

SOUTHMOD

Country report

Tanzania

TAZMOD v1.6

2012, 2015, 2016, 2017

Vincent Leyaro, Elineema Kisanga, Michael Noble,
Gemma Wright, and David McLennan

December 2017



Acknowledgements

The team thank Professor Jukka Pirttilä for his support and comments. Dr Helen Barnes and Ms Michell Mpike (SASPRI) are thanked for their contributions at the start of the project. This report draws from and builds on the Leyaro et al. (2015) WIDER Working Paper. Preliminary findings from this report were presented at a SOUTHMOD Project Workshop convened by UNU-WIDER on 10–11 October 2016 in Helsinki, Finland and on 4 July 2017 in Maputo, Mozambique.

Corresponding author: Gemma Wright (gemma.wright@saspri.org)

Please cite as

Leyaro, Vincent, Elineema Kisanga, Michael Noble, Gemma Wright, and David McLennan (2017). *UNU-WIDER SOUTHMOD Country Report: TAZMOD v1.6, 2012, 2015, 2016, 2017*, UNU-WIDER SOUTHMOD Country Report Series. Helsinki: UNU-WIDER.

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 available for Ecuador (ECUAMOD), Ethiopia (ETMOD), Ghana (GHAMOD), Mozambique (MOZMOD), Namibia (NAMOD), Vietnam (VNMOD), South Africa (SAMOD), Tanzania (TAZMOD), and Zambia (MicroZAMOD). SOUTHMOD models are updated to recent policy systems using national household survey data. This report documents TAZMOD, the SOUTHMOD model developed for Tanzania. This work was carried out by **University of Dar es Salaam** in collaboration with the project partners.

The results presented in this report are derived using TAZMOD version 1.6 running on EUROMOD software. 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 TAZMOD results against external data sources. For further information on access to TAZMOD and other SOUTHMOD models see the [SOUTHMOD page](#).

The TAZMOD 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’, which is part of a larger research project on ‘The economics and politics of taxation and social protection’. For more information, see the [SOUTHMOD project page](#).

Copyright © UNU-WIDER 2018

Information and requests: publications@wider.unu.edu

Typescript prepared by Ayesha Chari.

The United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Denmark, Finland, Sweden, and the United Kingdom.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors. WIDER does not take any responsibility for results produced by external users of the model.

Contents

1	Basic Information	1
1.1	Basic information about the tax–benefit system	1
1.2	Social benefits	2
1.3	Social contributions	2
1.4	Taxes	3
2	Simulation of taxes and benefits in TAZMOD	4
2.1	Scope of simulation	4
2.2	Order of simulation and interdependencies	5
2.3	Social benefits	5
2.4	Personal income tax	9
2.5	Indirect taxes	10
3	Data	11
3.1	General description	11
3.2	Data adjustment	12
3.3	Imputations and assumptions	12
3.4	Updating	14
4	Validation	15
4.1	Aggregate validation	15
4.2	Income distribution	16
4.3	Summary of ‘health warnings’	16
	References	17
	Annex	18

Tables

Table 2.1:	Simulation of benefits in TAZMOD	4
Table 2.2:	Simulation of taxes and social contributions in TAZMOD	4
Table 2.3:	TAZMOD Spine: order of simulation	5
Table 2.4:	Personal income tax bands (2015, 2016 and 2017)	9
Table 2.5:	Presumptive income tax bands (2015, 2016 and 2017)	10
Table 3.1:	TAZMOD database description	11
Table 3.2:	Raw indices for deriving TAZMOD uprating factors	14
Table 4.1:	Coefficients for the Adult Equivalence Scale	16

Table A1: Unemployment and employment figures	18
Table A2: Tax and benefit instruments simulated in TAZMOD: Number of recipients/payers	18
Table A3: Tax and benefit instruments simulated in TAZMOD: Annual amounts (TZS).....	19
Table A4: Income inequality.....	19
Table A5: Poverty rates.....	19

