Research Article

Journal of Economic Research & Reviews

Subsidising Textile Industries and Macroeconomic Performance in Developing Countries: An Application to the Cameroonian Economy

Rodrigue Nobosse Tchoffo[1*], Ibrahim Ngouhouo[2] and Guivis Zeufack Nkemgha[3]

[1]*University of Dschang, Faculty of Economics and Management, Department of Analysis and Economic Policy, Cameroon*

[2]*Professor of Economics, University of Dschang; Cameroon*

[3]*University of Bamenda, Cameroon*

[*]Corresponding author:
Rodrigue Nobosse Tchoffo, University of Dschang, Faculty of Economics and Management, Department of Analysis and Economic Policy, Cameroon

Submitted: 09 Jan 2022; **Accepted:** 25 Jan 2022; **Published:** 04 Feb 2022

Citation: *Rodrigue Nobosse Tchoffo, Ibrahim Ngouhouo and Guivis Zeufack Nkemgha (2022) Subsidising Textile Industries and Macroeconomic Performance in Developing Countries: An Application to the Cameroonian Economy. J Eco Res & Rev, 2(1): 01-13.*

Abstract

The most common researches on subsidies focus on the exports side. This policy is usual in the most developed countries and constitutes a mean for the government to accompany the industries. Concerning the textile sector, the developing countries are more often dependent while they have a high capacity to produce it themselves. Therefore, the objective of this article is to investigate the economic impacts of textile subsidy in developing countries. This is done through a computable general equilibrium (CGE) analysis applied to the Cameroonian economic. We show that by subsidizing the textile sector, the government participates not only to increase the capacity of firms to offer this good, but also the policy is favourable to the economic growth of these developing countries.

Keywords: Textile industries, subsidy, developing countries, CGE model

Introduction

Generally, there exist two policies that government use to sustain the domestic supply of a given product. It can either increase the custom duties on that product or apply a subsidy on it. For a small country whose ambition is not to conquer the world market, the direct effect of the subsidy is to reduce the total imports quantities of the concerned commodity by encouraging the local production. According to the subsidy theory, the decision to produce and in which quantity depends on the demand. If that demand is such that consumers cannot pay a certain price so that the producer can recover the initial spending, they will prefer to buy foreign goods at a lower price. In order to encourage the local supply in a competitive market and economy of scale, the government can intervein by subsidizing the domestic production. This subsidy permits not only to reduce the cost borne by the local enterprises in order the encourage them to offer their products at the market price, but it also contributes to reduce the level of imports. Generally, the most observed subsidy is that of the exports.

In this way, many works show the positive effects of export subsidy on textile commodities [1-3]. In contrary, the others show that textile subsidy has a negative effect on the economy [4-6]. Hence, the latter propose to stop the subsidy process in countries where it has already been applied such as in China, USA, India, Brasilia etc. Finding of this research that the cancellation of such a subsidy will lower the textile productivity and pinpoint exports but at the same time, permits the reallocation of the amount of the subsidy in the more productive sectors (more often agricultural sector in some countries and manufactural sector in others) capable to better support the growth. For illustration, Narayanan and Rungta showed that the textile subsidy is not the unique thing to do especially if the focus is on improving the well-being of the population [6]. It is therefore important to ensure that the total productivity of each factor is sufficiently optimised so that this objective is achieved. This is why is it important to subsidize the production especially the textile production which is almost inexistent in most of developing countries and particularly the sub-Saharan economies.

To do so, the level of the subsidy should be established such that the marginal cost of the local firm is lower than that of the foreign firm in order to discourage the latter from selling on the local market in a large scale. Therefore, the foreign enterprise would be unable to react to the increasing production of the local firm since, any increase in its production will lower both the price of the commodity and its marginal revenue. By this mechanism, the supplementary benefits achieved in the past by the foreign firm due to its economies of scale are transferred to the local firm, which contribute to sustain the national wealth. This is a motivated argument that a government can use when putting in place a production subsidy policy especially when it is established that more often, the value of subsidies is less that the generated benefits by the firms that earned it. However, obtaining more benefits than the subsidies

spending is not always guarantied, as it depends on the nature of the competition and the market structure [7, 8].

In a case where the subsidy has international aftermath and a foreign country reacts to the effects of that policy due to decrease of its exports by opposing an export subsidy policy, the importing country could impose duty in order to neutralise the effects generated by the exporting country. The subsidy should ensure the collective interest that is, the government brings to the firms, sufficient subsidy to enable households improve their well-being, and at the same time, firms should increase their profit. Subsidy comes from three main sources: either by a decrease in indirect tax on the subsidized commodity which will allow enterprises to reduce their tax burden, or decrease its indebtedness (domestic and external), or through the official development assistance (ODA). On the producer side, subsidy permits enterprises to make economies of scale that is, their production cost will decrease as the production is increasing. And because this decrease is observed through the time, it is called the dynamic economies of scale.

More often, the biggest economies in the world which have sophisticated and competitive industries on the world market benefit from government support. In the textile sector, statistics from WTO show that countries like the USA, China, India control the market with more than 25% of the world production [9]. One can observe in contrary that the developing countries remain the main importing countries of such a commodity. Their production which is very low constitutes therefore an important element causing reduction in profits. For Cameroon which does not escape to that reality, its supply on the world market remains very low. According to FAOSTAT, Cameroon produced 190,000 tonnes of seed cotton in 2010 [10]. The cotton link production was established at 62,000 tonnes. Even though the production of seed cotton has increased to 249,155 tonnes in 2018, the cottonseed has however decreased to 42,000 tonnes the same year. A comparative analysis with countries such as Cote d'Ivoire, Ethiopia, shows that the productive capacities of Cameroon are greater than that of Ethiopia but less than the capacities of Cote d'Ivoire.

