

SOUTHMOD

Country report

Uganda

UGAMOD v1.4

2016–2019

Ronald Waiswa, Joseph Okello Ayo, Michael Noble,
Christine Byaruhanga, Susan Kavuma, and Gemma Wright

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Corresponding author: Ronald Waiswa (rwaiswa@ura.go.ug)

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About the project

SOUTHMOD – simulating tax and benefit policies for development

SOUTHMOD is a joint project between the United Nations University World Institute for Development Economics Research ([UNU-WIDER](#)), the European Union Tax–Benefit Microsimulation Model ([EUROMOD](#)) team at the Institute for Social and Economic Research ([ISER](#)) at the [University of Essex](#), and Southern African Social Policy Research Insights ([SASPRI](#)) in which tax–benefit microsimulation models for selected developing countries are being built. These models enable researchers and policy analysts to calculate, in a comparable manner, the effects of taxes and benefits on household incomes and work incentives for the population of each country.

SOUTHMOD models are currently developed for Ecuador (ECUAMOD), Ethiopia (ETMOD), Ghana (GHAMOD), Mozambique (MOZMOD), Namibia (NAMOD), Vietnam (VNMOD), South Africa (SAMOD), Tanzania (TAZMOD), Uganda (UGAMOD), and Zambia (MicroZAMOD). SOUTHMOD models are updated to recent policy systems using national household survey data. This report documents UGAMOD, the SOUTHMOD model developed for Uganda. This work was carried out by Uganda Revenue Authority ([URA](#)) and [Makerere University](#) in collaboration with the project partners.

The results presented in this report are derived using UGAMOD version 1.4 running on EUROMOD software version 3.1.8. The report describes the different tax–benefit policies in place, how the microsimulation model picks up these different provisions, and the database on which the model runs. It concludes with a validation of UGAMOD results against external data sources. For further information on access to UGAMOD and other [SOUTHMOD models](#) see the SOUTHMOD page.

The UGAMOD model and its documentation in this country report has been prepared within the UNU-WIDER project on ‘SOUTHMOD—simulating tax and benefit policies for development’. For more information, see the [SOUTHMOD project page](#).

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Information and requests: publications@wider.unu.edu

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Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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Acronyms

CPI	Consumer price index
EUROMOD	European Union Tax–Benefit Microsimulation Model
ITA	Income Tax Act
LST	Local service tax
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labour and Social Development
NSSF	National Social Security Fund
PAYE	Pay-as-you-earn
UBOS	Uganda Bureau of Statistics
UGX	Ugandan shillings
URA	Uganda Revenue Authority
VAT	Value-added tax

1 Basic information

1.1 Country context and basic information for UGAMOD

Uganda is a landlocked country located in East-Central Africa with a population of about 42.8 million as of 2017 (World Bank 2019), and its capital Kampala is the largest city with a population of 1.5 million. Uganda's economic performance generally remained strong despite the recent slowdown in real gross domestic product growth, which was projected to reach 5.9 per cent in 2018, up from 4.8 per cent in 2017 and 2.3 per cent in 2016 (Africa Development Bank 2018). The increase in economic growth in 2018 was expected to be driven mainly by public infrastructure investment; recovery in manufacturing and construction; and improvements in the services sector, particularly financial and banking, trade, transport, and information and communication technology services.

A household is defined as a group of persons who normally live and eat together (UBOS 2017). According to the 2017 Uganda Bureau of Statistics (UBOS) report, there are a total of 7.3 million households in the country. Of these, 1.8 million are headed by women and 5.5 million by men. Households headed by women are generally smaller than those headed by men (see UBOS 2017). The median age at marriage in 2011 was approximately 18 years for women and that for men approximately 22 years. Over the period 1995–2011, women married at an earlier age (17–18 years) than men (22–23 years).

The legal minimum working age in Uganda is 18 years; work below that age is referred to as child labour. Dependent children are defined as those aged less than 18 years.

Children start primary school at 6 years of age. The National Education System has seven years of primary education and six years of secondary education. The government of Uganda introduced universal primary education in January 1997 and universal secondary education in 2007, making primary and secondary (up to senior four) education free.

The majority of the population have attained primary school-level education. Female literacy is lower (68 per cent) than that for males (77 per cent) (UBOS 2017). More women own a house (64 per cent) or land (59 per cent) individually than men (39 and 43 per cent, respectively); on the other hand, more men own a house (40 per cent) or land (37 per cent) jointly than women.

The Public Service Retirement Benefits Act 1999 defines the voluntary retirement age as 55 years and statutory retirement age as 60 years.

