FISCAL POLICY AND HEALTH CRISIS IN CAMEROON:

Response to COVID 19

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Résumé

Cette étude fait une analyse de la politique budgétaire en période de crise sanitaire au Cameroun, pour rappel à l'aube de l'apparition du COVID 19, plusieurs prévisions ont été revues à la baisse concernant le cadre macroéconomique du pays, en particulier un taux de croissance prévisionnel passant de 4% à 0,6%, en outre la situation des finances publiques n'a pas été épargnée. Face à cela, les autorités budgétaires ont dû appliquer une politique restrictive (-12,3%) avec une réallocation des dépenses orientées prioritairement à la santé. Pour autant en situation de récession, une littérature économique abondante préconise un accroissement de la dépense publique pour inciter l'activité économique retrouvant ainsi la pensée keynésienne. Dès lors cette étude se propose donc vérifier cette hypothèse, en outre s'assurer si les autorités budgétaires devraient continuer à appliquer une politique budgétaire restrictive pour les années futures. En utilisant un Modèle d'Equilibre General Calculable (MEGC) sur des données macroéconomiques de 2019, les résultats montrent qu'il faudrait employer une politique budgétaire expansionniste pour relancer la croissance économique, par ailleurs une politique budgétaire ciblée sur la demande, autrement dit une relance par la consommation car elle serait le canal le mieux adapté pour l'économie Cameroun face aux incidences économiques du COVID 19.

Mots Clés : Politique budgétaire, Crise sanitaire, Croissance économique, MEGC.
Classification JEL: O23, I18, I18

Abstract

This study analyzes fiscal policy during a health crisis in Cameroon, as a reminder at the dawn of the appearance of COVID 19, several forecasts have been revised downwards concerning the macroeconomic framework of the country, in particular a rate growth forecast going from 4% to 0.6%, in addition the public finances situation was not spared. Faced with this, the budgetary authorities had to apply a restrictive policy (-12.3%) with a reallocation of expenditure oriented primarily to health. However, in a recessionary situation, an abundant economic literature recommends an increase in public spending to encourage economic activity, thus rediscovering Keynesian thinking. This study therefore sets out to verify this hypothesis, in addition to ascertaining whether the budgetary authorities should continue to apply a restrictive budgetary policy for future years. Using a Calculable General Equilibrium Model (CGEM) on 2019 macroeconomic data, the results show that an expansionary fiscal policy should be used to revive economic growth, in addition a fiscal policy targeted on demand, in other words a recovery through consumption because it would be the most suitable channel for the Cameroon economy in the face of the economic impact of COVID 19.

Keywords: Fiscal policy, health crisis, Economic Growth, CGEM
JEL Code: O23, I18, I18

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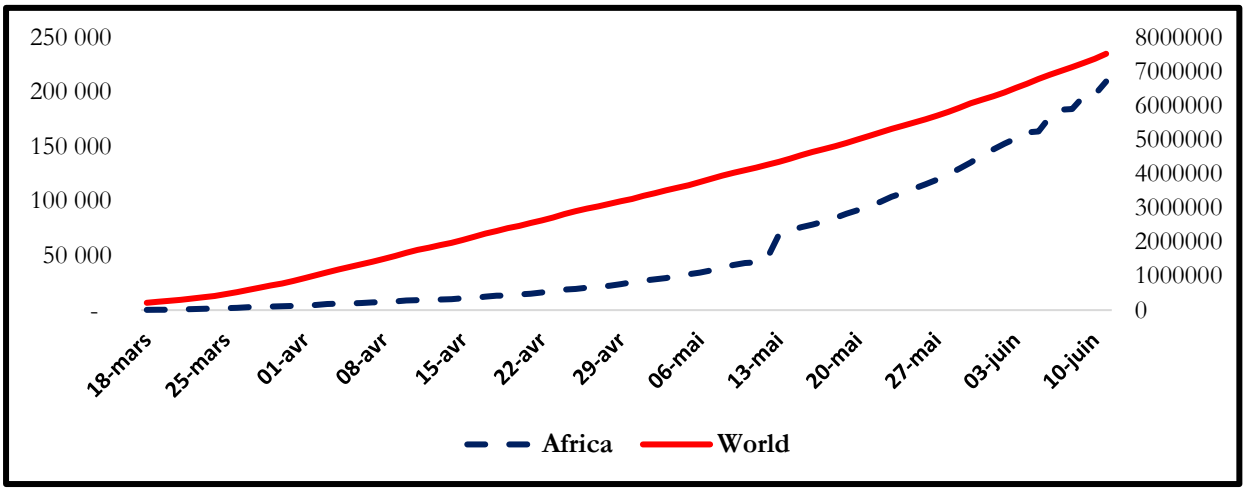
INTRODUCTION

COVID-19 first appeared in China's Hubei Province in December 2019 and then spread from China to Asia, Europe and the rest of the world. On March 11, COVID-19 is qualified as a "global pandemic" by the World Health Organization (WHO) in view of the rapid spread of the virus in China and the rest of the world and the significant risk to public health in the world. Although the rate of new infections in China is stabilizing, it is accelerating in many other parts of the world.

Mainly in East Asia, some regions that had managed to contain the initial spread of the virus are experiencing a second wave of infections as citizens return from overseas trips (overseas tourism and international students for example). Thus, the infected world population continues to grow reaching. As of June 2020, the 7.5 million mark. In addition, Africa, long spared, experiences its first case in February 2020, in Egypt. To date, all the 54 countries of the Continent are affected and the total number of cases stands at 209,438 including 5,678 deaths as of June 2020. Specifically, the first case of COVID-19 is declared in Cameroon on 06 March 2020.

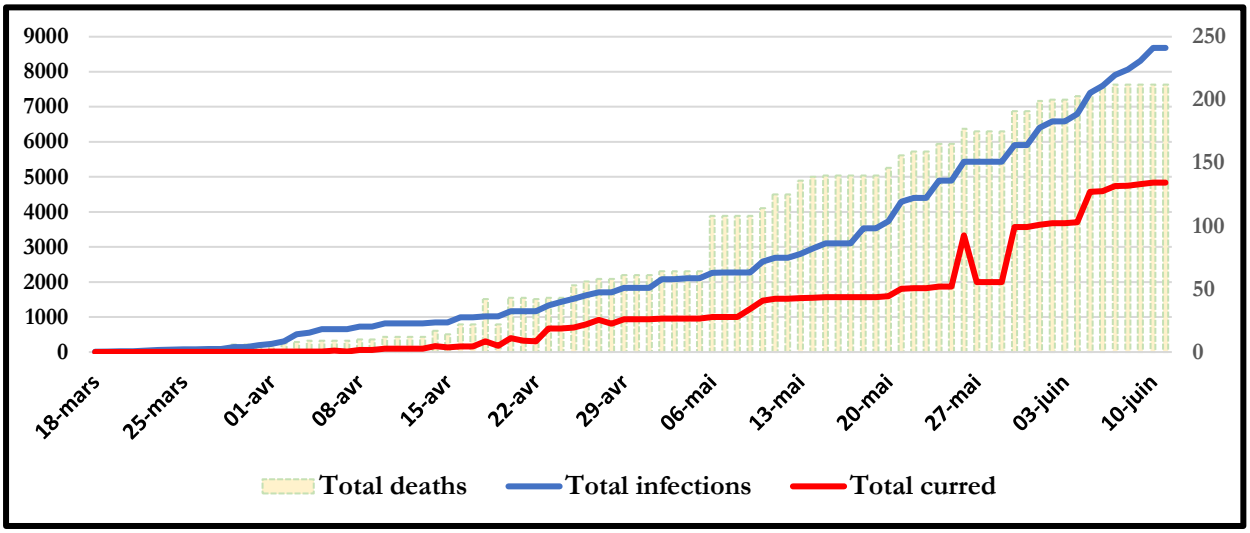
Graph 1: Evolution of the number of COVID-19 cases in the world and in Africa from mid-March 2020 to June 2020



Source: WHO statistics.

In order to contain the pandemic, many countries have notably adopted restrictive partial or total containment measures. Following this dynamic, on March 17, 2020, through its Prime Minister, Head of Government, the Cameroonian government will make public a list of 13 measures aimed at slowing the spread of this pandemic which, as shown in graph 2 below, began its rising phase. In June 2020, the country had 8,681 cases of contamination, including 212 deaths and 4,836 cured.

Graph 2: Evolution of the number of COVID-19 cases in Cameroon in June 2020 (Infections, deaths and cured)



Source: WHO statistics.

This health crisis situation materialized by various restrictions on a global scale has led in particular to a general slowdown in economic and financial activities, with prospects for a contraction of growth in 2020 which should be unprecedented according to specialists. In addition, we are witnessing turbulence in the financial markets, by a drop in external demand, a decrease in domestic demand and a breakdown in supply chains with consequences for national supply.
Indeed, containment measures aimed at curbing the spread of the COVID-19 virus have slowed economic activity due to the reduction in local international travel and the disruption of global value chains (GVCs).

Official quarantines have interrupted the free flow of people and goods, while preventative behaviors by consumers and businesses (such as border closures) as well as restrictions imposed by governments have reduced travel and tourism flight cancellations and created inflation on basic consumer goods. Tightening border controls and production delays have also disrupted the tightly knit GVC system. Factories around the world have slowed down or stopped production due to the shortage of intermediate inputs from China and elsewhere. Much of the service (notably tourism) and entertainment sectors, which contribute significantly to global growth, have closed in many countries.

According to the UNDP (2020), this decline in global demand and trade will have serious economic and social repercussions on African countries in connection with their openness to the world economy. Indeed, according to the WTO in 2017, the main exported products are raw materials (50.3%) and intermediate goods (25.7%).

As a result, the economies of the countries of the Central African Economic and Monetary Community (CEMAC) would not be spared. Indeed, the recent PREF-CEMAC report published in April 2020 did not fail to highlight the possible scenarios of plausible impact of the virus on the economy of the sub-region. In addition, the said report mentions that the economic and financial consequences of COVID-19 in the CEMAC economies are of several types, including: a significant drop in budget revenues, a significant deterioration in macroeconomic accounts, a decrease in external funding , a disruption of intra-community trade, a weakening of external and financial stability and a risk of rising inflationary pressures.

