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Tax Evasion and Widening the Tax Base in Uganda

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Abstract

Uganda still lags way behind in its tax collections at the domestic level. For most of the commodities the tax collection effort is not more than 5 percent relative to the statutory rate of 18 percent. This results into a situation where the government has to rely a lot on foreign financing. From the analysis, there is a lot of improvement where URA can be able to increase its tax effort. This could be achieved by targeting commodities that are under-taxed and excluding food items for equity purposes. Increasing domestic tax collection would also result into less overreliance on taxing a few commodities especially fuel which is interlinked with a lot of other sectors and could indeed harm growth in the long-run. We also find that the tax effort on imports is sufficient. However, import duties on fuel remain very high and this could be a symptom of the poor domestic tax collection.

1. Introduction

Building the capacity of low-income countries to mobilize more tax revenues is now at the top of the development policy agenda. One of the objectives of the tax reform agenda is to improve the efficiency of the tax administration itself. Uganda has initiated several tax reforms to address the fiscal challenges. There has been a concerted effort to widen the tax base to the extent that the financing of the budget shifts away from foreign to domestic financing while there has been some significant improvement in the collection of revenues (from a dismal 6.5 percent of GDP in 1989/90 which led to large deficits and a budget mainly funded by external financing to 13 percent in 2007). The remarkable growth in tax revenue was a result of policy measures that included restructuring the tax system/administration, particularly the establishment of the Uganda Revenue Authority (URA) in 1991.

While this growth is commendable, the tax revenues collected remain way much below the required financing to support the budget, with about 31 percent of the budget still financed from external sources. This makes the economy vulnerable to the actual realization of the funds obtained in addition to the political influence that comes with the providers of such funds. The purpose of this study is to explore ways how the government can expand its tax base and the implications of these measures.

Previous studies have mainly focused on the incidence of taxes on households (Bahigwa et.al., 2004, and Okidi et.al., 2004). There is established consensus that some taxes have had a negative impact on income distribution due to their regressivity. This was one of the justifications for the abolition of the graduated tax and replacing it with the local service tax. While the progressivity of the tax system is now well documented, there is not much analytical work that has been done to assess how the government can expand its resource envelop.

The tax base can be expanded in two ways. First, the government can target the sectors that are currently untaxed especially the informal sector. This can be implemented for example, by introducing presumptive taxes based on the activities of these sectors. To the extent that the informal sector is where the bulk of the poor are employed, this choice has to be implemented while minimizing the regressive and distortionary effects on the sector. The second alternative is to minimize tax evasion.

The objective of this study is to assess how these two approaches can be implemented without necessarily leading to a higher tax burden that would be regressive and distortionary. The study is particularly interested in the general equilibrium effects of widening the tax base, reducing tax evasion on the various sectors of the economy. With increased revenue mobilization, this would also reduce the burden of financing using domestic resources and the associated crowding out effects. There are arguments that indeed having a narrow tax base could lead to higher taxes on a few commodities which results into tax evasion. The model will be simulated to assess the benefits of reducing the tax burden on some activities while introducing taxes on new activities. The next two sections present the background to the tax problems in Uganda and literature review on the effects of tax evasion, particularly the effects of tax evasion.

2. Background

Due to the turbulences that characterized most of post-independence Uganda, tax collections have historically been low. For example, the tax to GDP ratio that stood at 12.6 percent in 1970-71, had declined to a dismal 6.5 percent by 1989/90, leading to large deficits and a budget mainly funded by external financing (Ayoki, et.al. 2004). Revenue performance has since improved, peaking at a tax/GDP ratio of 15.8 percent in 2006/07 before declining slightly to 13.1 percent in 2007/2008 (Figure 1 and Table 2). A number of policy initiatives explain this impressive performance, all of which were meant to streamline the administration of tax

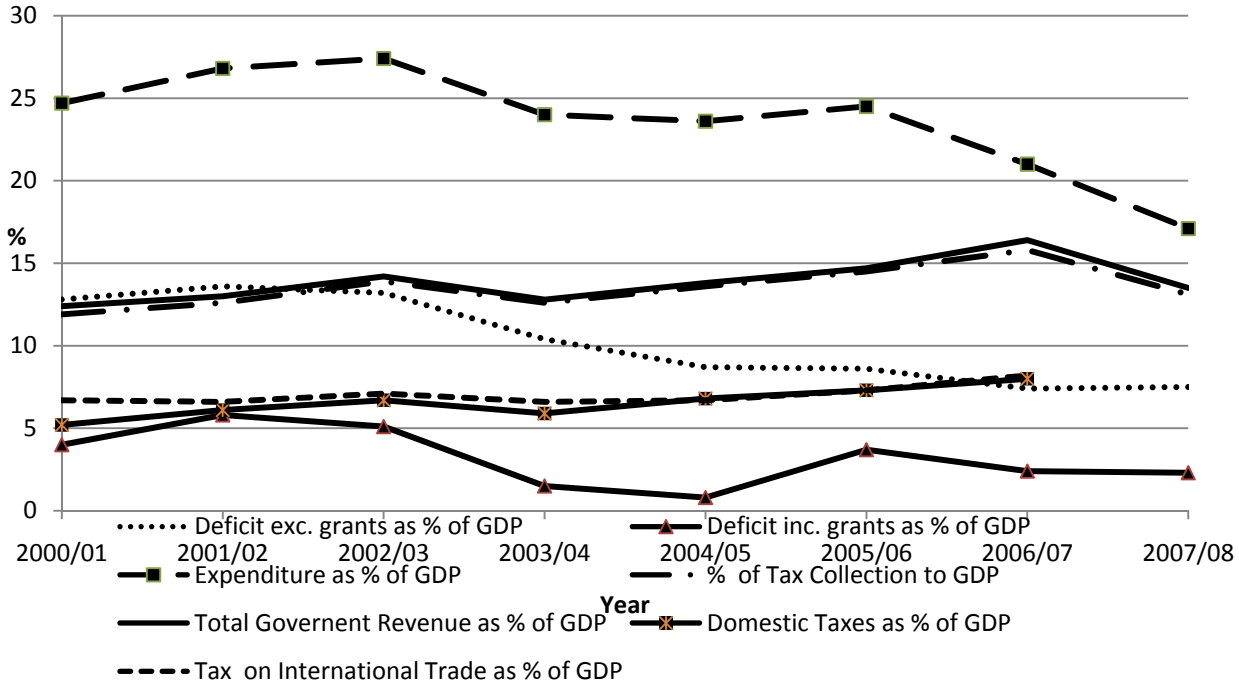
collection and to expand the tax base. The most notable policy changes include the establishment of the Uganda Revenue Authority (URA) in 1991, the replacement of sales tax with VAT in 1996, the introduction of the new income tax structure in 1997, in which personal income tax rates were reduced, and the replacement of tax holidays with tax concessions in 1999. In spite of these changes and the tremendous progress made in the tax collection efforts, the 2007/08 tax to GDP ratio was still below the Sub-Saharan Africa average of about 20 percent. Part of the problem is that a large section of the economy is untaxed, especially the informal and the commercial agricultural sectors, which complicates efforts to widen the tax base and increase domestic revenue.