Without any surprise, China production estimated at 17,711,962 tonnes in 2018 according to FAOSTAT is 70 times more than that of Cameroon whereas it was 95 times more in 2010 [10]. These remarkable performances of China demonstrate specifically its economic strength on the world market. WTO' statistics show that in 2018, China has exported for USD 118,526 millions of textile commodities which is equivalent to the performance of the Europe [9]. Cameroon has just exported for USD 6 million. An in-depth research shows that scientific community gives a considerable interest to a textile sector in the countries currently perform well in the world. We have for instance the studies of Lin and Li, Eckaus and Girma in China; Wubeneh in USA; Mohanty and Narayanan and Rungta in India [1, 2, 5, 6, 11, 12].

In such a situation, there is no need to demonstrate the interest to take public authorities of the developing countries in general and those of most African countries in particular to care about this. The issue here is about getting the populations concerned to adjust their behaviour vis-à-vis the textile commodities to the profit of local products. However, encouraging this approach bring us to the following question: does the production subsidy of textile sector participate to the economic growth of developing countries? Specifically, what is the impact of such policy on the other sectors of the economy? the idea here is that subsidy will generate an increase of the labour demand in the textile sector and might also reduce the demand in other sectors.

Another question arising is to know whether this subsidy will contribute to increase the total value added that is accordingly create wealth. Moreover, will the households' wellbeing be changed? In order to answer these questions, we suppose that the developing countries have the same behaviour vis-à-vis the textile commodities. Most of the time, they depend on the external supply. This limits their capacity to influence decisions on the world market. For this reason, we make a simulation on the Cameroonian economy, knowing that the debate on the issue that has been put on the mediatic sphere has not benefited from a scientific proof yet.

Hence, the following section 2 describes the stylised facts on the textile industry in order to identify some weakness. In section 3, we present the empirical literature on the subsidy followed by the methodology presented in section 4. Results come at section 5 and we end with a conclusion in section 6.

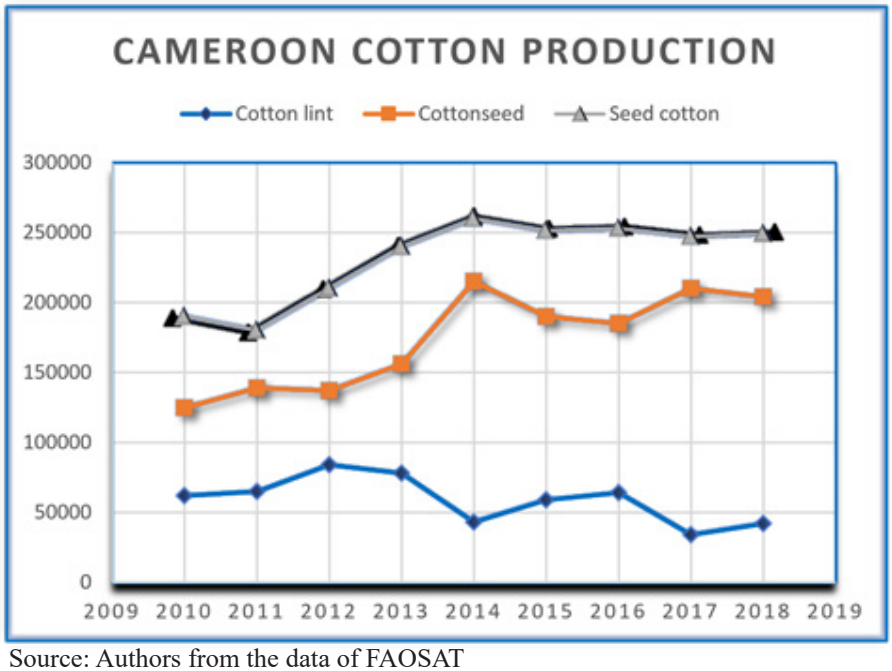
Stylised Facts on Textile

According to FAOSTAT, the most important productions of the different types of cotton (cotton link, cottonseed and seed cotton) are recorded in China throughout the period 20102018 (see Table 1) [10]. On the same vein statistics from cotton link show that china production has increased in an average of 2.37%, seed cotton and cottonseed productions rather decreased by
1.1% and 15.41% respectively on the same period. As in Cote d'Ivoire, the Cameroon's cotton link production has slowed down by 32.25% in average while the Ethiopian's output has grown by 122.22% on the same period. Despite the negative trend of cotton link in Cote d'Ivoire, the production in volume has always been higher in Cameroon (Table 1).

The cottonseed production has increased by 63.59% in Cameroon against 31.13% on the same period (2010-2018) for the same country. We also note that the seed cotton is the most produced variety in the channel according to the Cameroonian figures (Figure 1). In fact, the cotton link and the cottonseed may represent proportions of one third and two thirds respectively of the seed cotton in the production process. According to FAOSTAT (2020), China's production of seed cotton is 71 times higher than that of Cameroon and 126 times higher than that of Ethiopia in 2010 and these scores have augmented until 2018.