Concerning Cameroon, many reports have highlighted the negative impact of the crisis on the national economy, in particular the United Nations report published in July 2020. According to this report, the effects can be on several levels, in terms of macroeconomic, we note (i) an overall slowdown in economic activity with lower forecasts of the growth rate which would drop from 4% initially forecast to 0.6% (IMF, 2020), (ii) at the sectoral level, the most affected sector would be the tertiary sector; (iii) the drop in income would be -19.2% for the Government, -11.9% for businesses and -15% for households; which corresponded to a loss estimated at nearly 26.4 billion CFA francs for rural households, and nearly 58.2 billion CFA francs for urban households; (iv) the unemployment rate would register an increase compared to the reference situation of nearly 163%; and (v) the price level would increase by nearly 3.2%.

In terms of public finances, the 2020 budget was fixed in revenue and expenditure at the sum of 4,951.7 billion FCFA, with a forecast growth rate of around 4%, then corrected on June 3, 2020. , for a new amount of to 4409.0 billion FCFA, a decrease of 12.3%. The country was hoping to garner oil and tax revenues of 468 billion FCFA. However, the advent of the Corona Virus epidemic has resulted in the need to review all these forecasts.

On the monetary and financial level, according to the IMF, Cameroon will experience a slight decrease in the money supply due to COVID-19, which would drop from 24.5% of GDP in 2019 to 24.1% of GDP in 2020, thus impacting the investment capacity and the volume of bank liquidity.

Externally, there is a decline in external demand due to a drop or cancellation of global orders from the country's main economic partners such as China, Italy, France and the European Union, this should further widen the trade balance deficit, by ricochet that of the balance of payments.

Given these potential impacts of this health crisis on the Cameroonian economy, the government, via its budgetary policy, has not hesitated on the financial means to face the economic risks, in fact the country has adopted a revision of the law of 2020 corrected finance on June 3, 2020, thus bringing the budget down (-12.3%), from FCA 4,951.7 billion to FCFA 4,409.0 billion, and made a budget reallocation in order to allocate more than financial resources to the health sector, in particular through the creation of a Special National Solidarity Fund to fight against the coronavirus and its economic and global repercussions.

As other measures taken, we note (i) support for the cash flow of businesses through the allocation of a special envelope of 25 billion FCFA, for the clearance of stocks of VAT credits awaiting reimbursement, (ii) the total deductibility for the determination of the corporate tax of donations and gifts granted by companies for the fight against the Covid-19 pandemic, (iii) the exemption from the tourist tax in the sector of hotels and restaurants for the remainder of fiscal 2020, starting in March; (iv) exemption from final tax and parking tax for taxis and motorcycle taxis, as well as axle tax for the 2nd quarter which may be extended to the rest of 2020; (v) exemption for the second quarter from final tax and municipal taxes (market place rights, etc.) for the benefit of small food resellers (bayam-sellam); (vii) increasing the level of family allowances from 2,800 FCFA to 4,500 FCFA; (vii) the 20% increase in the level of old pensions that did not benefit from the automatic revaluation that occurred as a result of the 2016 reform and (viii) the cancellation of penalties for late payment of social contributions due to the National Social Security Fund (NSSF).

As mentioned above, the government had to cut its budget due to the macroeconomic impact of the shock. However, should the authorities continue this restrictive policy to revive economic activity?

As mentioned above, the government had to cut its budget due to the macroeconomic impact of the shock. However, should the authorities continue this restrictive policy to revive economic activity?

Indeed, according to many studies such as Candelon and Lieb (2013), during a recession, an expansive fiscal policy is recommended to revive economic activity through the effect of the Keynesian multiplier.

In addition, the accumulation of corporate and household debt, the increase in business closures and rising unemployment, as well as increased economic uncertainty, can lower future investment and consumption. expansive budget in times of recession stimulates demand, subsequently supply in response to increased demand, increases by increasing its factors of production, i.e. more labor, more capital, the result is an increase in household income, and there is thus a virtuous circle. Through this virtuous circle, growth is gradually regaining balance before the recession.

Thus, in view of this restrictive budgetary measure applied in Cameroon, it is important to take a break in order to question the relevance of this measure in the economic battle against COVID 19, this is the aim of our study which proposes to analyze the effectiveness of Cameroon's budgetary response to COVID-19.

The interest of this study would make it possible to reframe the government in the choice of its budgetary policy in the fight against COVID, in concrete terms to ensure whether it is rational to continue the momentum of a restrictive budgetary policy as it is. carried out since the start of this health crisis.

1. LITERATURE REVIEW

Faced with the adverse economic effects of a crisis on an economy, there is an abundant literature advocating fiscal policy as an effective response to these effects via the effect of automatic stabilizers.

On the theoretical level, Keynes (1936) in his book “General Theory of Employment, Interest and Money”, mainly developed the hypothesis according to which demand is the main factor determining the level of production and consequently that of employment.

The 1930s were marked by a deep economic crisis called in the United States "the great depression". The crisis, which arose in the United States following the crash of 1929, is spreading to Europe where unemployment is soaring and democracies are faltering.

The economic policies of the time, inspired by the liberal trend according to which economies regulate themselves on their own, were ineffective in emerging from the doldrums. Worse, they make it worse.

Thus, in the event of a macroeconomic imbalance, Keynes recommends increasing demand to remedy it, via an increase in one of the autonomous components, generally by increasing public expenditure and reducing taxes (expansive fiscal policy or stimulus policy): this is the multiplier principle.

However, if the Keynesians give pride of place to cyclical economic policy, they nonetheless insist on its conditional effectiveness, especially in a context of openness to the outside world. Thus, the effectiveness of a fiscal or fiscal stimulus policy can be affected by several phenomena:

- The fiscal stimulus usually results in an increase in interest rates (Model IS-LM). In a closed economy, an imbalance (need for financing) results in a crowding out effect: government loans being the most sought after (because they are more profitable), it is companies (and therefore private agents) who will suffer the scarcity of available capital and rising interest rates. In an open economy, rising interest rates attract foreign capital, which fills in the national imbalance and reduces interest rates. Thus, the crowding out effect does not come into play, but it is at the cost of the indebtedness of the nation (example of the USA);
- The fiscal multiplier is altered by the openness of the economy, and more specifically by the flight due to imports. In fact, the value of the multiplier is all the more low as the marginal propensity to import is strong;

- In a situation of fixed exchange rates, the effectiveness of a fiscal stimulus policy depends on the international mobility of capital (MUNDELL-FLEMING model). When the latter are stationary, the fiscal stimulus has no effect on real activity (indeed, if a country increases its public spending, part of the stimulus goes into imports, a trade deficit appears, there is a depreciation of the rate. exchange rate, the Central Bank must then intervene to support the national currency, which has the effect of contracting the money supply);
- Finally, a fiscal policy financed by borrowing leads to an increase in public debt. This is penalizing for an economy, especially when interest rates are higher than the growth rates of the economy.

The effectiveness of fiscal policy is thus conditioned by the multiplier; a propensity to consume that is higher than that to import; a demand for money that is not very elastic to income (the income must not generate a strong demand for money, which is possible if the speed of circulation of money is high); a demand for money that is highly elastic to the interest rate (a small increase in the interest rate would be enough to reduce the demand for money for speculation and to meet the demand for money for transaction); low elasticity of investment to the interest rate (so that investment is not depressed by the rise in the interest rate); idle production capacity and an elastic supply of goods and services in the short term.

Empirically, note that for the case of the United States, Auerbach and Gorodnichenko (2012) reveal that in a period of expansion the expenditure multiplier is equal to 0 after one year and to -0.1 after two years, whereas in a recession the same multiplier is 1.4 after one year and 1.8 after two years. Focusing on public expenditure financed by deficit, Candelon and Lieb (2013) confirm these results by obtaining higher multipliers in a period of recession (between 1 and 2.4) than in a period of expansion (around 0.5). They also defend policies to increase public spending rather than those to cut taxes.

In the UEMOA zone, Henin and N'Diaye (2001) complete the traditional VAR approach by taking into account the asymmetric nature of the responses of activity to an increase or decrease in the public deficit. The authors estimate a Markov regime-shift VAR model for four large countries to assess the extent to which the fiscal multiplier may depend on the cyclical situation - expansion or recession. The findings of the study confirm the uncertainties pointed out by previous studies on the Keynesian effects of fiscal policy. The authors conclude that fiscal policy has non-Keynesian effects in the majority of cases. However, they note that a budget deficit regime comes

with a high likelihood of continued growth or economic recovery. In contrast, a balanced budget regime comes with a high probability of entering or remaining in recession.

These studies presented above show that there is no consensus on the importance of expansive fiscal policies in times of recession, so in times of crisis there would be no certainty on the type of fiscal policy to apply, however, a large majority of the literature agrees on the use of an expansive fiscal policy in the face of crises.

To this end, Catherine Mathieu and Henri Sterdyniak (2009) in their study on budgetary strategies during the exit from the subprime crisis of 2009, show that budgetary policies should be expansionary because the crisis would have created imbalances in public finances such as This is the case of Cameroon, however the authors show that in a post-crisis period, if private consumption picks up again, then an expansionary budgetary policy would be able to relaunch economic growth.

In addition, the authors explain that if the fiscal authorities continue to apply a restrictive policy, this should lead to a surge in inflation, and therefore an increase in the interest rate.

This point of view is supported by Philippe Bance (2012) who wonders about the relevance of the budgetary policies of certain countries which remained restrictive 03 years after the financial crisis of 2009, he notes to this effect that the economic situation of these countries has not changed. is not improved practically on the whole justified by the limited effect of automatic stabilizers in the post-crisis periods.

Bony (2011), on the other hand, supports a more rational use of expansionary fiscal policies to exit the crisis, the author shows that certain expansionary fiscal policies used to revive the economy in the face of the 2009 crisis have positive short-term effects on economic activity, however, these effects were not sufficient to mitigate the budget deficits caused by indebtedness.

