THE DISTRIBUTIVE IMPACT OF FISCAL POLICY IN CAMEROON:

TAX AND BENEFIT INCIDENCE

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ABSTRACT

Addressing inequalities in the distribution of income in order to improve the welfare of the poor is of paramount importance amongst most governments’ plans. Fiscal policy as a tool of economic management has gained renewed interest in the wake of the pervasive and widespread poverty affecting the people coupled with wide income disparity. Conceptualising and measuring how the revenue and expenditure sides of the government budgets could alleviate poverty by reducing income disparity among households remain the centre of preoccupation in the domain of fiscal incidence. This study proposes to examine how the tax and expenditure sides of the budget could help fight against poverty, which has recently received much attention in Cameroon. The problem shall be addressed using a “welfare dominance” approach.

1. INTRODUCTION

Cameroon and other African countries over the past three decades achieved remarkable gains in living standards, as reflected in social indicators and income. The economy experienced a steady growth from the 1960s to the mid 80s. The nominal GDP grew at an average rate of 18.2%, rising from CFAF 300.4 billion in 1970 to CFAF 4135.1 billion in 1986. However, commencing from 1987 there was severe economic crisis resulting to a sharp decline in the per capita income. This economic decline took its toll on the social sectors manifested by food consumption inequalities (normally caused by income inequality where a family’s income is insufficient to achieve a certain though low standard of living) and structural poverty.

Cameroon’s poverty study as indicated by DSCN (1997, 2002) based on the 1996 and 2001 household surveys reveals that poverty affected an estimated 50.5% and 40.2% of Cameroonians respectively. Overall, the incidence of poverty
felt by about 13.1% while its depth reduced only by 5% with the greatest reduction occurring in the urban area (PRSP, 2003). Inequality in the distribution of income also remained high (negligibly moving) from 0.44 in 1996 to 0.41 in 2001 (DSCN 2002). Despite several measures undertaken within the auspices of the structural adjustment programme initiated in the 1987/88 Budget, more effort is needed to further reduce poverty and inequality.

Recently, poverty alleviation has received much attention in Cameroon especially at the time when the government is required to finalise its poverty reduction strategy programme at the Work Bank as a step towards being admitted to the heavily indebted poor countries initiative. Thus, several measures have been defined and are being undertaken to fight poverty and include: diversifying and reinforcing ongoing actions in priority sectors such as education, health and infrastructure; initiate policies that raise the purchasing power of the population especially as the domestic indirect taxation experienced some modification. It is therefore important to cross-check whether the services of public education and health as well as the entire taxation system are beneficial to the poor.

As concerns public expenditure, we are limited to health and education. For other components such as defence, public order, judiciary etc, it is impossible to identify their beneficiaries. Secondly, the social insurance or transfer payments schemes that account for much of the government’s redistributive policies in rich economies are non existence in Cameroon just like other African countries.

2. **RESEARCH PROBLEM AND OBJECTIVES**

Following the above discussion, it is clear that poverty is widespread in Cameroon and government’s effort to redress the situation is centred on the recommendations of the World Bank. For instance, an important novelty in the post–1999 approach to poverty alleviation is the preparation of the PRSPs by recipient countries as a prerequisite for reduction of the debt and for concessionary loans and grants. The new framework on poverty reduction contains macro economic and structural policy elements and also covers policy areas such as
health and education that are expected to have a direct bearing on poverty. Thus, the role of the budget is particularly important in poverty reduction strategies supported by the Bretton Woods institutions (UNCTAD, 2002).

In spite of this policy makers and even policy executors are facing the problem of making and executing policies which effectively target the poor groups. The answers to questions such as who benefits from public spending in education and health and who finances most of these spending are indispensable inputs to effective policies and pro-poor programmes. The present information gaps are likely to peter away any efforts at poverty alleviation. Further, it should be recognised that poverty alleviation could be targeted by addressing inequality in the distribution of wealth. Poverty poorly responds to growth in situation of high initial inequality (see Ali, 1998, Killick, 1998; Ravallion, 1997). A major priority therefore for policy makers is to have an insight into how best domestic budget revenue should be mobilized in ways which minimized the tax burden on the poor, and maximize equity among income groups.