Consequently, the tax burden has for long been falling on only a small section of the population that is either in formal employment or own businesses for which tax assessment is easier. It is estimated that the top 35 highest tax payers in the country alone account for about 50 percent of all the tax revenue, an indication of how narrow the tax base is in the country. This narrow tax base is also aggravated by the high levels of tax evasion and corruption in the tax administration system. The aggregate outcome of these shortcomings is a low growth in domestic revenue compared to the expenditure needs of the growing Ugandan economy. The contrast between revenue and expenditure highlights a serious financing problem for the country that necessitates the use of external financing to cover the resultant budget deficit. For example whereas in 2007/08, the share of total government expenditure to GDP was 17.1 percent, that of revenue to GDP was just 13.5 percent (Figure 1 and Table 2).. Moreover this fiscal deficit has been increasing, from about 6.5 percent in 1997/98, peaking at 13.6 percent in 2001/02, before falling to 7.5 percent in 2007/08, due to the various debt forgiveness initiatives and the commitment of the government to finance most of the budget by domestic revenues.

But much needs to be done if the government is to realize its goal of reducing external financing, especially in the area of diversification of tax sources. However, records from URA show that a small number of taxes still dominate the tax structure.

For example, more than a third of total tax collected in 2006/07 was from Pay as You Earn (PAYE) and excise duty, while more than 50 percent of all the excise tax was collected from petroleum products (Table 2).

Fig.1: Changes in Selected Revenue Performance Indicators 2000/01-2007/2008



Also to note is the large share of the taxes that are levied on international trade (an estimated 50 percent of total taxes), an indication of the under performance of the domestic taxes, at only 8 percent of GDP in 2007/08 (Fig. 1). Most of the domestic sectors of the economy are grossly under-taxed, for example the property taxes made up less than 1 percent of the total taxes in 2006/07. It is conceivably possible that this high tax burden on a small section of the population may be to blame for the high levels of tax evasion in Uganda. Gauthier and Reinikka, 2001 estimated that in 1997 about 46 percent of firms in Uganda were evading at least one of the main taxes, a high level of tax evasion that is not thought to have reduced, with possibility that it could have even increased. Therefore expansion of the tax base and stopping tax evasion are prerequisites for Uganda if it is to wean itself from external financing.

Figure 2: Changes in % of Selected Taxes and Revenues Types to Total Government Revenue 2002/03 – 2006/07

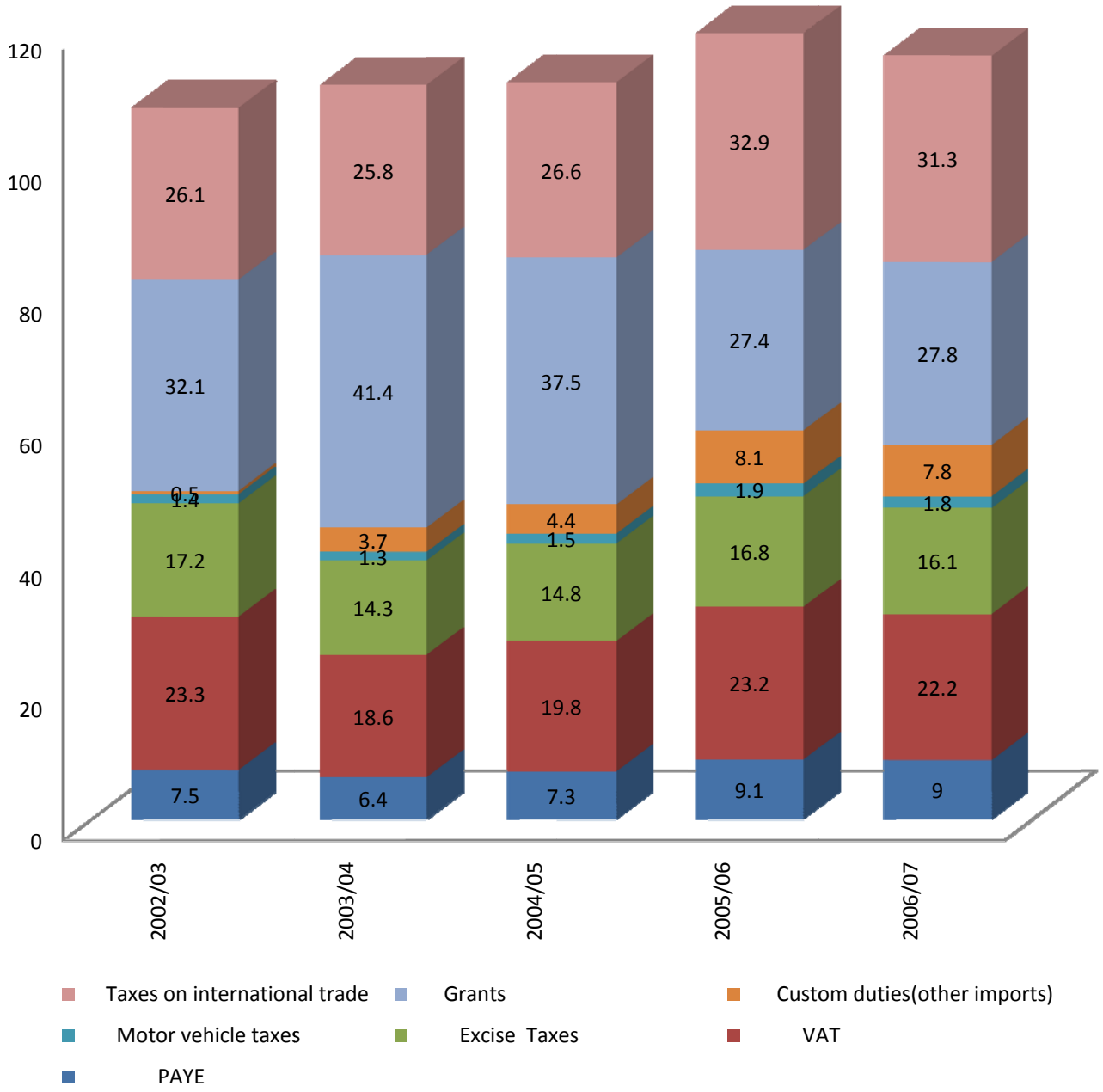


Table 1: Percentage Share of Type of Tax in the Overall Central Government Tax Collections, 2002/03-2006/07

	2002/03	2003/04	2004/05	2005/06	2006/07
1. Central Government Taxes	100.00	100.00	100.00	100.00	100.00
Taxes on Income, Profits ,and Capital					
gains	24.68	24.60	27.71	25.70	26.32
PAYE (Payable by individuals)	12.07	11.44	12.27	13.22	13.21
Corporations and Other Enterprises	6.81	7.90	8.82	8.48	8.87
Unallocatable	5.81	5.26	6.62	4.00	4.23
Taxes on property	0.43	0.35	0.29	0.28	0.27
Immovable property	0.43	0.35	0.29	0.28	0.27
Taxes on goods and services	74.88	75.06	71.99	74.02	73.41
General Taxes on goods and					
services(VAT)	37.28	33.33	33.12	33.63	32.60
Imported goods	19.74	19.57	18.16	18.46	18.09
Local goods	8.85	7.31	7.49	8.45	8.71
Local services	8.69	6.45	7.47	6.72	5.80
Excise Taxes	27.56	25.64	24.77	24.37	23.62
Petroleum	16.65	15.41	15.50	16.46	15.26
Other imports	2.80	2.88	2.46	1.06	1.02
Local goods	8.12	7.34	6.80	6.85	7.34
Taxes on permission to use goods or					
perform activities	2.91	9.05	9.88	14.47	14.17
Motor vehicle taxes	2.17	2.39	2.53	2.72	2.65
Other	0.02	0.02	0.02	0.01	0.01
Custom duties(other imports)	0.72	6.65	7.33	11.74	11.51
Other Taxes	7.14	7.04	4.22	1.55	3.02
Government procurement	0.91	0.68	0.78	0.72	0.74
Other	6.23	6.36	3.45	0.83	2.28

Source: Uganda National Bureau of Statistics (UBOS)

3. Literature Review

A survey of the literature reveals that no study has explicitly incorporated the general features a model should have in order to capture the fundamental aspects of the incidence of tax evasion. In Allingham and Sandmo's (1972) portfolio approach to tax evasion, individuals weigh the probability of getting caught and paying a penalty against the probability of being able to keep the evaded income. According to the portfolio approach therefore, the individual evader benefits by keeping the evaded income in its entirety.

