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Technical paper

Feasibility of tax-benefit microsimulation in Ghana

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Abstract: This paper studies the feasibility of building a tax-benefit microsimulation model for Ghana. The main Ghanaian tax and benefit policies are reviewed, followed by a discussion of data requirements. We conclude that the Ghana Living Standards Survey, wave 6 (GLSS6), forms a fairly promising basis for tax-benefit microsimulation. Ghana has a need not only for modelling, but also building a more comprehensive tax and benefit system.

Keywords: taxation, social protection, microsimulation
JEL classification: H20, H23

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1 Introduction

Ghana has been one of the rapidly growing economies in sub-Saharan Africa (SSA), with growth rate reaching 15 per cent in 2011. Recent years have seen some macroeconomic turmoil, with growth declining to 4.4 per cent in 2014. According to the World Bank[1], Ghana attained the lower middle-income status in 2011, and growth is projected to remain strong over the medium-term future. This is a continuation of steady growth at an average annual rate of 4.2 per cent between 1991 and 2002 and 6.3 per cent between 2003–10.

The rapid growth has also been reflected in success in poverty reduction. The official headcount poverty rate has dropped from 52 per cent in 1991–92 to 29 per cent in 2005–6. Since then, the pace of poverty reduction has declined somewhat, and in 2011–12 the headcount rate stood at 24 per cent (McKay et al. 2016, forthcoming). However, inequality has risen over the same period, as a result of which poverty reduction has not been as fast as it would have been without increased inequality.

In this paper, we evaluate the feasibility of building a tax-benefit microsimulation model for Ghana. The model would be built on the EUROMOD platform; for further information about the EUROMOD model, see Sutherland and Figari (2013). To assess the feasibility, one needs to review the tax and benefit policies of the country in question, discuss possible data sources and, most importantly, assess how well the dataset and the policies correspond: which policies can be simulated in a credible way and which policies need to be left out as there is not sufficient data for the simulation.

This paper aims to achieve these goals. We first present some basic facts about the institutions covering the fiscal policies in the country in Section 2. Details of the tax and benefit systems are described in Sections 3 and 4. Section 5 introduces the data that could be used, and Section 6 contains the assessment of policies that can be simulated. Section 7 discusses briefly the long-term use and potential partners.

2 Information about basic institutions

The internal revenue Act of 2000 (Act 592) regulates taxation in Ghana. There is no distinction in tax regulations on the basis of region or municipality although rules may be different by resident or non-resident status. Moreover Ghana is not a federation so the national taxes and levies apply in all ten regions of the country. Taxes consist of the income taxes administered by the Internal Revenue Service (IRS), customs and excise duties administered by the Customs, Excise and Preventive Service (CEPS), and the sales and service taxes administered by the Value-Added Tax Service (VATS).

The (fiscal year) year of assessment for a person is the calendar year from 1st January to 31st December. However, in the case of a company or a body of persons, it is the accounting year of the company or body. For example all companies have to file returns four months after their accounting year.

The compulsory retirement age of a public officer per the pensions act is 60 years.

[1] http://data.worldbank.org/country/ghana

Regarding income splitting in taxation, when a person attempts to split income with another person, the tax authority (the Commissioner) may adjust the chargeable income of both persons to prevent a reduction in the tax payable as a result of the splitting of income.[2]

A person is treated as having attempted to split income where that person transfers income, directly or indirectly, to an associate, or

1. That person transfers property, including money, directly or indirectly, to an associate with the result that the associate receives or enjoys the income from that property, and the reason or one of the reasons for the transfer is to lower the total tax payable on the income of that person and the associate.
2. In determining whether a person is seeking to split income, the Commissioner shall consider the value given by the associate for the transfer.
3. A transfer of income or property indirectly from a person to an associate of that person includes a transfer made through the interposition of one or more entities

The assessable income of each individual is determined separately.