Table 1: Annual Production of cotton in tonnes for some countries

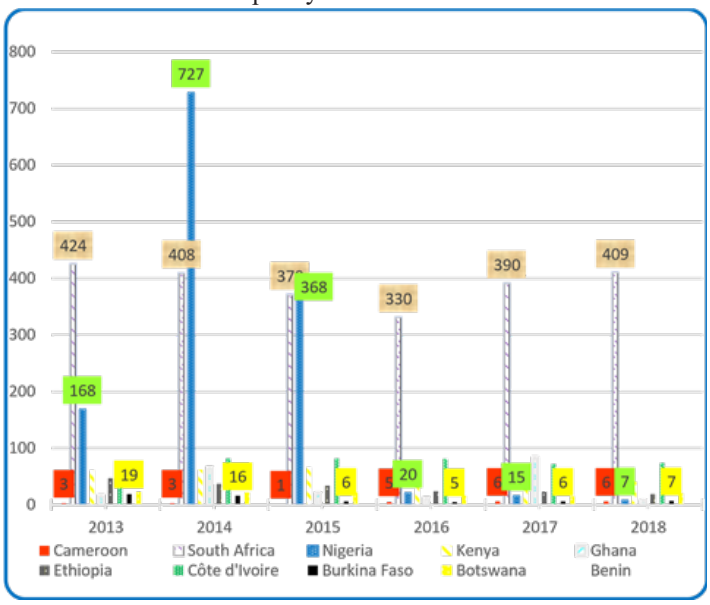
	Cameroon			China		
	Cotton lint	Cottonseed	Seed cotton	Cotton lint	Cottonseed	Seed cotton
2010	62000	124700	190000	5961132	11940000	17910000
2011	65000	139000	180000	6598000	13177918	19766876
2012	84000	137000	210000	6835975	13680000	20520000
2013	78000	156000	240000	6298989	12620000	18930000
2014	43000	215000	260000	6178318	12320000	18534950
2015	59000	190000	251432	5610000	11220000	16830000
2016	64000	185000	252922	5343000	10686000	16029000
2017	34000	210000	247238	5653000	9900000	17298319
2018	42000	204000	249155	6102800	10100000	17711962
	Cote d'Ivoire			Ethiopia		
	Cotton lint	Cottonseed	Seed cotton	Cotton lint	Cottonseed	Seed cotton
2010	82230	91000	174689	18000	37000	58000
2011	76503	170000	260306	20000	39000	62000
2012	112016	180000	352134	34000	55000	87000
2013	133500	207000	405223	30000	70000	111000
2014	132000	224000	410000	38000	85000	130000
2015	117983	160000	450000	47000	75000	130000
2016	120000	158000	310000	42000	65000	115000
2017	70000	235000	328000	45000	70000	130000
2018	50000	245000	316160	40000	80000	140000
Source: FAOSTAT (2020)						



Source: Authors from the data of FAOSAT

Figure 1: Evolution the cotton production in Cameroon (in tonnes)

The analysis of the textile export products (in millions USD) in some sub-Sahara countries shows that the two largest African economies (Nigeria and South Africa) are the first exporting countries of the textile products, Nigeria coming at the first position only for the year 2014 (Figure 2) [10]. At the bottom of the classification, we have countries like Cameroon, Benin and Burkina Faso. This weakness regarding the exports, illustrates the absence of structured industrial policy in favour of that sector.



Source: Authors from WTO (2019) data

Figure 2: Evolution of textile Products exportations in millions of USD

Literature Review

There exists an abundant literature on the effect of subsidy of textile sector. However, this literature mostly covers the export subsidy of textile [3-6, 12]. Arguments collected from these works show that the decision to implement an export subsidy policy on textile commodities or their cancellation for other countries where it is already applied depends on the main instruments of economic growth of each country. Some of these authors found that export subsidy on textile has globally positive effects on the economy, while others found a reverse effect [1-6, 12].

Regarding the positive effects of that form of subsidy, Lin and Li showed that a 10% of exports subsidy of China textile leads to 1% increase in GDP [1]. The same result was found by Eckauswho otherwise showed that the productivity performances are positively correlated to textile export in China [2]. On the same way, Girma et al. showed how the heterogeneity between firms can be treated in the textile exports subsidy process in order to boost the exports [11]. By doing so, they consider that the government should select firms according to their capacity of exporting textile goods since the subsidy is exogenous regarding the exports.

Analysing the negative effects of textile subsidy company, Narayanan and Rungta showed through a computable general equilibrium modelling (CGE) that the cancellation of exports subsidy on textile commodities in India has a negative effect on well-being [6]. Indeed, they showed that a subsidy has negative effects on well-being if there is no productivity gain.

Thus, an increase in total productivity of factors by 3.5% might be necessary before turning to a positive impact on well-being. In other words, the total productivity of factors might be encouraged in order to facilitate the improvement of well-being. They also found that, the cancellation of subsidy leads to an increase in exports price by 1.77% while the production decreased by 2.6%. The exports increase can be explained by the fact that the loss of labour in the textile sector shifts to the manufactural sector especially for the machine processing which generates more efficient profits. Wubeneh showed for the USA economy through a CGE analysis that, the cancellation of cotton production subsidy leads to a decrease in that product by 1% which consequently increases the market price of cotton by 0.61% [5]. On the world market side, this measure leads to a decrease on the production by 26% against a 31% increase of price. Therefore, the positive effect on welfare is higher in the USA compared to other countries. This is due to households' displacement from textile sector to other sectors such as agri-food and manufacturing sectors in which the production has increased.

In the production subsidy perspective of textile, authors like Mohanty et al. and Islam et al showed that such a policy might contribute to improve the economic growth [3, 12]. Indeed, Mohanty et al. in the study of the effectiveness of the cotton production in five regions of India found that the production of cotton is inefficient in some regions and necessitate subsequently a government intervention [12]. However, whether the exports or the production subsidy of textile sector, we can observe that many of the existent works focus on countries which have a big potential of production and export of such products. The issue of subsidy seems having a very few considerations in many developing countries with low income although, they have a remarkable potential to produce this type of goods. This observation is more practical in sub-Sahara countries among which Cameroon.