Martinez-Vazquez (1996) contends that the conclusions drawn from the conventional portfolio approach to tax evasion regarding the incidence of tax evasion are rather unsatisfactory. The author argues that the portfolio approach ignores the fact that in numerous situations, particularly those in which the expected value is positive, tax evasion is comparable to a tax advantage in the law. Consequently, it would be rational to expect replication and competition, when possible, to work toward the elimination of this direct advantage. Martinez-Vazquez (1996) argues that this process of adjustment should generally take place through changes in the relative prices of both commodities and factors of production.[1] However, the portfolio approach affords tax evasion incidence analysis only a partial equilibrium treatment and does not capture this general equilibrium effect.

Literature shows that several studies have utilized general equilibrium models to examine the distributional effects of tax evasion. Watson (1985) develops a model with two labor markets characterized by differing evasion possibilities, in order to examine changes in various tax parameters on evasion and labor market equilibrium. The analysis of both proportional and progressive taxation reveals that the gains that might accrue to those who are better able to avoid detection are partially offset by wage declines in markets in which evasion is possible, so that

[1]The advantage of tax evasion can also be dissipated away by direct means, for instance the bribing of corrupt officials (Shah & Whalley, 1990).

market forces tend to eliminate the value of any advantage created by the presence of evasion opportunities.

Kesselman (1989) develops an intersectoral general equilibrium model of income tax evasion. Qualitative and quantitative assessments of the effects of tax rate changes on evasion activity, relative output prices, and real tax revenues yield an array of findings. For instance the inducement toward more or less evasion requires changes in the relative prices of outputs from both the evading and compliant sectors, which suggests that the gains from evasion may be shifted from the evaders to the consumers of their output via lower prices. This indicates therefore that the evaders may bear most of the evasion costs, but the marginal evader may not gain from evasion.

However, though these two studies use general equilibrium models to examine the distributional effects of tax evasion, there are some key features that should characterize general equilibrium models of tax evasion. Martinez-Vazquez (1996) enumerates these desirable features.

First, the model should be able to capture the potential general equilibrium effects of tax evasion. The general equilibrium effects induce (potential) changes in the relative prices of both factors of production and goods and services brought about by market equilibrium forces. If there is an advantage in terms of expected factor income or firms' expected profits, the (potential) mobility of resources will lead to the necessary price adjustments until this advantage is eliminated.

Second, the model should incorporate the element of uncertainty in an individual's decision to evade in at least one sector of the economy. This fundamental distinguishing characteristic of evasion incidence, as opposed to tax incidence, allows the excess burdens of evasion associated with uncertainty to be accounted for in the model.

Third, the model should allow for varying degrees of competition or entry across sectors in the economy, including those in which tax evasion is prevalent. This includes mobility of factors, for instance labor in the case of income tax evasion; it also includes firm entry in several sectors, as in the case of sales tax or corporate income tax evasion. The element of mobility is critical to an understanding of how much of the tax advantage may be retained by the initial evaders and how much is shifted via factor and commodity price changes.

Failure to accommodate these effects can lead to misleading conclusions. For instance Skinner and Slemrod (1985) argue that, if labor income is more likely to be generated in the untaxed sector than capital income, then the existence of tax evasion makes the tax system more progressive. To the extent that the advantages realized by workers get capitalized or competed away by market processes, this conclusion is incorrect. The non-payment of tax by domestic helpers, for instance, may actually benefit higher-income households who use these services because these households pay lower prices for the domestic services.

In summary therefore, a comprehensive analysis of the incidence of tax evasion requires the consideration of the three general equilibrium effects, accounting for uncertainty and varying degrees of mobility across sectors. In particular, the key phenomenon that any model should explain is the extent to which any advantage of tax evasion gets capitalized or competed away via price changes, including the identification of gainers and losers from this process. This study utilizes these guidelines to develop a framework for examining the distribution effects of tax evasion in Uganda with emphasis on gainers and loosers.

4.0 Objectives of the Study

4.1 General Objective

This study seeks to examine the various options of expanding the tax base by reducing tax evasion and targeting the informal sector which largely does not pay taxes. This will provide also an assessment of the general and macroeconomic effects of undertaking such reforms.

4.2 Specific Objectives

In particular, this study seeks to assess:

i. The implications of widening the tax base on the informal sector;
ii. The general equilibrium effects of reducing tax burden on the overtaxed sectors while introducing the new taxes in new sectors;
iii. The implications of reducing tax evasion and the implied reduction on the financing requirement that could lead to crowding-out effects.
iv. Quantify the welfare effects of introducing the new taxes like the local service tax.

5.0 Significance of the Study

There is no study that has attempted to look at the various options of widening the tax base and its macroeconomic implications.

As such, this study will provide information on key decision variables that will be used to inform policy aimed widening the tax base without necessarily increasing the tax burden. The study will also inform policy makers on how tax evasion could be

minimized by reducing taxes on some over taxed sectors while introducing taxes in new areas.

6.0. Methodology

6.1 The Uganda Social Accounting Matrix (SAM) 2007

A Social Accounting Matrix (SAM) is a table which summarizes the economic activities of all agents in the economy. These agents typically include households, enterprises, government, and the rest of the world (ROW). The relationships included in the SAM include purchase of inputs (goods and services, imports, labour, land, capital etc.); production of commodities; payment of wages, interest rent and taxes; and savings and investment. Like other conventional SAMs, the Uganda SAM is based on a block of production activities, involving factors of production, households, government, stocks and the rest of the world.

The Uganda SAM is a 120 by 120 matrix. The various commodities (domestic production) supplied are purchased and used by households for final consumption (42 per cent of the total), but also a considerable proportion (34 per cent) is demanded and used by producers as intermediate inputs. Only 7 percent of domestic production is exported, while 11 per cent is used for investment and stocks and the remaining 7 percent is used by government for final consumption. Households derive 64 per cent of their income from factor income payments, while the rest accrues from government, inter-household transfers, corporations and the rest of the world. The government earns 32 percent of its income from import tariffs – a relatively high proportion, but a characteristic typical of developing countries. It derives 42 percent of its income from the ROW, which includes international aid and interest. The remainder of government's income is derived from taxes on products (14 percent), income taxes paid by households (6 percent) and corporate taxes (5 percent).

Investment finance is sourced more or less equally from government (26 per cent), domestic producers (27 per cent) and households (26 per cent), with enterprises providing only 21 per cent. Imports of goods and services account for 87 percent of total expenditure to the ROW. The rest is paid to ROW by domestic household sectors in form of remittances; wage labour from domestic production activity; domestic corporations payments of dividends; income transfers paid by government; and net lending and external debt related payments.

The extent of household dis-aggregation is very important for policy analysis, and involves representative household groups as opposed to individual households. Pyatt and Thorbecke (1976) argue persuasively for a household dis-aggregation that minimizes within-group heterogeneity. This is achieved in the Uganda SAM through the disaggregating of households by rural and urban, and whether households are involved in farming or non farming activities.