Atemnkeng (2003) avert that the expenditure tax system could be a useful tool to promote equity in Cameroon. The study did not consider the direct tax system nor the expenditure side of the budget. The current analysis finds a complete fiscal incidence study to be more important. In an ideal world the distributional effects of public expenditures should not be analysed in isolation with the taxes used to finance those expenditures. A tax system may be highly regressive, so that raising taxes in order to finance increased public spending on education and health may lead to regressive changes in the overall distribution of income.

The main objective of this study therefore is to examine the welfare impact of fiscal policy on the distribution of welfare in Cameroon. Specifically, this involves:

a) Checking the progressivity of direct and indirect taxes
b) Assessing the extent to which public spending on education and health care constitute a targeted means for poverty reduction.
c) Assess the extent to which a policy change involving increase spending could distribute benefits among the population.

d) Propose policy measures for poverty alleviation.

3. A CRITICAL OVERVIEW OF FISCAL INCIDENCE

3.1 Tax Incidence

There is a considerable list of studies in the literature of tax incidence analyses with empirical estimates extending far back for over half a century. Tax incidence is the analysis of who ultimately bears the burden of government taxes in the economy. A tax normally transfers real purchasing power from households to the government. Generally, there can be large differences between who the law says is obligated to pay taxes and who ultimately in the economy bears the burdens of taxes or whose real purchasing power falls in the course of government imposition. Thus, tax incidence studies determine economic rather than statutory incidence (also called legal or normal incidence) which refers to those tax payers that are by law required to pay the tax. For this reason tax incidence studies often adopt a number of assumptions which permit the shifting process of tax burdens from the legal payer to the person whose real purchasing power is finally affected. In this paper, we present a review of the incidence results obtained in some recent studies and provide a summary of the general trends in their findings.

Four recent studies that describe the extent to which the tax system succeeds in transferring resources to the poor in African countries are: Uganda (Chen et al., 2001), Madagascar (Younger et al., 1999), Ghana (Younger 1996). Sahn and Younger (1998) carried out some analysis in seven African countries including South Africa, Tanzania, Cote d’Ivoire, Guinea and the other countries mentioned above. In a more recent case in Cameroon, preliminary results indicate quite similar results (Atemnkeng and Azia, 2003) to those above. The tax system of the countries are found to be progressive or mildly progressive except taxes on kerosene and export duties which are regressive. However, in Cameroon the
progressivity of consumption taxes which were the centre of preoccupation in the study was reinforced following the tax and custom reforms in 1994.

Other studies on tax incidence recently undertaken in Latin America also produce the same over all conclusion of progressivity or mild progressivity of the tax systems, as in the case of Guatemala (Bahl et al., 1996) and Mexico (Martinez-Vazquez, 2001). Several others reviewed in Shah and Whalley, also find a broadly progressive overall incidence pattern with an exception of Wasylenko (1986) who found an inverted U-shape incidence pattern (where income is redistributed from the middle income groups to the poor and the rich) in Jamaica.

In developed countries especially between the 1950s and 80s, Atkinson and Stiglitz (1980) review results of similar studies with the incidence of taxation being roughly proportional over a wide range of incomes. In OECD countries, Messere (1997) recently find generally proportional or mildly progressive patterns where governments had always taken steps to maintain proportionality or mild progressivity of the entire tax system. However, as reported in Bird and De Wulf (1973), the findings on overall progressive tax incidence over the last two decades contrast with those found in earlier studies. Of the 24 tax incidence studies these authors reviewed for Latin America, only four were to have found some degree of progressivity in the tax systems. Thus, it may be that the move toward progressivity in more recent times has been due to changes in tax policies or reforms (Atemnkeng and Azia, 2003). But assumption and measurement differences in tax incidence could occur depending on the environment as well as particular institutional issues which may alter the results obtained in other studies. This paper intends to adopt the proposition raised in this direction by Shah and Whalley (1991.)

3.2 Expenditure Incidence

Two general approaches have been widely used in the estimation of public expenditure incidence1. The first methodology and the one most frequently used is

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1 See Van de Walle (1998) and Demery (2000) for two excellent and complete reviews of the issues.
known as the “benefit incidence” approach. In essence, this approach uses the estimated inputs or costs, e.g. the cost incurred by the government of an individual attending school or visiting the clinic (see for example, Selden and Wasylenko 1992; Meerman 1979; Selowsky 1979; Demery, Dayton and Mehra, 1996, Castro-Leal et al., 1987; Demery 2000).