Acronyms

CPI	Consumer price index
HBS	Household Budget Survey
LFS	Labour Force Survey
LGA	Local Government Authority
LMA	Law of Marriage Act
MoFP	Ministry of Finance and Planning
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund
PAYE	Pay-as-you-earn
PMT	Proxy means test
PSSN	Productive Social Safety Net
PSU	Primary sampling unit
TASAF	Tanzania Social Action Fund
TMU	TASAF monitoring unit
TRA	Tanzania Revenue Authority
TZS	Tanzanian shillings
URB	Unified Registry of Beneficiaries
VAT	Value-added tax

1 Basic Information

1.1 Basic information about the tax–benefit system

The United Republic of Tanzania is located within the Southern African Development Community and the East African Community.

The working age in Tanzania is 18 years and above; work below that age is referred to as child labour. Primary education is free and compulsory for all children from seven years of age, and primary education lasts for a period of seven years. The minimum school leaving age in Tanzania is 14 years. Dependent children are defined as those aged below 18 years.

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

In terms of family structure, polygamy is fairly widespread in Tanzania, with origins in Customary Law and Islamic Law traditions. The 1971 Law of Marriage Act (LMA) allows men to have more than one wife (but not for women to have more than one husband) and was written with the intention of accommodating both Customary Law and Islamic Law traditions (Howland and Koenen, n.d.). Importantly, the Act states that each wife shall enjoy equal rights and have equal status in law. However, where informal de facto variants of polygamy occur, the ‘unofficial co-wives have limited social recognition and little protection under the LMA’ (Howland and Koenen, n.d.: 27).

Lone parenthood is not very prevalent but is on the rise. Tanzania’s Local Customary Law (Declaration) Order of 1963 states that children of married couples belong to the father, and this custodianship continues beyond divorce. The only exception is that divorced women are given temporary custodianship of children that they are breastfeeding. If a woman has an illegitimate child, the child is said to belong to the woman’s father (see Government of Tanzania 1963: Chapters 3 and 4).

In Tanzania, tax policies are divided between central and local government, although central government collects most of the tax revenue (see Leyaro et al. 2015). The Ministry of Finance and Planning (MoFP, formerly the Ministry of Finance and Economic Affairs) through the Tanzania Revenue Authority (TRA) is the custodian of the design, oversight, administration, and implementation of tax policies. The fiscal year runs from 1 July to 30 June, and amendments to taxes and other related financing policies are usually submitted by MoFP to Parliament at the start of the financial year through the Finance Bill. Upon approval of Parliament and signature by the president, the Finance Bill becomes the law known as the Finance Act. At the local government level, the Local Government Finance Act guides Local Government Authorities (LGAs) 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, they usually include property taxes, fees, and levies. Other fees, fines, and charges are collected by other ministries, departments, and agencies of the government other than MoFP, but they make an insignificant share of total revenue collections.

Tanzania has a progressive personal income tax schedule (the minimum rate is 9 per cent and the maximum is 30 per cent), which is applied at the level of the individual. There is no statutory indexing regime for taxes to take account of inflation in Tanzania. Taxpayers need to fill in a tax return; however, tax evasion and avoidance is still quite widespread.

In Tanzania, social security is a right for everyone. This right is contained in Article 11(1) of the Constitution of the United Republic of Tanzania and in the National Social Security Policy of 2003 (Ministry of Labour, Youth Development and Sports 2003). This right is also enshrined in the Universal Declaration of Human Rights of 1948 and International Labour Organization charters. Within Tanzania, there are mandatory and voluntary contributory schemes as well as non-contributory benefits (see below and Leyaro et al. 2015), and there are a number of developments underway (Ulriksen 2016).

Finally, TAZMOD has been produced for mainland Tanzania only, as Zanzibar has different tax and benefits arrangements and undertakes its own household surveys. Therefore, it may be optimal to develop a separate model for Zanzibar (i.e. ZANMOD).