Continuing the idea of Bony (2011), Bayon et al. (2010) show the positive effect of budgetary policies impact on the way out of the crisis via the spontaneous mechanism of automatic stabilizers nevertheless these policies have a cost, which materializes in the increase in public debt, at the end of the crisis the States who are struggling to regain economic growth, do not record strong budgetary revenues, suddenly resorting to more and more debt to finance most of this public expenditure.

However, despite the positive effects of budgetary impulses during economic crises, other authors do not share this opinion, Feldstein (1982), Giavazzi and Pagano (1990), Blanchard

(1990), Perotti (1999) and more recently Minea & Villieu (2012), highlighted non-linearities in the economy's response to a budget shock.

In the UEMOA zone and over the period 1986-2002, Ary Tanimoune, Combes and Plane (2008) have highlighted the non-Keynesian effects of budget variations on private consumption and investment, in particular in connection with reversals in expectations in highly indebted economies.

Similarly, Minea & Villieu (2009) show the non-keneysian effects of an increase in public deficits on public investment in a context of high public debt. Following on from this work, two recent studies explore the possible dependence of fiscal multipliers on the level of the public debt ratio, such as that by Corsetti et al. (2012) who showed that fiscal multipliers are lower when public debt is high.

These lessons teach us that, subject to a greater propensity to consume, a lower propensity to import and an investment that is not very elastic to the interest rate, an expansionary fiscal policy that is not accompanied by high debt has positive effects during economic crises, in particular to revive the economy, indeed a high public debt could be unnatural to revive the economy, suddenly we will at most see a short-term economic recovery, but in the medium and long term, the weight of public debt should catch up with the positive effect of the stimulus.

However, the Cameroonian economy is an essentially extroverted economy, highly dependent on the outside but also very indebted, suddenly one is led to wonder about the relevance of an expansive fiscal policy as a crisis solution as suggested by a large part. of the economic review.

2. DATA

Regarding the methodological framework, we propose the implementation of a General Calculable Equilibrium Model (GCEM), the choice of this model is justified by its macroeconomic structure which would allow to reconcile the interrelationships between the different economic agents, however before its implementation we built the 2019 Cameroon social accounting matrix.

As a result, we have used many sources of information made available to us including the Table of Financial and Economic Operations, the Balance of Payment, the monetary and financial situation of Cameroon, the Resource and Employment Table and data from of Cameroon's national accounts for the year 2019.

The construction of the social accounting matrix followed the process of Reinert and Roland-Holst (1997). This procedure is done according to the top-down approach respecting the following steps: (i) construction of an aggregated social accounting matrix (or macro-SAM), (ii) disaggregation of the macro-SAM into a matrix with a breakdown relative by sector (or micro-SAM of the order of 37x37), and (iii) Balancing of the micro-SAM in order to make it suitable for calibration.

Table 1 presents the different accounts of the macro-SAM. This matrix includes the productive account which has been broken down into 3 major sectors (primary, secondary, tertiary), we indicate two factors of production namely capital (K) and labor (L), the intentional agents numbering 18 are 14 types of households, 2 types of firms, non-profit institutes serving households (NPISH) and public administrations (GVT) and the rest of the world (ROW). The tax account has been disaggregated into 4 types of taxes namely direct taxes, indirect taxes, import taxes and export taxes, finally this matrix takes into account the capital account where the investments in terms of goods and services and the savings of the various institutional agents.

According to the objectives that we have set ourselves to achieve, the types of households retained are as follows: Unemployed Rural, Unemployed Urban, Inactive Rural, Inactive Urban, Informal agricultural Rural, Informal agricultural Urban, Informal non agricultural Rural, Informal non agricultural Urban, Private formal Rural, Private formal Urban, Public Rural, Public Urban, Retirees Rural, Retiree Urban.

The types of firms are financial corporations and non-financial corporations. The matrix is presented in the appendix.

Table 1 : Social Accounting Matrix Accounts (SAM)

Production (3)	**Production factors (2)**	**Institutional agents (19)**	**Capital (2)**	**Taxes (4)**
Primary	Capital	Household (14)	Investment	Direct taxes
Secondary	Labor	NPISH	Saving	Indirect Taxes
Tertiary		Firms (2)		Import taxes or customs duties
		Public Administration		Export taxes
		Rest of the world		

Source : Our data.

Thus, on the basis of our calculations, Table 2 presents the standard matrix for Cameroon in 2019. With regard to this table, the added value is at 20 641 800 billion FCFA in 2019, an intermediate consumption of 15 215 875 billion FCFA, that is to say a total base production of CFAF 36,157,675 billion. Again, in the light of the table, the total consumption amounts to 18 849 100 billion, the total investment meanwhile is 5 245 500 billion FCFA. Externally, imports amount to 5,900,200 billion FCFA and exports to 4,574,900 billion FCFA.

Table 2 : Standard SAM of the Cameroonian Economy in 2019 (Macro-SAM) and in billions of FCFA.

EMPLOYMENT / RESOURCES		Branches of activity	Branch products	Production factors	Resident institutional units	Capital	Rest of the world	Total
		1	2	3	4	5	6	
Branches of activity	1		36157675					36157675
Branch products	2	15215875			18849100	5245500	4574900	43885375
Production factors	3	20941800						20941800
Resident institutional units	4		1827500	20905587	3378349		472397	26583833
Capital	5				3721531		1523969	5245500
Rest of the world	6		5900200	36213	634853			6571266
Total		36157675	43885375	20941800	26583833	5245500	6571266	

Source : Our calculations.

According to Table 3 on the structure of the Cameroonian economy in 2019, the GDP stood at FCFA 22,769,200 billion in 2019, with a majority share of the tertiary sector of 51.41%, the secondary sector contributing a contribution of 25.88% and the primary sector with 14.61%.

Table 3 : Quarterly data on current GDP in 2019 (in billions of FCFA) according to the production perspective.

	T1_2019	T2_2019	T3_2019	T4_2019
PRIMARY SECTOR	**639,7**	**921,0**	**1063,2**	**704,4**
SECONDARY SECTOR	**1447,5**	**1573,0**	**1482,0**	**1391,3**
TERTIARY SECTOR	**2764,6**	**2952,1**	**3001,4**	**3001,6**
TOTAL ADDED VALUES	**4851,9**	**5446,1**	**5546,6**	**5097,2**
Taxes and net taxes on products	411,3	455,5	475,8	484,8
GDP	**5 263,2**	**5 901,7**	**6 022,4**	**5 582,0**

Source: Cameroon National Institute of Statistics data.

On the demand side, it is dominated by private consumption at 71.78%, followed by private investment with 19.10%, this shows us that the total demand in Cameroon is dominated at over 90% by domestic demand and less than 10% by foreign demand. In addition, concerning external demand, exports represented 20.09% of GDP in 2019, and imports 25.91% of GDP.

Table 4 : Quarterly data on current GDP in 2019 (in billions of FCFA) according to the demand perspective

	T1_2019	T2_2019	T3_2019	T4_2019
FINAL CONSUMPTION	**4373,2**	**4944,9**	**4848,6**	**4682,3**
Private consumption	3831,3	4325,6	4201,3	3985,9
Public consumption	541,9	619,4	647,3	696,4
GFCF	**1167,0**	**1321,4**	**1387,9**	**1388,0**
Private GFCF	1054,6	1082,9	1175,4	1036,1
Public GFCF	112,4	238,5	212,5	351,9
Stock variation	46,3	-68,6	39,9	-36,4
INVESTMENT	**1213,3**	**1252,8**	**1427,8**	**1351,6**
EXPORTS	**1089,6**	**1134,4**	**1079,8**	**1271,1**
Exports of good	767,9	797,2	759,3	891,3
Exports of services	321,7	337,2	320,5	379,7
IMPORTS	**1412,8**	**1430,5**	**1333,9**	**1723,0**
Imports of good	1011,4	1023,1	953,3	1231,0
Imports of services	401,4	407,4	380,5	492,0
GDP	**5263,2**	**5901,7**	**6022,4**	**5582,0**

Source: Cameroon National Institute of Statistics data.

3. METHODOLOGY

Regarding the methodological framework, as mentioned above we propose the implementation of a General Calculable Equilibrium Model (GCEM). The second step after the construction of the social accounting matrix is the definition of the scenarios allowing to analyze the impact of COVID 2019 on economic activity, these scenarios will be based on the most plausible transmission channels for Cameroon such as than identified above.

After identifying these scenarios, we will simulate the effect of budgetary measures in the face of COVID in order to analyze their effectiveness, then as part of the discussions of the results, we will implement a second series of simulations in response to the COVID question of make these budgetary measures more robust

Concretely, the GCEM is specified by describing the equations which underlie it according to its SAM (micro SAM-37x37, presented above). Specifically, this is a static model, in an open economy with government, this study is built from three (3) products, each of which comes from a specific branch (primary, secondary, tertiary). Demand and income distribution are broken down between three (3) major resident agents: APUs, representing the State and local authorities (gvt), non-profit institutes serving households (npish); Households (indexed h) and finally Businesses (indexed f), as well as an agent representative of the Rest of the World (row). As for the production factors, they come in two (2) components: labor (indexed l) and capital (indexed k). Thus, this model is structured mainly in four (4) blocks, namely: the block of production and demand of factors; the demand block for goods and services, the source and destination block of income and ultimately the block defining the price system.