1. The assessable income of an individual for a year of assessment shall be reduced by the following amounts:

    a. In the case of an individual with a dependent spouse or at least two dependent children, 35 currency points;
    b. In the case of a disabled individual, 25 per cent of that individual's assessable income from a business or an employment;
    c. In the case of an individual who is 60 or more years of age and derives an assessable income during the year from an employment or business, the lesser of 35 currency points or the total of that income;
    d. In the case of an individual sponsoring the education of the individual's children or wards in a recognized registered educational institution in the Republic, 30 currency points per child or ward, but that individual may only claim a relief in respect of three children or wards and, where two or more persons qualify in respect of the same child or ward, only one relief shall be granted;
    e. In the case of an individual with a dependant relative, other than a child or spouse, who is 60 or more years of age, 25 currency points—equivalent to Ghanaian Cedis (GH¢)—but that individual may only claim a relief in respect of two dependant relatives and, where two or more persons qualify in respect of the same relative, only one relief shall be granted; and
    f. In the case of an individual, the cost of training if it is to update the professional, technical or vocational skills or knowledge of that individual, 100 currency points.

2. For the purpose of this section, 'dependant child, spouse, or relative' in respect of an individual, means a child, spouse, or relative of the individual for whom that individual provides the necessaries of life and who does not have income for the year of assessment exceeding twenty currency points.

Various income sources are taxed differently. Capital gains tax is payable by a person at the rate of 5 per cent of capital gains accruing to or derived by that person from the realization of a

[2] Unfortunately such splits cannot be identified in the data.

chargeable asset owned by that person. The income tax payable for a year of assessment shall be calculated by applying the rates of tax under the relevant part of the First Schedule of the Act to the chargeable income of that person for the year.

In Ghana, the law requires all income earners to fill their taxes three months after the fiscal year. However this is not the practice since most people refuse to file their taxes.

There are no statutory regimes for taxes and benefits to take account of inflation. The government has the sole power to change the tax regime as and when it deems fit to change them. Tax and benefits are fashioned in a way that encompasses income brackets such that as individuals or firms incomes go up they are required to pay more taxes.

Since in Ghana wages are paid monthly assessable annual income for workers who are not deducted from source like Government workers is divided by 12 so as to determine the taxable income.

Current estimates on poverty and inequality are based on GLSS6 data (to be discussed in Section 4). Poverty headcount is estimated to be at at 24 per cent, and the Gini index at 0.41 (GSS 2014b). The poverty headcount is based on national poverty line, which is an absolute one, based on calorie needs and essential non-food consumption. The line stood at GH¢1,314 per adult per year using January 2013 prices in Accra region.

The unemployment rate was below 5 per cent in 2013, but this concept is not really meaningful in a developing country like Ghana where only a minority of the workforce work at the formal sector. This is because there is a difference between joblessness and unemployment. In Ghana most people are without jobs (jobless) but not unemployed. To be unemployed per ILO, one should be without a job and actively seeking for a job. Moreover, even if labour surveys are being undertaking, a person who qualifies as employed must have been engaged in any economic activity either for pay in kind or in cash for at least an hour a week before the survey.

An estimate of the size of the informal sector can be found in literature as well as the GLSS6. The share of formal sector workers based on computations by Alagidede et al. (2013) using the 2010 population and housing census is 13.8 per cent. However per the GLSS6, the share is about 13.7 per cent.

The latest census was done in 2010. Mid-year population estimates are not available.

3 The tax system

Chargeable income of an individual is defined in the Internal Revenue Act 2000 (Act 592) as:

> the total of a person's assessable income, from each business, employment, and investment, less the total amount of deductions allowed to that person for the year under sections 13 to 22 (relating to general and specific deductions), section 39 (relating to reliefs), section 57 (relating to life insurance), and section 60 (relating to contributions to retirement funds).

Taxes on income and property in Ghana are principally derived from personal and corporate income taxes. The Personal Income Tax (PIT) is a progressive regime covering employees, sole proprietorships, and partnerships. Entrepreneurs in this category are required to add profits earned to wages and other income in computing their taxable income.

Domestic taxes are administered by the Domestic Tax Revenue Division (DTRD) of the Ghana Revenue Authority. It is the merger of the operational wings of the erstwhile Value-Added Tax Service and the Internal Revenue Service. Some of the domestic taxes being administered by the DTRD include:

Taxes Payable: The only notable national levies in the country are:

a) The National Health Insurance Levy of 2.5 per cent imposed on certain goods and services;

b) The National Fiscal Stabilization Levy of 5 per cent imposed on profit before tax of companies and institutions of certain listed sectors of the economy.

The National Health Insurance Levy is administered on the lines of the VAT.