1.2 Social benefits

The Tanzania Social Action Fund (TASAF) is responsible for implementing the Productive Social Safety Net (PSSN). The PSSN programme contributes to the achievement of the overall government objective of enabling poor households to increase incomes and opportunities while improving consumption. In addition to the two cash transfers and the public works programme described in this section, the PSSN also has two other strands of provision: livelihoods enhancement and targeted infrastructure. The two cash transfers arose from a pilot community-based conditional cash transfer that ran between 2010 and 2013 in three districts (Bagamoyo, Chamwino, and Kibaha).

Benefit 1 (*Basic Social Assistance: PSSN, fixed basic cash transfer*): This is a cash transfer to low-income households.

Benefit 2 (*Basic Social Assistance—Conditional: PSSN, variable conditional cash transfer*): This is a top-up cash transfer to low-income households with children, conditional on compliance with requirements related to education and health behaviour.

1.2.1 Not strictly benefits

Not strictly benefit 1 (*Public works programme: PSSN, public works*): This is also a strand of the PSSN scheme.

1.3 Social contributions

There are a large number of contributory schemes in Tanzania, some of which are compulsory and some are voluntary. However, coverage is minimal and the programmes are complex and fragmented. Partly because of these issues, the schemes are now overseen by the Social Security Regulatory Authority (see Leyaro et al. 2015: 9–12 and Annex 5).

Supplementary schemes are voluntary and very flexible. For example, contributions can be made daily, weekly, monthly, or annually in the form of agricultural and livestock products such as eggs or tea.

The main contributory social insurance schemes are listed here.

Social contribution 1 (*Pension contributory scheme 1: National Social Security Fund*): This mandatory scheme was established in 1998 and is managed by MoFP. This scheme is mainly used by the private sector, by formal employees and self-employed people, though certain government employees can be members if they are not covered by any of the government-specific pensions schemes. Benefits include old age pension, invalidity, survivorship, health insurance, funeral grant, maternity, and injury benefits. A voluntary supplementary scheme attached to this mandatory scheme is called the Deposit Administration Scheme.

Social contribution 2 (*Pension contributory scheme 2: Government Employees Provident Fund*): This mandatory scheme was established in 1942 and is managed by MoFP. A voluntary supplementary scheme attached to this mandatory scheme is called the Voluntary Saving Retirement Scheme.

Social contribution 3 (*Pension contributory scheme 3: Local Authority Pension Fund*): This mandatory scheme was established in 1942 and is managed by the Prime Minister's Office—Regional Administration and Local Government. A voluntary supplementary scheme attached to this mandatory scheme is called the Pension Saving Scheme.

Social contribution 4 (*Pension contributory scheme 4: Parastatal Pension Fund*): This mandatory scheme was established in 1978 and is managed by MoFP. A voluntary supplementary scheme attached to this mandatory scheme is called the Deposit Administration Scheme.

Social contribution 5 (*Pension contributory scheme 5: Public Service Pension Fund*): This mandatory scheme was established in 1999 and is for central government employees in pensionable positions. A voluntary supplementary scheme attached to this mandatory scheme is called the Pension Saving Scheme.

Social contribution 6 (*Health insurance contributory scheme 1: National Health Insurance Fund, NHIF*): This mandatory scheme was established in 1999 and the contribution rates are 3 per cent each for the employer and employee, respectively. The scheme is mandatory for government employees in non-pensionable positions but is also open to others.

Social contribution 7 (*Health insurance contributory scheme 2: Community Health Insurance Fund*): This scheme started in 1996 with a pilot scheme in Igunga District, which was later expanded to other councils with the expectation of covering the whole country (Ministry of Health 1999). The scheme was identified as a possible mechanism for granting access to basic health care services to populations in the rural areas and the informal sector in the country. As such, its primary aim was not to raise additional funds but to improve access to health care for the poor and vulnerable groups. The fund is a form of pre-payment scheme designed for rural people in Tanzania (Munishi 2001). It is based on the concept of risk sharing whereby members pay a small contribution on a regular basis to offset the risk of needing to pay a much larger amount in health care user fees if they fall sick. Membership to the scheme is voluntary and each household within a district contributes the same amount of membership fee, as agreed by members of the community themselves, and is given a health card (United Republic of Tanzania 2001).