3.1. Production and demand for factors

The production function, characterizing the behavior of producers, is concave. Thus, producers maximize their profit and the output (X_i) of each sector or branch of activity is modeled by a function CES[2] of labor (L^d_i) and of capital (K_i) under the hypothesis of imperfect substitutability between these two factors. The labor factor is mobile between the different sectors, while the capital factor is assumed to be fixed for each sector and exogenous. The constrained profit maximization allows us to deduce the demand for labor input from the following equation:

$$X_i = A_i^p [\alpha_i^p (L_d^i)^{-\mu_i^p} + (1 - \alpha_i^p)\overline{K_\iota}^{-\mu_i^p}]^{-\frac{1}{\mu_i^p}} \quad (1)$$

On the basis of the optimization conditions, we thus obtain:

$$\frac{L_d^i}{X_i} = \left[\frac{pva_{i.}.\alpha_i^p}{(A_i^p)^{\mu_i^p}.w}\right]^{\sigma_i^p} \quad (2)$$

With X_i: *Volume production of branch i;*

A_i^p: *Scale parameter of the production function of branch i;*

α_i^p: *Factorial parameter of the production function of branch i;*

L^d_i : *Job demand of branch i;*

$\overline{K_i}$: *Capital of branch i;*

μ_i^p: *Parameter for estimating the elasticity of substitution* (σ_i^p) *between* L^d_i *and* $\overline{K_\iota}$ *of the production function of branch i:* $\sigma_i^p = \frac{1}{1+\mu_i^p}$;

pva_i : *Price of value added of branch i;*

w : Wage rate in the economy.

[2] The CES (Constant Elasticity of Substitution) production function is a special form of neoclassical production function introduced by Arrow, Chenery, Minhas and Solow in 1961. In this approach, the production technology uses constant percentages of changes in factor proportions. (capital and labor) following a one percent change in the marginal rate of technical substitution (MRTS).

3.2. Demand of goods and services

3.2.1. Domestic goods, composite goods, exports and imports

For Cameroon, the prices of imported and exported goods are not set by the internal market, but externally. It is assumed here that the Cameroonian economy is thus a "small open economy strongly influenced by the world economy" or even a "price taker". The equations relating to the foreign trade of this economy are governed by the assumption of « little country »[3] and that of « Armington »[4].

The Armington hypothesis specifies that the demand **(*Q_i*)** of the domestic goods of the branches, exclusively intended for the Malian markets, results from a function with constant elasticity of substitution (CES) of the local good (D_i^s) and of the imported good (*IM_i*). The demand for the composite good (Q_i) is therefore obtained by the equation:

$$Q_i = A_i^q [\alpha_i^q (IM_i)^{-\mu_i^q} + (1 - \alpha_i^q)(D_i^s)^{-\mu_i^q}]^{-\frac{1}{\mu_i^p}} \quad (3)$$

The consumer who chooses between a good produced locally and a good imported one, will seek to minimize the cost of his purchases which depends on the domestic prices of the imported good (pm_i) and the local good (pd_i). The minimization program, given a quantity Q_i of the composite good leads to an optimal quantity of demand for imported good given by the relation:

$$\frac{IM_i}{D_i^s} = \left[\frac{\alpha_i^q}{1 - \alpha_i^q} \mathrm{X} \frac{pd_i}{pm_i}\right]^{\sigma_i^q} \quad (4)$$

With Q_i *: Demand for composite product from branch i;*

A_i^q*: Scale parameter of the production function of branch i;*

α_i^q*: Factorial parameter of the production function of branch i;*

D_i^S *: Demand on the domestic market for locally produced good i;*

IM_i*: Import of good i ;*

[3] This assumption states that the country is an international “price taker”. Because, its weight in the world economy is not great enough for it to be able to influence world export and import prices; these prices will therefore be considered exogenous.
[4] This is the hypothesis of imperfect substitutability between two similar products but of different origins, and whose demand must therefore be specified by a CES-type function.

μ_i^q *: Parameter for estimating the elasticity of substitution* (σ_i^q) *between* D_i^S *et* IM_i *of the demand function of good* i *:* $\sigma_i^q = \frac{1}{1+\mu_i^q}$ *;*

pm_i *: Import price of good i in national currency;*

pd_i*: Price of good i manufactured and sold locally.*

At the level of exports of tradable goods, the "price taker" hypothesis leads to exogenous pricing of exports by the world market. The production (X_i) of the good is shared between its export (EX_i) and its demand on the domestic market (D_i^t) from a function with constant elasticity of transformation (CET) according to the equation:

$$X_i = A_i^t[\alpha_i^t(EX_i)^{-\mu_i^t} + (1-\alpha_i^q)(D_i^d)^{-\mu_i^t}]^{-\frac{1}{\mu_i^t}} \quad (5)$$

For a quantity of produced good X_i, the producer will therefore seek to maximize his income, which depends on the domestic price of the good for export (pe_i) and its price on the local market (pd_i). Solving the maximization program gives the optimal volume of exports:

$$\frac{EX_i}{D_i^d} = \left[\frac{\alpha_i^t}{1-\alpha_i^t} \mathrm{X} \frac{pd_i}{pe_i}\right]^{\sigma_i^t} \quad (6)$$

With X_i *: Volume production of branch i;*

A_i^t *: Scale parameter of the production function of branch i;*

α_i^t *: Factorial parameter of the production function of branch i;*

D_i^d*: Supply on the domestic market of the good i manufactured locally;*

EX_i *: Export of good i;*

μ_i^t*: Parameter for estimating the elasticity of commercial transformation* (σ_i^t) *between* D_i^d *and* EX_i *of the production function of branch i:* $\sigma_i^t = \frac{1}{1+\mu_i^t}$ *;*

pe_i *: Export price of good i in national currency;*

pd_i *: Price of good i manufactured and sold locally.*

3.2.2. Use of composite goods

Household final consumption expenditure on composite goods takes the form of a linear expenditure system (Stone-Geary). We thus have the relation:

$$pcq_i.CFQ_i^h = \overline{c\ mın_i^h}.pcq_i + pmc_i^h\left[YD_h - \sum_j \overline{c\ mın_j^h}.pcq_j\right] ; j\in\{1,2,3\} \quad (7)$$

With pcq_i: *Consumer price of composite good i;*

CFQ_i^h : *Final consumption of household in volume of composite product i;*

$\overline{\text{cmin}_i^h}$: *Volume of incompressible consumption of good i of households;*

pmc_i^h : *Marginal propensity to consume good i of households;*

YD_h : *Disposable Household Income.*

On the other hand, the final consumption expenditure on composite goods of the Public Administrations is determined in volume through an exogenous distribution key. This is done from the overall level of government consumption, assumed to be an economic policy variable according to the relationship below:

$$CFQ_i^g = w_i^g \overline{CFQ^g} ; i \in \{1,2,3\} \quad (8)$$

With CFQ_i^g : *Final state consumption in volume of composite product i;*

$\overline{CFQ^g}$: *Total final consumption in volume of the State ;*

w_i^g : *Key to the distribution of government consumption among products i.*

As regards the intermediate demand in volume, it is deduced from the matrix of technical coefficients. We thus have the relation:

$$CIQ_i = \sum_j a_{ij} X_j ; i \in \{1,2,3\} \quad (9)$$

With CIQ_i : *Intermediate volume consumption of composite product i;*

X_j: *Volume production of branch j;*

a_{ij} : *Leontief technical coefficients in product i for branch j.*

The investment requests of the branches are determined in value from a distribution key and an overall level of investment assumed to be exogenous, through the relationship:

$$pcq_i . IQ_i = \beta_i I \; ; \; i \in \{1,2,3\} \quad (10)$$

With pcq_i *: Consumer price of composite good i;*

IQ_i *: Investment in volume of composite product i;*

β_i*: Clefs de répartition de l'investissement entre les produits i ;*

I: Total value of Investment.

3.3. Sources and destinations of income

3.3.1. Origins and use of agent income

Households receive labor income and a share of capital income. They also receive the transfer income from the various resident institutional sectors and the rest of the world. These transfers are assumed to be exogenous in volume. We therefore have the following relation:

$$Y_h = l_h \sum_i wL_i^d + k_h \sum_i (pva_i \; va_i - wL_i^d - \overline{REVXR}) + \overline{TRANSF_h^f} + \overline{TRANSF_h^g} + \overline{TRANSF_h^h} + \overline{TRANSF_h^i} + \overline{TRANSF_h^r} \quad (11)$$

With Y_h *: Household income;*

w : Wage rate in the economy;

L^d_i *: Labor demand of branch i;*

l_h *: Share of labor income earmarked for household h;*

$\overline{REVXR}$ *: External income received ;*

k_h *: Share of capital income earmarked for household h ;*

pva_i *: Price of value added in branch i;*

$\overline{TRANSF_h^g}$ *: Volume transfers paid by State to households;*

$\overline{TRANSF_h^h}$ *: Volume transfers paid by households to households;*

$\overline{TRANSF_h^f}$ *: Volume Transfers paid by firms to households;*

$\overline{TRANSF_h^i}$ *: Volume transfers paid by npish to households;*

$\overline{TRANSF_h^r}$ *: Volume transfers from the rest of the world to households.*

In addition, the payment of income tax and domestic and foreign interest expense determines the level of household disposable income. We thus have the following relation:

$$YD_h = (1 - \overline{ty_h})Y_h - \overline{TRANSF_f^h} + \overline{TRANSF_g^h} - \overline{TRANSF_h^h} - \overline{TRANSF_i^h} - \overline{TRANSF_r^h} \quad (12)$$

With YD_h *: Disposable Household Income;*

$\overline{ty_h}$ *: Direct tax rate on household income ;*

Y_h *: Household income ;*

$\overline{TRANSF_f^h}$ *: Volume transfers paid by households to firms;*

$\overline{TRANSF_g^h}$ *: Volume transfers paid by households to State;*

$\overline{TRANSF_h^h}$ *: Volume transfers paid by households to households;*

$\overline{TRANSF_i^h}$ *: Volume transfers paid by households to npish;*

$\overline{TRANSF_r^h}$ *: Volume transfers paid by households to the Rest of the world.*

In addition, households save a residual proportion of their disposable income, i.e. the part not consumed. This savings is determined by the relationship:

$$S_h = psi_h YD_h \ (13)$$

With S_h *: Household savings;*

psi_h*: Marginal propensity to save of households;*

YD_h *: Disposable Household Income.*

As for firms, they receive the undistributed share of capital income, transfers from the various resident institutional sectors as well as from the rest of the world. Thus, their income is determined by the relationship:

$$Y_f = \left(1 - k_i - k_h - k_g\right) \sum_i (pva_i \ va_i - wL_i^d - \overline{REVXR)} + \overline{TRANSF_f^f} + \overline{TRANSF_f^g} + \overline{TRANSF_f^h} + \overline{TRANSF_f^i} + \overline{TRANSF_f^r} \quad (14)$$