Corporate Tax: This is the tax paid by companies on their profits in the year. The tax rate is 25 per cent. There are different rates applicable to certain companies (refer to 'Incentives' below). From 2012, mining companies are to pay corporate tax at a rate of 35 per cent.

A branch of any foreign company doing business in Ghana is taxed like any corporate entity in Ghana. With the aim of preventing tax avoidance schemes (such as transfer pricing, thin capitalization, and income-splitting), the Commissioner of the IRS is entitled to adjust chargeable income of the branch on the basis of the turnover of the whole group. Where it repatriates its branch profit after tax, it will be required to pay 10 per cent tax on the amount repatriated. This is in addition to any corporate tax paid.

PIT: Self-employed persons are required to pay Income tax at graduated rates in four equal instalments. The current PIT rates took effect from November 2011.

Individuals are required to pay tax on gains or profit from employment, business or investment. For a resident person, he or she is to pay tax on income accruing in, derived from, brought into, or received in Ghana, and for a non-resident person on income accruing in, and derived from, Ghana regardless of whether the income is received in Ghana. An individual is considered resident if they have stayed in Ghana for an aggregate period of 183 days or more in any 12 month period. All incomes are aggregated and taxed after the various adjustments relating to the type of income earned are made. The aggregated income excludes capital gains, gifts and rent income.

The tax rates are graduated with rates ranging from 0 to 25 per cent. Annual income up to GH¢1,200 is taxed at 0 per cent. Any income in excess of GH¢25,920 is taxed at 25 per cent.

Pay As You Earn (PAYE): The PAYE contributions are withholdings from salaries of employees in order to satisfy their income tax responsibilities. The PAYE is computed with the PIT rates (see boxes).

Annual Tax Rates—effective 23 May 2013

Chargeable Income (GH¢)	Rate (%)	Tax (GH¢)	Cumulative Chargeable Income (GH¢)	Cumulative Tax (GH¢)
First 1,584	Free	NIL	1,584.00	NIL
Next 792	5	39.60	2,376.00	39.60
Next 1,104	10	110.40	3,480.00	150.00
Next 28,200	17.5	4,935.00	31,680.00	5,085.00
Exceeding 31,680	25			

Exceeding 31,680—25 per cent.

Monthly Tax Rates

Chargeable Income (GH¢)	**Rate (%)**	**Tax (GH¢)**	**Cumulative Chargeable Income (GH¢)**	**Cumulative Tax (GH¢)**
First 132	NIL	NIL	132.00	NIL
Next 66	5	3.30	196.00	3.30
Next 92	10	9.20	290.00	12.50
Next 2,350	17.5	411.25	2,640.00	423.75
Exceeding 2,640	25			

Exceeding 2,640—25 per cent.

Fringe Benefits Tax: With the exception of dental, medical, and health insurance expenses, all fringe benefits derived from employment are taxable. Benefits relating to accommodation and cars have their own treatment specified in the tax law. For all other benefits, the open market value or a reasonable value is added to taxable income and subject to tax. For some services provided to its employees (e.g. food offered in a canteen, office outings, transportation of employees, accident insurances, and payments to retirement funds), the employer has the option to pay the income tax on account for the employee.

Local Taxes: These are collected by the District, Municipal and Metropolitan Assemblies (authorities) from persons doing business within their localities. They are also responsible for the collection of property rates.

Gift Tax: Subject to certain exemptions, gift tax is payable by every person on the total value of taxable gifts received by the person by way of gifts within a year of assessment. The rate ranges from 5 to 15 per cent.

Stamp Duty: Stamp duty is paid (at various rates) by a person who undertakes certain transactions including the following:

a) conveyance or transfer on the sale of any property;
b) appointment of a new trustee;
c) natural resource lease or license (e.g. mining and timber);
d) agreement or memorandum of agreement;
e) award of cost in a matter of dispute;
f) bill of exchange (e.g. issue of cheques);
g) bill of lading;
h) insurance policy.

Mineral Royalties: Holders of mining leases are required to pay royalties at specified rates to the Government on monthly basis but not on quarterly basis.

Communication Service Tax: This is a tax on communication service providers based on turnover. The coverage of this tax has been extended to include the following:

a) public/corporate data operators;
b) providers of radio (FM) broadcasting services;
c) providers of free-to-air television services.

Tax Stamp: This a tax imposed on operators in the informal sector. The amount paid is based on turnover and nature of product but not on profit.