The Uganda SAM identifies three labour categories disaggregated by skilled, unskilled and self employed. Land and capital are distributed accordingly to the various household groups.

6.2 Salient Features of the CGE Model

The CGE model used in the present study is based on a standard CGE model developed by Lofgren, Harris, and Robinson (2002). This is a real model without the financial or banking system (See Table A1). It cannot be used to forecast inflation. The CGE model is calibrated to the 2007 SAM. GAMS software is used to calibrate the model and perform the simulations.

Productions and commodities

For all activities, producers maximize profits given their technology and the prices of inputs and output. The production technology is a two-step nested structure. At the bottom level, primary inputs are combined to produce value-added using a CES (constant elasticity of substitution) function. At the top level, aggregated value added

is then combined with intermediate input within a fixed coefficient (Leontief) function to give the output. The profit maximization gives the demand for intermediate goods, labour and capital demand. The detailed disaggregation of production activities captures the changing structure of growth due to the pandemic.

The allocation of domestic output between exports and domestic sales is determined using the assumption that domestic producers maximize profits subject to imperfect transformability between these two alternatives. The production possibility frontier of the economy is defined by a constant elasticity of transformation (CET) function between domestic supply and export.

On the demand side, a composite commodity is made up of domestic demand and final imports and it is consumed by households, enterprises, and government. The Armington assumption is used here to distinguish between domestically produced goods and imports. For each good, the model assumes imperfect substitutability (CES function) between imports and the corresponding composite domestic goods. The parameter for CET and CES elasticity used to calibrate the functions used in the CGE model are exogenously determined.

Factor of production

There are 6 primary inputs: 3 labour types, capital, cattle and land. Wages and returns to capital are assumed to adjust so as to clear all the factor markets. Unskilled and self-employed labor is mobile across sectors while capital is assumed to be sector-specific.

Institutions

There are three institutions in the model:, households, enterprises and government. Households receive their income from primary factor payments. They also receive transfers from government and the rest of the world. Households pay income taxes and these are proportional to their incomes. Savings and total consumption are assumed to be a fixed proportion of household’s disposable income (income after income taxes). Consumption demand is determined by a Linear Expenditure System

(LES) function. Firms receive their income from remuneration of capital; transfers from government and the rest of the world; and net capital transfers from households. Firms pay corporate tax to government and these are proportional to their incomes.

Government revenue is composed of direct taxes collected from households and firms, indirect taxes on domestic activities, domestic value added tax, tariff revenue on imports, factor income to the government, and transfers from the rest of the world. The government also saves and consumes.

Macro closure

Equilibrium in a CGE model is captured by a set of macro closures in a model. Aside from the supply-demand balances in product and factor markets, three macroeconomic balances are specified in the model: (i) fiscal balance, (ii) the external trade balance, and (iii) savings-investment balance. For fiscal balance, government savings is assumed to adjust to equate the different between government revenue and spending. For external balance, foreign savings are fixed with exchange rate adjustment to clear foreign exchange markets. For savings-investment balance, the model assumes that savings are investment driven and adjust through flexible saving rate for firms. Alternative closures, described later, are used in a subset of the model simulations.

Recursive Dynamics

To appropriately capture the dynamic aspects of aid on the economy, this model is extended by building some recursive dynamics by adopting the methodology used in previous studies on Botswana and South Africa (Thurlow, 2007). The dynamics is captured by assuming that investments in the current period are used to build on the new capital stock for the next period. The new capital is allocated across sectors according to the profitability of the various sectors. The labour supply path under different policy scenarios is exogenously provided from a demographic model. The model is initially solved to replicate the SAM of 2007.

7.0 Extent of Tax Evasion

Using the information from the social accounting matrix, it's revealed that tax collection is still way below relative to its tax base. Focusing on the indirect taxes or consumption taxes which include VAT, Table 2 shows that for most of the commodities, the effective tax rates computed are below the statutory rates. For instance, the statutory VAT is at 18 percent. However, for most commodities the ratio of taxes collected is very low. For all the commodities, it's shown that less than 5 percent of the tax base is collected. This could be a reflection of two problems: first, there could be rampant tax evasion within the tax system. Second, it might be the case that the revenue authority is still too weak to effectively capture the statutory taxes in the economy. For the case of imports, a different pattern is portrayed where most of the commodities imported indeed meet their statutory tax payments. For the cases like fertilizers where the ratio is less than the statutory rates there is deliberate government policies not to over tax those commodities. This background clearly indicated that there is more work to do for the URA to improve on its domestic tax collections. In addition, some imports including fuel are overtaxed and given the importance of this commodity for other sectors like manufacturing and services especially transport, this could impact the economy negatively. Therefore, by improving domestic tax collection this would create room for reduction of taxes on commodities like fuel.

The other main source of revenues is the direct taxes which include corporate taxes on enterprises and income taxes on individuals. In this case, we mainly focus on the income taxes imposed on individuals because of the data available. Table 3 shows that the bulk of the income taxes are paid by households residing in Kampala. This is partly explained by the fact that the majority of the formal jobs are indeed in Kampala. This includes government workers and formally registered enterprises. However, while upcountry there are also government establishments and there are also some enterprises based upcountry, it's revealed that the tax collection upcountry is still very low relative to the total income of households especially those residing in the urban areas. Tax collection for the rural households is also very weak.

However, a case can be made on equity grounds that the poor are largely residing in the rural areas and therefore there tax burden should not be increased.

Table 2: Tax Collection and Tax Base Derived from the SAM

Commodity	Indirect Taxes (millions)	Total consumption (mill	Taxes Collected (%)	Import duties (millions)	Import Values (millions)	Duties Collected (%)
Maize	282	335,648	0.1	56	61,833	0.1
Rice		100,697	0.0	359	24,911	1.4
Other cereals	3,006	442,805	0.7	553	155,347	0.4
Cassava	12,403	610,780	2.0	…	…	…
Irish potato	3,948	214,679	1.8	…	…	…
Sweet potato	4,091	464,289	0.9	…	…	…
Matoke	…	0		…	…	…
Oilseeds	…	12,306	0.0	…	…	…
Beans	3,532	167,898	2.1	11	10,243	0.1
Vegetable	17,439	736,810	2.4	…	…	…
Fruits & other tree crops	1,445	35,136	4.1	…	…	…
Flowers	…	…	…	…	…	…
Cotton	…	…	…	…	…	…
Tobacco	…	…	…	…	…	…
Coffee	18,879	693,751	2.7	…	…	…
Tea, cocoa & vanilla	2,135	63,033	3.4	751	6,165	12.2
Cattle & sheep		422,060	0.0	…	…	…
Poultry	1,715	66,521	2.6	…	…	…
Other livestock		77,164	0.0	115	1,920	6.0
Forestry	24,785	1,317,249	1.9	…	…	…
Fisheries	6,391	579,885	1.1	…	…	…
Mining	4,344	191,415	2.3	9,088	67,917	13.4
Meat processing	36,093	590,925	6.1	360	58,281	0.6
Fish processing	6,323	210,691	3.0	1,222	40,100	3.0
Grain processing	52,925	1,981,416	2.7	31,537	309,941	10.2
Feed stock	22,745	856,446	2.7	10,428	78,904	13.2
Other food processing		102,648	0.0	…	…	…
Beverages & tobacco	60,448	1,631,834	3.7	11,082	73,406	15.1
Textiles & clothing	51,880	974,501	5.3	53,374	270,386	19.7
Wood & paper		245,492	0.0	19,578	92,753	21.1
Petrol & diesel	27,718	1,193,748	2.3	483,071	600,146	80.5
Fertilizer	63,484	1,628,551	3.9	52,259	668,975	7.8
Other chemicals	8,514	230,892	3.7	18,154	143,348	12.7
Machinery & equipment	9,307	1,287,724	0.7	96,138	533,539	18.0
Furniture	21,491	2,080,779	1.0	252,445	2,162,666	11.7
Other manufacturing	7,646	158,382	4.8	4,527	30,325	14.9
Energy & water	32,139	1,090,077	2.9	…	…	…
Construction	20,781	967,947	2.1	…	…	…
Trade	4,671	4,127,879	0.1	…	…	…
Hotels & catering	5,474	129,729	4.2	…	…	…
Transport	63,909	2,360,061	2.7	…	1,472,148	…
Communications	20,595	911,756	2.3	…	27,937	…
Banking	536	475,845	0.1	…	130,019	…
Real estate	12,452	2,349,390	0.5	…	…	…
Community services	1,855	770,884	0.2	71	246,599	0.0
Other private services	…	2,473	0.0	…	…	…
Research & development	…	24,814	0.0	…	…	…
Public administration	…	1,453,989	0.0	…	…	…
Education	…	369,595	0.0	…	…	…
Health	24,431	467,716	5.2	…	…	…