Methodology

To evaluate the impact of a subsidy on textile production sector, we need to use an appropriate tool which allows us to navigate into the whole economy. In this way, the econometric models are less useful. The more appropriate tools are among others: the structural vectorautoregressive models (SVAR), the dynamic stochastic general equilibrium models (DSGE), the CGE or computable general equilibrium models (Herault, 2011). Contrarily to SVAR which just take a few numbers of variables in the analysis, the CGE models gives the possibility of taking into account a very large number of variables and more often the whole economy. They permit the modeller to capture the simultaneous impacts of a simulation on several market as well as the accuracy of results [13]. CGE mod-

els are comprehensive because whether they are detailed or not, they describe simultaneously all parts of the economy and show how they interact each other (Burfisher, 2016). A complete CGE model should take into account two sectors: the real sector of the economy and the financial sector [14]. The real sector contains the good and services market and the market of factors of production. Likewise, the financial sector takes into account the interactions on the financial market (share, bonds, debt obligations) and also the monetary market (the control money supply, the interest rates, the mortgage rates, the central banks). CGEs permit to deal the economic theory founded by Walras (1874) in "élément d'économie politiques pure" with the empirical analyses that can provide an accurate way to elaborate policies such as taxation or subsidies and their effects on the economic system [6]. However, notable generation of practical CGE works relies on the Shoven and Whalley article [15].

Presentation of the Model

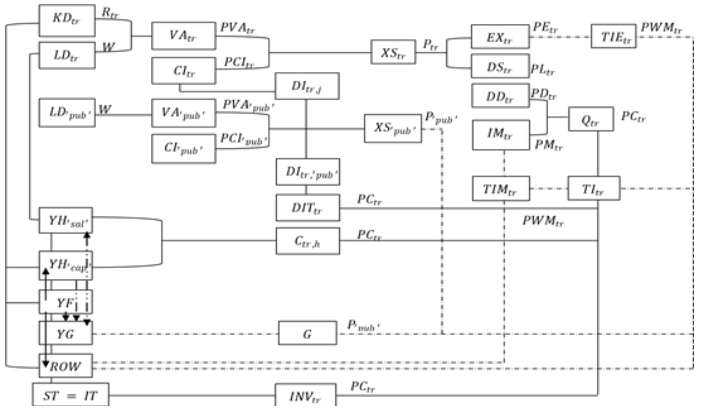
In this research, we use the EXTER model built by Decaluwé et al. The social accounting matrix (SAM) used as the data base of the model is that of the Cameroonian economy that we constructed using input-output data and national accounting data for 2016 [13]. These data come from the national institute of statistic. The methodology we have used to elaborate that matrix was inspired from Fofana [16]. The SAM is a squared matrix that records interaction flows between economic agents, sectors of activity and the rest of the world during a given period, mostly annual. Its theorical framework comes from the work of Quesnay which was ameliorated by Leontiefm in the form of input-output table. To balance the matrix, we used the entropy method [17, 18]. Details can be found in Robinson et al, Robinson and Moataz, Fall [19-21]. The functioning of the model is summarized in Indeed, the production is determined by a Leontief function between the total value added and the intermediate consumption of the different sectors. All products that come from the activity branches are sold on the market and the factors of production are combined in a constant elasticity of substitution (CES) production function between labour and capital. To minimize their production cost, firms determine the optimal quantities of different factors to use in the production process taking into account the level of demand to satisfy. Capital is fixed while labour factor is mobile between sectors. The mobility of the latter permits us to define the quantity of labour needed in production and especially the level of wealth applied on the labour market. The output price and the world price of exported goods are constants. The domestic prix is constituted of producer price and the indirect tax on products. The price of a composite good is a function of the domestic price and the market price of imported good in each sector. The output price is function of the price of input used which in the same way affects the export price. The sectoral output is an aggregated output. One part of that output is sold on the domestic market and the other part is exported abroad. This creates an imperfect processing of the aggregated output intended for the domestic and external markets given by a constant elasticity of transformation (CET) function.

The producers maximize their profits from their selling on the market subject to the transformation constraints. The export demand is infinitely inelastic. The price received by producers is given in local currency. Domestic goods are sold on the market to households, government, and they are also bought by firms as intermediate inputs. The domestic prices are flexible and reflect the equilibrium between demand and supply of goods on the market. The external supply is perfectly elastic with respect to the world prices. Households who detain the factors of production earn in return a revenue constituted of wages for salaried households and capital remuneration for capitalist households. They also receive transfer revenue by the government, enterprises, other households and the rest of the world. They spend their money to buy goods on the market, make transfer to other households, pay direct taxes and make savings.

Firms receive capital revenue as well as transfer from the institutions. They pay direct taxes, pay dividends to capitalist households and make savings.

Government collects taxes, one part comes from the direct taxes and the other part from the indirect taxes whether on the domestic production or on imported goods after imposing custom duties. As spending, it pays wages to the government authorities, makes transfer to households,

makes public investments, makes subsidies to firms and makes savings. The current account deficit is constant in order to avoid the external shocks that affect the economy.



Source: Authors from the Partnership for Economic Policy (PEP)

Figure 3: Sheme of the model

Calibration of the Model

To reach the benchmark , the model needs to be calibrated that is each equation should be fixed from the SAM data. According to Emini et al. (2006), calibrating each equation can be done by either defining some parameters (known in the model β) which will help the solver to easily solve that equation or choosing other parameters (known parameters γ). The process starts with the following equation 1: $Y = f(X, \beta, \gamma)$ (1)

Where Y represents the vector of endogenous variables, X the vector of exogenous variables.