With Y_f *: Income of firms;*

k_h *: Share of capital income earmarked for households ;*

k_g *: Share of capital income earmarked for state;*

k_i *: Share of capital income earmarked for npish;*

pva_i *: Price of value added in branch i;*

X_i *: Volume production of branch i;*

w : Wage rate in the economy;

L^d_i *: Labor demand of branch i;*

$\overline{REVXR}$: *External income received;*

$\overline{TRANSF_f^f}$ *: Volume transferts paid by firms to firms;*

$\overline{TRANSF_f^g}$ *: Volume transferts paid by State to firms;*

$\overline{TRANSF_f^h}$ *: Volume transferts paid by households to firms;*

$\overline{TRANSF_f^r}$ *: Volume transfers from the rest of the world to firms;*

$\overline{TRANSF_f^{i.}}$ *Volume transferts paid by npish to firms.*

These firms also generate savings (positive or negative depending on their financing capacity or need). The latter is determined by balance, once the corporation tax has been paid. We thus have the following relation:

$$S_f = \left(1 - \overline{ty_f}\right)Y_f - \overline{TRANSF_h^f} - \overline{TRANSF_g^f} - \overline{TRANSF_f^f} - \overline{TRANSF_i^f} - \overline{TRANSF_r^f} \quad (15)$$

With S_f: *Firms Savings;*

Y_f: *Income of firms;*

$\overline{ty_f}$: *Direct tax rate on firm's income;*

$\overline{TRANSF_f^f}$ *: Volume transferts paid by the firms to firms ;*

$\overline{TRANSF_g^f}$ *: Volume transferts paid by the firms to State;*

$\overline{TRANSF_h^f}$ *: Volume transferts paid by the firms to households;*

$\overline{TRANSF_r^f}$: *Volume transferts paid by the firms to households;*

$\overline{TRANSF_i^f}$: *Volume transferts paid by the firms to npish..*

Concerning Public Administrations, they receive a share of capital income, the various taxes collected and transfers from resident institutional sectors and the rest of the world. We therefore have the relation:

$$Y_g = k_g \sum_i (pva_i\ va_i - wL_i^d - \overline{REVXR}) + \sum_h \overline{ty_h} Y_h + \sum_f \overline{ty_f} Y_f + \sum_i \overline{tx_i} px_i X_i + \sum_i \overline{tm_i} pm_i IM_i + \sum_i \overline{tc_i} pcq_i CFQ_i^h + \overline{TRANSF_g^f} + \overline{TRANSF_g^h} + \overline{TRANSF_g^i} + \overline{TRANSF_g^g} + \overline{TRANSF_g^r}$$

(16)

With Y_g *: Income of State;*

k_g *: Share of capital income earmarked for the state;*

pva_i *: Price of value added in branch i;*

X_i *: Volume production of branch i;*

w: Wage rate in the economy;

L^d_i *: Labor demand of branch i ;*

$\overline{REVXR}$ *: External income received;*

$\overline{ty}_h$ *: Direct tax rate on household income;*

Y_h *: Income of households ;*

$\overline{ty}_f$ *: Direct tax rate on firm's income;*

Y_f *: Income of firms;*

$\overline{tx_i}$ *;* Tax rate on the production of branch i;

px_i *: Producer price in branch i;*

tc_i *: Tax rate on the consumption of product i;*

pcq_i *: Consumer price of composite good i;*

CFQ_i^h *; Final consumption of household in volume of composite product i;*

$\overline{tm_i}$ *: Tax rate on imports of product i;*

pm_i *: Import price of product i*;

IM_i *: Import of good i ;*

$\overline{TRANSF_g^f}$ *: Volume transferts paid by firms to state;*

$\overline{TRANSF_g^g}$ *: Volume transferts paid by state to state ;*

$\overline{TRANSF_g^h}$ *Volume transferts paid by households to state;*

$\overline{TRANSF_g^r}$ *Volume transferts of the rest of the world to state;*

$\overline{TRANSF_g^r}$ *: Volume transferts paid by npish to state.*

Public Administrations have savings which are determined by net management balance, after payment of the various current public expenditure and transfers paid, according to the relationship:

$$S_g = Y_g - \overline{TRANSF_h^g} - \overline{TRANSF_g^g} - \overline{TRANSF_f^g} - \overline{TRANSF_i^g} - \overline{TRANSF_r^g} - \sum_i pcq_i\, CFQ_i^g \quad (17)$$

With S_g *: State savings;*

Y_g *: Income of state ;*

$\overline{TRANSF_f^g}$ *: Volume transferts paid by state to firms ;*

$\overline{TRANSF_g^g}$ *: Volume transferts paid by State to State;*

$\overline{TRANSF_h^g}$ *: Volume transferts paid by state to household s;*

$\overline{TRANSF_r^g}$ *: Volume transferts paid by State to the rest of the world ;*

$\overline{TRANSF_i^g}$ *: Volume transferts paid by State to npish ;*

pcq_i *: Consumer price of composite good i;*

CFQ_i^g *: State consumption in volume of composite product i.*

With regard to npish, note that their income only takes into account the income from capital, therefore:

$$Y_i = k_i \sum_i (pva_i\ va_i - wL_i^d - \overline{REVXR}) + \overline{TRANSF_i^f} + \overline{TRANSF_i^g} + \overline{TRANSF_i^h} + \overline{TRANSF_i^r} \quad (18)$$

With Y_i *: Income of npish;*

k_i *Share of capital income earmarked for npish;*

pva_i *: Price of value added in branch i;*

w : Wage rate in the economy;

L^d_i *: Labor demand of branch I;*

$\overline{REVXR}$ *: External income received ;*

$\overline{TRANSF_i^f}$ *: Volume transferts paid by firms to npish;*

$\overline{TRANSF_i^g}$ *: Volume transferts paid by State to npish ;*

$\overline{TRANSF_i^h}$ *: Volume transferts paid by households to npish;*

$\overline{TRANSF_i^r}$ *:Volume transferts by the rest of the world to npish;*

The savings of the npish is deduced by subtracting transfers to other agents because it is assumed that they have no endowment in consumption.

$$S_i = Y_i - \overline{TRANSF_h^i} - \overline{TRANSF_g^i} - \overline{TRANSF_f^i} - \overline{TRANSF_i^i} - \overline{TRANSF_r^i} \quad (19)$$

With S_i *: npish savings;*

Y_i *: Income of Revenu des isblm ;*

$\overline{TRANSF_f^i}$*: Volume transferts paid by npish to firms;*

$\overline{TRANSF_g^i}$ *: Volume transferts paid by npish to State;*

$\overline{TRANSF_h^i}$ *: Volume transferts paid by npish to households;*

$\overline{TRANSF_r^i}$*: Volume transferts paid by npish to the rest of the world.*

Finally, concerning the rest of the world, its income depends on income from capital, imports and transfers received:

$$Y_r = \sum_i pm_i\, IM_i + \overline{REVXR} + \overline{TRANSF_r^f} + \overline{TRANSF_r^g} + \overline{TRANSF_r^h} + \overline{TRANSF_r^i} \quad (20)$$

With Y_r *: Income of the rest of the world;*

$\overline{REVXR}$ *: External income received ;*

$\overline{TRANSF_r^f}$ *: Volume transferts paid by firms to the rest of the world;*

$\overline{TRANSF_r^g}$ *: Volume transferts paid by State to the rest of the World ;*

$\overline{TRANSF_r^h}$ *: Volume transferts paid by households to the rest of the world;*

$\overline{TRANSF_r^i}$ *: Volume transferts des npish to the rest of the world;*

pm_i *: Import price of product i*;

IM_i *: Import of good i.*

The current account representing the savings of the rest of the world is obtained by subtracting the exports and transfers paid by the rest of the world:

$$S_r = Y_r - \sum_i px_i EX_i - \overline{TRANSF_h^r} - \overline{TRANSF_g^r} - \overline{TRANSF_f^r} -$$

$$\overline{TRANSF_i^r} - \overline{REVXV} \quad (21)$$

With S_r: *Current account;*

Y_r: *Income of the rest of the world;*

$\overline{TRANSF_f^r}$: *Volume transferts paid by the rest of the world to firms ;*

$\overline{TRANSF_g^r}$: *Volume transferts paid by the by the rest of the world to State;*

$\overline{TRANSF_h^r}$: *Volume transferts paid by the by the rest of the world to households;*

$\overline{TRANSF_i^r}$: *Volume transferts paid by the by the rest of the world to npish;*

$\overline{REVXV}$: *External income paid ;*

pe_i : *Export price of product i*;

EX_i : *Export of good i..*

3.3.2. Agent capital account

Total savings (S) are deduced from those of the various resident institutional sectors and outside by aggregation, and finance the total investment (I). We therefore have the following accounting relationships:

$$S = \sum_h S_h + \sum_f S_f + S_i + S_r + S_g \ (22) \ et \ I = S(23)$$

With *S: Total savings;*

S_f *: Firms savings;*

S_g *: State savings;*

S_h *: Households savings;*

S_i *: NPISH savings;*

S_r *: Current account;*

I : Total investment.

3.4. Price system

In all branches, the value added price (pva_i) depends on the producer price (px_i), minus a tax, and on the price of intermediate consumption (pcq_j) in composite products. Moreover, the producer price (px_i) is deduced from the CET transformation function and the price of composite products (pcq_j) from the Armington function.