In Uganda, tax policies are divided between central and local government, although central government collects most of the tax revenue. The Ministry of Finance, Planning and Economic Development (MoFPED) through the Uganda Revenue Authority (URA) is the custodian of the design, oversight, administration, and implementation of the tax policies for central government. The fiscal year runs from 1 July to 30 June, and amendments to tax rules and other related financing policies are usually submitted by MoFPED to Parliament at the start of the financial year following the Public Finance Bill. Upon approval by Parliament and signature by the President, the amended Public Finance Bill becomes the law known as the Public Finance Act. At the local government level, the Local Government Finance Act guides local government authorities on sources of revenue and management of funds and resources. The municipal and district councils introduce the taxes using bylaws, and although the rates may differ from one local government to another, the taxes are the same, including property taxes, fees, and levies. Other fees, fines, and charges assessed by ministries, departments, and agencies of the government are collected by the URA.

All tax laws are made and passed through the Acts of Parliament of Uganda. The main tax laws for the purpose of this report include the Income Tax Act (ITA), Value-Added Tax (VAT) Act, Excise Duty Act, and Local Service Tax (LST) Act (see Okuja 2018; LGFC 2008); all are defined by common laws at the national level. Municipalities are empowered under the Local Government Act to collect all taxes for local governments.

The ITA defines a taxpayer as any person who derives an amount subject to tax under the ITA. Ugandan tax residents are subject to income tax on their worldwide income, whereas non-residents are subject to tax on income accrued in or derived from Uganda.

A resident is defined as an individual who:

- has a permanent home in Uganda;
- is present in Uganda
 - for a period of, or periods amounting in aggregate to, 183 days or more in any 12-month period that commences or ends during the year of income; or
 - during the year of income and in each of the two preceding years of income for periods averaging more than 122 days in each such year of income;
- is an employee or official of the government of Uganda posted abroad during the year of income.

Employers are obliged to contribute on a monthly basis to the National Social Security Fund (NSSF) 15 per cent of an employee's monthly salary, wages, and cash allowances, but 5 per cent is deducted from the employee's wage as his/her share of the contribution.

The following social regimes exist in Uganda: Public Service Pension Scheme, NSSF for the formal private sector and non-governmental organizations, and private schemes such as occupational pensions/saving schemes run by particular institutions and companies. Social security was created to cover old age, disability, and survivors. The first social security law was set in 1967, and currently the laws applicable are the Pensions Act, the 1985 NSSF Act, and the 2011 National Retirement Benefit Authority Act. Social security is a constitutional right and a right enshrined in the United Nations Universal Declaration of Human Rights (UDHR 1948). Article 22 of the UDHR provides the right to social security, highlighting the fact that every member of society should be entitled to social security. The same right is reiterated in the International Labour Organization Convention No. 102, which sets the minimum standards of social security benefits for old age, invalidity, sickness, Medicare, unemployment, employment injury, and family and maternal benefits.

1.2 Social benefits

The social assistance grants were introduced as government and non-governmental organization programmes whose aim was to achieve the overall government objective of enabling poor households to increase incomes and opportunities while improving consumption. Some of these grants are summarized below.

Benefit 1 (*Senior Citizens' Grant*): This is an old-age grant given to targeted older persons of 65 years and above (but lowered to 60 years in the case of the more vulnerable Karamoja region). Each individual receives a monthly stipend of 25,000 Ugandan shillings (UGX) (US\$8). This amount represents about 20 per cent of the monthly household consumption of the poorest in Uganda. It was expected that between 2015 and 2020, the programme would be implemented in 55 districts in total. However, in practice, the current roll-out only went as far as the financial year 2016/17. This means that beyond the 15 pilot districts and 20 initial roll-out districts, only an additional 5 districts were rolled out. This brought the total number of districts to 40 (MoGLSD 2019).

Benefit 2 (*Disability Support Grant*): Individuals eligible for the disability grant are considered to be those with a physical and/or mental limitation that supposedly interferes with both activities at work and daily tasks. Disabled people are defined as those who express some difficulty in seeing, hearing, walking, concentrating, and self-care.

Benefit 3 (*Extremely Vulnerable Households Programme*): This gives food and cash handouts to children under 5 years of age, children aged 5–18 years, and adults (18 years and above). This programme is implemented under the World Food Programme's SCOPE beneficiary system and the Government of Uganda's social protection registry coordinated by the Prime Minister's office.

1.2.1 Not strictly benefits

Not strictly benefit 1 (*Youth Livelihood Programme*): Project eligibility criteria include the following:

- The beneficiaries should fall within the youth age bracket (18–30 years).

- All the members of the Youth Interest Group should be bona fide residents of the location (village) under which the project is being approved.
- All the Youth Interest Groups are transparently selected in a community participatory process based on the selection criteria set by the programme.
- Evidence that members of the Youth Interest Group fully participated in the identification and planning processes for the project and group formulation shall be voluntary. There should be evidence that the enterprise selected has undergone adequate viability and sustainability analyses guided by technical experts, with clear business and repayment plans for the revolving fund.
- There should be evidence that the enterprise selected has undergone the full generation process, including appraisal and approval by the sub-county and district local governments, respectively, based on the programme guidelines.
- The enterprise must have a clear physical address/location. Where the enterprise requires land, the ownership and legal status of the land should be established through a valid land agreement or land title.
- The enterprise should have a reasonable maturity period that permits repayment of the interest-free revolving fund within a time period of 1 year. A service fee of 5 per cent shall be levied on all repayments that exceed 1 year.
- The enterprise should have a good implementation and sustainability plan.
- At least 80 per cent of the budget for the enterprise should go into the core inputs of the enterprise as opposed to essential and non-core inputs and administration expenses.