Table 3: Households Income Taxes

Households	Income Tax (mill)	Total Income (mill)	Tax Collected(%)
Rural farm	50,106	4,695,186	1.07
Rural non-farm	33,670	954,396	3.53
Kampala metro	234,007	1,249,676	18.73
Urban farm	35,768	882,176	4.05
Urban non-farm	41,706	711,087	5.87

Given that the informal sector is very difficult to target and collect taxes, government introduced a local service tax which would be a source of revenue especially for the local governments. The service tax is to be levied on wealth and incomes of people currently falling in the brackets of direct taxes collected by the central government. The service tax is a direct tax on incomes of taxpayers and in principle falls in the same category as income tax collected by Uganda Revenue Authority.

The tax is also levied on informal activities like small hotels where its added as a surcharge to the hotel bill. This has various implications on the activities where its levied in terms of service delivery.

7.1 Sources of Untapped Tax Revenues

Using the household surveys, this paper attempts to identify areas that are largely untapped or where tax evasion is considered to be rampant. The household survey has a section which captures the activities of the household during the past year. These activities range from agriculture, fishing, mining, manufacturing, construction, wholesale and retail trade, hotels and restaurants, transport, communication, real estate, education (private schools), health services (clinics and drug stores) and other services like saloons.

While it's difficult to target these small and informal enterprises, by effectively implementing the presumptive tax the government could be able to collect more revenues. This tax is levied on a turnover of less than or equal to 50 million Uganda

shillings. It mainly covers small businesses, because any business with a turnover of above 50 million is considered a corporation. These small businesses are associated with inability to keeping proper records, hence unlike corporate taxes; these firms are taxed without adjusting for deductions of expenditures and losses.

Table 4: Presumptive tax

Income Tax on MOF Schedule		
From	To	Rate(Ug.Shs)
-	5,000,000.00	0
5,000,001.00	20,000,000.00	100,000.00
20,000,001.00	30,000,000.00	250,000.00
30,000,001.00	40,000,000.00	350,000.00
40,000,001.00	50,000,000.00	450,000.00

By using the above schedule we derive the potential presumptive tax revenues that can be collected. The total additional revenue that can be collected is estimated at USHS 53 billions. The largest contribution that is largely untaxed is the retail and whole sale trade. Unfortunately, the businesses involved in retail trade and some whole sale trade are not formally registered businesses. They would therefore not be VAT registered neither would they be paying corporate tax on their profits or income tax for their employees. Combined with these businesses not keeping records, it becomes very difficult to target this group.

Potential Revenues Untapped (Million Shs)	
Fishing	1,963
Mining and quarrying	254
Manufacturing	4,793
Whole Sale	11,060
Retail Trade	23,310
Leasing Machinery	334
Hotels and Restaurants	4,391
Transport	3,376
Financial Intermediation	29
ICT (Internet Cafes)	209
Professional services (consultants, lawyers, etc.)	830
Construction Activities	588
Education (Schools)	427
Health (Drug shops and clinics)	1,437
Entertainment	163
Other services (Saloons etc)	290
Total	53,454

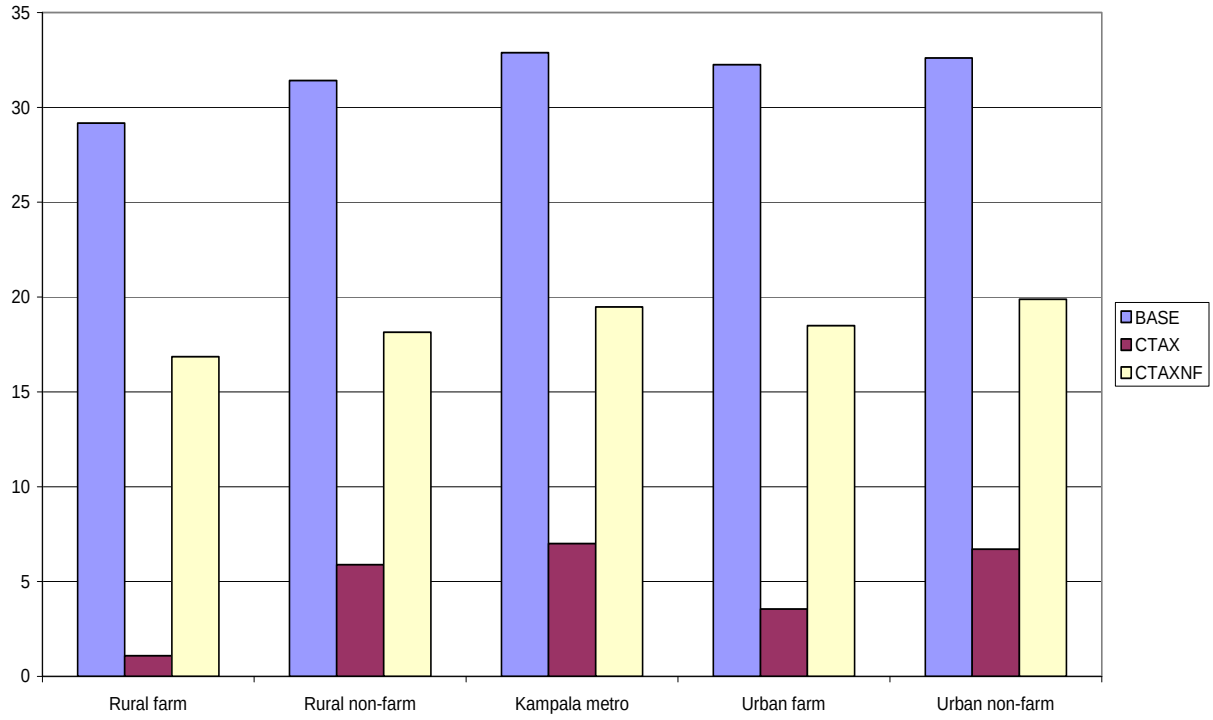
7. 2 Simulations

The previous section provides the basis for our simulations. The objective of these simulations is to find how revenues can be raised without necessary affecting the growth of the economy and exacerbating equity within household groups. The first simulation investigates the possibility of increasing domestic revenues. Since all commodities are generally under taxed, we first run a simulation (CTAX) where the tax effort (or revenue collection) is improved by 10 percent every year.[2] The key aspects that we are interested in this simulation are the impact of consumption, production and equity of households. From the consumption side, increased revenue collection on consumption items would have some redistributive implications. We note that households which are largely rural and involved in farming would be most affected. Over the simulation period of five years, consumption for rural households would be lower than the baseline by 0.5 percent. The intuition behind this result is that while attempting to increase domestic taxes, this has to be done selectively by focusing more on goods that are mainly consumed by the rich.