On one thus the three relations below:

$$pva_i = px_i(1 - \overline{tx_i}) - \sum_j a_{ij}\, pcq_j \quad (24)$$

$$px_i X_i = pd_i D_i^d + pe_i EX_i \ (25)$$

$$pcq_i Q_i = pd_i D_i^s + pm_i IM_i \ (26)$$

With pva_i *: Price of value added in branch i;*

px_i *: Producer price in branch i;*

$\overline{tx_i}$ *:* Tax rate on the production of branch i;*;*

a_{ij} *: Leontief technical coefficients in product i for branch j..*

pcq_j *: Consumer price of composite good j;*

X_i *: Volume production of branch i;*

pd_i *: Price of good i manufactured and sold locally;*

D_i^t *: Supply on the domestic market of the good i manufactured locally;*

pe_i : Export price of good i in national currency;;

EX_i : Exports of good d i ;

pcq_i : Consumer price of composite good i;

Q_i : Demand for composite product from branch i;

D_i^s : Demand for the good i manufactured locally;

pm_i : Import price of good i in national currency;

IM_i : Imports of good i.

3.5. Conditions of equilibrium in the markets

To carry out this work, we assume that the real wage is flexible and the economy is at full employment in order to complete the labor market. We thus have the following relations:

$$\bar{L_s} = \sum_i L_i^d \quad (27)$$

With $\bar{L^s}$ *Total labor supply in volume ;*

L^d_i : Labor demand of branch i ;

w : Wage rate in the economy;

Demand is equal to the supply in each market for domestic goods and services.. $D_i^d = D_i^S$ (28)

$Q_i = CFQ_i^g + CFQ_i^h + CIQ_i + IQ_i$ (29)

With *D_i^d : Supply on the domestic market of locally produced good;*

D_i^S : Demand on the domestic market for locally produced good i;

Q_i : Demand for composite product from branch i;

CFQ_i^g : Final State consumption in volume of composite product i;

CFQ_i^h : Final consumption of Households in volume of composite product i;

CIQ_i : Intermediate volume consumption of composite product i ;

IQ_i : Investment in volume of composite product i.

3.6. Closure rule

CGEM is a simultaneous equation system. This requires that the number of equations equal the number of variables for the model to have a unique solution. To this end, certain variables will be kept fixed in connection with the type of macroeconomic closure or looping (Classic, Keynesian, Kaldorian or Johansen) retained for the model, which is likely to make the system of equations determined. Thus, in the loopback:

- **Classic:** the investment is not exogenous, it adjusts to the total available savings, which is a function of the income from full use of resources. The distribution of income is then determined only on the supply side. Once we know the full employment income, we determine consumption, then savings and finally investment;
- **Keynesian:** The hypothesis of full employment of the factors of production is rejected and the labor supply is determined endogenously;
- **Kaldorian:** factors of production are no longer remunerated at their marginal productivity. The neoclassical distribution of income is therefore abandoned and it is real savings that adjust to the level of planned investment;
- **Johansen:** public consumption becomes an endogenous variable. Since the investment is exogenous, it is the savings that adjust to it. Given the state income, it is the adjustment of public savings that makes it possible to close the gap between exogenous investment and different savings.

In the context of this study, we retain the second closure, because it is the one that approaches the real situation of the Cameroonian economy. Indeed, referring to the Strategic Document on Growth and Employment (SDGE), the government established a Keynesian policy materialized by an increase in public procurement in order to revive demand, this boosted demand was to endogenously create work.

3.7. Identification of scenarios

To define the scenarios, it is important Depending on the nature of the Cameroonian economy, we have identified the following transmission channels as those most likely to reflect the impact of COVID on the Cameroonian economy:

- The international trade channel:

In terms of international trade, Cameroon is highly dependent on countries which are currently heavily affected by COVID 19. As a result, the drop in demand from the main trading partners and the collapse in commodity prices will impact on the volume and the value of exports, the balance of the current account and public finances in terms of budgetary revenue. In addition, companies in sectors oriented towards exports and tourism will experience a slowdown in activities with impacts on the GDP but also on employment.

- The supply channel:

A sudden stop like that of containment can easily trigger a cascading chain of events, fueled by decisions of economic actors (households, companies, suppliers, banks and financial intermediaries, etc.) whose decisions are made either on the side of the supply or on the demand side of the economy.

On the supply side first, the shock of this health crisis will lead to a massive wave of layoffs from companies that will downsize and others that will close. These jobs will be lost, probably for quite a long time, which will cause a general drop in disposable income for both employees and the self-employed. Although working from home is an option, the short-term disruption of work is major, and can affect productivity.

With part of the household labor force confined for an indefinite period of time, it is inevitable that business output will fall. Therefore, on the supply side of the economy, containment measures will reduce economic activity and production. And, as a number of economists have pointed out, most of this lost output will not come back.

Finally, global supply chains will also be affected by the shutdown of production of intermediate consumption, in turn creating production difficulties for final products. This redoubles the shocks that production receives, even when certain manufacturing units are excluded from the bans.

- The demand channel:

As for shocks on the demand side, they obviously have several cumulative causes. First, confined households necessarily have fewer opportunities to spend. In addition, in the face of uncertainties about the future economic outlook, a common impetus could be to reduce spending further. It is then the disposable income of part of the population that disappears.

Workers who lose their jobs when businesses close have no income, so they have lower consumption and eventually decrease their demand for goods. Indeed, in the face of declining demand for their products, businesses (especially, in certain sectors such as leisure, travel or entertainment, where demand is likely to collapse almost entirely) will want to reduce their costs, lay off workers to avoid a complete collapse, leading to a decline in disposable income and aggregate demand.

- The funding channel:

However, the Covid-19 pandemic is not only a big shock to real economic variables on the demand and supply side, but it is also a shock to the functioning of the financial markets of the economy. Thus, in addition to the previous analysis, there is also the influence of financial assets.

In a typical recession, the wisest management of financial assets is to wait until normalcy returns if, for one reason or another, you don't have to sell. In this crisis, the return to normal will not happen as before. The prices of some financial assets will drop to zero because the companies they represent will close in greater proportions than in previous crises. Thus, the management of financial assets refers to precautionary behaviors that further reduce aggregate demand.

With a deteriorating portfolio of non-performing loans, banks will naturally want to reduce their lending, further discouraging the outlook for the non-financial sector. Thus, loss of confidence, or "panic", amplifies the initial effect. This would result in cascading business failures, with an accumulation of financial weaknesses, or a decrease in the volume of financing.

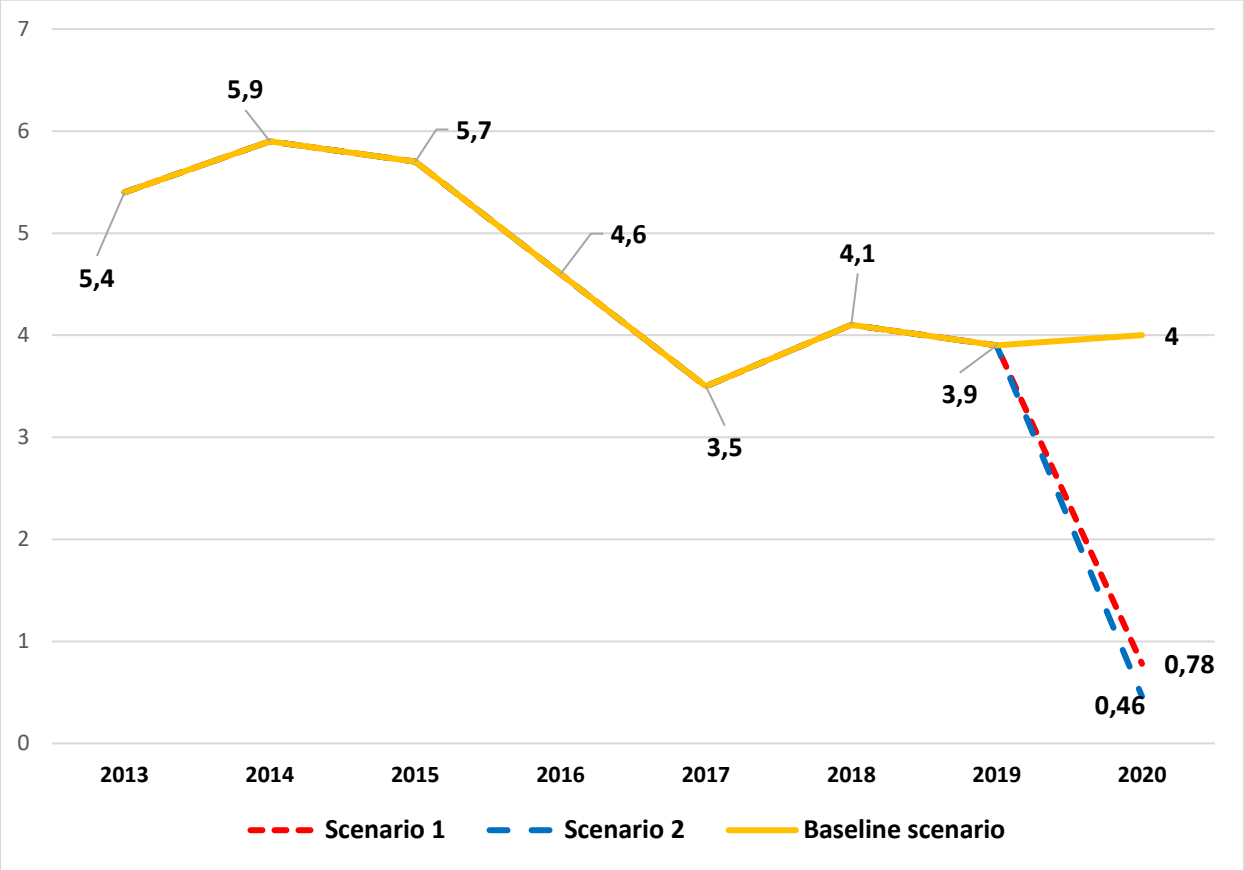
Based on the Cameroonian economy, we will focus on 2 most relevant channels namely, the supply and demand channel because these channels are linked and indirectly explain the other two channels, so we define 2 scenarios namely a scenario based on the fall in demand and another scenario based on supply.

The 2 scenarios will be based respectively on a fall in demand (scenario 1) and a fall in supply (scenario 2), these reductions will materialize in the fall in the income of production factors.

4. RESULTS ET DISCUSSIONS

In this part, we will present the results from the model, they are simulations on the real growth rate according to the 2 scenarios identified above, however, we would like to present the results in 2 stages, firstly which does not take into account a budgetary impulse and a second step that takes it into account.