In the preceding approach, individual user of public facilities are ranked according to a welfare measure and into groups with their corresponding computed subsidies. The subsidy or unit cost implied by the provision of the specified service is obtained from data on public expenditure accounts whereas information on use of public services comes from household survey. However, the cost measures may not be a good enough approximation of true benefits. Further, unit costs may reflect inefficiencies in public service provision and may not capture possible differences in the quality of services in rich urban areas and in poor rural areas nor take into consideration long-term benefits (for example, basic education or immunization services).

Sahn and Younger (1998) recently made use of a simple approach by using a binary indicator of whether or not an individual accesses a service. Implicit in the method is that those who use a service or participate in a program receive the same benefits. This approach introduces a systematic bias in the results, in that it is likely that the poor attend lower quality schools and receive lower quality health care, in part because the services they have access to are not financed as well.

Standard benefit incidence therefore uses group average to estimate the distribution of benefits. Despite its popularity, recent research has pointed out many other limitations (Van de Walle 1998; Lanjouw and Ravallion 1999). Among the most common criticisms of standard benefit incidence is that the measure does not yield the distributional consequences of a marginal policy change that distributes benefits to existing users in proportion to their benefit.

The studies reviewed above have focused on four categories of government expenditure programs or sectors, education, health, water/sanitation, and other infrastructures. The incidence of public education expenditures generally varies
with the level of education services. Primary and perhaps secondary education tend
to be pro-poor and higher education / university typically benefit the rich much
more\(^2\). The incidence of health expenditures tends to be flatter although primary
care tends to be more pro-poor and more sophisticated types of health care more
pro-rich\(^3\). For electricity, water and sanitation or sewerage, the distribution of
benefits was highly unequal with almost all the beneficiaries in urban areas or
where demand was highly concentrated since services were offered at fees that
covered total costs.

In response to the above observation, several recent studies including
Lanjouw and Ravallion (1999) as reviewed in Younger (2003) have proposed
alternative methodology used in benefit incidence is known as the “behavioural”
approach. This method further allows the estimation of incidence for public
spendings for which specific users cannot be identified and incorporates individual
behavioural responses thereby providing concrete guidance for policy reform.
Another advantage that this method provides is the possibility to estimate,
econometrically, compensating and equivalent variations or the willingness to pay
for price and other policy change. A well established literature in transport and
environmental economics does this for goods and services where demand is
discrete (Small and Rosen 1981) and Paul Gertler and his associates have applied
these techniques to the demand for health and education in developing countries
(Gertler at al., 1987, Gertler and Glewe 1990). The later found that rural
households were willing to pay fees high enough to more than cover the operating
costs of opening new secondary schools in there villages. In Cameroon Litvack
and Bodart (1993) indicate that user fees and qualify policy led to increased
utilization of health facilities, as the travel and time costs involved in seeking
travel and time costs involved in seeking alternative sources became too high.

The problems with this approach is that it is more data intensive and
complex, information or data requirements such as fees and other private expenses

\(^2\) See Van de Walle and Nead (1995) for a review of 13 countries generally supporting this conclusion.
\(^3\) See Sahn and Younger (1998)
incurred by the beneficiaries, are high and may seldom be met in reality, willingness to pay for services as expressed by the head of the household may have little to do with the private benefits children receive from education or health care and it also suffers a series of econometric problems in the case where the non exogeneity of policy measures renders the coefficients of the model biased etc.

Following the fact that both ‘benefit incidence’ and the behavioural approach have several difficulties, several recent studies among which are Hammer, Nabi and Cercone (1995), Ravallion et al (1995), and Younger (1999) have tried to combine both approaches to build on their respective strengths. As van de Walle (1998) points out, one way to proceed is to use the behavioural approach to measure benefits net of behavioural responses. Since the regression analysis in the behavioural approach only predicts mean outcomes, the benefits approach can be used in a second step to determine incidence on a more disaggregated level and to quantify changes in the distribution of income.

This directive is followed in Younger (1999, 2003). He first employs the behavioural approach to estimate demand curves for public services and he uses the compensating variation rather than the unit costs of provision to determine the individuals’ value of the services. Finally, Younger uses these estimates of individual benefits to evaluate the progressivity of government expenditures as is done in conventional benefit incidence analysis. Another interesting application of benefit and behavioural approaches is provided in Ravallion et al. (1995). The study seeks to distinguish between the extent of “protection” against poverty, as done in conventional benefit incidence, and “promotion” out of poverty, which looks at the behavioural responses of the recipients of social welfare payments.