1.3 Social contributions

Social (insurance) contribution 1 (NSSF): NSSF Uganda is a national saving scheme mandated by the government through the NSSF Act, Cap 222 (Laws of Uganda) to provide social security services to employees in Uganda. NSSF Uganda is a provident fund and covers employees in the private sector. It is a contributory scheme and is funded by contributions from employees and employers, of 5 and 10 per cent, respectively, of the employee's gross monthly wage. Since 2012, the fund is regulated by the Uganda Retirement Benefits Regulatory Authority while MoFPED is responsible for overseeing policy.

As per the Act, NSSF administers and pays qualified contributing persons the following benefits as a matter of right:

Age benefit: This is paid to persons who have reached the retirement age of 55 years. Age benefit can also be claimed on attaining the age of 50 years, provided the claimant has retired from employment.

Survivors' benefit: This is paid to the immediate surviving family (spouse and children) of the deceased person. In case the individual did not have a spouse or children, the benefit is paid to parents if they solely depended upon the deceased person.

Exempted employment: This is paid to persons who join exempted employment categories that have their own social protection schemes (e.g. public service, army, police, etc.).

Emigration grant: This is paid to foreign¹ or Ugandan nationals who are leaving the country permanently.

Invalidity benefit: This is paid to persons who can no longer be gainfully employed because of physical or mental incapacitation.

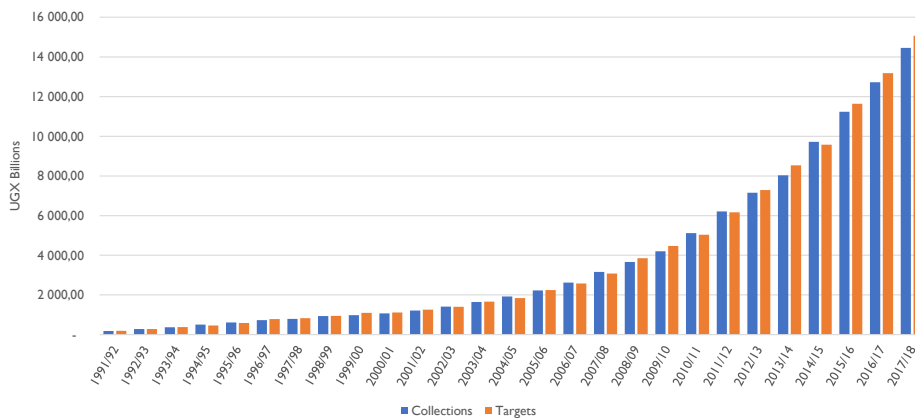
Withdrawal benefit: This is paid to a person if s/he attains the age of 50 years and if s/he has not been employed under a contract of service for a period of 1 year immediately preceding his or her claim.

¹ From the National Social Security Fund (NSSF) Act, foreign nationals in this context refer to non-Ugandans who have been working in Uganda and contributing to the NSSF.

1.4 Taxes

The URA was established by an Act of Parliament in September 1991 as a central body for the assessment, collection, and accounting of government revenue. In fulfilling this obligation, the URA administers and enforces laws relating to such revenue and advises government on tax policy matters. Before the establishment of the URA, central government taxes were collected by the Ministry of Finance. The government hoped to achieve two main objectives when it established the URA (Kangave 2005). First, by removing tax collection obligation from the Ministry of Finance, it was anticipated that the newly established revenue authority would operate with limited political interference. Second, creating the URA as an autonomous statutory body not part of civil service would provide an opportunity to offer better remuneration and thereby attract and retain competent staff. These reforms, along with the introduction of VAT in 1996 and the enactment of a new income tax law in 1997, registered success in terms of revenue collection over time (Figure 1.1).

Figure 1.1: Tax revenue performance, 1991/92–2017/18 (UGX billions)



Source: Authors' compilation based on URA annual revenue data.

The URA collects both tax and non-tax revenues. Tax revenues include domestic taxes and international trade taxes. Domestic taxes consist of income tax [corporation tax, individual income tax, pay-as-you-earn (PAYE), presumptive tax, rental income tax], withholding tax, tax on bank interest, casino tax, excise duty, and VAT. International trade taxes include petroleum duty, import duty, excise duty, VAT on imports, withholding taxes on imports, and levies among others. Non-tax revenue includes fees and licences.