Vehicle Income Tax: This is a tax imposed on commercial vehicles. It is paid quarterly.

Airport Tax: This is imposed on both domestic and international travels. It varies depending on the passenger class and the place of destination.

Current rates are:

Domestic travel	US$5
Regional travel within West Africa	US$60
International travel:	
Economy class travel outside West Africa	US$100
Business class travel outside West Africa	US$150
First class travel outside West Africa	US$200

National Fiscal Stabilization Levy: This levy was imposed on businesses in 2009 but has been abolished from January 2012.

Windfall TAX: Mining companies pay a windfall tax of 10 per cent.

Tax Amnesty: Effective 1 January 2012 a tax amnesty was granted to companies and individuals who evaded taxes. This concession expired on 30 September 2012.

The Sales Tax/VAT are indirect taxes paid by consumers on some goods and services to the state through registered individuals or businesses. The rate is 12.5 per cent for businesses and individuals whose turnover for a 12 month period is GH¢120,000 or above on the value of goods and services. This excludes the National Health Insurance Levy of 2.5 per cent.

Businesses and individuals whose turnover for a 12 month period falls below GH¢120,000 are to pay a presumptive tax of 6 per cent of their turnover. (No input or output VAT is computed.) There are exemptions specified in the VAT law. Exempt supplies include agricultural products and inputs, printed matter, approved medical and pharmaceutical supplies, transport, financial services, land, building and construction.

Chargeable assets also do not include trading stock, securities of a company listed on the Ghana Stock Exchange during the first 15 years of the establishment of the Stock Exchange, Classes 1, 2, 3, and 4 assets (e.g. vehicles, plant and machinery, air and sea transport, computers, etc).

Under Excise Duty, the rate for Environmental Tax has been reduced from GH¢ 20 per cent to GH¢15 per cent. Also excise duty rates are to be reduced on a sliding scale to companies using local raw materials as substitutes in the production of excisable goods.

Exemptions on gifts of a charitable nature imported by non-governmental organizations (NGOs) are limited to only those for health and educational purposes. All other items imported by NGOs will attract import duties unless Parliament specifically grants an exemption on the goods.

The following exemptions also apply:

1) Gains derived from mergers, amalgamations or re-organization of the company where there is continuity of underlying ownership in the asset of at least 25 per cent;
2) Capital gains of up to Gh¢ 50.00;
3) Where the person uses up the amount received to acquire a replacement asset;
4) Transfer of ownership of an asset to a former spouse in divorce settlement or\genuine separation;
5) Transfer of asset to spouse or certain relatives.

Exports are zero rated. Imports are taxable, however the zero rate applies to importation of agricultural and industrial machinery, solar, wind and thermal generating sets, electric generating set of 375 KVA and above, solar cells and panels as well as educational materials. Also, Motor vehicles falling within H.S. Code Nos. 8701, 8705, and 8703.10.20 (ambulance) are zero rated.

Imported mosquito nets falling within heading no. 5608. 19.00.10 of the HS Code are admitted free of import duty.

The base of Ghana's excise regime is restricted to the traditionally accepted excisable\products, namely, petroleum, tobacco, alcoholic, and non-alcoholic beverages. Similarly, the special or quasi-excise regimes are restricted to luxury rates imposed as additional tariffs or import duty on sumptuary imports. According to Terkper (2001) the core of the excise regime can be considered to be fairly efficient in terms of its narrow coverage of commodities where demand is deemed to be price inelastic, or to correct for negative externalities.

The import excise rate on these items is calculated on the Cost Insurance and Freight (CIF) value and is levied on these commodities as follows:

1) tobacco products—140 per cent;
2) beer—50 per cent;
3) water including mineral and aerated—20 per cent;
4) malt drink (non-alcoholic)—5 per cent.

A look at the tax rates on these commodities from 1988–2013 shows that these rates s compared with the sales tax and tariff regimes in the country are relatively high (by SSA standards at least). According to Terkper (2001) this is so because rates appear to confirm their conscious use as proxy rates to correct negative externalities or as user charges in line with the benefit principle. This is evident from the fact that the rates of excise taxes on non-alcoholic beverages are relatively lower than the rates on petroleum products, alcoholic drinks, and tobacco.

