

# Towards an Exit from The Inflationary Crisis in Cameroon In the Context of The Russian-Ukrainian Conflict: Exploring the Channels of Public Transfers and Indirect Tax in A Computable General Equilibrium Model

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## Abstract

The objective of this article is to explore two instruments of state intervention to overcome the inflationary crisis caused by the Russian-Ukrainian conflict on the Cameroonian economy. This is the subsidy via a reduction in the indirect tax and public transfers to households. The study is based on a computable general equilibrium model (CGEM) built initially by relaying some specificities related to its operation. This is calibrated on a 2016 social accounting matrix (SAM) so the data comes from the Eora database. Three basic scenarios are applied to the increase in the local price of imported products, in particular 5%, 10% and 12%. From these thresholds, we use welfare as a control instrument to determine the level of reduction applicable to the indirect tax as well as the share of government income that must be transferred to households. It emerges that fiscal policy turns out to be more effective than transfer policy.

**Keywords:** Inflation, indirect tax, public transfers, CGEM

JEL classification: C68, D57, G18

## Introduction

In Africa, the rise in the prices of basic products which has become a societal phenomenon for a certain number of years has never had such serious consequences on the daily life of households as in 2022. The decline in power which affects the well-being of households is perceived as a consequence of the Ukrainian crisis marked by military opposition from Russia to the project of Ukraine's entry into NATO. Thus, the impossibility of the State to import certain production inputs from Ukraine has caused an increase in production costs, the main source of the soaring prices. In Cameroon, this situation which reminds us of sad episodes in times of expansion of the recent Corona virus health crisis is perceived as one of the most striking crises in the history of social life. Indeed, the report of the Ministry of Economy, Planning and Regional Development on the economic situation of the country in 2021 placed the inflation rate at 2.3%, although down from the rate of 2.5% recorded in 2020 [1]. According to the same report, the prices of imported products increased by 3%. This increase was mainly driven by the 4.3% increase in food prices. The most affected products are oils, meat and cereal-based products. Compared to the situation in 2022,

INS statistics (2022) show that the inflation rate has greatly exceeded the 3% bar known as the convergence threshold in the CEMAC zone. It went from 3.9% in March to 6% in May 2022. The ever-increasing difficulties faced by households in acquiring products pose major challenges for the economy. The decline in purchasing power rightly elucidates the mortgage created either on income or on household consumption.

Similarly, the difficulties faced by companies prevent them from honoring their tax commitments with direct consequences on the public treasury which is likely to suffer a double shock because this situation is not without consequences on public expenditure. Coupled with the evolution of the price of the dollar which reached in August 2022 the record value of 639.5 FCFA for 1 US dollar, the difficulties are enormous. But so far, public authorities are struggling to find a viable solution to this phenomenon. One of the major concerns of the State being to ensure the well-being of its populations, reflections must also be focused on this way. Among the major instruments of State intervention in the economy, attention deserves to be placed on taxes and public transfers. The choice of these two axes that we place at the

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heart of this article aims to provide viable solutions that would help to at least bend the price curve. Therefore, the central question raised by this article is whether a subsidy to businesses or a transfer of public funds to households can help lower the prices of goods and services in the market. We base our investigations on the theory of indirect tax reform developed by Musgrave, Atkinson and Stiglitz and Ahmad and Stern [2-4]. The latter having investigated the determination of the rate of the indirect tax applicable to the products in accordance with the objectives. For the rest of the article, section 1 poses the problem of the study, section 2 presents the literature review, section 3 presents the methodology used, the simulations as well as the results are presented in section 4. The study ends with a conclusion.

### Problem Statement

In general, economists pay special attention to inflation because of its negative economic and social consequences. The goods and services that constitute the wealth of nations are measured in monetary terms and in this case, there is a symmetry between the holding of money and that of goods and services. The problem with inflation is that it alters or destroys this symmetry which is the basis of economic stability. The same quantity of money held at two different periods does not allow the acquisition of the same quantity of goods and services. The functions of unit of account and store of value are blurred. We must therefore favor economic policies that maintain the stability of the purchasing power of the currency. It is in this regards that the problem of the present study is inserted, which consists in investigating the use of two public policy instruments, in particular the indirect tax and public transfers in response to the inflation phenomenon. It is a question of determining the levels of tax and transfers compatible with an improvement in the purchasing power of households.

### Literature Review

We do a brief theoretical and empirical review of the consequences of indirect tax and transfers on the economy.

### Theoretical Review

The issue of the definition of indirect taxes applicable to products has experienced particular growth since the work of Musgrave [2]. The latter examines the forms of public financing in a theoretical approach. Several years later, Atkinson and Stiglitz and Ahmad and Stern develop a theory for indirect tax reform with application to the Indian economy [3, 4]. The problem they pose is that of finding the level of indirect tax applicable to a good in order to ensure social well-being. They are based on the Pareto optimality rule which maintains that one cannot improve the well-being of all agents at the same time. They put forward the concept of the marginal social utility of income, developed by Guesnerie which makes it possible to assess the achievement of the objective of the tax reform [5]. The question of the choice of ways to achieve social well-being. Therefore, it is the search for an answer to this question that must obey the condition of optimality.

The problem to be solved is that of consumer welfare constrained by government revenue. Assuming fixed prices to the

producer and constant returns to scale, an increase in the tax translated into an increase in the price to the consumer without companies making any subsequent profits. In the model, all the tax is collected on production according to the formula:  $R = t \cdot X = \sum_i t_i \cdot X_i$  where  $t_i$  is the tax levied on the product  $i$  and  $X_i$  the output of sector  $i$ . Therefore, the problem of the tax is to find the vector of the modification of the tax which is such that the variation of social welfare  $dV \geq 0$  and the variation of government revenue  $dR \geq 0$ , one of the two inequalities being strict. This means that either welfare is improved and income remains fixed at unity according to Atkinson and Stiglitz, or the concern is to improve government revenue without worrying about welfare [3]. Thus, we can increase welfare for a constant income by increasing the tax on the good by an amount that reduces the consumption of a unit of good  $X$  and at the same time reducing the tax on the good by an amount that allows acquire the same unit of good  $X$ . If we increase the tax on the good  $i$ , either the income of the household willing to buy this good decrease, or its utility decreases if it instead adjusts its consumption.

Atkinson and Stiglitz extending the work of Musgrave who developed the opposing concepts of horizontal equity and vertical equity, emphasize the first [2, 3]. They argue that horizontal equity must be at the heart of government policy objectives and its proper management would help to correct the distortions that arise from differences in consumer taste in the solicitation of different goods. Moreover, Stiglitz (1974) shows that horizontal equity can be in contradiction with the concept of Pareto optimality and even with the maximization of social welfare. Taking horizontal equity into account therefore imposes constraints on the structure of the tax to be adopted.

### Empirical Review

At the empirical level, it is difficult to find empirical work that has addressed the relationship between public transfers and inflation. This observation is also valid at the theoretical level as mentioned above. The vacuum in question thus constitutes one of the major contributions of the present study. On the other hand, the relationship between indirect tax and inflation that we focus on in this section is relatively covered in the literature.