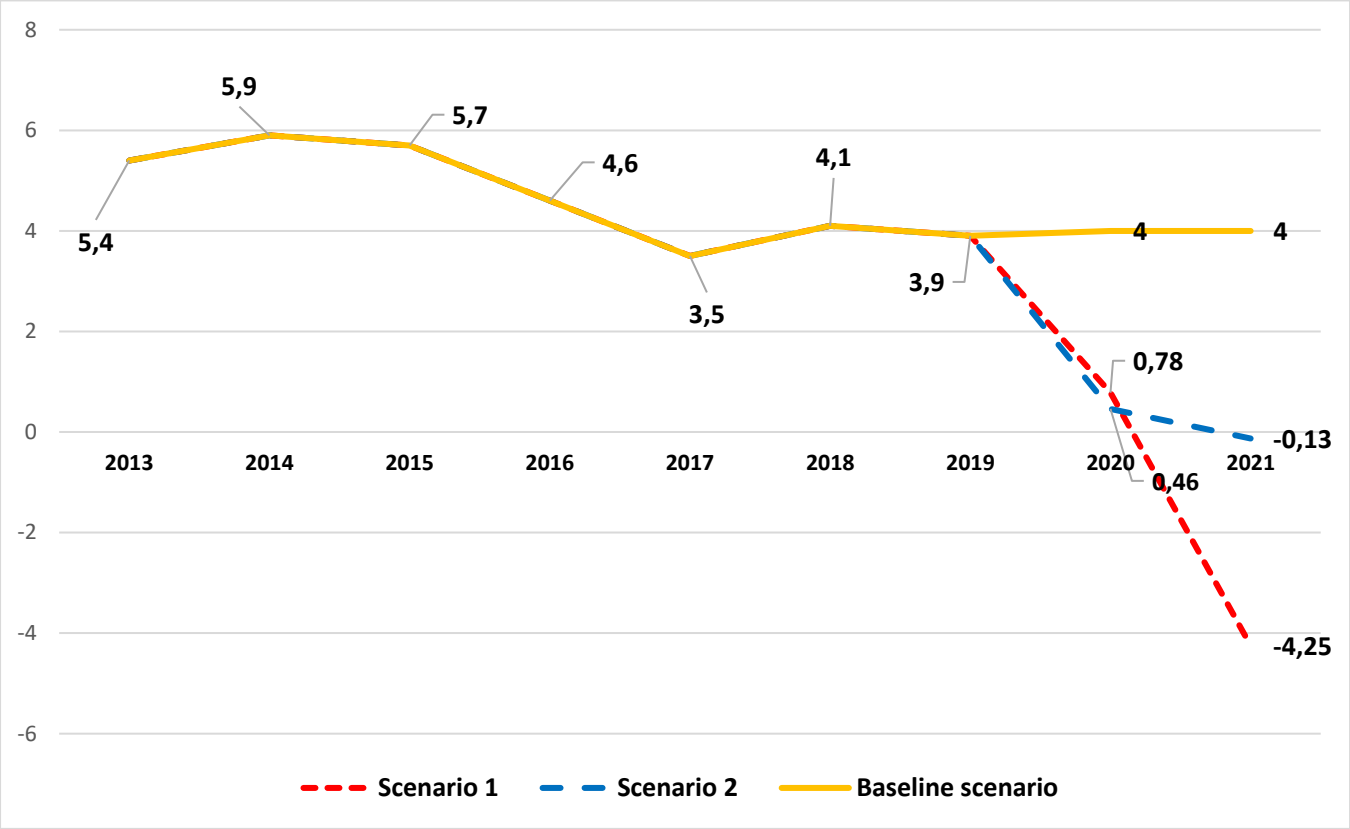
Graph 3 : Results of simulations on the real growth rate without budgetary response.



Source: Our data.

With regard to graph 3, we note that the 2 scenarios reflect the reality of the extent of the crisis on economic activity (below 1%). Before the crisis, forecasts predicted a real growth rate of 4%, however, taking these scenarios into account, we notice a more pronounced drop in scenario 2, 0.78% against 0.46% for scenario 1, reflecting the fact that the crisis would be more severe through the supply channel, therefore it would affect economic activity more negatively through the effect on companies than the effect on households. These forecasts are not far from those of the government which forecast 0.6% as the actual growth rate in 2020 as a result of COVID 2019.

Graph 4 : Results of simulations on the real growth rate if a restrictive fiscal policy is maintained (-12.3%) after 2020.

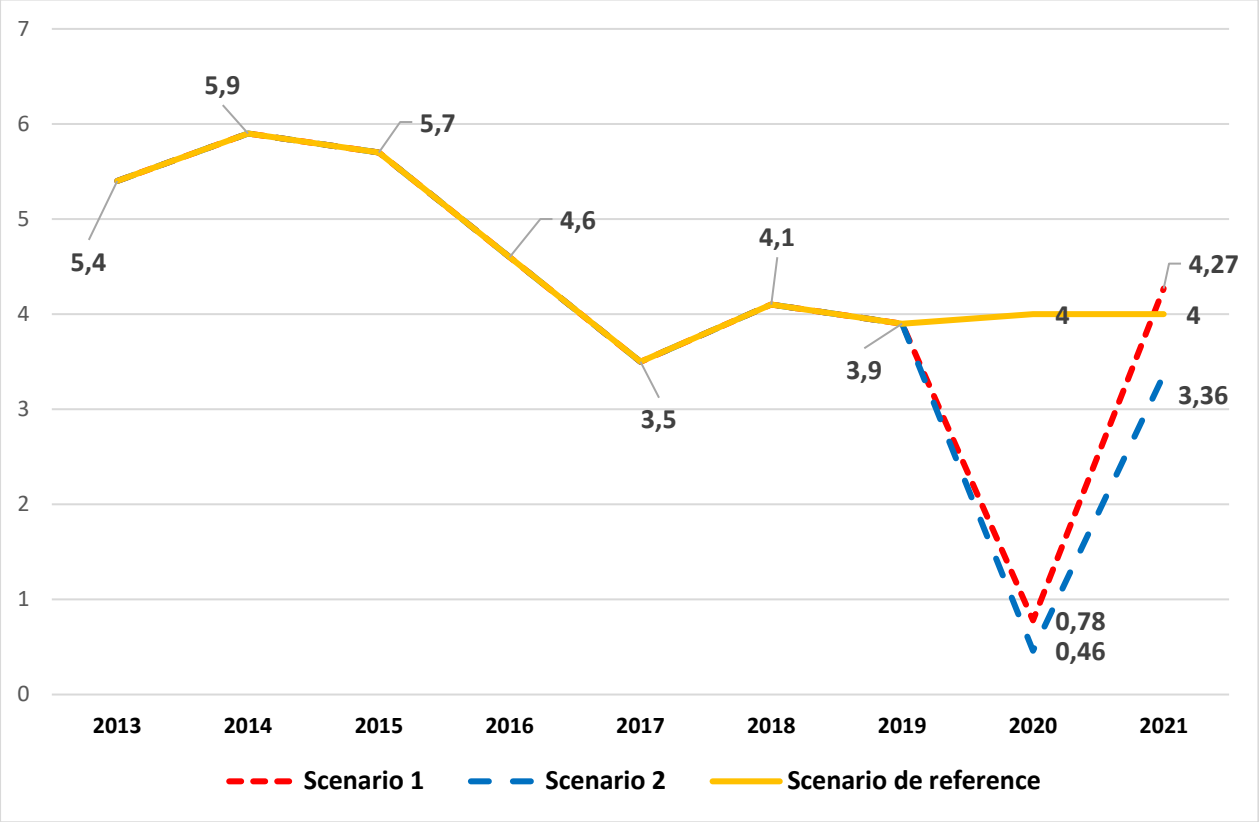


Source: Our data.

Graph 4 shows the impact of continued fiscal restraint on economic activity one year after the crisis. While the budget restriction is maintained, the scale of the crisis will still be felt in the scenarios, in particular a very negative growth rate on the scenario corresponding to a drop in demand unlike Graph 3, proof that if the crisis manifests itself in me via the fall in demand, it could have very significant repercussions, -4.25% against -0.13%.

In other words, the fiscal authorities should consider an expansive fiscal policy in order to emerge from the negative effects of the crisis, however it would be important to see what could be the impact of a fiscal stimulus on economic activity.

Graph 5 : Results of simulations on the real growth rate with a 25% budget boost after 2020.



Source : Our data.

The graph below shows the impact of a 25% increase in public spending on the growth rate in 2021, it shows us that this budgetary impulse, whatever the scenario, will have virtues on economic activity, and is better. in scenario 1, proof that a stimulus targeted on demand is more suited to the Cameroonian economy to emerge from the crisis, which is in line with the conclusions of Catherine Mathieu and Henri Sterdyniak (2009) who mention that in a post crisis, if private consumption picks up again, then an expansionary fiscal policy would help revive economic growth.

By boosting consumption, this should emphasize the increase in potential demand, companies to capture this demand, should seek more labor and capital, production should subsequently increase and resolve the problem of supply which is the channel through which the crisis has the most negative impact.

Table 5 : Simulation on the real growth rate due to a positive shock on household consumption.

	Government forecast (en 2020) (a)	**Impact (2021) (b)**	**Différence (b)-(a)**
Unemployed Rural	0,6%	0,73%	0,13%
Unemployed Urban	0,6%	1,3%	**0,70%**
Inactive Rural	0,6%	1,03%	**0,43%**
Inactive Urban	0,6%	0,99%	**0,39%**
Informal agricultural Rural	0,6%	3,51%	**2,91%**
Informal agricultural Urban	0,6%	0,74%	0,14%
Informal non agricultural Rural	0,6%	0,28%	-0,32%
Informal non agricultural Urban	0,6%	0,68%	0,08%
formal Rural	0,6%	0,6%	0,00%
Private formal Urban	0,6%	0,13%	-0,47%
Public Rural	0,6%	1,01%	**0,41%**
Public Urban	0,6%	0,57%	-0,03%
Retirees Rural	0,6%	0,4%	-0,20%
Retiree Urban	0,6%	4,1%	**3,50%**

Source : Our data.