From the macroeconomic perspective, this simulation shows that the overall deficit would be reduced by 3 percent in the baseline. This would have various implications at the macroeconomic level. First, with the reduced borrowing requirement, this would imply that the government would borrow less from the domestic market and hence put less pressure on interest rates. Indeed private investments increase by 2.6 percent over the simulation period.

[2] Note that for these simulations, we are not changing the statutory tax rates. Rather, we assume that the revenue authority would improve on its administration which would subsequently result into higher revenues collected.

Welfare Effects of Increasing Consumption Tax Collection



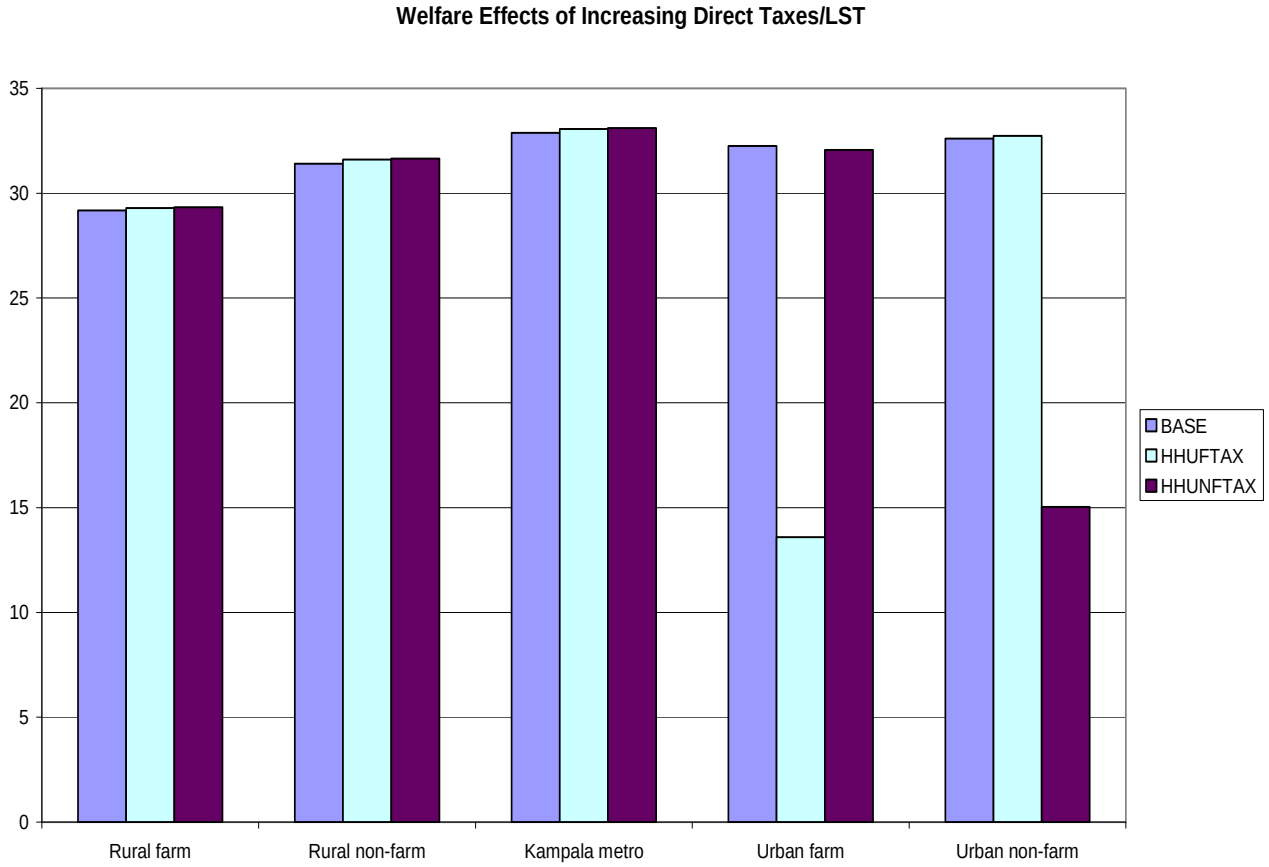
From the equity perspective, all households would be affected increasing the consumption tax collection effort. However, the households that would be most affected are the ones in the rural areas.

The second simulation (CTAXNF) focuses on the case where all food items are excluded from higher tax collection. In general, food items make the largest composition of the consumption basket for poor households. For most of the food items, they are exempted from VAT. However, processed foods which are largely sold through supermarkets are subject to taxes. The processed foods are generally consumed by the richer households especially those based in the urban areas. In the simulation, we only exclude food items that are not processed. The impact of this simulation is similar to the previous case although the magnitudes differ. In particular, the consumption of households that are rural based would not be as negatively affected like in the previous simulation. The expenditure equivalent variation measure which captures the consumption foregone by all groups is much

less compared to the previous simulation. This suggests that the policy stance of improving tax collections while excluding the food items would be more progressive.

Direct Taxes

Given that the local service tax (LST) is mainly targeted to individuals who are not captured under the income tax category, we run a simulation where we apply the thresholds on households which are based in the urban areas (HHUFTAX). The households identified paying the lowest income taxes are those in urban areas excluding Kampala and all households in rural areas. These households are largely involved in informal sector activities. While it can be argued on equity grounds that these households tend to be poorer, there are households which are fully captured in the income tax category with equal or less income than the informal sector workers. For instance, Teachers and Policemen earn on average less than UG 400,000 shillings a month which is taxed. However, there are many informal business owners who make a profit that is much higher than the average salary of these two categories. Hence, URA should make a deliberate effort to capture this group in an effort to expand its tax base.



In one of the simulations we increase the tax collection effort by the URA among the households which are urban and not involved in farming activities (HHUNFTAX). These households usually involve individuals who are running small businesses like shops or petty traders. This simulation would result into a reduction of the welfare of the households targeted. However, the welfare for all the other households improves relative to the baseline and indication that they are not overburdened by the tax system. There are also households which are involved in farming but residing in urban areas. Some of these households would typically have farms which are not only for subsistence. Increasing the tax collection effort among this group would reduce their welfare but the welfare of the households residing in Kampala would improve. This suggests that indeed Kampala residents could be overburdened by the income tax system. By rolling the tax system out to other urban centers in the form of the LST would reduce the burden of Kampala financing the Local Governments upcountry.

8.0 Conclusions and Policy Conclusions

From the basic analysis it's been found that Uganda still lags way behind in its tax collections at the domestic level. For most of the commodities the tax collection effort is not more than 5 percent relative to the statutory rate of 18 percent. This results into a situation where the government has to rely a lot on foreign financing. From the analysis, there is a lot of improvement where URA can be able to increase its tax effort. The paper identifies specific areas which URA should target to improve its tax collection. We estimate a total of 53 billion shillings which is untapped. This could be achieved by targeting businesses, commodities that are under-taxed and excluding food items for equity purposes. Increasing domestic tax collection would also result into less overreliance on taxing a few commodities especially fuel which is interlinked with a lot of other sectors and could indeed harm growth in the long-run. We also find that the tax effort on imports is sufficient. However, import duties on fuel remain very high and this could be a symptom of the poor domestic tax collection.