During the financial year 2017/18, domestic taxes contributed 59.4 per cent and international trade taxes 40.6 per cent of the gross revenues. The major contributing tax heads were PAYE (16.6 per cent), VAT (15.1 per cent), VAT on imports (15.7 per cent), and petroleum duty (12.2 per cent), as seen in Table 1.1.

Table 1.1: Tax revenue collections for financial year 2017/18

	Collections (UGX billions)	Percentage share
Gross revenues (includes all NTR)	14,659.8	100.00
Domestic taxes	8,448.9	59.40
Taxes on international trade	6,210.8	40.60
Direct domestic taxes	4,670.7	32.50
PAYE	2,396.1	16.60
Corporate tax	884.8	6.90
Other corporate tax	101.6	0.40
Presumptive tax	5.3	0.00
Withholding tax	754.3	5.00
Rental income tax	88.7	0.70
Casino tax	29.2	0.20
Other	55.2	0.30
Indirect domestic taxes	3,188.7	22.80
Excise duty	953.9	7.80
VAT	2,234.8	15.10
Taxes on international trade	6,210.8	40.60
Petroleum duty	1,811.8	12.00
Import duty	1,223.8	8.00
Excise duty	196.9	1.30
VAT on imports	2,416.6	15.70
Withholding taxes	179.6	1.10
Infrastructure levy	87.7	0.50
Hides and skins levy	12.4	0.10
Fees and licences	209.5	1.40
Total non-tax revenue	380.0	2.70

Note: NTR, non-tax revenue; VAT, value-added tax.

Source: Authors' compilation based on URA revenue data.

1.5 UGAMOD tax rules

Tax 1 (PAYE): Employers are required by law to deduct income tax from an employee's taxable salary via PAYE. For PAYE, a withholding tax approach is used. PAYE is for income exclusively from one employer.

Tax 2 (Individual income tax): This is applicable to individuals earning business income (self-employment) or those with both employment income and business income (Table 1.2).

Table 1.2: Income tax rates for individuals, 2019

Chargeable income	Rate of tax
≤2,820,000 (or 235,000 per month)	Nil
>2,820,000≤4,020,000 (or 335,000 per month)	10% on amount in excess of 2,820,000 (or 235,000 per month)
>4,020,000≤4,920,000 (or 410,000 per month)	120,000 (10,000 per month)+20% on amount in excess of 4,020,000 (or 335,000 per month)
>4,920,000≤120,000,000	300,000 (25,000 per month)+30% on amount in excess of 4,920,000 (or 410,000 per month).
>120,000,000 (or 10,000,000 per month)	Where income exceeds 120,000,000 (10,000,000 per month) an additional 10% is charged on the amount in excess of 120,000,000 (10,000,000 per month)

Source: Authors' compilation from the Ugandan ITA (see Okuja 2018).

Tax 3 (Rental income tax): This is charged separately from income tax for persons earning rental income for a year of income. (Rent is not included under the gross income of an individual.) For individual taxpayers, an allowable deduction of 20 per cent of the rental income as expenditures and losses incurred by individual in the production of income is given. It is charged as 20 per cent of the chargeable income in excess of 2,820,000.

Tax 4 (*Presumptive tax—income tax on small businesses*): This is applied to resident persons (individuals and non-individuals) with businesses that have an annual turnover of less than UGX 150 million. No deductions or tax credits are allowed. This is treated as the final tax. It does not apply to a resident taxpayer who is in the business of providing medical, dental, architectural, engineering, accounting, legal, or other professional services; public entertainment services; public utility services; or construction services (Tables 1.3 and 1.4).

Table 1.3: Small business taxpayers' tax rates, 2019

Gross turnover	Tax
Where the gross turnover of the taxpayer exceeds UGX 50 million but does not exceed UGX 75 million per annum	UGX 937,500 or 1.5% of the gross turnover, whichever is lower
Where the gross turnover of the taxpayer exceeds UGX 75 million but does not exceed UGX 100 million per annum	UGX 1,312,500 or 1.5% of the gross turnover, whichever is lower
Where the gross turnover of the taxpayer exceeds UGX 100 million but does not exceed UGX 125 million per annum	UGX 1,687,500 or 1.5% of the gross turnover, whichever is lower
Where the gross turnover of the taxpayer exceeds UGX 125 million but does not exceed UGX 150 million per annum	UGX 2,062,500 or 1.5% of the gross turnover, whichever is lower

Source: Authors' compilation from the Ugandan ITA (see Okuja 2018).