There appears to be general acceptance that the relatively high rates of tax on tobacco and alcohol are imposed to rein in the externalities associated with the consumption of these commodities. Hence the reluctance on the part of the authorities to reduce the relatively high rates on tobacco and beer has not met with the same level of public discontent as the tax levied on petroleum products. It is remarkable that the general public does not associate the petroleum tax with the excesses caused by the transport sector in the economy. This is because of the dramatic impact the petroleum excises had on transportation fares at the time they were introduced. This problem has also been compounded due to the increase in fuel purchases to power generators as a result of the power crisis in the country

Apart from a few items which are exempted from payment of Custom Duties, all imports attract Import Duties, Import VAT of 12.5 per cent, and National Health Insurance Levy. Other Levies e.g. ECOWAS Levy which 0.5 per cent, is levied on all goods and vehicles originating from Non-ECOWAS Countries, Export Development and Investment Levy which is 5 per cent of the CIF value on all non-petroleum products imported in commercial quantities under the Development and Investment Fund Act 2000. Import Excise is also levied as an additional tax on some selected commodities.

Import Duty is calculated on the CIF value of the commodity whilst Import VAT is calculated on the duty-inclusive value of the goods.

It is important to note that different rates of duty apply to all imports whereas VAT is a flat rate. Details of current rates of duty for all imports can be found in the *Harmonized commodity codes and tariff schedules*, which can be found online[3].

There is a 1 per cent processing fee on the CIF value for goods whose importation is statutorily exempt from the payment of Import Duty. Moreover, an examination fee of 1 per cent of the CIF value on imported used vehicles is charged in addition to the existing taxes on used vehicles.

Exemptions under the Mining List are still restricted to plant, machinery and equipment. All other items under the Mining List will attract 5 per cent Import Duty.

The mandatory social insurance contribution paid by employees is the 2.5 per cent National Health Insurance Levy (NHIL). There are no mandatory social insurance contributions paid by the formal sector employees, since they are contributors of social security which was the source of the seed money for the NHIL.

Description of tax allowances and expenditures

Tax Reliefs are granted by the government in order to encourage certain forms of behaviour and actions, such as the education of children and care for the aged.

Reliefs are granted to individuals or entities as a means of reducing their tax burden. This is done through a reduction in the assessable incomes of those who qualify.

There are three main categories of reliefs: I) Personal Reliefs; II) Relief from Double Taxation; and III) Roll over Relief.

I Personal Reliefs

Personal Reliefs are granted to individuals who satisfy one or more conditions as stated by the law. The assessable incomes of employees who qualify are reduced by fixed sums. Personal

[3] http://www.gra.gov.gh/docs/info/customs/Ghana_Customs_HS_Code.pdf

reliefs are of two main categories. Those granted upfront and those granted upon the filing of returns.

Reliefs granted upfront	Reliefs granted upon filing of returns
Marriage	Aged dependant relief
Children's education	Individual undergoing apprenticeship training
Disabled individual	Life insurance
Aged relief	
Paid upfront for the period he remains an employee	

Reliefs paid upfront (employees)

i. Marriage relief—GH¢30.00 per annum;

This relief is granted to only one of two married persons with a dependant spouse or a single parent responsible for the upkeep of two or more dependant children.

The individual who qualifies upon certification by his employer has his assessable income reduced by GH¢30.00 per annum.

ii. Children's education—GH¢30.00 per child per annum

Individuals who qualify for this relief are entitled to a reduction in their assessable income by an amount of GH¢30.00 per child per annum up to a maximum of 3 children

To qualify for this relief, the children / wards should be in recognized registered educational institutions in Ghana. Only one of two parents may apply through the employer for this relief.

Where 2 or more persons qualify in respect of the same child or ward, only one relief shall be granted.

iii. Disabled Relief—25 per cent of assessable income

The Disabled relief serves as an incentive to individuals who in spite of their disabilities are in gainful employment. It is granted to disabled individuals who earn income from any business or employment. They would be entitled to a reduction in their assessable incomes of 25 per cent on application through their employers.

iv. Aged relief—GH¢30.00 per annum

An individual who is sixty (60) years of age and earns income during the year from an employment or business is entitled to this relief.

v. Aged dependant relative—GH¢25.00 per annum

This relief is meant to serve as an incentive to individual responsible for the upkeep of their aged relatives.