1.4 Taxes

The Tanzania Revenue Authority (TRA) was formed in 1995 by Act of Parliament No. 111. In 2013/14, the main taxes (as a percentage of total tax revenue in mainland Tanzania) were pay-as-you-earn (PAYE) (16.5 per cent), corporation tax (15.0 per cent), domestic value-added tax (VAT) (13.3 per cent), and VAT on imports (13.5%) (TRA 2014).

Tax 1 (*Personal income tax: PAYE, presumptive income tax, and personal income tax for individuals, or tax for account cases*): Employers are required by law to deduct income tax from an employee's taxable salary via PAYE (for a definition of taxable salary income, see Leyaro et al. 2015: Annex 1). For PAYE a withholding tax approach is used (for details about the withholding tax approach, see Leyaro et al. 2015: Annex 2). Presumptive Tax is applied to resident individuals with businesses that have an annual turnover of less than TZS 20 million. Individuals with an annual turnover above this threshold pay personal income tax for individuals who prepare audited accounts, and are taxed on their profits. Individuals with an annual turnover of less than the presumptive tax threshold but who have other income, for example from salary employment, are also not eligible to pay presumptive tax and have to submit accounts.

Tax 2 (*Skills and development levy*): This is collected by TRA under the Vocational Education Training Act. It is payable by an employer who has four or more employees, with certain exceptions. In general taxable income for PAYE is also taken into account when calculating this levy, and it is calculated as 5 per cent of the total salary paid to all employees during the month (TRA n.d.).

Tax 3 (*Capital gains tax*): This tax is payable for the realization of interest in land or buildings, at 10 per cent for residents and 20 per cent for non-residents. It is also payable on net gains when investment assets are sold. For further details, see Leyaro et al. (2015: Annex 4).

Tax 4 (*Corporate income tax*): Corporation tax is a tax charged on the taxable incomes (profits) of entities such as limited companies and other organizations including trusts, clubs, cooperative societies, non-governmental associations, charitable organizations, domestic permanent establishment (branches of non-resident companies), political parties, government agencies, and other unincorporated bodies. It is payable at 30 per cent, both by residents and by non-residents (TRA n.d.).

Tax 5 (*Excise: Domestic and international trade*): Specific rates are charged on alcoholic and soft drinks, recorded music, cigarettes, tobacco, petrol, natural gas, and vehicles of different ages and engine sizes. Ad valorem rates vary from 10 to 50 per cent (TRA 2014).

Tax 6 (*VAT on supply of domestic goods and services and on imports of goods and services*): VAT registration is required when taxable turnover exceeds TZS 40 million per year, or turnover exceeds TZS 10 million over three consecutive months. The standard rate is 18 per cent (TRA 2014).

Tax 7 (Import duties): Semi-finished goods are taxed at 10 per cent, and finished consumer or commercial goods are taxed at 25 per cent. Raw materials, pharmaceuticals, capital goods, and agricultural tools are taxed at 0 per cent. Certain items are taxed above 25 per cent in order to protect local businesses (TRA 2014).

Tax 8 (Other taxes and charges): These include stamp duty, rental tax, withholding tax, gaming tax, tourism development levy, airport service charges, port charges, motor vehicle registration, motor vehicle annual fee, motor vehicle transfer tax, motor vehicle driving license, fire inspection charge for motor vehicles, and export tax (for raw hides and skins and for raw cashew nuts) (TRA 2014).

2 Simulation of taxes and benefits in TAZMOD

2.1 Scope of simulation

Table 2.1 shows the benefit policies that are simulated in TAZMOD. Table 2.2 lists the main taxes and social contributions and specifies which are simulated within TAZMOD.