In this wake, we note the work of Harris who showed through descriptive analyzes of the British economy that subsidies are anti-inflationary; and even if a rise in prices were to result, it would be spread thinly across the economy and the reduction would be concentrated in areas of essential commodities [6]. Using the same analytical approach, showed that there is a positive correlation between value added tax (VAT) and inflation for the case of the Greek economy during the period 2010-2012 [7]. We also have Vala and Gujarati who showed that there is a positive correlation between food subsidies and inflation for the Indian economy during the period 1993-2013 [8]. In the same vein, Mozdzier examined the effect of an increase in the indirect tax rate on inflation in European Union countries during the period 2007-2016 and found that an increase in VAT positively impacts inflation [9]. Koester et al. find that the reduction in VAT would have a negative impact on the harmonized consumer price index (HICP) for the euro area in July 2020 by around 0.6 percentage

point. Overall, this work shows that each time the government applied a food subsidy, it had an increasing impact on the level of inflation [10]. Moreover, when the food subsidy was reduced in 2005-2006, its effect was felt in 2007-2008 on the inflation (of food products) which has also fallen. Also in 2008-2009, the food subsidy was at the peak and affected inflation during the period 2010-2011.

However, it should be noted that this work has some limitations. (i) firstly, a major finding emerges from these, namely that the graphical analyzes constitute their basis, which does not make it possible to evaluate in a numerical way the sensitivity of inflation following the variation of the indirect tax or subsidies. (ii) secondly, these works do not make it possible to understand the consequences of the subsidy beyond inflation. Nothing is in fact said about other macroeconomic aggregates such as production, exports, income, public and private consumption, GDP. Added to these limits, the void on the consequences of transfers on inflation gives support to the present study which attempts to fill in the said shortcomings within the framework of the Cameroonian economy.

### Methodology

The use of Computable General Equilibrium Models (CGEM) seems to be appropriate for analyzing the impact of the Ukrainian crisis on the Cameroonian economy, for at least three reasons: the first is that such a model offers a wide spectrum over the implications of an exogenous shock on the economy. Indeed, a CGEM by definition makes it possible to analyze the interactions likely to occur following an economic shock between the various sectors of activity on the one hand and on the other hand between the various economic agents. The second reason is that a CGE makes it possible, through the interplay of balances in the different markets, to ensure the cohesion of exchanges between the participants in each market. The third reason is that it is almost congenital to CGEMs to be interested in simulations of the reaction of the economy following an exogenous shock for the purposes of economic policy decisions. That said, this section is divided into four points. The first subsection presents the assumptions of the model, the second one presents the data as well as the detail linked to the construction of the social accounting matrix (SAM), the third subsection describes the model as well as its calibration and the last subsection describes the procedure for determining the applicable tax and public transfer rate empirically.

### Assumptions

#### Assumptions on Transfers

For the implementation of the Transfer policy we assume that:

- The government takes a fraction of its income  $\tau_h$  that it transfers to households;
- Only households receive these funds, non-profit institutions are by definition involved in non-market actions and therefore require little support;
- The total amount of transfers  $\tau_h$  made up increases the income of private agents  $Y_{p_h}$  and decreases government income  $Y_g$ .

### Assumptions on The Entire Model

The model whose equations are inspired by Hosoe et al. considers two factors of production (capital and labor) and assumes like Decaluwé et al. that labor is mobile between branches of activity while capital is specific to each branch [11, 12].

- State revenue comes exclusively from the indirect tax collected on goods and services;
- These receipts which constitute the income of the State are broken down in part in terms of public expenditure and the rest is transferred to households;
- There are two categories of private agents (households and non-profit institutions) which offer the factors of production against remuneration, constituting its main source of income. This income is then spent on the purchase of goods and services and the rest is devoted to savings;
- The total mobilization of agents' savings (households, government and the rest of the world) follows the Keynesian postulate, i.e. it makes it possible to define the potential level of investment which ensures the savings-investment balance;
- The rest of the world savings are determined by the current account balance;
- The firms' behavior is not captured explicitly. They buy the factors of production and exploit them to produce the goods and services available in the economy;
- The production technology follows an Armington type CET specification;
- The intermediate consumption of the branches obeys a Leontief-type technology based on the technical coefficients of the input-output matrix;
- The value added of the branches follows the Cobb Douglas specification with constant returns to scale;
- The import function follows an Armington CES specification;
- The household utility function follows a Cobb Douglas type specification;
- There is a composite demand made up of domestic demand and foreign demand (exports) just as the composite supply is made up of domestic supply and foreign supply (imports).

### Data and Construction of The Social Accounting Matrix

The basic data come from the Eora database site and covers the year 2016 [14]. This database provides basic data from the Leontief input-output matrix (1941) on 190 countries. We first build the Resources and Employment Table (RET) whose initial format is illustrated through the example given in table 1. The inventory change account is used to adjust the accounts for the use-supply balance. In this table, there are two activity accounts denoted 'A1' and 'A2'. The labor supply LD is represented by "Compensation of employees D,1"; the capital supply KD is made up of "Net operating surplus B,2n, Net mixed income B,3n and Consumption of fixed capital K,1" as indicated in the database. From the 26 branches, we have retained 23, ignoring the last three named respectively "Private Households, Others, Re-export & Re-import" because these offer few clues to the interpretation of their operation. Taxes are considered net of subsidies, i.e. deducted from subsidies. Imports expressed at CIF cost are equal to the sum of imports from various countries including

Ukraine; The same applies to exports which, expressed at the fob price, take into account all the destinations of the products.

Once the RET has been constructed, we proceed with the implementation of the SAM, the illustration of which is given in Table 2. In addition to the two activity accounts, there are four current institution accounts (the household, HH; non-profit institutions, ISBN; government, G, and the rest of the world, ROW). The factor accounts remain capital, KD, and labor, LD. Finally, an accumulation account, ACC is created to record savings and investments. The total supply of factors is redistributed to households and non-profit institutions in proportion to their respective shares of consumption expenditure. The coefficient  $\vartheta_h$  is thus determined by:

$\vartheta_h = (\sum_j C_{p_{h,j}}) / (\sum_h \sum_i C_{p_{h,i}})$  and the income from the sale of factors by the h's household is determined by:  $YF_{h,k} = \vartheta_h \sum_j FF_{k,j}$

By way of illustration, and which makes it possible to calculate  $\vartheta_{hh} = (10+15) / ((10+15)+(5+10)) = 0,625$ ,  $\vartheta_{isbn} = (5+10) / ((10+15)+(5+10)) = 0,375$

$YF_{hh,ld} = \vartheta_{hh} (FF_{ld,A1} + FF_{ld,A2}) = 0,625(10+20) = 18,75$

$YF_{hh,kd} = \vartheta_{hh} (FF_{kd,A1} + FF_{kd,A2}) = 0,625(15+10) = 15,625$

Each agent's savings is determined by the difference between the agent's overall income and expenditure. Finally, the volume of investment is deduced as being the difference between the total output of each branch and the corresponding composite demand. This last entry makes it possible to balance the rest of the SAM accounts.