3.3 **Possible Literature and Scientific contribution**

One of the criticisms of benefit incidence is that inefficiency and misallocation of funds can lead to public expenditures for in excess of what

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4 The compensating variation is how much income we would need to give a household to be as well off if the public service were not provided.
actually goes to the intended beneficiaries. In tax incidence, tax evasion, aggravated by tax compliance may disrupt the equivalence hypothesis between tax burden and actual revenue collected by the government. Such practices are common in corrupt societies that impede good governance. Theory points to the fact that ethnic fragmentation, corruption coupled with tax compliance largely results in under provision of public goods (Kimenyi, 2003). We intend to include this factor (Corruption which characterises the Cameroonian society in the behavioural model to assess its effect on budgetary policy.

4. **METHOD OF ANALYSIS**

In order to examine the welfare impact of fiscal policy, we shall use household expenditures (per capita) as a proxy for permanent income. The raison d’être is that households tend to report their expenditures more accurately than they report their incomes. They are more inclined to hide incomes than expenditure (from the enumerator and from family members). Likewise, it enables us to easily compare the progressivity of taxes and public expenditures using a common money-metric of utility, and as a welfare indicator, households could be ranked and inequality level measured. Further, the benefits of public spending are to be valued using the monetary welfare metric consistent with the behavioural responses to the public spending. The monetary measures commonly used in this case are compensating and equivalent variations and the willingness to pay. Thus, the determinants of participation in public health services and attendance of public schools would be identified using a quantal response model.

4.1 **Data Base**

This study will be based on data from the Cameroon’s Household survey (ECAM2) of 2001 and on National accounts data all compiled by the Department of Statistics and National Accounts. Published documents and data base in CD Rom shall be used. The ECAM2 covers 11500 households and draws inspiration from the last two households surveys which did not provide adequate information
deemed necessary for poverty reduction (DSCN 2002). Information exist on household characteristics, income and expenditure sources of households and on their use of public goods such as education and health. On the expenditure items, the survey contains information on monetary and non-monetary expenditures on essential needs categorised under the following headings: foodstuff, drinks and tobacco; clothing and footwear; housing, water, electricity and other fuels; health and personal care; transport and communications; education, leisure spectacles and cultures.

4.2 Models of Tax Incidence

The basic methodology behind conventional models of tax incidence is to allocate tax burdens to different income groups, ordered from rich to poor by deciles or quintiles of the population, based on a series of assumptions about who bears the final burden of taxes. To arrive at an estimate of the incidence for the entire tax system, effective calculation of average tax rates by level of expenditure or income is done separately for each income group.

For indirect taxes the general assumption underlying the estimates is that consumers bear the entire burden according to the share of consumption of the taxed goods and services. To estimate the tax base for Cameroon, the following assumptions as provided in the general tax code are made.

- Value added tax (VAT) is levied on the c.i.f value of imports plus import duties paid
- Import duties and tariffs are levied on the c.i.f value of imports
- Commodity specific exercises on (alcoholic beverages, cigarettes, cosmetics and jewelleries) are levied on the c.i.f value plus import duty for imported products

Other indirect taxes include special tax on petroleum products such as gasoline and petrol, and tax on transport. Tax on the non-expenditure item of exports is determined by applying the duty rate to each household’s sales of the said export.
On the other hand, income categories are reported on an after-tax basis in the household survey data. In order to estimate direct tax burden it is necessary to estimate income on a pre-tax basis. This requires performing several calculations by developing a tax calculator or liability based on the 2001 tax income parameters and information in the tax code. The various direct taxes will include personal income tax, tax on rents, interest and business profits and the assumption characterising these taxes is that those concerned pay such taxes without any transfer of incidence.

4.3 Estimating the value of public Spending

Fiscal resources are spent to provide public goods, such as education and health. In order to examine whether such services target the poor in the redistribution, two approaches (benefit/behaviour) are combined to quantify the incidence on households in Cameroon. Standard benefit incidence will be used to determine the average rate of participation in health services or attendance in schools. The behaviour approach shall determine the marginal benefit incidence whose impact can be captured by compensating variations.