As Tanzania's financial year runs from 1st July to 30th June, it has been decided that TAZMOD's systems for each year should reflect the position as at 1st July in each year, rather than selecting a time point in June. So, for example, TAZMOD's 2015 system refers to the arrangements that were applicable from 1st July 2015.

Table 2.1: Simulation of benefits in TAZMOD

	Variable name(s)	Treatment in TAZMOD				Why not fully simulated?
		2012	2015	2016	2017	
Basic Social Assistance (<i>bsa_tz</i>)	<i>Bsa_s</i>	—	PS	PS	PS	Community assessment of eligibility cannot be simulated
Basic Social Assistance—Conditional (<i>bchot_tz</i>)	<i>Bchot_s</i>	—	PS	PS	PS	Community assessment of eligibility cannot be simulated
Public works (<i>bun_tz</i>)	<i>Bun_s</i>	—	PS	PS	PS	A flag is created for eligible households

Notes: '—' policy did not exist in that year; 'PS' policy is *partially simulated* as some of its relevant rules are not simulated; '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 TAZMOD

	Variable name(s)	Treatment in TAZMOD				Why not fully simulated?
		2012	2015	2016	2017	
Health insurance (<i>tsceehl_tz</i> and <i>tscerhl_tz</i>)	<i>Tsceehl_s</i> <i>Tscerhl_s</i>	E	PS	PS	PS	NHIF is simulated but not CHIF
Presumptive tax (<i>ttn_tz</i>)	<i>Tttn_s</i>	S	S	S	S	
Personal income tax (<i>tin_tz</i>)	<i>Tin_s</i>	S	S	S	S	
Excise (<i>tex_tz</i>)	<i>Texcy02_s</i> <i>Texcy03_s</i> <i>Texcy05_s</i>	PS	PS	PS	PS	Simulated for certain goods only
VAT (<i>tva_tz</i>)	<i>Tva01_s</i>	S	S	S	S	
Capital gains tax	n/a	E	E	E	E	No information available
Pensions	n/a	E	E	E	E	Numerous fragmented schemes

Notes: NHIF, National Health Insurance Fund; CHIF, Community Health Insurance Fund; VAT, value-added tax; '—' policy did not exist in that year; 'E' policy is *excluded* from the model as it is neither included in the microdata nor simulated; 'PS' policy is *partially simulated* as some of its relevant rules are not simulated; 'S' policy is *simulated* although some minor or very specific rules may not be simulated.

Source: Authors' compilation.

2.2 Order of simulation and interdependencies

Table 2.3 shows the order in which taxes and benefits are simulated in TAZMOD. The table is a reproduction of the policy spine from the model.

Table 2.3: TAZMOD Spine: order of simulation

Policy	2012	2015	2016	2017	Description of the instrument and main output
Uprate_tz	On	On			DEF: Uprating factors
ldef_tz	On	On	On	On	DEF: Income concepts
Tudef_tz	On	On	On	On	DEF: Assessment units
Constdef_tz	On	On	On	On	DEF: Constants
Poverty_lines_tz	n/a	On	On	On	INC: Poverty lines
Tsceehll_tz	On	On	On	On	SIC: NHIF employee contribution
Tscerhl_tz	Off	On	On	On	SIC: NHIF employer contribution
Ttn_tz	On	On	On	On	TAX: Presumptive income tax
Tin_tz	On	On	On	On	TAX: Personal income tax
Bsa_tz	Off	On	On	On	BEN: Fixed basic cash transfer
Bshot_tz	Off	On	On	On	BEN: Variable conditional cash transfer
Bun_tz	Off	On	On	On	BEN: Eligibility for public works
Tva_tz	On	On	On	On	TAX: VAT
Tex_tz	On	On	On	On	TAX: Excise duty and VAT on excise items
Output_std_tz	On	On	On	On	DEF: Standard output individual level
Output_std_hh_tz	Off	Off	On	On	DEF: Standard output household level

Notes: DEF, definitional policy; INC, poverty policy; SIC, social insurance contribution policy; BEN, benefit policy.