Table 1.4: Tax rates for different trades in Kampala City divisions, municipalities, and towns and trading centres, 2019

Business trade	Where the gross turnover exceeds UGX 35 million but does not exceed UGX 50 million	Where the gross turnover exceeds UGX 20 million but does not exceed UGX 35 million	Where the gross turnover exceeds UGX 10 million but does not exceed UGX 20 million
Kampala City divisions			
General trade	500,000	400,000	250,000
Carpentry/metal workshops	500,000	400,000	250,000
Garages (motor vehicle repair)	550,000	450,000	300,000
Hair and beauty/salons	550,000	400,000	300,000
Restaurants or bars	550,000	450,000	300,000
Drug shops	500,000	350,000	250,000
Others	450,000	300,000	200,000
Municipalities			
General trade	400,000	300,000	150,000
Carpentry/metal workshops	400,000	300,000	150,000
Garages (motor vehicle repair)	450,000	350,000	200,000
Hair and beauty/salons	450,000	350,000	200,000
Restaurants or bars	450,000	350,000	200,000
Drug shops	400,000	300,000	150,000
Others	400,000	350,000	150,000
Towns and trading centres			
General trade	300,000	200,000	100,000
Carpentry/metal workshops	300,000	200,000	100,000
Garages (motor vehicle repair)	350,000	250,000	100,000
Hair and beauty/salons	350,000	250,000	100,000
Restaurants or bars	350,000	250,000	100,000
Drug shops	300,000	200,000	100,000
Others	300,000	250,000	100,000

Source: Authors' compilation from the Ugandan ITA (see Okuja 2018).

Tax 5 (VAT—on supply and imports of domestic goods and services): VAT registration is required when taxable turnover exceeds UGX 150 million per year. The standard rate is 18 per cent (see the VAT Act in Okuja 2018).

Tax 6 (Excise—domestic and international trade): Different commodities have different tax rates. It includes a mix of specific rates and ad valorem rates.

Tax 7 (LST): This is levied on the wealth and income of the following categories of people, and the assessment is fair, equitable, and non-regressive: persons in gainful employment, self-employed and practising professionals, self-employed artisans, businessmen, and businesswomen. However, the salaries of the following categories of people are exempted from LST: members of the police force, prison services, Uganda Peoples’ Defence Force, unemployed persons, peasants (people living in poverty and unable to earn a minimum income to access basic necessities of life), and individuals on diplomatic missions accredited to Uganda.

The tax rates vary for the different categories of taxpayers (see LST Act in LGFC 2008).

2 Simulation of taxes and benefits in UGAMOD

2.1 Scope of simulation

Table 2.1 shows the benefit policies that are simulated in UGAMOD. Table 2.2 lists the main taxes and social contributions and specifies which ones are simulated within UGAMOD. Table 2.3 presents the order of the main elements of the Ugandan system for 2016–19 for simulations.

Table 2.1: Simulation of benefits in UGAMOD

	Variable name(s)	Treatment in UGAMOD			
		2016	2017	2018	2019
Pension benefits (Senior Citizen Grant)	<i>Boa_ug</i>	S	S	S	S

Note: ‘S’ policy is simulated although some minor or very specific rules may not be simulated.

Source: Authors’ compilation.

Table 2.2: Simulation of taxes and social contributions in UGAMOD

	Variable name(s)	Treatment in MOZMOD			
		2016	2017	2018	2019
Taxes					
Personal income tax	<i>tin_ug</i>	S	S	S	S
Presumptive turnover tax	<i>ttn_ug</i>	S	S	S	S
LST	<i>tgV_ug</i>	S	S	S	S
Rental income tax	<i>tpr_ug</i>	S	S	S	S
VAT	<i>tva_ug</i>	S	S	S	S
Excise duty	<i>tex_ug</i>	S	S	S	S
Social contributions					
Employee pension contribution	<i>tscee_ug</i>	S	S	S	S
Employer pension contribution	<i>tscer_ug</i>	S	S	S	S

Notes: LST, local service tax. ‘S’ policy is simulated although some minor or very specific rules may not be simulated.

Source: Authors’ compilation.

Table 2.3: UGAMOD spine: Order of simulation

Policy	2016	2017	2018	2019
<i>uprate_ug</i>	On	On	On	On
<i>ildef_std_ug</i>	On	On	On	On
<i>lldef_non_std_ug</i>	On	On	On	On
<i>lldef_stats_ug</i>	On	On	On	On
<i>lldef_exp_ug</i>	On	On	On	On
<i>tundef_ug</i>	On	On	On	On
<i>constdef_ug</i>	On	On	On	On
<i>spl_ug</i>	On	On	On	On
<i>ses_ug</i>	On	On	On	On
<i>tscee_ug</i>	On	On	On	On
<i>tscer_ug</i>	On	On	On	On
<i>tgV_ug</i>	On	On	On	On
<i>tpr_ug</i>	On	On	On	On
<i>ttn_ug</i>	On	On	On	On
<i>tin_ug</i>	On	On	On	On
<i>boa_ug</i>	On	On	On	On
<i>tva_ug</i>	On	On	On	On
<i>tex_ug</i>	On	On	On	On
<i>output_std_ug</i>	On	On	On	On
<i>output_std_hh_ug</i>	Off	Off	Off	Off

Source: Authors' compilation based on the UGAMOD model.