In this regard, concerning targeting, Table 5 shows us that actions should be taken to support consumption towards urban retirees as a priority, followed by those in the informal agricultural sector, inactive people (rural or urban), finally actions in support of the urban unemployed and those in the rural public sector, it is these categories of households that are in the process of boosting growth through consumption.

CONCLUSION AND POLICY RECOMMENDATIONS

This study analyzes fiscal policy during a health crisis in Cameroon, as a reminder at the dawn of the appearance of COVID 19, several forecasts have been revised downwards concerning the macroeconomic framework of the country, in particular a rate growth forecast going from 4% to 0.6%, in addition the public finances situation was not spared. Faced with this, the budgetary authorities had to apply a restrictive policy (-12.5%) with a reallocation of expenditure oriented primarily to health. However, in a recessionary situation, an abundant economic literature recommends an increase in public spending to encourage economic activity, thus rediscovering Keynesian thought. This study therefore sets out to verify this hypothesis, in addition to ascertaining whether the budgetary authorities should continue to apply a restrictive budgetary policy for future years. Using a Calculable General Equilibrium Model (CGEM) on 2019 macroeconomic data, the results show that an expansionary fiscal policy should be used to revive economic growth rather than maintaining the observed fiscal restriction, in addition a targeted fiscal policy. on demand, in other words a stimulus through consumption because it would be better suited for the Cameroon economy in the face of the economic impact of COVID 19.

Indeed, the restrictive fiscal policy implemented this year was one of the first measures to deal with the crisis given the fall in own internal revenue, including oil revenue in particular, however, as a way out of the crisis, it would be necessary to relaunch public order as recommended by Keynes (1936), through the multiplier effect.

Concretely, the expansive fiscal policy should aim to revive private consumption, it is the revival of consumption that will encourage companies to ask for more labor and capital, so they would be in an urgent need to recruit. to employ more staff to meet this increase in demand. To do this, more transfers (allowances, loans, etc.) should be granted to households, especially those most vulnerable.

However, the authorities should not abandon companies but continue to support in their cash flow as has been done until now, and even consider temporary measures to reduce tax rates or exemption to allow them more room for maneuver. in the flow of their products.

Therefore, ensuring that demand for consumer and investment goods is strong is essential for the recovery. Policymakers should create the conditions for increased consumption and investment. Stimulus programs will have to be calibrated according to the size of the output gap caused by the crisis. Fiscal stimulus packages should be temporary, clearly communicated and not create permanent deficits. Communication should ensure that the stimulus leads to stronger demand, and not just to repay existing debts or increase savings.

BIBLIOGRAPHICAL REFERENCEES

Auerbach, A. and Gorodnichenko, Y. (2012) : « Measuring Output Responses to Fiscal Policy », American Economic Association : Economic Policy, Vol. 4 No. 2, pp. 1-27.
Blanchard O. (1990) Comment, *NBER Macroeconomics Annual*, n° 5, 111-116.

Blanchard O., Perotti R. (2002) An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output, *Quarterly Journal of Economics*, n° 117, 1329-1368

Bance (2012), Politiques budgétaires dans la crise : krach, sauvetage, boomerang…trappe à l'intervention publique ? *CREAM Université de Rouen*

Bayon et al. (2010), Europe, Etats-Unis Japon : quelles politiques budgetaires de sortie de crise**.** ***Revue de l'OFCE,*** n° 112, janvier 2010.

Bony (2011), Efficacité des politiques de crise dans la zone euro : l'exemple français, Université du Sud.

Catherine Mathieu et Henri Sterdyniak (2009) Finances publiques, sorties de crise, Revue de l'OFCE, n° 10

Corsetti, G., Kuester, K., Meier, A. et Muller, G. (2012). Debt consolidation and fiscal stabilization of deep recessions. *American Economic Review*, 100(2):41{45..

Feldstein M. (1982) Government Deficits and Aggregate Demand, *Journal of Monetary Economics*, n° 9, 1-20

Giavazzi, F. and Pagano, M. (1990) : « Can Severe Fiscal Adjustments Be Expansionary ? Tales of Two Small European Countries », vol. 5, MIT Press.

Henin, P. Et N'Diaye, P. (2001). l'effet des politiques budgetaires sur l'activité : une fonction des conditions conjoncturelles et du regime budgetaire. *Economie et prévision* n°147 2001

Keynes, J. M. (1936), "The General Theory of Employment Interest and Money", Harcourt, Brace & Company, New York.

Minea A., Villieu P. (2009) Investissement public et effets non linéaires des déficits budgétaires, *Recherches économiques de Louvain*, n° 75, 281-311

Perotti R. (1999) Fiscal Policy in Good Times and Bad, *The Quarterly Journal of Economics*, n° 114, 1399-1436.

Perotti R. (2005) Estimating The Effects of Fiscal Policy in OECD Countries, *CEPR Discussion Paper*, n° 4842, 60 p.

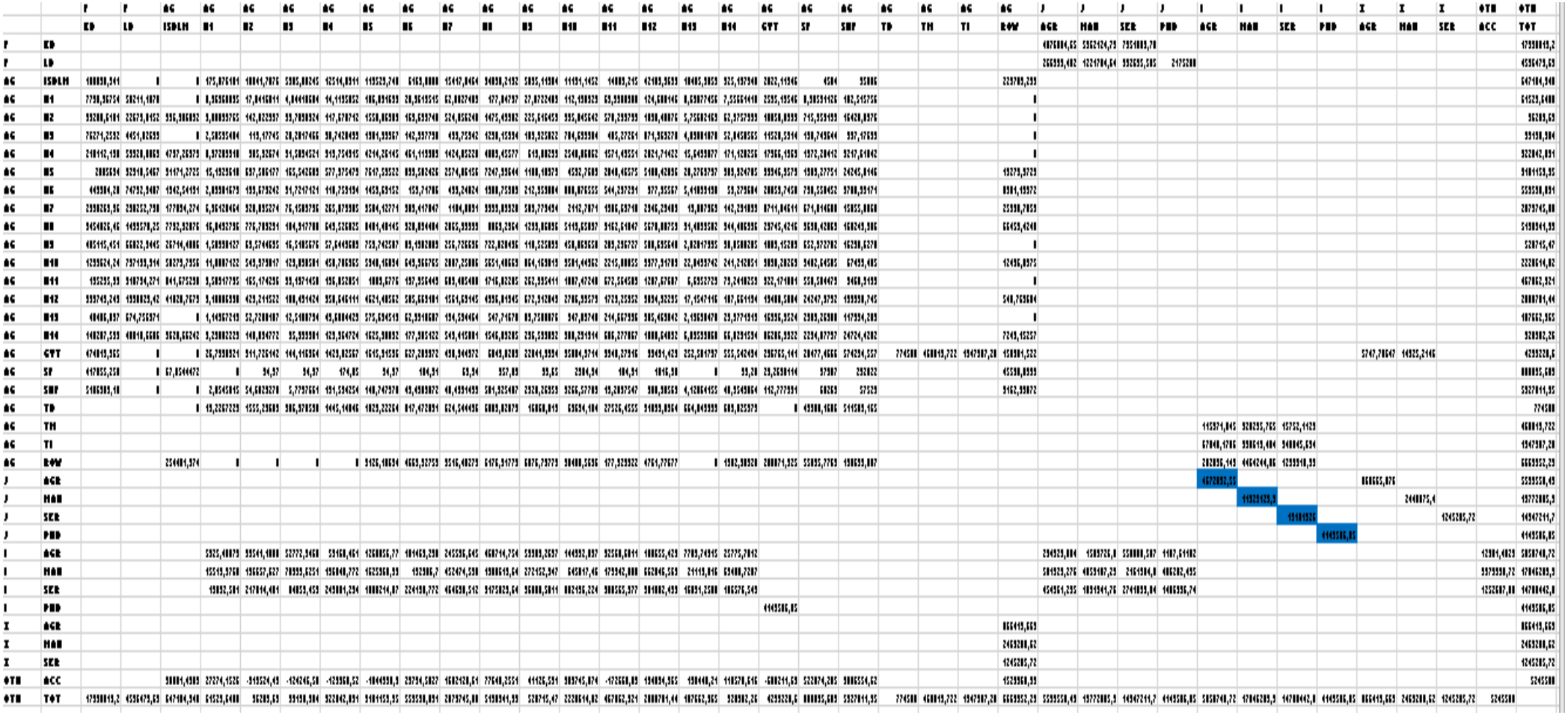
Perotti R. (2006) Public Investment and the Golden Rule: Another (Different) Look, *IGIER Working Paper*, n° 277, 49 p.

Reinert, K. A. and Roland-Holst, D. W. (1997). Social Accounting Matrices. In J. F. Francois and K. A. Reinert, Eds., Applied Methods for Trade Policy Analysis: A Handbook. Cambridge, MA: Cambridge University Press, 94-121.

Tamimoune, N., Combes, J.L. et plane, P. (2005). Les effets non linéaires de la politique budgetaire : le cas de l'Union Economique et monétaire Ouest Africain. *Centre d'études et de recherche sur le développement (CERDI).*

APPENDIX

APPENDIX A : Social Accounting Matrix



APPENDIX B : Model calibration

The resolution of the model requires numerical values for the parameters of the various specifications retained. Certain parameters, in particular, elasticities of substitution and transformation of functions are introduced into the model. Regarding the parameters of the CES and CET functions as well as the various ratios, they are calibrated using data from the social accounting matrix.

The calculation consists of presenting the equations of the model in an inverse manner, considering the parameters as explained values. The parameters estimated by this operation are essentially the exponent, distribution and scale coefficients of the CES and CET functions of the different levels of international trade modeling. Thus, the calibrated parameters are calculated in such a way that the model reproduces the reference situation in this case that of the 2019 SAM used in this model. The latter was calibrated with GAMS software (Generalized Algebraic Modeling System).