**Table 1: Basic input output matrix**

	A1	A2	HH	ISBN	G	INV	EX	Stock	TE
A1	40	15	10	5	20	15	10	-5	110
A2	25	35	15	10	15	10	20	-15	115
LD	10	20	Sectors: 1 & 2 Household: HH Non-market institution: ISBN Government: G Investment: INV			Stock change: Stock Labor: LD Capital: K.D. Tax: TX Imports: M		Exports: EX Total resources: TR Total employment: TE	
K.D.	15	10							
TX	5	10							
M	15	25							
TR	110	115							

**Table 2: Illustration of the SAM**

	A1	A2	LD	K.D.	HH	ISBN	G	ROW	ACC	Total
A1	40	15			10	5	20	10	10	110
A2	25	35			15	10	15	20	-5	115
LD	10	20								30
K.D.	15	10								25
HH			18.75	15.625						34.375
ISBN			11.25	9.375						20.625
G	5	10								15
ROW	15	25								40
ACC					9.375	5.625	-20	10		5
Total	110	115	30	25	34.375	20.625	15	40	5	

**Description and Closure of The Model**

Following the model assumptions presented above, all the equations used are presented in an associated file. To replicate the benchmark, each model equation is calibrated using a parameter whose value is calculated upstream using the initial data from the SAM. For example, to determine the values of the intermediate consumptions of the branches given by the equation  $Z_{ij} = A_{ij} \cdot X_j - A_{ij}$ , the technical coefficients are determined upstream by:  $A_{ij} = Z0_{ij} / X0_j$  with  $Z0_{ij}$  and  $X0_j$  the initial values of intermediate consumption and production respectively. These values are taken from the SAM.

Regarding the closure of the model, it is first necessary to define the different sets:

$i=j \in I = \{A1, A2, \dots, A23\}$  which is the set of industries with  $A_i$  in-

dustry number  $i$ ;

$h \in nh \in H = \{HH, ISBN\}$  which is the set of categories of private agents with HH households and ISBN non-profit institutions;

$k \in K = \{LD, KD\}$  which is the set of factors of production with LD the labor and KD the capital.

We therefore have a total of 23 branches of activity, 2 categories of private agents, 2 factors of production. As shown in the appendix, the model contains a total of 1124 variables and 1030 equations. To make the model square, 94 variables are fixed with one (the wage rate) fixed as numéraire. There are therefore 1030 endogenous variables and 93 exogenous variables. These exogenous variables which constitute the closure of the model are given as follows:  $FF_{k,j}$ ;  $Pm_i$ ;  $PWE_i$ ;  $\epsilon Pm_i$ . The base scenario is applied to the local price of imported products.

### Choice of Tax and Transfer Rates to Apply

Two scenarios are considered in this study. The first assumes the use of fiscal policy while the second concerns the possibility of transferring public funds to households. In the first scenario, the government must waive the collection of part of the indirect tax. In the second scenario, it is a question of determining the fraction of government income to be transferred to households. The objective is to determine for each of the two measures the equation which associates with a given rate of inflation the level of the reduction in the rate of the indirect tax or the rate of public transfers to households to remedy this phenomenon. To do this, we consider three inflation rates closely linked to the local price of imported products, namely 5%, 10% and 12%. Our model then allows us to first estimate the rates of the tax and the corresponding transfers, together with their consequences on the economy. Secondly, we estimate the equation of the appropriate rate from the previous thresholds by applying the ordinary least squares technique to the following equations:

$$\Delta Pm_i = \alpha_{0i} + \alpha_{1i} \Delta TX_i + \varepsilon_{xi}$$
$$\Delta Pm_i = \beta_{0i} + \beta_{1i} \Delta Tr_i + \varepsilon_{ri}$$

With  $\Delta Pm_i$  the rise in the local price of imported products,  $\Delta TX_i$  the reduction in the tax on products, and  $\Delta Tr_i$  the rate of public transfers. All these variations being given in percentage.

It should be noted that once these equations have been obtained, it will be easy for a given level of inflation observed on a product to determine the estimated level of the tax to be reduced or the transfer to be made to support private consumption.

### Simulations and Interpretations of Results

Before proceeding with the simulations, a discussion was held on the nature of the shock linked to the Ukrainian war. The central issue is whether it is a demand shock or a supply shock. In other words, is the rise in product prices a cause of the fall in imports or is it rather a consequence of the latter? an analysis on the demand side considers the rise in prices as a consequence, i.e. a response to the fall in imports and by extension the demand for goods and services on the market. Which is not far from the reality where the rise in the cost of raw materials is rejected as the main cause of the current inflation. Except that on the market, we face a typical situation where products whose raw materials and production are sufficiently supplied locally also see their prices rise. The general decline in demand is therefore rather a consequence of the surge in prices on the market. But it should be noted that like all inflation, the main indicator that should allow us to better understand the consequences of this situation is purchasing power. When the price of a good increases and the agent's income remains constant, the latter registers a loss of purchasing power. This reading will be indicated above all in the policy of public transfers to households. The reason being that the transfer has no direct effect on the price because it does not affect the cost of production as the indirect tax does.

That said, the results are presented in two stages. First, we simulate the behavior of the economy following an increase in the local price of imported products by 5%, 10% then 12%. But for simplification measures, we will only comment on the results of

the 10% increase, echoing the others exceptionally, it being understood that the trend is the same at 5 as at 12%. Starting from this inflationary situation, we assume on the one hand that the State lowers the indirect tax and on the other hand that it deducts an amount from its income which it transfers to households. For one or the other of the possible solutions, we seek for each level of inflation the level of the tax or the public transfers which would make it possible to remedy the problem.

### Increase in The Local Price of Imported Products

By focusing on the 10% increase in the local price of imported products, the difficulties related to the importation of products from Ukraine used as a production input of firms affects the productive capacities of the latter as shown in the table 13 in several branches of activity. There is a total of 52.17% of the sectors affected by the crisis. The reasons for these weaknesses go beyond the simple drop in imports, although they are essentially related to it. We have the acquisition prices of the raw materials, of course, but also the price of the value added which contribute to this result. However, the upward rigidity of wages in Cameroon reduces the constraint to the single capital factor. The rise in production costs inevitably leads to a rise in the prices of domestic products (see table 11) which, coupled with the prices of imported products lead to an increase in the purchase price of the products as shown in Table 10. Consequently, the composite demand which reflects the simultaneous desire of households for domestic and foreign goods (see Table 12) decreases in almost all industries. The direct correlation that deserves to be established is between the consumer price and household consumption. By the law of demand, we see that the products whose prices have undergone an increase see their quantity consumed decrease and this practically in the same proportion for all the sectors of the economy. For agricultural goods, for example, the scale of consumption down 0.15% is diametrically opposed to the increase in price. This trend betrays a downward rigidity of the consumer's income notwithstanding a loss of his well-being as shown in Table 6. As we mentioned above, wages being rigid, the current inflation causes a double behavior of the household: either it reduces its consumption, or it reduces its savings and thus indirectly its disposable income. We have just seen that it is consumption that has adjusted, thus reducing the shopping basket. Income has therefore not changed as shown in Table 14.