A relief of GH¢25.00 per annum is granted to an individual with a dependant relative who is 60 years of age or more. This relief can only be claimed in respect of two dependant relatives upon filing of tax returns. Where two or more persons qualify in respect of the same relative, only one relief would be granted.

vi. Individual undergoing training

Where an individual is undergoing training to update the professional, technical or vocational skills or knowledge, he or she is eligible for a relief of GH¢100.00 or the cost of training whichever is less.

Self-employed: a self-employed person would be granted whichever relief they qualify for upon filing of their returns.

II Relief from Double Taxation

1. For the purpose of determining the income of a person for a basis period accruing or derived from outside Ghana, the foreign income tax paid with respect to the income would be deducted.
2. Foreign Tax Credit: a resident person is entitled to a credit for a year of assessment for any foreign income tax paid by that person in respect of his foreign income for the year.
3. Foreign tax credits are calculated separately for taxable foreign income from each business, employment or investment. These foreign tax credits should not exceed the average rate of Ghanaian income tax of that person (for the year of assessment) applied to his taxable foreign income for the year from each business, employment or investment.
4. A person's assessable income, for which that person is entitled to a foreign tax credit, would be increased by the amount of the foreign tax credit.
5. Where taxable foreign income of a person includes a dividend, tax would be deemed to have been paid.
6. Where a Double Taxation Agreement (exists), credit is to be granted for foreign income tax paid with respect to the profits from which the dividend is distributed.
7. A person may elect to relinquish a foreign tax credit with respect to the foreign income tax paid.

III Roll over Relief

This relief is enjoyed by a person (partnership included) or an associate, disposing of an asset to another associate. The following conditions must be satisfied:

a. The asset must be a business asset or a depreciable asset of the associate;
b. The person and the associate must be residents at the time of transfer;
c. That the associate should not be exempt from tax;
d. That there is a continuation of part ownership of the asset of at least 25 per cent;
e. That both the person and the associate are to apply for this relief.

Categories of Roll over Relief

The asset would be transferred at one of the following values:

1. Written Down Value

Where the asset is depreciable

a. Such as buildings, structures and works of a permanent nature which are not used in mining, as well as in tangible assets;
b. A complete pool of depreciable assets constituting the following: Computers, data handling equipment. All forms of land, rail, water and air transportation vehicles and equipment, office furniture, fixtures and equipment. The written down value must have been worked out as at the time of transfer

2. Market Value

The market value as at the time of transfer is used where

a. Depreciable asset is transferred out of a pool of assets;
b. Where any asset which is used in or held for the purpose of business is transferred or held for sale.

4 The benefit system

Apart from tax benefits in Ghana, there are other types of benefits and social intervention programmes that the citizenry can access in order to better their lives and also to enable the government achieve its objectives of poverty alleviation.

These interventions are necessary due to the fact that lack of education and the heavy reliance on the informal sector make the tax benefits non-existent to the citizenry since majority of Ghanaians do not file their taxes, one of the important steps to fulfil in order to access tax benefits.

Among these other benefit systems are: social protection strategies, pension schemes, family benefits, and unemployment benefits. However, family and unemployment benefits are non-existent in the Ghanaian benefit system. This can be attributed to a lot of factors that are beyond the scope of this discussion, however, the other two benefit systems as mentioned above will be discussed.

One important social protection strategy being implemented in Ghana is the Livelihood Empowerment against Poverty (LEAP) programme prepared by the Ministry of Manpower, Youth and Employment. The intention is to provide a cushion for poor households to encourage them to seek capacity development and other empowering objectives. Households in this regard are not just going to be handed cash payments and then be left on their own.

Certain social groups have been identified as generally eligible for LEAP. They include different categories of vulnerable and excluded social groups from Ghana's extremely poor population, as defined by the Ghana Living Standards Survey (GLSS5). Based on the GLSS the extremely poor category of Ghanaians refers to those households whose expenditure falls below 50 per cent of the national mean household consumption expenditure. The target population may be described as dangerously poor, given their experience of chronic food shortages and general lack of capacity to engage in social risk mitigation. Households with persons that belong to the groups identified above will first have to satisfy specific eligibility criteria.

Arriving at the appropriate amount to be transferred is critical to achieving the objectives of the LEAP social grants programme. The amount should be affordable in a low income country context and allow for scaling up to the national level. If the amount is too low the impact on poverty will be limited. In contrast a large amount may push the income of the extreme poor above other poor income groups, and this could lead to social tensions and resistance towards the programme. Microsimulation analysis based on GLSS5 was used to analyse these possible outcomes of the social grants scheme.