Since the values of β and endogenous and exogenous are known (we design them respectively by Y_0 and X_0 as the basis values), equation (1) becomes:

$$Y_0 = f\ (X0, \beta, \gamma) \quad (2)$$

The resolution of equation (2) permits to obtain the values of parameters γ.

$$\gamma = f\ (Y0, X0, \beta) \quad (3)$$

Macro Closure of the Model

The closure of the model consists of choosing the variables that have to be exogenous in the model. Even though our model is not squared as initially fixed by Decaluwé et al, we have fixed the following variables for the closure rule in a Non-Linear Programming (NLP) [13].

The export price of the product $tr\ PWE(tr)$; the price consumption index ($PINDEX$); the exchange rate (e); the direct tax $Td(h)$. The variable production of the textile sector on which we base our main scenario $XS('a16')$ is chosen exogenously only at the simulation stage that is during the second solve of the model.

Sensitivity Analysis

According to Hosoe et al, the sensitive analysis consists of proving the robustness of the results, that is to show that results are not sensitive to a change of a given parameter [22]. The most common used parameters are the constant elasticity of substitution (CES) and the constant elasticity of transformation (CET). Here, we focus on the CES elasticity.

Results

We decompose this section into three sub-sections: by simulating a 10% increase in textile production, it is convenient to firstly interrogate the sectoral behaviour of the most common variables; secondly, the macroeconomic aggregate constituted by the GDP, the indebtedness, etc. will pay our attention; and finally, we check the robustness of the results. The most common impacts will be concerned among others by the textile production, prices, exports and imports, the demands and the well-being.

Impact on the Sectors

Tables 2 to 5 show how a textile subsidy affects the different sectors of the economy. First, we observe that the demand for labour in the textile sector (product a16) augments by 134.85% against a diminution of the demand for capital. This illustrates a big decrease of capital intensity in that sector. The SAM data show that the value of the labour used in that sector was CFAF 6 billion against 0.63 billion of capital. This justifies the diminution in capital intensity which is being deteriorated with the subsidy. Hence, there will be creation of numerous employments in that sector. Despite the fact that capitalist entrepreneurs are less demanded in most sectors (see Table 3), employment in other sectors will rather increase. This observation is almost general for agricultural, manufacture and the service sectors. Thus, the local textile demand by the (wholesale and retail) sector will increase by 10.89% (product a35).

The composite demand constituted of both local and imported goods to be sold on the domestic market increased by 86.99% against a big decrease of textile imports of 74.71% (see Table 5). This decrease subsequently leads to a decrease of custom duties by 19.28% (Table 7). This shows that by implementing such a policy, activities will grow in favour of the consumption of local products discouraging the imports. Then, the balance of trade will subsequently be improving in that leash since the export capacities would have increased accordingly as shown in Table 3. In other sectors, the conclusion is the same and this justify the positive consequences of the textile sector compare to other sectors.

Concerning the evolution of prices, we note an increase in the price of the imported goods on the domestic market by 51.49%. At the same time, the producer price decreased by 37.61%. The consumer will face to a fall in the price of local goods by 55.12%. therefore, he will prefer the local goods to the imported ones. Finally, the total wealth created by the textile industry will increase by about 111.36% (Table 5). This impact will therefore have a positive effect on the gross domestic product.

Impact on the Macroeconomic Aggregates

We have just noted at the previous section that, the value added of the textile sector will augment by 111.36% in addition to the positive effects recorded on the balance of trade. The indirect taxes generated in that sector also increased by 16.41%. All these indicators have a positive effect on the economic growth. Indeed, Table 7 shows that the GDP will increase by 8.15%. This justify the fact that the state will be able to recover the spending it made in terms of subsidy to encourage entrepreneur of the textile sector (because the tax it collected will have been increasing), but also that policy will facilitate the increase in national output more than expected, given the current performances of the textile sector. This finding corroborates the conclusions of Mohanty and Islam et al.

Moreover, this measure will be helpful for the indebtedness engagements [3,12]. Given the increase in government revenue, this will have the capacity to refund its charges especially towards the donors and this capacity will increase by 254%. At this stage, the funding abilities of the economy will help to reduce or to take control of the level of the economy indebtedness.

In the same line, the turnover of the firms, the level of global investment and the total supply of the workers increase (Table 4). The total supply of the workers which increases at 13.30% shows that this measure can participate to reduce the unemployment because the trade effect has allowed the increase of the employability level within all the economy.

Concerning the welfare measured by equivalent variation, the subsidy of the textile sector will be profitable to the Salaried households as well as Capitalist households (Table 5) [13]. Indeed, the

fall in production price and a minimal increase of households' income would participate to increase the utility of Salaried household nearly to CFAF 222 billion and that of Capitalist household to CFAF 15 billion. Moreover, the consumption of local textile product by household (Table 1) increases much more (+ 112.82%) than the importations false (-74.71%) (Table 4). This testifies to an increase of the global consumption of this product by the household and coming from welfare. Our result corroborates that of Rungta who examining of the cancellation of exports subsidy found a negative impact on well-being for China economy [6]. Therefore, one can conclude that maintaining the subsidising process generates positive welfare effects.

Sensitivity Analysis

To verify the robustness of the latter result, we made a variation of the value of elasticity parameter whiting the all sectors: a rising of 20% firstly, then a rising of 5% and finally, the decrease of 10%. We find that the signs are the same for nearly all the variables. For instance, the sign of impact remains positive for the demand of workers and the price of imported goods on the local or internal market even when their values decrease. Concerning the aggregate indicators, the impact on the GDP remains positive as well as other variables such as the total supply of workers within the economy. The customs taxes remain lower. Only total investment follows an increase of 20% of elasticity of substitution change the sign (-0.67%) whereas it's positive for those scenarios. The welfare impact remains equally positives for the both categories of households. All these results show that our estimations are robusts to the modification of the scale parameter value.