Consequently, there is a decline in well-being. First captured by a utility function of the Cobb Douglas type, Table 4 shows that the utility of households fell by 0.14% while that of non-profit institutions (ISBN) fell by 0.13%. But to take into account prices and consumption at the same time, the indicator of the equivalent variation which evolves in the opposite direction to the compensating variation is more appropriate. According to the latter, there is a loss of household well-being of around 43.17 million US dollars. This value represents the income lost by the household due to the price increase. In other words, compared to the situation before the crisis, households will have to devote 43.17 million US dollars of additional income to the purchase of the same products if they consume the same quantities of goods as before. This shortfall is 0.62 million for ISBNs. 17 million US dollars. This value represents the income lost by the house-

hold due to the price increase. In other words, compared to the situation before the crisis, households will have to devote 43.17 million US dollars of additional income to the purchase of the same products if they consume the same quantities of goods as before. This shortfall is 0.62 million US dollars for ISBNs. This value represents the income lost by the household due to the price increase. In other words, compared to the situation before the crisis, households will have to devote 43.17 million US dollars of additional income to the purchase of the same products if they consume the same quantities of goods as before. This shortfall is 0.62 million for ISBNs.

With regard to the government action, Table 14 indicates a decrease in its income of 0.45%. This result is the direct consequence of a drop in tax revenue, essentially driven by levies on products. At the same time, it reflects a decline in business performance expressed by the weakness in production mentioned above. subsequently, public savings decrease by equal value. The only agent that benefits from this crisis is the rest of the world through the current account balance which improves by 9%.

After this ex ante analysis of the consequences of the crisis, let us now look at plausible solutions.

### Overcoming the Trials of The Crisis

The first major focus of this study is to identify possible solutions to overcome the pangs of this inflationary crisis which, as we have just seen, is hurting almost all sectors of activity as well as economic agents. Two avenues that all relate to the instruments of budgetary policy are explored in this work: the first considers the possibility of a reduction in the tax on products and the second explores the voice through public transfers to households. While an action on the tax will make it possible to lower the prices on the market, the transfers will on the other hand act indirectly on the price. It is above all a question for this measure of having a positive influence on purchasing power by creating a shield effect. The instrument we have chosen to level the rate is welfare. This choice is inspired by a major argument which is that a variation in prices and consumption has a direct effect on the well-being of the household captured by the equivalent variation. Following the three appropriate rate, the equation that would make it possible to calculate the applicable tax or transfer rate was estimated using the OLS technique.

For the tax equation we have

$$\text{Taux\_taxe}_i = 2,2799 + 0,1003 \Delta P m_i \quad (1)$$

For the transfer equation, we have

$$\text{Taux\_transferts}_i = 3,7487 + 0,3538 \Delta P m_i \quad (2)$$

### Rate of Indirect Tax Necessary To Increase Welfare

Starting from a loss of well-being of 43.17 million US dollars at the inflation rate of 10%, the adjustment by the rate of the indirect tax on products made it possible to achieve a positive level of well-being to be of the order of 27.86 million US dollars. The reduction that should be applied to the current level of the indirect tax is 3.22%. At a lower rate of 5%, the appropriate rate is 2.8% while at 12% it is 3.53% (see Table 3). In terms of utility, at the 5% threshold, we would gain satisfaction in the consump-

tion of goods and services of the order of 0.06%, which goes to 0.09% then to 0.11% respectively at the thresholds of 10% and 12%. This mechanism succeeds in reversing the prices of goods and services on the market. This starts from the subsidy provided by the State to companies, which allows them to lower their production costs with a direct consequence on market prices.

Moreover, Table 11 proves this sufficiently. It shows, with a few exceptions, that the evolution of product prices in the various branches of activity is reversed. Some products have remained in the same dynamic which was deemed commendable. This is the case of construction services, retail sales, transport and post and telecommunications. Moreover, only 13.04% of the branches of activity keep a positive sign. These results are reflected in consumption as shown in Table 9 where, with a few exceptions, there is an increase in household consumption of various products. The decline in the consumption of financial intermediation services has an opposite dynamic to that of mining, the use of wood and paper, as well as access to education and health services. We see the impact in this sector goes from -0.01% at the 10% threshold to 0% at 12%. This shows that beyond 12% it would become positive.

With regard to the impact on growth, the opportunity judged to adopt this economic policy decision will have a negative impact on growth as indicated in Table 12. However, it is clear that it is a more or less negligible impact of -0.04%. While public savings are clearly the most affected with -0.82%, household savings, which follow the same trend as income, are not affected.

### Rate of Public Transfers Necessary to Increase Welfare

For transfers, Table 6 shows that for a 10% inflation rate, a fraction of 7% of the State income allocated to households would be necessary to help them cope with inflation. At 5%, it is 5.6% and 8.2% at the 12% threshold. We can quickly see from Table 14 that at the 10% threshold, this transfer has a positive impact of around 0.05% on household income. It is mainly this revival which allows him to improve his purchasing power. But it must be remembered that this measure does not affect market prices. This is why we speak of the shield effect because its action is indirect on the price.

More precisely, well-being improves with not only an increase in household utility of 0.08%, but also the equivalent variation increases by 30.85 million US dollars. On the ISBN side, the increase in utility is 0.07% for an equivalent variation of 0.33 million US dollars. A little more in detail, tables 9 and 10 show faithful compliance with the law of demand for almost all the different branches of activity. We note that the consumption of goods for which the price is falling is on the rise. In the agriculture branch, it is 0.11%. For fish products the increase is 0.15%. Basically, the branch with the greatest impact (4.30%) is recycling. At the same time, it is the branch in which the price suffered the greatest drop in (4.07%). These combined effects are also the result of an increase in supply, as shown in Table 13.

It is clearly a response to the increase in demand for domestic products that explains this result. It is therefore a natural reaction

guided by economic laws which would like the supply to shift where there is demand, according to the Keynesian postulate. Since this is a short-term reasoning, this increase in production, which does not necessarily imply a reduction in production costs as was the case with the indirect tax, will gradually take precedence over demand and trigger a drop in product prices. This drop in prices therefore appears to be an indirect consequence of the transfer policy.

With regard to State income, the transfer policy logically leads to a drop of around 5.12% and at the same time has a positive effect on growth which, contrary to the tax policy, increases although slightly, by 0.01%. Finally, savings in the rest of the world improved by 18.5%.

**Table 3: Estimated rate as a solution to inflation**

Inflation rate	5%	10%	12%	20%	30%	40%	50%	60%	70%
Tax reduction	2.80%	3.22%	3.53%	n / A	n / A	n / A	n / A	n / A	n / A
transfer drop	5.60%	7.00%	8.20%	n / A	n / A	n / A	n / A	n / A	n / A
Estimated tax rate	2.78%	3.22%	3.48%	4.29%	5.29%	6.30%	7.30%	8.30%	9.31%
Estimated transfer rate	5.52%	7.29%	7.99%	10.83%	14.36%	17.90%	21.44%	24.98%	28.52%

**New Applicable Indirect Tax Rate**

Table 4 presents the real rate applicable after deduction of expenditure made by the State in the fight against inflation backed by VAT, taken as an illustration. It should be specified that the new rate should apply only to the sector whose price level re-

quires it. If inflation is estimated at 5%, the VAT applied in the sector concerned will have to be reduced to 18.71% rather than 19.25%. For a price increase of 50%, the VAT rate must be reduced to 17.84%.