To identify the small informal businesses, it would require implementation of the National Identity where an individual or business (small or big) can easily be tracked. In addition, URA would need to undertake a special survey to establish the potential revenue that is not currently tapped. While the current household surveys have some information, it's not very sufficient as such surveys are known for respondents under reporting their income or exaggerating their costs.

For the income taxes, we also find that there is much room for improvement by the URA. The bulk of this tax is being paid by the Kampala residents. In essence, with the abolition of the graduated income tax (which was a poll tax for every Ugandan), this implies that largely the tax base financing the local governments is around Kampala. While there are arguments that this is where richer households and bigger enterprises are located, an effort should be made to expand the tax base beyond Kampala. Introducing the LST is a step in that direction. We find that the targeted

households with this LST would lose in welfare, but other households' welfare not paying the LST would improve an indication that the tax burden would be less.

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Table A1 continued. CGE model sets, parameters, and variables

Symbol	Explanation	Symbol	Explanation
Greek Symbols			
α_a^a	Efficiency parameter in the CES activity function	δ_{cr}^t	CET function share parameter
α_a^{va}	Efficiency parameter in the CES value-added function	δ_{fa}^{va}	CES value-added function share parameter for factor *f* in activity *a*
α_c^{ac}	Shift parameter for domestic commodity aggregation function	γ_{ch}^m	Subsistence consumption of marketed commodity c for household h
α_c^q	Armington function shift parameter	θ_{ac}	Yield of output c per unit of activity a
α_c^t	CET function shift parameter	ρ_a^a	CES production function exponent
β^a	Capital sectoral mobility factor	ρ_a^{va}	CES value-added function exponent
β_{ch}^m	Marginal share of consumption spending on marketed commodity c for household h	ρ_c^{ac}	Domestic commodity aggregation function exponent
δ_a^a	CES activity function share parameter	ρ_c^q	Armington function exponent
δ_{ac}^{ac}	Share parameter for domestic commodity aggregation function	ρ_c^t	CET function exponent
δ_{cr}^q	Armington function share parameter	η_{fat}^a	Sector share of new capital
υ_f	Capital depreciation rate		
Exogenous Variables			
$\overline{CPI}$	Consumer price index	$\overline{MPSADJ}$	Savings rate scaling factor (= 0 for base)
$\overline{DTINS}$	Change in domestic institution tax share (= 0 for base; exogenous variable)	$\overline{QFS}_f$	Quantity supplied of factor
$\overline{FSAV}$	Foreign savings (FCU)	$\overline{TINSADJ}$	Direct tax scaling factor (= 0 for base; exogenous variable)
$\overline{GADJ}$	Government consumption adjustment factor	$\overline{WFDIST}_{fa}$	Wage distortion factor for factor f in activity a
$\overline{IADJ}$	Investment adjustment factor		
Endogenous Variables			
AWF_{ft}^a	Average capital rental rate in time period t	QG_c	Government consumption demand for commodity
$DMPS$	Change in domestic	QH_{ch}	Quantity consumed of

	institution savings rates (= 0 for base; exogenous variable)		commodity c by household h
DPI	Producer price index for domestically marketed output	QHA_{ach}	Quantity of household home consumption of commodity c from activity a for household h
EG	Government expenditures	$QINTA_a$	Quantity of aggregate intermediate input
EH_h	Consumption spending for household	$QINT_{ca}$	Quantity of commodity c as intermediate input to activity a
EXR	Exchange rate (LCU per unit of FCU)	$QINV_c$	Quantity of investment demand for commodity
$GSAV$	Government savings	QM_{cr}	Quantity of imports of commodity c
QF_{fa}	Quantity demanded of factor f from activity a		

Table A1 continued. CGE model sets, parameters, and variables

Symbol	Explanation	Symbol	Explanation
Endogenous Variables Continued			
MPS_i	Marginal propensity to save for domestic non-government institution (exogenous variable)	QQ_c	Quantity of goods supplied to domestic market (composite supply)
PA_a	Activity price (unit gross revenue)	QT_c	Quantity of commodity demanded as trade input
PDD_c	Demand price for commodity produced and sold domestically	QVA_a	Quantity of (aggregate) value-added
PDS_c	Supply price for commodity produced and sold domestically	QX_c	Aggregated quantity of domestic output of commodity
PE_{cr}	Export price (domestic currency)	$QXAC_{ac}$	Quantity of output of commodity c from activity a
$PINTA_a$	Aggregate intermediate input price for activity a	RWF_f	Real average factor price
PK_{ft}	Unit price of capital in time period t	$TABS$	Total nominal absorption
PM_{cr}	Import price (domestic currency)	$TINS_i$	Direct tax rate for institution i (i $\in$ INSDNG)

PQ_c	Composite commodity price	$TRII_{ii'}$	Transfers from institution i' to i (both in the set INSDNG)
PVA_a	Value-added price (factor income per unit of activity)	WF_f	Average price of factor
PX_c	Aggregate producer price for commodity	YF_f	Income of factor f
$PXAC_{ac}$	Producer price of commodity c for activity a	YG	Government revenue
QA_a	Quantity (level) of activity	YI_i	Income of domestic non-government institution
QD_c	Quantity sold domestically of domestic output	YIF_{if}	Income to domestic institution i from factor f
QE_{cr}	Quantity of exports	ΔK^a_{fat}	Quantity of new capital by activity a for time period t

Table A2. CGE model equations

Production and Price Equations

$QINT_{ca} = ica_{ca} \cdot QINTA_a$	(1)
$PINTA_a = \sum_{c \in C} PQ_c \cdot ica_{ca}$	(2)
$QVA_a = \alpha_a^{va} \cdot \left(\sum_{f \in F} \delta_{fa}^{va} \cdot \left(\alpha_{fa}^{vaf} \cdot QF_{fa} \right)^{-\rho_a^{va}} \right)^{-\frac{1}{\rho_a^{va}}}$	(3)
$W_f \cdot \overline{WFDIST}_{fa} = PVA_a \cdot QVA_a \cdot \left(\sum_{f \in F'} \delta_{fa}^{va} \cdot \left(\alpha_{fa}^{vaf} \cdot QF_{fa} \right)^{-\rho_a^{va}} \right)^{-1} \cdot \delta_{fa}^{va} \cdot \left(\alpha_{fa}^{vaf} \cdot QF_{fa} \right)^{-\rho_a^{va}-1}$	(4)
$QF_{fa} = \alpha_{fa}^{van} \cdot \left(\sum_{f' \in F} \delta_{ff'a}^{van} \cdot QF_{f'a}^{-\rho_{fa}^{van}} \right)^{-\frac{1}{\rho_{fa}^{van}}}$	(5)
$W_{f'} \cdot WFDIST_{f'a} = W_f \cdot WFDIST_{fa} \cdot QF_{fa} \cdot \left(\sum_{f'' \in F} \delta_{ff''a}^{van} \cdot QF_{f''a}^{-\rho_{fa}^{van}} \right)^{-1} \cdot \delta_{ff'a}^{van} \cdot QF_{f'a}^{-\rho_{fa}^{van}-1}$	(6)
$QVA_a = iva_a \cdot QA_a$	(7)
$QINTA_a = inta_a \cdot QA_a$	(8)
$PA_a \cdot (1 - ta_a) \cdot QA_a = PVA_a \cdot QVA_a + PINTA_a \cdot QINTA_a$	(9)
$QXAC_{ac} = \theta_{ac} \cdot QA_a$	(10)
$PA_a = \sum_{c \in C} PXAC_{ac} \cdot \theta_{ac}$	(11)
$QX_c = \alpha_c^{ac} \cdot \left(\sum_{a \in A} \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}} \right)^{-\frac{1}{\rho_c^{ac}-1}}$	(12)
$PXAC_{ac} = PX_c \cdot QX_c \left(\sum_{a \in A'} \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}} \right)^{-1} \cdot \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}-1}$	(13)
$PE_{cr} = pwe_{cr} \cdot EXR - \sum_{c' \in CT} PQ_c \cdot ice_{c'c}$	(14)
$QX_c = \alpha_c^t \cdot \left(\sum_r \delta_{cr}^t \cdot QE_{cr}^{\rho_c^t} + (1 - \sum_r \delta_{cr}^t) \cdot QD_c^{\rho_c^t} \right)^{\frac{1}{\rho_c^t}}$	(15)
$\frac{QE_{cr}}{QD_c} = \left(\frac{PE_{cr}}{PDS_c} \cdot \frac{1 - \sum_r \delta_{cr}^t}{\delta_c^t} \right)^{\frac{1}{\rho_c^t - 1}}$	(16)