Source: Authors' compilation.

2.3 Social benefits

2.3.1 Basic social assistance (PSSN: fixed basic cash transfer) (bsa_tz)

Definitions

For the purposes of this benefit, a child is defined as aged 5–17 years inclusive, and an infant is defined as aged 0–4 years inclusive. This benefit is applied at the household level.

Eligibility conditions

TASAF defines the eligibility conditions for this benefit as follows:

- a Households with very low and unpredictable income compared with other households in the community.
- b Households that cannot afford or cannot be certain that they can afford to have three meals per day.
- c Households located in extremely poor environments/settlements. TASAF further elaborated that this criterion takes into account the number of rooms, windows, and bedrooms of the house; type of foundation of the house; construction material used for the house; and the type of floor, roof, and walls.

Identification of potential beneficiary households takes place after a Village Assembly has elected and formed a community team (or Community Management Committee). The community team is briefed about the targeting process, and the community team and LGA facilitators are then responsible for identifying potential beneficiary households using pre-determined criteria that have been agreed upon at the Village Assembly meeting. The pre-determined criteria are themselves based on a standard criterion that is reviewed and agreed upon by the Village

Assembly. The standard criterion is that households should be below the food poverty line of TZS 26,085.50 per adult equivalent per month (NBS 2014b: 54).¹

Once the community teams have produced a final list of households, Village Assembly meetings are convened to approve the list. Each community team has two members: one person with a good knowledge of households in the village so that they can help identify those most in need and one person with at least primary school education to administer paper work used in targeting and enrolment activities. Once potential beneficiaries have been identified, key household data are collected which are then entered into the Unified Registry of Beneficiaries (URB) at the local government level. The TASAF monitoring unit (TMU) then applies the proxy means test (PMT) and each household that has been entered into the URB receives a welfare score. Households whose welfare score falls below the food poverty line are considered eligible for the programme (even if this means that the resulting beneficiary number for the district is above the target set by the resource allocation formula).

In addition to the basic transfer, targeted households with children are eligible for conditional transfer, and households with able-bodied people of working age are eligible for the public works programme. This matching exercise is automated using the URB. The TMU then provides the LGAs with lists of households accepted and rejected by the PMT who, in turn, take these lists to the villages for a final round of community validation.

Income test

A PMT is applied (see above) in order to identify households that are likely to be below the food poverty line, which avoids the need to collect income or expenditure data at the point of application (Leite 2012). The PMT was derived using regression analysis of variables in the Household Budget Survey (HBS), with the dependent variable being those below the food poverty line.

Benefit amount and duration

The amount payable is TZS 10,000 per month per household that contains one or more adults, and TZS 4,000 per month per household that contains one or more children or infants. In practice, this benefit is paid every two months in order to reduce the costs of implementation.

TAZMOD notes

It is not possible to simulate the initial ranking of villages that is undertaken in order to prioritize areas for support (Leite 2012).

It is also not possible to simulate the multi-stage decision-making roles of the Village Assembly and the community team.

It was not necessary to implement the PMT, as households below the food poverty line could be identified in the HBS, without the need to implement the PMT. Indeed, the PMT was derived using regression analysis of variables in the HBS, with the dependent variable being those below the food poverty line (Leite 2012).

2.3.2 Basic social assistance—Conditional (*PSSN: variable conditional cash transfer*) (bchot_tz)

Definitions

For the purpose of this benefit, children are divided into four groups: pre-primary (aged 0–6 years inclusive), primary (aged 7–13 years inclusive, Standard I–VII), ordinary level secondary (aged 14–17 years inclusive, Form 1–4), and advanced secondary (aged 18–19 years inclusive, Forms 5 and 6). This benefit is applied at the household level.