**Table 4: New applicable rate: case of VAT**

VAT 19.25%	Inflation rate	5%	10%	12%	20%	30%	40%	50%	60%	70%
	Decrease	2.80%	3.22%	3.53%	4.29%	5.29%	6.30%	7.30%	8.30%	9.31%
	Variation	0.54%	0.62%	0.68%	0.83%	1.02%	1.21%	1.41%	1.60%	1.79%
	New rate	18.71%	18.63%	18.57%	18.42%	18.23%	18.04%	17.84%	17.65%	17.46%

Source: Authors

**Arbitration Between the Two Policies**




After having presented the two possible solutions, an arbitration is necessary. Given the consequences that emerge, everything seems to be drawn in favor of tax policy, but there are a few indicators that militate in favor of transfer policy. Before coming back to possible comparisons, it is important to situate the real level of expenditure which commits the State in the implementation of each of these measures.

Starting from the assumption that the State revenue is essentially derived from indirect taxes, this makes it possible to make the bases of the discussions fair. On the one hand, the State wants to directly influence the production machine of firms and hence prices by providing them with a subsidy through tax relief; and on the other hand, it provides direct support to households through transfers. The rate of the indirect tax or transfers to be applied depending on the case must be assessed in addition to the possibility it offers to reverse the trend, on the basis of the total amount of public expenditure to be incurred.

Consider the tax and transfer rate corresponding to the 10% threshold. They are 3.22% and 7% respectively. The amounts of taxes and transfers sacrificed for the circumstance are respectively 13.3 million US dollars and 16.42 million US dollars (see Table 5). For an inflation of 12%, these amounts are respectively 14.56 and 19.06 million US dollars. It can be seen that the transfer policy is more expensive. It takes relatively the same amounts to curb inflation of 5% and 10% by applying the transfer and fiscal policies respectively. At 10%, a difference of US\$3.12 million emerges.

However, it is clear that via transfers, the impact is a little greater than via the tax both on well-being and on the sectors of activity, with the exception of prices where the tax policy is more effective. This is just as true when it comes to boosting economic growth. Indeed, while the tax negatively affects GDP in spite of a certain revival of the productive capacity of the branches of activity, the transfer on the other hand plays rather in favor of this one.

**Table 5: Government expenditures**

Inflation rate	5%	10%	12%
Lower tax	2.80%	3.22%	3.53%
Government Revenue Fraction	5.60%	7%	8.20%
Tax policy 	11.5	13.3	14.56
Transfer Policy 	13.3	16.42	19.06
 values are in millions of US dollars			

Source: authors

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## Sensitivity Analysis of Results

We show in this section that the results obtained are robust, that is to say that they are not sensitive to the values of the parameters, especially those which come from external sources such as the elasticity of substitution ( $\varphi_i$ ) and the elasticity of transformation ( $\rho_i$ ) used in the functions of imports and exports of goods and services. We modify the values of the elasticities of substitution and transformation. Initially the model gives these elasticities the value of 0.3. We first modify the value of  $\varphi_i$  to 0.8; secondly that of  $\rho_i$  is also modified to 0.8.

Table 8 summarizes the results obtained on well-being, which we have chosen arbitrarily for the simplification reasons. It should be noted that the trends observed in well-being are the same for all the variables displayed upstream. This table shows that an increase in the value of  $\varphi_i$  from 0.3 to 0.8 has almost no effect on welfare, whether captured by utility or equivalent variation and also regardless of the policy applied. The observation is almost the same when the two elasticities go to 0.8. Only the equivalent variation is slightly modified, the utility variation remaining unchanged. This proves the robustness of the results.

## Economic Policy Recommendations

Based on the results obtained, we make two major recommendations to the government:

- Reduce the consumption tax on basic products by applying the formula (1) to the product concerned or failing that;
- Apply the formula (2) to determine the fraction of state income needed to support households in the form of public transfers relative to the rate of inflation due to the crisis.

## Conclusion

In the era of globalization, trade openness appears as a means that allows States to create wealth. However, this openness exposes them at the same time to global shocks. This article has investigated, in the context of the Ukrainian crisis, two measures through which Cameroon could mitigate if not compensate for the inflation which tends to become a real source of social tension. We first built a CGEM which happens to be the appropriate tool for this type of analysis, if only for its recognized ability to capture the impact of a shock on the entire economy. Another strength of this model lies in the fact that it uses data from the Eora database which provides data on 190 countries in the world and therefore the study could be extended to the entire CEMAC sub-region and even to the other states. However, this model captures only the real sphere and the overall results obtained show that the implementation of a policy of public transfers of funds to households seems less effective than a reduction in the indirect tax on a good number of indicators. After simulating an increase in the local price of imported products of 5%, 10%

and 12%, we used welfare as a control instrument to determine the level of reduction to be applied to the indirect tax as well as the percentage of income that the State will be able to transfer to households either as a reduction in the direct tax or as an increase in wages.

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Appendix of tables

Table 6: Well-being

Transfer									
				Indirect tax reduction			Government income rate		
				2.80%	3.22%	3.53%	5.60%	seven%	8.20%
Basic impact									
Well-being indicator	5%	10%	12%	5%	10%	12%	5%	10%	12%
Households									
Change in Utility (UU)	-0.09	-0.14	-0.14	0.06	0.09	0.11	0.05	0.08	0.09
Equivalent variation (EV)	-27.04	-43.17	-41.44	19.03	27.86	31.92	19.68	30.85	36.30
Compensating Variation (CV)	27.06	43.23	41.50	-19.01	-27.84	-31.88	-19.67	-30.83	-36.28
Non-market institution									
Change in usefulness (UU)	-0.09	-0.13	-0.11	0.05	0.08	0.10	0.03	0.06	0.07
Equivalent variation (EV)	-0.40	-0.62	-0.55	0.26	0.41	0.48	0.14	0.27	0.33
Compensatory Variation (CV)	0.40	0.62	0.55	-0.26	-0.41	-0.48	-0.14	-0.27	-0.33

Note: UU is given as a percentage while EV and CV are in billions of US dollars

Table 7: Estimated Rates as a Solution to Inflation

Inflation rate	5%	10%	12%	20%	30%	40%	50%	60%	70%
Lower the tax rate	2.80%	3.22%	3.53%	n / A	n / A	n / A	n / A	n / A	n / A
Decrease the transfer rate	5.60%	7.00%	8.20%	n / A	n / A	n / A	n / A	n / A	n / A
Estimated tax rate	2.78%	3.22%	3.48%	4.29%	5.29%	6.30%	7.30%	8.30%	9.31%
Estimated transfer rate	5.52%	7.29%	7.99%	10.83%	14.36%	17.90%	21.44%	24.98%	28.52%