The minimum amount payable to the beneficiary households should be GH¢8.00 scalable up to GH¢15.00 depending on number of eligible beneficiaries. In any case, the maximum shall be four beneficiaries per household. This is based on a careful consideration of the issues of acceptability, affordability and adequacy.

In addition to the above there is also the pension benefits that is available for Ghanaian retirees. The new and improved three-tier concept of the reform is meant to provide more options for people to plan for their retirement. The objectives of the Pension Act are to provide pension benefits to ensure retirement income security for all categories of workers in the country. It is also to ensure that workers receive retirement and related benefits as and when they are due, and to establish a uniform set of rules, regulations, and standards for the administration and payment of retirement benefits for workers, both in the public and private companies and institutions. The three-tiers can be explained below.

First tier: a mandatory occupational scheme to be run by a restructured Social Security and National Insurance Trust (SSNIT). Contributions will be 13.5 per cent of gross salary. Retirement benefits will be only in the form of monthly income and death as well as invalidity benefits should a contributor die before retirement. SSNIT will no longer pay the one-off lump sum benefit at retirement. It is a Defined Benefit (DB) scheme, which means the level of pension benefits would depend on quantum of contribution, also related to the level of income during the active working years, and the number of years one contributed for.

Second tier: also a mandatory occupational scheme to be run by approved Trustees licenced by the regulatory body but managed by private fund managers. Contributions to the scheme would be 5 per cent of the employee's gross salary. Benefits would be lump sum payments which are expected to be higher than presently exists under SSNIT and CAP 30. Being a Defined Contribution (DC) scheme, level of benefits would depend on both level of contribution and returns on investments. Proceeds could be used to purchase annuities to enhance the monthly benefits or to fulfil any other financial objectives set by the individual.

Third tier: a voluntary fully funded provident fund and personal pension scheme managed by private fund managers. An optional scheme for everyone to either top-up their pensions or to use as a sole pension provision. The guide to contributions would conform to the tax regulations on the Long Term Savings Act now repealed. The maximum allowable tax relief of 35 per cent on gross earnings would apply. Each contributor would either be paid a lump sum or monthly pension depending on choice while on retirement by the chosen private fund manager. It means that formal sector employees can only top with 16.5 per cent of gross salary, as 18.5 per cent would already have been paid into first and second tiers. It is also a DC scheme and therefore benefits would depend on contributions and largely on investment returns. Benefits could be used to purchase annuities or deployed for a financial objective.

Lastly over the years, successive governments in Ghana have instituted programmes and policies to make education, especially basic education, affordable and accessible to all people and to improve educational outcomes. One of those benefits that citizens have enjoyed in this direction is the Capitation Grant introduce during the 2004–05 academic year in fulfilment of the Millennium Development Goals on education. It includes the coverage of the extra cost and levies (such as examination, facilities management, security charges, games and sports) that parents usually pay as 'school fees' in public schools.

There is also the National School Feeding Program which was introduced in the 2005/2006 academic year. The Ghana School Feeding Program (GSFP) is a pilot project to provide food to children at school. It is run by the GSFP Secretariat in partnership with international agencies, as well as national organizations including Canadian International Development Agency (CIDA), the US Agency for International Development (USAID) and the Dutch embassy. Each pupil under the scheme was covered by a feeding grant of GH¢0.30 a day as at 2008.

5 Description of possible data sources

We will use the latest cross section of the Ghana Living Standards Survey (GLSS6), which is designed to provide nationally and regionally representative indicators on household wellbeing. The data were collected between 18 October 2012 and 17 October 2013. The data are available by request, subject to approval of the purpose of using the data, from the Ghana Statistical Service, GSS. The data follows the same format as earlier GLSS waves (which are comparable since GLSS3 from 1991–92 onwards; the data have been gathered approximately every seventh year).

The GSS has already provided reports on households' consumption and income and labour market conditions (see GSS 2014a, 2014b, and 2014c).[4] These reports cover mean and overall figures on consumption, labour market conditions, and poverty and inequality. In this respect, meta data figures are available.

The previous years of the survey have been extensively used by academic researchers; one important example is GSS (2007).