Table 2: Impact on the consumption of product tr by household h (values in %)

Products	Code	Salaried household (HS)	Capitalist household (HK)
Agricultural products	a1	67.41	na
Livestock and hunting products	a2	24.54	24.54
silvicultural product	a3	-4.06	-4.06
Fishery and fish farming products	a4	-22.60	-22.60
Energy products	a6	38.25	38.25
Other extractives products	a7	-0.04	-0.04
Meat and fish	a8	94.60	94.60
Grain working products and products	a9	-25.23	-25.23
Cocoa. coffee. tea and sugar products	a10	4.92	4.92
Oilseeds and animal feed	a11	-30.11	-30.11
Cereal products	a12	10.73	10.73
Dairly product and fruit products	a13	-2.57	-2.57
Drinks	a14	2.32	2.32
Tabacco products	a15	15.50	15.50
Products of textile industry	a16	122.82	122.82
Leathers and shoes	a17	-0.29	-0.29
Woodworking products and articles	a18	-0.95	-0.95
Cardboard; edited and printed products	a19	-3.39	-3.39
Products of refining and coking	a20	196.86	196.86
Chemical products	a21	-1.72	-1.72
Rubber and plastic products	a22	9.21	9.21
Other non-metallic mineral products and m	a23	27.06	27.06
Basic metal products and works in m	a24	31.53	31.53
Machines. electrical devices and materials	a25	0.01	0.01
Equipments and devices audiovisual and the c	a27	-0.64	-0.03
Transport material	a29	2.58	-0.64
Furniture. products fromvarious industries	a30	4.32	0.02
Repair and installation of machinery	a31	0.75	0.75

Electricity and energy supports	a32	-0.87	-0.05
Water and sanitation	a33	56.55	56.55
Construction work	a34	-7.40	-7.40
Wholesale and retail	a35	-2.48	-2.48
Repair and maintenance of vehicules and motorc	a36	4.60	4.60
Hotel and restaurant services	a37	-4.18	-4.18
Transport and storage	a38	-0.50	-0.50
Information and communications services	a39	na	na
Financial services	a40	na	na
Real estate services	a41	na	na

Table 3: Impact on the different types of demand (values in %)

Products	dde	Comp dde	Int dde	Ld	Kd
a1	43.43	42.35	25.38	77.69	65.97
a2	9.75	9.25	1.14	31.28	-22.39
a3	-1.67	-1.67	-0.22	6.88	-50.88
a4	-24.31	-19.60	-0.14	-19.42	-54.97
a5	0.00	0.00	na	10.25	-43.08
a6	15.79	15.78	3.42	46.94	-78.40
a7	-0.09	-0.14	-1.47	22.70	-84.37
a8	75.01	66.42	-6.15	92.55	-0.58
a9	-11.05	-9.82	-4.74	-11.13	-81.76
a10	8.88	8.60	23.40	31.96	-77.37
a11	-29.25	-25.95	-3.21	-10.34	-90.32
a12	7.68	6.66	-0.40	16.28	-26.13
a13	-2.62	-2.60	-18.09	7.13	-71.97
a14	0.00	1.19	na	23.39	-75.90
a15	9.76	9.75	-3.02	10.55	5.45
a16	110.60	86.99	7.50	134.85	-23.58
a17	1.20	1.20	3.69	9.86	-66.37
a18	-4.64	-4.54	-17.06	12.20	-78.57
a19	-2.44	-2.31	-9.44	-2.22	-37.71
a20	102.44	102.42	10.42	110.23	22.38
a21	1.95	1.95	7.26	29.37	-83.93
a22	4.78	4.56	-0.54	16.08	-49.25
a23	3.13	3.13	2.74	4.00	0.24
a24	21.65	21.62	-3.78	40.42	-85.93
a25	-0.03	-0.03	-3.24	11.63	-56.19
a26	0.14	0.14	-5.08	9.06	-57.37
a27	-0.55	-0.56	-6.27	10.50	-55.62
a28	na	na	-3.37	16.19	-51.25
A29	na	na	-1.95	26.15	-80.79
A30	na	na	-17.27	11.03	-51.70

a31	1.24	1.24	12.19	11.26	-58.98
A32	na	na	-11.86	21.95	-74.47
a33	41.11	41.11	-14.17	-9.02	184.60
a34	-6.14	-6.14	-7.61	12.50	-78.49
a35	-2.72	-2.72	-9.86	10.89	-62.55
a36	0.93	0.62	-1.48	11.52	-59.15
a37	-3.50	-3.50	-10.26	7.31	-55.18
a38	2.30	2.30	5.64	10.48	-38.85
A39	na	na	na	-65.93	na
A40	na	na	na	-28.14	na
A41	na	na	na	0.36	na
A42	na	na	na	0.45	na
A43	na	na	na	8.77	na

Table 4: Impact on prices (values in %)