Note: Estimated rates are derived from equations

Source: Authors

Table 8: Household well-being (sensitivity analysis)

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Indicators of well-being	5%	10%	12%	5%	10%	12%	5%	10%	12%
$\phi_i = \rho_i = 0.3$									
Change in usefulness (UU)	-0.09	-0.14	-0.14	0.06	0.09	0.11	0.05	0.08	0.09
Equivalent variation (EV)	-27.04	-43.17	-41.44	19.03	27.86	31.92	19.68	30.85	36.30
Compensatory Variation (CV)	27.06	43.23	41.50	-19.01	-27.84	-31.88	-19.67	-30.83	-36.28
$\phi_i = 0.8$ and $\rho_i = 0.3$									
Change in usefulness (UU)	-0.09	-0.14	-0.14	0.06	0.09	0.10	0.05	0.08	0.09
Equivalent variation (EV)	-27.04	-43.17	-41.44	18.76	27.26	31.17	20.39	30.34	35.66
Compensatory Variation (CV)	27.06	43.23	41.50	-18.75	-27.24	-31.14	-20.39	-30.33	-35.64
$\phi_i = \rho_i = 0.8$									
Change in usefulness (UU)	-0.09	-0.14	-0.14	0.06	0.09	0.10	0.05	0.08	0.09
Equivalent variation (EV)	-27.04	-43.17	-41.44	18.76	27.26	31.17	20.30	30.20	35.49
Compensatory Variation (CV)	27.06	43.23	41.50	-18.75	-27.24	-31.14	-20.29	-30.19	-35.47

Note: UU is given in percentage while EV and CV are given in billions of US dollars

**Table 9: Household consumption**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	-0.08	-0.15	-0.18	0.31	0.38	0.42	0.07	0.11	0.13
Fishing	-2.39	-4.32	-4.68	0.12	0.17	0.20	0.09	0.15	0.17
Mines and quarries	0.21	0.39	0.47	-0.33	-0.39	-0.43	0.03	0.04	0.04
Food and Beverage	-0.21	-0.40	-0.47	0.27	0.33	0.37	0.08	0.12	0.14
Textiles and clothing	-0.38	-0.75	-0.92	0.09	0.13	0.15	0.08	0.13	0.15
Wood and Paper	1.57	3.02	3.63	-0.17	-0.23	-0.26	0.00	-0.02	-0.03
Oil. Chemistry	-0.47	-0.92	-1.09	0.15	0.18	0.21	0.06	0.09	0.11
Metal products	-0.73	-1.41	-1.70	0.26	0.45	0.53	0.22	0.42	0.50
Electricity and machinery	-0.09	-0.20	-0.27	0.06	0.10	0.11	0.07	0.12	0.14
Transport equipment	-0.12	-0.25	-0.30	0.06	0.11	0.12	0.08	0.13	0.15
Other Manufacturing	-0.25	-0.51	-0.64	0.12	0.19	0.23	0.11	0.19	0.23
Recycling	-0.03	-0.06	-0.08	2.60	4.60	5.36	2.30	4.30	5.06
Electricity, Gas and Water	-0.03	-0.10	-0.16	0.12	0.16	0.17	0.06	0.09	0.11
Construction	0.91	1.74	2.03	0.06	0.10	0.12	0.08	0.13	0.15
Maintenance and repair	-5.20	-8.03	-7.72	0.29	0.38	0.43	0.09	0.16	0.19
The wholesale trade	-1.73	-2.98	-3.28	0.22	0.29	0.33	0.09	0.14	0.17
Retail trade	0.19	0.33	0.36	0.23	0.30	0.33	0.08	0.13	0.16
Hotels and restaurants	-0.43	-0.85	-1.03	0.16	0.21	0.23	0.07	0.10	0.12
Transport	2.17	4.17	4.99	0.11	0.16	0.19	0.08	0.14	0.16
Post and telecommunications	3.02	7.31	10.42	0.09	0.13	0.15	0.07	0.12	0.14
Financial intermediation	-0.69	-1.48	-1.89	-0.04	-0.01	0.00	0.09	0.14	0.17
Public administration	-0.07	-0.10	-0.08	0.02	0.05	0.06	0.07	0.12	0.14
Education, health and other services	-0.10	-0.17	-0.19	-0.22	-0.22	-0.23	0.08	0.13	0.15

Note: Values are given in percentage

**Table 10: Household well-being (sensitivity analysis)**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Indicators of well-being	5%	10%	12%	5%	10%	12%	5%	10%	12%
Psi = 0.3									
Utility variation (UU)	-0.09	-0.14	-0.14	0.06	0.09	0.11	0.05	0.08	0.09
Equivalent variation (EV)	-27.04	-43.17	-41.44	19.03	27.86	31.92	19.68	30.85	36.30
Compensatory Variation (CV)	27.06	43.23	41.50	-19.01	-27.84	-31.88	-19.67	-30.83	-36.28
PSI = 0.8									
Utility variation (UU)	-0.09	-0.13	-0.11	0.06	0.09	0.10	0.05	0.08	0.09
Equivalent variation (EV)	-0.40	-0.62	-0.55	18.76	27.26	31.17	20.39	30.34	35.66
Compensatory Variation (CV)	0.40	0.62	0.55	-18.75	-27.24	-31.14	-20.39	-30.33	-35.64
Psi = Rho = 0.8									
Utility variation (UU)	-0.09	-0.13	-0.11	0.06	0.09	0.10	0.05	0.08	0.09
Equivalent variation (EV)	-0.40	-0.62	-0.55	18.76	27.26	31.17	20.30	30.20	35.49
Compensatory Variation (CV)	0.40	0.62	0.55	-18.75	-27.24	-31.14	-20.29	-30.19	-35.47

Note: UU is given in percentage while EV and CV are given in billions of US dollars