The sampling was as follows (from GSS 2014a, p. 203–4): 'A two-stage stratified sampling design was adopted'. At the first stage, 1,200 enumeration areas (EAs) were selected to form the primary sampling units (PSUs). The PSUs were allocated into the 10 regions using probability proportional to population size (PPS). The EAs were further divided into Urban and Rural

[4] The reports are available from http://www.statsghana.gov.gh/glss6.html

localities of residence. A complete listing of households in the selected PSUs was undertaken to form the secondary sampling units (SSUs). At the second stage, 15 households from each PSU were selected systematically. Hence, the total sample size came to 18,000 households nationwide. Since the mean household size is 4.0, the survey covers 72,000 individuals."

Weights are available and they also account for non-response rate, which was overall 6.8 per cent.

The data set is very extensive, covering information on the household composition (household roster[5]), the educational level of all household members, their health situation and migration status. One of the main parts of the data is to gather information on farming techniques, inputs and crops. Expenditure is gathered at household level, covering in detail expenditure on both food and non-food items. The questionnaire also covers individual-specific knowledge on employment, wage income and hours worked. Remittances are included, and so are transfers out of the households. The data also cover information on pensions, social security, the LEAP transfer programme reception and other transfers received in separate variables. Taxes paid are included as one variable. There is a variable asking if taxes have been deducted at the employer level on wage income.

Expenditure data on non-frequently bought non-food items refer to outlays in the past 12 months, whereas food consumption and frequent non-food consumption was recorded on a daily basis during one month, but values are turned into annual consumption in the main reports of the data.

Data on transfers received cover the amount last time received and the number of times these transfers have been received during the past 12 months. Data on remittances and taxes paid refer to past 12 months. Information on work and wages earned refer to the last 7 days, but the survey also includes information on the main and secondary activities of the household members during the past 12 months, and the number of weeks worked in different occupations during the 12 month period.

6 Assessment of tax-benefit simulation feasibility

Given the data requirements (based on the policy rules) and data availability, this section aims at assessing the possibilities for simulating particular tax and benefit instruments.

Table 1 provides a summary of simulation feasibility in Ghana.

[5] The household roster gives information on foster children, as well.

Table 1: Simulation feasibility in Ghana, 2012–13.

Benefit	Simulated?	Why not fully simulated?
Income tax	Yes	
Fringe benefit tax	No	insufficient information in the survey
VAT	Yes	
The National Health Insurance Levy	Yes	
Local taxes	No	insufficient information in the survey
Stamp duty	No	insufficient information in the survey
Gift tax	No	insufficient information in the survey
Vehicle income tax	No	insufficient information in the survey
LEAP transfer programme	Yes	
State pension	No	No data on contribution history
Capital gains tax	No	insufficient information in the survey
TV licence fee	No	insufficient information in the survey
Excise taxes on tobacco, alcohol, malt drinks, water and fuel	Yes	
School capitation grant	Partly	unsure if information sufficient

Source: authors.

The main conclusion is that the most important polices both on the tax side (income tax, VAT, excises) and the transfer side (the LEAP) can be simulated well using the GLSS6 data.

In addition to existing policies, we will also simulate the potential impacts of important new possible policies, including for instance non-contributory old-age pension.

7 Conclusions

Ghana is in the process of building up its tax and social protection system; yet system-wide information on the impacts of the current system or potential new systems has not been available. Tax-benefit microsimulation modelling would be one important tool for understanding the distributional and welfare consequences of tax and benefit reforms.

This paper reviewed the Ghanaian tax and benefit policies. It also concluded that the latest wave of the Ghana Living Standards Survey (GLSS6) will be the best possible database for a microsimulation model. The paper then assessed the feasibility of simulating tax and benefit policies. We argued that the most important tax components, such as the income tax, the value-added tax and the most important excises should be subject to simulation. On the benefit side, the LEAP cash transfer scheme should also be possible to model. The broad conclusion is, therefore, that in principle building a tax-benefit model should make sense.

In terms of the future interest and stakeholders of such a model, The Institute for Statistical, Social and Economic Research (ISSER) of the University of Ghana is interested in maintaining the model over the long term and will be also the partner chosen for building the model.

Other interested users include the Bank of Ghana, the Ministry of Finance, and the National Development Planning Commission (NDPC), who have all indicated a keen interest for having a microsimulation model available.

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