Products	Pl	Pm	Pc	Pva	P
A1	-22.97	32.11	-40.27	-4.62	-5.50
A2	-16.14	1.45	-19.71	-1.44	-4.74
A3	3.96	-20.71	4.23	3.50	3.40
A4	7.30	-22.41	29.19	-0.03	0.81
A5	-2.58	0.00	-2.17	2.30	0.10
A6	-9.64	-46.42	-27.66	18.70	2.76
A7	0.92	0.94	0.04	15.37	1.30
A8	-27.71	39.30	-48.61	0.80	-16.67
A9	18.86	-10.38	33.74	2.43	8.58
A10	-4.95	1.22	-4.69	13.73	-4.14
A11	10.17	-27.76	43.09	19.47	1.47
A12	-8.38	1.46	-9.69	-1.30	-4.70
A13	2.88	0.39	2.63	3.38	2.89
A14	-1.11	na	-2.27	15.77	-8.59
A15	-13.38	1.60	-13.42	-5.63	-10.90
A16	-37.61	51.49	-55.12	4.34	-14.97
A17	0.32	-9.10	0.29	2.14	1.35
A18	3.09	0.79	0.96	10.57	2.28
A19	0.84	-3.76	3.51	-4.95	-5.27
A20	-54.48	-73.54	-66.31	-3.58	-5.18
A21	0.16	12.09	1.75	19.45	3.45
A22	-7.45	0.49	-8.43	2.89	-8.08
A23	-9.49	-49.40	-21.30	-5.93	-6.60
A24	-18.44	-27.47	-23.97	8.50	-4.40
A25	-0.04	-0.04	-0.01	4.85	-6.30
A26	-0.04	0.30	0.03	2.26	0.53
A27	1.07	0.63	0.65	4.34	1.18

A28	0.00	na	na	9.10	0.00
A29	0.00	na	na	18.45	0.00
A30	0.00	na	na	4.25	0.00
A31	-0.74	na	-0.74	3.19	-0.74
A32	0.00	na	na	14.51	0.00
A33	-36.30	-6.55	-36.12	-14.57	-11.54
A34	7.99	na	7.99	12.71	8.26
A35	2.97	8.66	2.55	7.57	1.67
A36	3.07	22.08	-4.40	4.55	3.89
A37	4.45	2.12	4.37	5.19	4.01
A38	0.50	na	0.50	1.41	0.49

Table 5: Impact on economic activities (values in %)

Branches	VA	Ti	M	EX	INV
A1	74.94	10.38	-99.95	155.94	na
A2	25.07	0.59	-25.66	58.75	na
A3	-3.04	-1.35	6988.91	-10.04	na
A4	-24.31	na	77.55	-46.75	na
A5	1.19	na	-1.62	1.77	na
A6	16.25	13.64	18.71	49.14	na
A7	-0.14	-0.95	-2.00	-1.98	na
A8	79.37	1.78	-64.32	256.70	na
A9	-18.53	13.35	75.66	-44.31	na
A10	8.95	6.55	2.30	24.90	na
A11	-29.53	23.27	112.06	-56.86	na
A12	10.62	0.16	-7.26	31.75	na
A13	-2.69	-2.40	-1.45	-9.41	na
A14	0.08	-0.54	-1.10	0.61	na
A15	10.00	4.03	-6.57	10.69	15.94
A16	111.36	16.41	-74.71	447.10	na
A17	1.00	1.22	6.11	0.73	0.09
A18	-4.71		-6.47	-12.72	-0.57
A19	-3.40	1.50	13.31	-5.30	na
A20	104.74	74.95	86.73	111.91	na
A21	1.69	-0.11	-4.99	1.36	na
A22	5.93	1.76	-9.09	24.49	na
A23	3.82	10.31	26.78	4.41	na
A24	21.53	20.20	22.47	20.14	32.03
A25	-0.03	0.00	0.03	0.03	0.39
A26	0.14	0.02	-0.09	0.16	0.35
A27	-0.57	-0.87	-1.91	-2.95	na

A28	na	na	na	na	2.22
A29	na	na	na	na	na
A30	na	na	na	na	na
A31	1.24	1.24	na	3.39	1.13
A32	na	na	na	na	na
A33	0.00	41.05	32.95	na	na
A34	-6.27	-6.14	na	-23.08	na
A35	-3.21	-3.35	-14.53	-5.44	-2.11
A36	0.15	-6.77	-84.29	-4.66	na
A37	-4.20	-3.57	-95.85	-13.50	na
A38	2.30	na	na	2.41	-0.12
A39	-59.30	na	na	na	na
A40	-24.49	na	na	na	na
A41	0.32	na	na	na	na
A42	0.39	na	na	na	na
A43	5.82				

Table 6: Impact on welfare (CFAF billion)

Households	Equivalent variation
Salaried households	222.91
Capitalist households	15.07

Table 7: Impact on some scalars of the model

Variables	Values (%)
Total debt amount	254.29
Total value of tariffs	-19.28
total Investment	0.38
Total supply of labour in volume	13.30
Gross Domestic Product (GDP)	8.15
Recipe coming from indirect taxes on the corporate revenue	25.31
Corporate revenue	25. 31

Table 8: Sensitive analysis (modification of elasticity of substitution)

Variables	0%	20%	5%	-10%
Concerning the textile sector only (values in %)				
Labour demand	134.85	6.38	15.87	23.40
Imports	-74.71	-1.39	-1.52	-2.40
Local price of imported goods	51.49	0.02	0.20	0.04
Market price of local goods	-55.12	-3.60	-2.84	-6.99
Concerning the macroeconomic aggregates (values in %)				
Total debt amount	254.29	288.44	269.10	290.51
Total value of tariffs	-19.28	-7.08	-11.80	-18.55
Total investment	0.38	-0.67	1.91	0.29
Total supply of labour in volume	13.30	16.28	12.33	17.38
Gross Domestic Product (GDP)	8.15	10.30	6.14	10.15
Recipe coming from indirect taxes on the corporate revenue	25.31	18.07	17.13	19.86
Corporate revenue	25.31	18.07	17.13	19.86
Concerning equivalent variation in CFAF billion				
Welfare of Salaried households	222.91	132.82	115.14	226.05
Welfare of Capitalist households	15.07	10.13	5.87	15.97

Conclusion

The subsidy policy of exports is one of the ways mostly used by the governments to improve the competitiveness of the economy. This measure is more observed within the developed countries while developing countries have an important opportunity that should be exploited efficiently. Many of the latter are extractive economies because they import currently the processed products and export the raw materials most of the time. However, the remarkable weaknesses are observable in the exploitation of certain products. It's the case of the textile industries with very low production level while the potentialities exist really. The objective of this article was to evaluate the impacts of textile subsidy production on macroeconomic aggregates in developing countries. An application to Cameroonian economy allowed us to show that the government of developing countries will gain to allocate the subsidy at this important sector, because it would be a boom for general economy but also for economic agents.