Table A3. CGE model equations (continued)

$QX_c = QD_c + \sum_r QE_{cr}$	(17)
$PX_c \cdot QX_c = PDS_c \cdot QD_c + \sum_r PE_{cr} \cdot QE_{cr}$	(18)
$PDD_c = PDS_c + \sum_{c' \in CT} PQ_{c'} \cdot icd_{c'c}$	(19)
$PM_{cr} = pwm_{cr} \cdot (1 + tm_{cr}) \cdot EXR + \sum_{c' \in CT} PQ_{c'} \cdot icm_{c'c}$	(20)
$QQ_c = \alpha_c^q \cdot \left(\sum_r \delta_{cr}^q \cdot QM_{cr}^{-\rho_c^q} + (1 - \sum_r \delta_{cr}^q) \cdot QD_c^{-\rho_c^q} \right)^{-\frac{1}{\rho_c^q}}$	(21)
$\frac{QM_{cr}}{QD_c} = \left(\frac{PDD_c}{PM_c} \cdot \frac{\delta_c^q}{1 - \sum_r \delta_{cr}^q} \right)^{\frac{1}{1+\rho_c^q}}$	(22)
$QQ_c = QD_c + \sum_r QM_{cr}$	(23)
$PQ_c \cdot (1 - tq_c) \cdot QQ_c = PDD_c \cdot QD_c + \sum_r PM_{cr} \cdot QM_{cr}$	(24)
$QT_c = \sum_{c' \in C'} \left(icm_{cc'} \cdot QM_{c'} + ice_{cc'} \cdot QE_{c'} + icd_{cc'} \cdot QD_{c'} \right)$	(25)
$\overline{CPI} = \sum_{c \in C} PQ_c \cdot cwts_c$	(26)
$DPI = \sum_{c \in C} PDS_c \cdot dwts_c$	(27)
Institutional Incomes and Domestic Demand Equations	
$YF_f = \sum_{a \in A} WF_f \cdot \overline{WFDIST}_{fa} \cdot QF_{fa}$	(28)
$YIF_{if} = shif_{if} \cdot \left[YF_f - trnsfr_{row\,f} \cdot EXR \right]$	(29)
$YI_i = \sum_{f \in F} YIF_{if} + \sum_{i' \in INSDNG'} TRII_{ii'} + trnsfr_{i\,gov} \cdot \overline{CPI} + trnsfr_{i\,row} \cdot EXR$	(30)
$TRII_{ii'} = shii_{ii'} \cdot (1 - MPS_{i'}) \cdot (1 - \overline{tins}_{i'}) \cdot YI_{i'}$	(31)
$EH_h = \left(1 - \sum_{i \in INSDNG} shii_{ih} \right) \cdot (1 - MPS_h) \cdot (1 - \overline{tins}_h) \cdot YI_h$	(32)
$PQ_c \cdot QH_{ch} = PQ_c \cdot \gamma_{ch}^m + \beta_{ch}^m \cdot \left(EH_h - \sum_{c' \in C} PQ_{c'} \cdot \gamma_{c'h}^m \right)$	(33)
$QINV_c = IADJ \cdot \overline{qinv}_c$	(34)
$QG_c = \overline{GADJ} \cdot \overline{qg}_c$	(35)

Table A3. CGE Model Equations (continued)

$EG = \sum_{c \in C} PQ_c \cdot QG_c + \sum_{i \in INSDNG} trnsfr_{i\,gov} \cdot \overline{CPI}$	(36)
System Constraints and Macroeconomic Closures	
$YG = \sum_{i \in INSDNG} \overline{tins}_i \cdot YI_i + \sum_{c \in CMNR} tm_c \cdot pwm_c \cdot QM_c \cdot EXR + \sum_{c \in C} tq_c \cdot PQ_c \cdot QQ_c + \sum_{f \in F} YF_{gov\,f} + trnsfr_{gov\,row} \cdot EXR$	(37)
$QQ_c = \sum_{a \in A} QINT_{c\,a} + \sum_{h \in H} QH_{c\,h} + QG_c + QINV_c + qdst_c + QT_c$	(38)
$\sum_{a \in A} QF_{f\,a} = QFS_f$	(39)
$YG = EG + GSAV$	(40)
$\sum_{r\ c \in CMNR} pwm_{cr} \cdot QM_{cr} + \sum_{f \in F} trnsfr_{row\ f} = \sum_{r\ c \in CENR} pwe_{cr} \cdot QE_{cr} + \sum_{i \in INSD} trnsfr_{i\,row} + FSAV$	(41)
$\sum_{i \in INSDNG} MPS_i \cdot \left(1 - \overline{tins}_i\right) \cdot YI_i + GSAV + EXR \cdot FSAV = \sum_{c \in C} PQ_c \cdot QINV_c + \sum_{c \in C} PQ_c \cdot qdst_c$	(42)
$MPS_i = \overline{mps}_i \cdot \left(1 + MPSADJ\right)$	(43)
Capital Accumulation and Allocation Equations	
$AWF^a_{f\,t} = \sum_a \left[\left(\frac{QF_{f\,a\,t}}{\sum_{a'} QF_{f\,a'\,t}} \right) \cdot WF_{f\,t} \cdot WFDIST_{f\,a\,t} \right]$	(44)
$\eta^a_{f\,a\,t} = \left(\frac{QF_{f\,a\,t}}{\sum_{a'} QF_{f\,a'\,t}} \right) \cdot \left(\beta^a \cdot \left(\frac{WF_{f,t} \cdot WFDIST_{f\,a\,t}}{AWF^a_{f\,t}} - 1 \right) + 1 \right)$	(45)
$\Delta K^a_{f\,a\,t} = \eta^a_{f\,a\,t} \cdot \left(\frac{\sum_c PQ_{c\,t} \cdot QINV_{c\,t}}{PK_{f\,t}} \right)$	(46)
$PK_{f\,t} = \sum_c PQ_{c\,t} \cdot \frac{QINV_{c\,t}}{\sum_{c'} QINV_{c'\,t}}$	(47)
$QF_{f\,a\,t+1} = QF_{f\,a\,t} \cdot \left(1 + \frac{\Delta K^a_{f\,a\,t}}{QF_{f\,a\,t}} - \upsilon_f \right)$	(48)
$QFS_{f\,t+1} = QFS_{f\,t} \cdot \left(1 + \frac{\sum_a \Delta K_{f\,a\,t}}{QFS_{f\,t}} - \upsilon_f \right)$	(4

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