4.3.1 Standard Benefit Incidence

The binary approach of Shan and Younger (2000) shall be used. Users of public services are counted and given the benefit of one, while non-users get zero. Once this is done according to group sample based on per capita expenditure or per adult equivalent, divide each individual’s or household’s benefits by the total to get his or her share of benefit. The shares across each population sub-group (usually welfare quantiles) are summed up to obtain the group averages that represent the distribution of benefits.

4.3.2 Econometric estimates of compensating variations

Rather than use the standard benefit incidence method as an approximation for the compensating variation for a price change, it is possible to estimate,
econometrically, compensating variations for price and other policy changes (See Small and Rosen 1981; Gertler et al; 1987, 1990)

The model operates by assuming that each household has a utility function that depends on its consumption and its choice for the quality of health care or schooling given as:

\[ V_j = f[y - p_j; Q(X_j, Z)] + e_j \]

Where \( j \) indexes the choice (visit to hospital or school or no visit/no school), \( y \) is household permanent income proxied by household expenditures, \( p_j \) is the price of choice \( j \) including all opportunity costs of time, and \( Q \) is a function that measures quality, which depends on choice-specific characteristics \( Z \). Households choose the option \( j \) that yields the highest utility. Although \( V_j \) is greater than all other \( V_i \), if a household chooses option \( j \), \( V_j \) is greater than all other \( V_i \). The model estimates the probability that this is the case using only the observed choice, and takes the probability of choosing option \( j \) as an expected demand for that option. The computation of the compensating variation from the model is adapted from Small and Rosen (1981). This requires the use of a nested multinomial logit model.

### 4.4 Statistical Testing

There is uncertainty about certain aspects of inequality comparisons across different kind of taxes and subsidies or transfers. The interest is to rank the progressivity of benefits of education, health and different types of taxation. Secondly, the distribution of expenditures and taxes must be assessed against two benchmarks: whether they are progressive, i.e., inequality reducing relative to our welfare benchmark, and whether they are per capita progressive implying that those at the lower (upper) end of the income distribution receive (pay) at least an equal level of benefits (taxes) as upper (lower) income individuals.

One of the most widely used methods in doing so is known as “Welfare dominance”. The methodology, developed by Yitzhaki and Slemrod (1991) uses concentration curves. These are curves similar to Lorenz curves with households ranked from poorest to wealthiest on the horizontal axis and the cumulative
percentages of taxes (benefits) paid (received) on the vertical axis. The second method uses cardinal measures in the form of a more general index of inequality such as the Atkinson index. This index is preferable to the Gini coefficient that is based on a social welfare function that also favours progressivity but is restricted to a set of particular weights. Thus, with the Atkinson indices and their respective standard errors computed, statistical tests on the value of inequality indices and the impact of taxes and spending on such indices are performed and known.

5. DISSEMINATION AND USE OF RESULTS

Cameroon’s poverty situation remains alarming even though slight decline has been recorded. As indicated in DSCN (1997) based on the 1996 household survey, poverty affects an estimated 50.5% of Cameroonians, with the rural poor making up about 86.5% of those considered as poor. However, the recent 2001 survey reveals that 40.2% of the population are poor. It is worth noting that equalizing policies could help reduce the severity of poverty through a reduction in income disparity among households. Cameroon is to benefit from the heavily indebted poor countries initiative funds, which shall be used to fight against poverty. This fight consist of the provision of basic social services such as education, health and other infrastructures. Finally, to improve on the living standards through increase in the purchasing power of the population is another aspect of government’s effort. Therefore there is need to evaluate the efficiency of fiscal policy as a tool that can help reduce inequality and poverty.

At the end of the study, we seek to use all respectable information channels to communicate the findings, which is expected to have a constructive influence on economic policies. Of equal importance, the fact that Cameroon is progressing towards its final phase for admission into the World Bank Poverty reduction strategy programme, this study would complement, update and give more input into the formulation of general macro-economic policy, management and discussion. Noting that poverty is so pervasive in sub-Saharan Africa, our study would therefore be very useful for more informed decision making process and for
comparative studies. We therefore, hope to present and discuss our findings with policy makers, research groups and other stakeholders at different stages of the study. Lastly, reports, papers, policy briefs and journal articles should hopefully be produced from the study which would supplement the poverty reduction strategy paper produced by the Ministry of Finance.

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