References

1. Lin J Y, Yongjun L (2002). Export and Economic Growth: A Demand-Oriented Analysis. *China Economic Review*.
2. Eckaus R S (2006) China's exports, subsidies to state-owned enterprises and the WTO. China Economic Review 17 : 1-13.
3. Islam M M, Khan A M, Islam M M (2013) Textile industries in Bangladesh and challenges of growth. *Research Journal of Engineering Sciences ISSN,* 2278, 9472.
4. Sumner D A (2003) The impact of US cotton subsidies on cotton prices and quantities: Simulation analysis for WTO disputes.
5. Wubeneh N (2006) A General Equilibrium analysis of the Impact of eliminating US Cotton subsidies on US and World Cotton Market.
6. Narayanan B G, Rungta V (2014) Export Subsidy Reforms and Productivity Improvements: The Case of the Indian Textile and Clothing Sector. Margin: *The Journal of Applied Economic Research* 8: 327-352.
7. Eaton J, Grossman G M (1986) Optimal trade and industrial policy under oligopoly. *The Quarterly Journal of Economics* 101: 383-406.
8. Brander J A, Spencer B J (1985) Export subsidies and international market share rivalry. *Journal of international Economics* 18: 83-100.
9. WTO. (2019). https://www.wto.org/english/res_e/statis_e/data_pub_e.htm
10. Technical report, Centre d'Analyse Théorique et de Traitement des données économiques FAOSTAT. 2020.
11. Girma S, Gong Y, Görg H, Yu Z (2009) Can production subsidies explain China's export performance? Evidence from firm-level data. *Scandinavian Journal of Economics* 111: 863-891.
12. Mohanty S, Fang C, Chaudhary J (2002) Assessing the competitiveness of Indian cotton production: a policy analysis matrix approach.
13. Decaluwé B, Martens A, Savard L (2001) La *politique économique du d'enveloppement et les modèles d''équilibre général calculable : une introduction à l'application de l'analyse méso économique aux pays en développement.*
14. Haqiqi I, Mirian N (2015) A financial general equilibrium model for assessment of financial sector policies in developing countries. Technical report, University Library of Munich Germany.
15. Shoven J B, Whalley J (1984) Applied general-equilibrium models of taxation and international trade: an introduction and

survey. *Journal of Economic literature* 22: 1007-1051.
16. Fofana I (2007) Elaborer une matrice de comptabilité sociale pour l'analyse d'impacts des chocs et politiques macro-économiques. *Centre Interuniversitaire sur le Risque, les Politiques Economiques et l'Emploi (CIRPEE).*
17. Quesnay F (1759) The third edition of the Table economique. Quesnay's Table Economique.
18. Leontief W (1941) The structure of the American economy, 1919-1929 Harvard university press. *Cambridge (new, enlarged edition, Oxford University Press, New York, 1951).*
19. Robinson S, Cattaneo A, Moataz ES (1998) Estimating a social accounting matrix using cross entropy methods.
20. Robinson S, Moataz ES (2000) Gams code for estimating a social accounting matrix (sam) using cross entropy methods.
21. Fall S (2010) Une matrice de comptabilité sociale (MCS) du Sénégal pour l'année 2006.
22. Hosoe N, Gasawa K, Hashimoto H (2010) *Textbook of computable general equilibrium modeling: programming and simulations.* Springer.
23. Arrow K, Debreu G (1954) Existence of an equilibrium for a competitive economy. Econometrica: *Journal of the Econometric Society* 22: 265-290.
24. Asaduzzaman M, Chowdhury T (2014) Effect of working capital management on firm profitability: Empirical evidence from textiles industry of Bangladesh. Research *Journal of Finance and Accounting* 5: 175-184.
25. Burfisher M E (2017) *Introduction to computable general equilibrium models.* Cambridge University Press.
26. Cardenete M A, Guerra A I, Sancho F (2017) *Applied general equilibrium.* Springer, Second Edition.
27. Emini C A, Ongolo Zogo V, Kanmi Feunou D, Tadjuidje M H (2006) Décomposition des effets des politiques économiques sur l'évolution de la pauvreté au Cameroun : une analyse en équilibre général micro-simulé avec double-calibration ; rapport final.
28. Frederick S, Gereffi G (2009) Review and analysis of protectionist actions in the textile and apparel industries. *The fateful allure of protectionism:* taking stock for the G, 8, 65.
29. Heron T (2011) Asymmetric bargaining and development trade-offs in the cariforum european union economic partnership agreement. *Review of international political economy* 18: 328-357.
30. Iqbal Z, Siddiqui R (2001) Critical review of literature on computable general equilibrium models. Technical report, Pakistan Institute of Development Economics.
31. Kimbambu V (2014) Diagnostic de la politique monétaire en rép. dém. Congo approche par l'équilibre général dynamique stochastique. Technical report CEPREMAP.
32. Nadvi K, Thoburn J T, Thang B T, Ha N T T, Hoa N T, et (2004) Vietnam in the global garment and textile value chain: impacts on firms and workers. Journal of international development 16: 111-123.
33. Walras L (1874) Eléments d'économie politique pure. Lausanne:1877.