**Table 11: Household consumer prices**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	0.08	0.15	0.18	-0.31	-0.38	-0.42	-0.03	-0.05	-0.06
Fishing	2.45	4.52	4.91	-0.12	-0.17	-0.20	-0.05	-0.09	-0.11
Mines and quarries	-0.21	-0.39	-0.47	0.33	0.39	0.43	0.01	0.02	0.02
Food and Beverage	0.21	0.40	0.47	-0.27	-0.33	-0.37	-0.03	-0.07	-0.08
Textiles and clothing	0.38	0.76	0.93	-0.09	-0.13	-0.15	-0.04	-0.07	-0.09
Wood and Paper	-1.55	-2.93	-3.50	0.17	0.23	0.26	0.04	0.07	0.09
Oil. Chemistry	0.48	0.93	1.11	-0.15	-0.18	-0.21	-0.02	-0.04	-0.04
Metal products	0.73	1.43	1.73	-0.26	-0.45	-0.53	-0.18	-0.36	-0.44
Electricity and machinery	0.09	0.20	0.27	-0.06	-0.10	-0.11	-0.03	-0.06	-0.08
Transport equipment	0.12	0.25	0.31	-0.06	-0.11	-0.12	-0.04	-0.08	-0.09
Other Manufacturing	0.25	0.51	0.65	-0.12	-0.19	-0.23	-0.07	-0.14	-0.17
Recycling	0.03	0.06	0.08	-2.54	-4.40	-5.09	-2.21	-4.07	-4.76
Electricity, Gas and Water	0.03	0.10	0.16	-0.12	-0.16	-0.17	-0.02	-0.04	-0.05
Construction	-0.90	-1.71	-1.99	-0.06	-0.10	-0.12	-0.04	-0.07	-0.08
Maintenance and repair	5.49	8.73	8.36	-0.29	-0.38	-0.43	-0.05	-0.10	-0.12
The wholesale trade	1.76	3.07	3.39	-0.22	-0.29	-0.33	-0.04	-0.09	-0.11
Retail trade	-0.19	-0.33	-0.36	-0.23	-0.29	-0.33	-0.04	-0.08	-0.09
Hotels and restaurants	0.43	0.85	1.04	-0.16	-0.21	-0.23	-0.02	-0.05	-0.06
Transport	-2.13	-4.01	-4.75	-0.11	-0.16	-0.19	-0.04	-0.08	-0.10
Post and telecommunications	-2.93	-6.81	-9.43	-0.09	-0.13	-0.15	-0.03	-0.06	-0.07
Financial intermediation	0.69	1.50	1.93	0.04	0.01	0.00	-0.04	-0.09	-0.11
Public administration	0.07	0.10	0.08	-0.02	-0.05	-0.06	-0.03	-0.06	-0.07
Education, health and other services	0.10	0.17	0.19	0.22	0.22	0.23	-0.04	-0.08	-0.09

Note: Values are given in percentage

**Table 12: Domestic prices**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	0.11	0.20	0.23	-0.29	-0.34	-0.37	-0.01	-0.01	-0.01
Fishing	2.47	4.57	4.97	-0.07	-0.08	-0.09	0.00	0.00	0.00
Mines and quarries	-0.18	-0.34	-0.41	0.36	0.44	0.48	0.03	0.06	0.08
Food and Beverage	0.22	0.42	0.50	-0.26	-0.31	-0.35	-0.02	-0.05	-0.06
Textiles and clothing	0.39	0.78	0.95	-0.08	-0.11	-0.12	-0.02	-0.05	-0.06
Wood and Paper	-1.54	-2.91	-3.47	0.18	0.25	0.28	0.05	0.09	0.11
Oil. Chemistry	0.48	0.94	1.12	-0.14	-0.17	-0.19	-0.01	-0.02	-0.03
Metal products	0.78	1.53	1.84	-0.20	-0.34	-0.40	-0.13	-0.25	-0.30
Electricity and machinery	0.10	0.23	0.30	-0.05	-0.07	-0.08	-0.02	-0.04	-0.04
Transport equipment	0.14	0.27	0.33	-0.05	-0.08	-0.10	-0.03	-0.05	-0.06
Other Manufacturing	0.27	0.56	0.70	-0.09	-0.15	-0.17	-0.04	-0.09	-0.11
Recycling	0.07	0.15	0.19	-2.47	-4.27	-4.94	-2.14	-3.95	-4.61

Electricity, Gas and Water	0.04	0.13	0.19	-0.11	-0.13	-0.14	-0.01	-0.02	-0.02
Construction	-0.88	-1.67	-1.95	-0.04	-0.07	-0.08	-0.02	-0.04	-0.05
Maintenance and repair	5.48	8.74	8.39	-0.25	-0.30	-0.34	-0.01	-0.03	-0.03
The wholesale trade	1.78	3.12	3.44	-0.19	-0.23	-0.25	-0.01	-0.03	-0.03
Retail trade	-0.16	-0.27	-0.29	-0.20	-0.23	-0.26	-0.01	-0.02	-0.02
Hotels and restaurants	0.45	0.88	1.07	-0.15	-0.18	-0.20	-0.01	-0.02	-0.02
Transport	-2.10	-3.95	-4.68	-0.09	-0.12	-0.14	-0.02	-0.04	-0.05
Post and telecommunications	-2.91	-6.75	-9.36	-0.07	-0.10	-0.11	-0.01	-0.02	-0.03
Financial intermediation	0.71	1.54	1.98	0.06	0.05	0.05	-0.02	-0.04	-0.05
Public administration	0.08	0.12	0.11	-0.01	-0.03	-0.04	-0.02	-0.04	-0.05
Education, health and other services	0.11	0.20	0.22	0.24	0.25	0.27	-0.02	-0.05	-0.06

Note: Values are given in percentage

**Table 13: Composite Demand**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	-0.18	-0.33	-0.39	-0.20	-0.34	-0.40	0.03	-0.05	-0.07
Fishing	-2.50	-4.55	-4.97	1.21	0.09	-0.29	1.23	0.32	0.07
Mines and quarries	-2.43	-4.62	-5.44	3.09	2.72	2.69	0.65	-0.12	-0.44
Food and Beverage	-0.85	-1.64	-1.93	-0.56	-1.22	-1.47	-0.62	-1.28	-1.53
Textiles and clothing	-1.50	-2.86	-3.35	-0.87	-2.19	-2.68	-0.83	-2.07	-2.50
Wood and Paper	-3.35	-6.23	-7.32	-0.79	-1.70	-2.04	-0.94	-1.87	-2.22
Oil, Chemistry	-0.88	-1.68	-1.97	-0.88	-1.66	-1.96	-0.86	-1.64	-1.93
Metal products	-0.83	-1.58	-1.84	-1.08	-2.34	-2.79	-1.07	-2.20	-2.57
Electricity and machinery	-1.53	-2.92	-3.43	-1.84	-3.53	-4.13	-1.78	-3.32	-3.83
Transport equipment	-1.59	-3.03	-3.56	-1.82	-3.51	-4.12	-1.75	-3.33	-3.88
Other Manufacturing	-1.66	-3.16	-3.70	-1.54	-3.22	-3.83	-1.48	-3.05	-3.60
Recycling	-1.28	-2.44	-2.83	1.06	0.79	0.72	0.91	0.79	0.80
Electricity, Gas and Water	-0.39	-0.76	-0.91	-0.12	-0.35	-0.43	-0.19	-0.43	-0.52
Construction	-0.79	-1.49	-1.75	-1.88	-3.56	-4.14	-1.82	-3.27	-3.71
Maintenance and repair	-3.63	-5.93	-6.10	0.10	-1.12	-1.55	0.04	-1.04	-1.38
The wholesale trade	-1.50	-2.70	-3.07	-0.71	-1.44	-1.70	-0.74	-1.41	-1.63
Retail trade	-0.03	-0.07	-0.11	0.02	-0.15	-0.20	-0.10	-0.26	-0.30
Hotels and restaurants	-0.55	-1.08	-1.29	-0.10	-0.29	-0.37	-0.14	-0.36	-0.44
Transport	-1.21	-2.26	-2.64	-0.34	-0.84	-1.04	-0.43	-0.98	-1.20
Post and telecommunications	0.53	1.58	2.53	-0.62	-1.13	-1.32	-0.58	-1.06	-1.23
Financial intermediation	-0.43	-0.83	-0.98	-0.40	-0.61	-0.71	-0.37	-0.61	-0.72
Public administration	-1.36	-2.65	-3.15	-4.11	-5.80	-6.59	-3.79	-5.88	-6.89
Education, health and other services	-0.55	-1.07	-1.27	-1.87	-2.50	-2.82	-1.52	-2.32	-2.74