3 Data

3.1 General description

The UGAMOD model used data from the 2016/17 Uganda National Household Survey (UNHS), which is the sixth national household cross-section survey conducted by UBOS. The UNHS is an integrated household survey with data collected using four modules: socio-economic, labour force, community, and market price. The data used to generate the UGAMOD database were obtained from two modules: the socio-economic and labour force modules that include data on the demographic and socio-economic characteristics of households, such as educational attainment, health status, household income, expenditure and assets, and labour market characteristics. Data were collected for a period of 12 months from a total of 15,721 households. Table 3.1 describes the database.

Table 3.1: UGAMOD database

Characteristic	Description
Name	Uganda National Household Survey
Provider	Uganda National Bureau of Statistics
Year of collection	2016/17
Period of collection	June 2016 to June 2017
Income reference period	Monthly
Sample size	74,422 individuals and 15,721 households
Response rate	91%

Source: 2016/17 UNHS (see UBOS 2018).

3.2 Data adjustment

The UNHS data are stored in separate files for each of the sections of the questionnaire. Consequently, the data compilation process involved the merging of 17 separate files on the various dimensions of household and individual demographic and socio-economic characteristics using both the household identifier (*hhid*) and the person identifier (*pid*) to

create an individual-level database. The database excluded a total of 2,341 individuals who were not permanent members of the household because of being guests (1,743), having left the household more than 6 months ago (202), having left permanently (277), or having died (119).

3.3 Imputations and assumptions

In order to generate relevant variables for the UGAMOD model, where applicable, we imputed missing values from existing variables using plausible assumptions. For instance, there were nine missing ages (*dag*) of which it was possible to impute one value using the month and year of birth.

The *idpartner* variable was created from the variable capturing the relationship of the household member to the household head. Specifically, we used the response of spouse to generate the *idpartner* variable. The *idfather* and *idmother* variables were constructed from responses to three questions: Is the biological father (mother) of (name) alive? Is he (she) living in this household? And what is the ID/name of the father (mother)? There were 239 cases with no father other than dead or absent from the household and only 86 cases with no mother other than dead or absent from the household. The missing values for *idfather* and *idmother* were identified and replaced using the gender variable and variable capturing the relationship of the household member to the household head. The *idfather* and *idmother* were used to generate the *idparent* variable.

In order to compute the LST and presumptive tax, it was necessary to create a number of flags, such as the municipality flag (*drgn3*), town council flag (*drgn4*), and trades flag (*tc*). The variables *drgn3* and *drgn4* were generated using information on location variables on districts, municipalities, and town councils. The *tc* variable was constructed using the occupation variable (*loc*) data and responses to the following question: What kind of work do you usually do in the main job/activity that you had last week or from which you were absent? The aim was to identify different trades that are provided for in the presumptive tax policy.

The income of an employee (*yem*) was computed on the basis of earnings from the main job using reported earnings for a specified period of time, including hourly, daily, weekly, every 2 weeks, twice monthly, monthly, annually, and other (specify). Given that majority (63.61 per cent) of the workers reported monthly income, the rest of the earnings were converted into monthly earnings as a measure of standardizing the earnings. To convert hourly earnings into monthly earnings, the reported earnings were multiplied with the reported weekly hours worked and by 4. The daily earnings were converted by multiplying the earnings with 20 days (it was assumed the employee works 5 days a week). The weekly earnings were multiplied by 52/12 weeks. The bi-monthly earnings were multiplied by 2, while annual earnings were divided by 12. The data had a few outliers at the top of the income distribution and were capped at 99 per cent of the income distribution. The computed *yem* is gross income.

Income for the self-employed (*yse*) was constructed from individual responses on monthly net profit in the raw data. Other types of income were reported on a household level for a period of 12 months, such as income from agricultural activities (*yag*), building rent (*ypr*), land lease (*yprld*), private transfers (*ypt*), interest earned (*yjyt*), dividends (*yjyd*), and other sources (*yot*). These were converted to monthly earnings by dividing the income with 12 months in reference to the household variable (*dhh*) to attribute the income to the household head and data were capped at 99 per cent to remove outliers at the top of the income distribution.

A new methodology for modelling VAT and excise duties was introduced into SOUTHMOD models in 2017. This involves removing VAT and excise duty (where applicable) from expenditure items at the point of preparation of the data so that expenditure is brought into the model ex-VAT and excise. This simplifies the modelling of indirect taxes on the model. The VAT and excise duty removed are carried into the model as the variables for imputed VAT (*tvaiv*) and imputed excise duty (*texiv*).

For the correct functioning of estimates of consumption poverty using the Statistics Presenter application within the model, variables for imputed direct taxes (*tis* and *ttr*) were created as well as a number of other variables (see DRD² for details of the other variables). Imputed direct

² Data Requirement Document is an Excel file that shows how all variables in the model were constructed from the original dataset. This is available on request from the authors.

taxes are required because direct tax information is not collected by the survey instrument. Because of the complexity of direct taxes in Uganda, an innovative method was employed for the imputation process. First, the input dataset was completed without direct tax imputation. Second, the model (which was also complete) was run in order to generate modelled taxes and employee social security contributions for 2016. Third, these modelled taxes (personal income tax, presumptive tax, rental income tax, LST, and employee social insurance contributions) were brought back into the input dataset to create the imputed variables *tis* and *ttn*. This methodology is more straightforward than trying to simulate the imputed taxes using STATA code.

There are two main poverty lines in the UNHS data: the basic needs poverty line and the food poverty line. The former is the most widely used and so is used in UGAMOD. The basic needs poverty line is reported in the data in the variable *spline*. There are eight values for the basic needs poverty line, ranging from UGX 40,558.76 to UGX 46,233.65. It was possible to incorporate the eight values for the basic needs poverty line in the model. With regard to household monthly consumption (*xhh*) in the model, the basic needs poverty line uses the variable *cpexp30* (monthly household expenditures in constant prices after adjusting for regional prices).

3.3.1 Time period

The survey data were collected between June 2016 and June 2017. Income data were gathered in relation to the previous week or month or year before the first date of interview.

3.3.2 Gross incomes

Gross incomes are reported in the 2016/17 UNHS.

3.3.3 Disaggregation of harmonized variables

It was not necessary to disaggregate composite variables for the UGAMOD dataset.

3.4 Updating

To account for any time inconsistencies between the input dataset and the policy year, uprating factors are used. Each monetary variable (i.e. each income component) is updated to account for changes in the non-simulated variables that have taken place between the year of the data and the year of the simulated tax-benefit system. Uprating factors are generally based on changes in the average value of an income component between the year of the data and the policy year.

The list of uprating factors as well as the sources used to derive them can be found in Table 3.2.

Given that the financial year in Uganda runs from 1 July to 30 June, a decision was made to uprate the model to a time point of 1 July in each year and the uprating indices have been adjusted accordingly.

Table 3.2: Raw Indices for deriving UGAMOD uprating factors

	Constant name	2015	2016	2017	2018	2019
Overall CPI (base October 2009=100)	\$f_CPI_Overall	150.3	158.1	167.1	172.2	176.5
Food CPI (base October 2009=100)	\$f_CPI_Food	159.2	166.8	184.9	180	184.7
Non-food CPI (base date=100)	\$f_CPI_Non_Food	146.9	154.7	160.2	169.6	173.7
Alcohol CPI (base October 2009=100)	\$f_CPI_Alcohol	144.9	153.1	153.9	158.5	160.4
Tobacco CPI (base October 2009=100)	\$f_CPI_Tobacco	144.9	153.1	153.9	158.5	160.4
Fuel CPI (base October 2009=100)	\$f_CPI_Fuel	162.8	167.6	180.7	209.6	207.0

Note: CPI, consumer price index.

Source: Authors' compilation based on UBOS annual statistical abstracts.

4 Validation

4.1 Aggregate validation

UGAMOD results have been validated against external benchmarks where feasible. The main discrepancies between UGAMOD results and external benchmarks are discussed in the following sub-sections. Factors that may explain the observed differences are also discussed.

4.1.1 Validation of outputted (simulated) taxes

Table A1 in the Annex compares the UGAMOD-simulated taxpayers with the target figures from the URA.

The discrepancies are largely attributed to the high non-compliance levels of individual taxpayers generally (Kangave et al. 2018; Moore and Prichard 2017).

There are no available statistics on the actual collections and target for LST. The recently published statistics by the local government financial commission are for the financial year 2015/16 where UGX 11.719 billion was collected.

Most individuals registered for income tax are in formal employment and they pay most of the personal income tax (68 per cent) (Kangave et al. 2018). Similarly, of the individual taxpayers registered in the URA, majority (67.1 per cent) are employees. Only 28.9 per cent declared business as their source of income, 1.4 per cent rental, and 2.7 per cent property (URA 2019).

UGAMOD estimates of the number of taxpayers are much higher than those actually registered in the URA (see Table A1 in the Annex). Again, this is most likely due to the poor taxpayer culture and the huge informal sector in the country.

Table A2 in the Annex compares the UGAMOD-simulated revenue statistics with the actual and target collections from the URA.

4.1.2 Validation of outputted (simulated) social security contributions

Tables A1 and A2 in the Annex compare the UGAMOD estimates of the social security contributors and contributions respectively, with the figures reported by the NSSF.

Most of the contributors to the NSSF are those in formal employment. Also, there are a number of organizations that do not comply: for example, in the financial year 2016/17, the compliance level was 78 per cent.