Note: Values are in percentage

**Table 14: Production**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	-0.03	-0.06	-0.07	-0.37	-0.50	-0.56	0.09	0.05	0.05
Fishing	-2.17	-3.95	-4.28	1.40	0.44	0.13	1.42	0.68	0.49
Mines and quarries	-0.28	-0.53	-0.64	5.81	7.81	8.70	3.04	4.50	5.04
Food and Beverage	0.21	0.40	0.47	0.52	0.86	0.99	0.45	0.78	0.91
Textiles and clothing	0.25	0.50	0.62	0.98	1.35	1.51	1.01	1.47	1.68
Wood and Paper	-2.44	-4.51	-5.34	0.93	1.58	1.84	0.72	1.34	1.57
Oil. Chemistry	0.39	0.77	0.93	0.52	1.01	1.19	0.51	1.00	1.20
Metal products	0.56	1.12	1.36	0.43	0.56	0.64	0.44	0.70	0.86
Electricity and machinery	0.00	0.01	0.02	-0.27	-0.53	-0.60	-0.22	-0.33	-0.30
Transport equipment	0.11	0.23	0.28	-0.07	-0.15	-0.17	0.00	0.02	0.07
Other Manufacturing	0.10	0.21	0.27	0.29	0.27	0.29	0.34	0.43	0.52
Recycling	-0.09	-0.15	-0.12	2.44	3.42	3.82	2.27	3.40	3.89
Electricity. Gas and Water	-0.03	-0.08	-0.10	0.25	0.36	0.40	0.17	0.27	0.31
Construction	-0.19	-0.35	-0.40	-1.35	-2.57	-2.96	-1.29	-2.27	-2.53
Maintenance and repair	-2.34	-3.60	-3.47	0.99	0.59	0.48	0.95	0.70	0.67
The wholesale trade	-0.96	-1.65	-1.82	-0.11	-0.29	-0.34	-0.15	-0.27	-0.28
Retail trade	0.08	0.13	0.13	0.13	0.06	0.04	0.01	-0.04	-0.05
Hotels and restaurants	-0.17	-0.34	-0.41	0.25	0.39	0.44	0.21	0.33	0.37
Transport	-0.01	0.03	0.05	0.89	1.54	1.78	0.80	1.41	1.62
Post and telecommunications	0.83	2.13	3.15	-0.27	-0.46	-0.52	-0.23	-0.38	-0.44
Financial intermediation	-0.12	-0.25	-0.30	-0.05	0.07	0.11	-0.01	0.08	0.10
Public administration	0.01	-0.01	-0.03	-2.75	-3.21	-3.54	-2.42	-3.29	-3.85
Education. health and other services	0.03	0.04	0.04	-1.32	-1.41	-1.53	-0.94	-1.21	-1.43

Note: Values are in percentage

**Table 15: producer price of products**

Base impact				Decrease in indirect tax			Percentage of total income		
				2.80%	3.22%	3.53%	5.60%	7%	8.20%
Sectors	5%	10%	12%	5%	10%	12%	5%	10%	12%
Agriculture	0.04	0.08	0.10	-0.03	-0.03	-0.04	0.00	0.00	-0.01
Fishing	2.29	4.24	4.62	0.00	0.00	-0.01	0.00	0.00	0.00
Mines and quarries	-0.02	-0.04	-0.05	0.15	0.17	0.19	0.00	0.01	0.01
Food and Beverage	0.19	0.37	0.44	-0.17	-0.21	-0.24	-0.02	-0.04	-0.05
Textiles and clothing	0.34	0.68	0.83	-0.05	-0.08	-0.09	-0.02	-0.04	-0.05
Wood and Paper	-0.70	-1.33	-1.59	0.10	0.13	0.15	0.02	0.04	0.05
Oil. Chemistry	0.45	0.89	1.06	-0.09	-0.12	-0.13	-0.01	-0.02	-0.03
Metal products	0.68	1.34	1.61	-0.16	-0.28	-0.33	-0.11	-0.22	-0.27
Electricity and machinery	0.10	0.22	0.29	-0.03	-0.05	-0.06	-0.02	-0.04	-0.04
Transport equipment	0.13	0.26	0.32	-0.04	-0.07	-0.08	-0.03	-0.05	-0.06
Other Manufacturing	0.24	0.49	0.61	-0.07	-0.11	-0.13	-0.04	-0.08	-0.09
Recycling	0.06	0.13	0.16	-2.16	-3.74	-4.33	-1.88	-3.47	-4.05

Electricity, Gas and Water	0.04	0.13	0.19	-0.05	-0.06	-0.07	-0.01	-0.02	-0.02
Construction	-0.87	-1.64	-1.91	-0.03	-0.05	-0.06	-0.02	-0.04	-0.05
Maintenance and repair	4.44	7.05	6.77	-0.07	-0.09	-0.10	-0.01	-0.02	-0.03
The wholesale trade	1.67	2.91	3.22	-0.06	-0.08	-0.09	-0.01	-0.02	-0.03
Retail trade	-0.15	-0.26	-0.28	-0.06	-0.07	-0.08	-0.01	-0.02	-0.02
Hotels and restaurants	0.40	0.80	0.97	-0.05	-0.07	-0.08	-0.01	-0.02	-0.02
Transport	-1.73	-3.26	-3.86	-0.05	-0.07	-0.08	-0.02	-0.03	-0.04
Post and telecommunications	-2.72	-6.34	-8.80	-0.04	-0.05	-0.06	-0.01	-0.02	-0.03
Financial intermediation	0.71	1.53	1.97	0.02	0.00	0.00	-0.02	-0.04	-0.05
Public administration	0.08	0.12	0.11	-0.01	-0.03	-0.04	-0.02	-0.04	-0.04
Education, health and other services	0.11	0.19	0.22	0.14	0.14	0.14	-0.02	-0.05	-0.06

Note: Values are given in percentage

**Table 16: Other variables**

<b>Base impact</b>				<b>2.80%</b>	<b>3.22%</b>	<b>3.53%</b>	<b>5.60%</b>	<b>7%</b>	<b>8.20%</b>
<b>Indicator</b>	<b>5%</b>	<b>10%</b>	<b>12%</b>	<b>5%</b>	<b>10%</b>	<b>12%</b>	<b>5%</b>	<b>10%</b>	<b>12%</b>
GDP	0.00	0.00	-0.01	-0.03	-0.04	-0.04	0.01	0.01	0.01
Saving rdm	4.70	9.00	10.63	12.30	19.30	21.99	11.58	18.50	21.15
Savings	-0.18	-0.45	-0.62	-4.09	-4.82	-5.33	-3.69	-5.12	-6.04
Gvtal income	-0.18	-0.45	-0.62	-4.09	-4.82	-5.33	-3.69	-5.12	-6.04
Household income	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.06

Note: Values are in percentage

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