4.1.3 Validation of outputted (simulated) Senior Citizen Grant expenditures and number of beneficiaries

UGAMOD estimates have been compared with those reported by the Ministry of Gender, Labour and Social Development (MoGLSD; see Kidd 2016).

4.2 Income distribution

4.2.1 Income inequality

Analysis of the UGAMOD output data for 2016/17 yields a Gini coefficient of 0.44 whereas that reported by UBOS (2018) is 0.42, as seen in Table A3 in the Annex.

4.2.2 Poverty rates

The UGAMOD estimated poverty rate for 2016 was 20.9 per cent whereas that reported by UBOS (2018) for 2016/17 was 21.4 per cent, as seen in Table A4 in the Annex.

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Annex

Table A1: Tax and benefit instruments simulated in UGAMOD: Number of recipients (of the benefits) and payers (of the tax and social insurance contributions)

Tax–benefit policy	UGAMOD				External			Ratio		
	2016 (A)	2017 (B)	2018 (C)	2019 (D)	2016 (E)	2017 (F)	2018 (G)	2016 (A/E)	2017 (B/F)	2018 (C/G)
Personal income tax	2,493,850	2,578,485	2,619,442	2,663,781	749,086 ^a	Not available	Not available	333	/	/
Presumptive tax	18,720	21,310	21,310	22,694	13,641 ^a	Not available	Not available	137	/	/
Rental income tax	167,665	179,111	179,149	179,149	13,101 ^a	Not available	Not available	1280	/	/
VAT	N/A	N/A	N/A	N/A	18,061 ^{a,b}	Not available	Not available	N/A	N/A	N/A
Excise duty	N/A	N/A	N/A	N/A	542 ^a	Not available	Not available	N/A	N/A	N/A
LST	2,215,826	2,394,998	2,406,292	2,420,482	/	Not available	Not available	/	/	/
Social insurance contributors	901,801	901,801	901,801	901,801	1,623,082 ^c	Not available	Not available	56	/	/
Senior Citizens' Grant	333,927	394,919	394,919	394,919	125,000 ^d	Not available	Not available	267	/	/

Notes: VAT, value-added tax; LST, local service tax. N/A, not applicable. ^aFigures obtained from URA taxpayer register. ^bIncludes only individuals and non-individuals who are registered and pay VAT. The VAT threshold is UGX 150 million. ^cNumber of NSSF contributors; these individuals are employed by 22,770 employers. ^dFigures obtained from MoGLSD (see Kidd 2016).

Source: Columns A–D: UGAMOD version 1.4. Columns E–G: URA, unless otherwise specified in notes.

Table A2: Tax and benefit instruments simulated in UGAMOD: Annual amounts

Tax–benefit policy	UGAMOD				External ^a			Ratio		
	2016, UGX (A)	2017, UGX (B)	2018, UGX (C)	2019, UGX (D)	2016, UGX billion (E) ^a	2017, UGX billion (F)	2018, UGX billion (G)	2016 (A/E)	2017 (B/F)	2018 (C/G)
Personal income tax	3,669.7	3,985.2	4,177.0	4,329.3	2,031.2 ^b	Not available	Not available	181	/	/
Presumptive tax	75.5	85.7	86.3	93.6	60.0	Not available	Not available	126	/	/
Rental income tax	142.7	156.4	164.3	170.9	61.4	Not available	Not available	232	/	/
VAT	3,536.5	3,763.8	3,833.4	3,920.4	1,952.4	Not available	Not available	181	/	/
Excise duty	860.0	831.7	760.4	765.8	Not available	Not available	Not available	/	/	/
LST	53.0	59.7	60.7	61.5	Not available	Not available	Not available	/	/	/
Social insurance contributors	999.1	1,056.0	1,088.2	1,115.4	785.5	Not available	Not available	127	/	/
Senior Citizens' Grant	100.2	118.5	118.5	118.5	Not available	Not available	Not available	/	/	/

Notes: N/A, not applicable. ^aTarget amounts. ^bIncludes PAYE, income from self-employment, etc., but excludes presumptive tax and rental income tax.

Source: Columns A–D: UGAMOD version 1.4. Columns E–G: URA.

Table A3: Income inequality

Year	UGAMOD consumption-based Gini (A)	External consumption-based Gini (B)
2016	0.40	0.42
2017	0.40	/
2018	0.40	/
2019	0.40	/

Source: Column A: UGAMOD version 1.4. Column B: UBOS (2018: 94).

Table A4: Poverty rates

Year	UGAMOD consumption-based (A)	External consumption-based (B)
2016	21.66	21.4
2017	21.78	/
2018	21.87	/
2019	21.98	/

Notes: The eight basic needs poverty lines (comprising an urban and a rural poverty line for each of the four regions Central, East, North, and West) were applied in UGAMOD version 1.4. These lines were updated using the overall CPI to 2017, 2018, and 2019 prices for the subsequent years.

Source: Column A: UGAMOD version 1.4; Column B: UBOS (2018: 90).