¹ In practice, TASAF has raised this threshold slightly to capture approximately 14 per cent of the population, rather than the 10 per cent captured below the food poverty line, in recognition that those just above the line will be at risk (personal correspondence with TASAF).

Eligibility conditions

TASAF defines the eligibility conditions for this benefit as follows. The first three are the same as the non-conditional cash transfer described above:

- Households with very low and unpredictable income compared with other households in the community;
- Households that cannot afford or cannot be certain that they can afford to have three meals per day;
- Households located in extremely poor environments/settlements.

In addition, there are the following selection criteria:

- Household with school-age children (7–17 years inclusive) that cannot afford to register or enrol the children in school or where the children have dropped out of school because the household cannot afford to send them to school;
- Households with children (0–6 years inclusive) that do not attend the clinic to get health services/treatment;
- Households with pregnant women.

The conditionalities are as follows:

Education: Annual enrolment of school-age children in primary and secondary schools (where available) and regular attendance of at least 80 per cent of the school days per month.

Maternal and infant health: all pregnant women within beneficiary households shall attend a minimum of four prenatal medical examinations; they should deliver at a health facility or be assisted by skilled personnel and attend a post-natal check-up according to the country's health protocol. Children younger than two years shall attend regular check-ups at health services at least once every month, including regular growth monitoring and distribution of micronutrients and counselling. All children of the household aged between 24 and 60 months shall attend routine health services at least once every six months; for all children younger than five years, the health facility will provide full immunization.

Income test

The same PMT is applied as for basic social assistance (see above) in order to identify households that are likely to be below the food poverty line (Leite 2012).

Benefit amount and duration

A flat rate amount of TZS 4,000 per month is paid to households that contain one or more pre-primary school-age children (aged 0–6 years inclusive). TZS 1,000 per month is paid per primary school-age child (for a maximum of four children of this age). TZS 2,000 is paid per child in lower secondary school (for a maximum of three children of this age) and TZS 3,000 per child in high secondary school (for a maximum of two children). In practice, this benefit is paid every two months in order to reduce the costs of implementation; so, for example, TZS 2,000 is paid per primary school-age child six times per year.

No more than TZS 19,000 in total can be paid per month per household for the basic cash transfer plus the variable cash transfer.

TAZMOD notes

This benefit is targeted at households where children are unable to attend school or the clinic because of household poverty. The HBS does not measure pregnancy status of women and so this criterion cannot be simulated. Receipt of the benefit is dependent on the child attending school and going to the clinic. This raises the conundrum when designing the policy in TAZMOD that potentially eligible children would be those who do not comply with the conditions, whereas currently eligible recipients will be complying with the conditions. For the time being, eligibility for this benefit in TAZMOD is simply linked to the existence of children of the various age ranges.

It is not possible to simulate the multi-stage decision-making roles of the Village Assembly and the community team.

As seen in Table 2.1, an additional policy is included in TAZMOD to combine the policies 'bsa_tz' and 'bchot_tz' in order to cap the amount payable.

2.3.3 Public works programme (*PSSN: public works*) (bun_tz)

Definitions

The public works programme enables beneficiaries to earn additional income through their participation in public works during four months of the lean season.

Eligibility conditions

The beneficiary must be of working age and the household must comply with the same eligibility conditions as for the basic cash transfer and must have been part of that initiative for six months.

Income test

This is the same as for the basic cash transfer.

Benefit amount

The public works programme offers a guaranteed 15 days of paid work per month for four months to enrolled households targeted under the PSSN. The daily wage rate is TZS 3,000 (or USD 1.5 per day) and the total a household can earn in a year is USD 90. The programme runs for three years.

TAZMOD notes

Within TAZMOD it is only possible to identify potentially eligible households on the basis of receipt of the basic cash transfer. The number of potentially eligible households will not take into account the limited duration of the scheme (see benefit amount).

Social contributions: Due to the many fragmented and overlapping pension policies in existence in Tanzania, and their small coverage, these have not been implemented in TAZMOD. Although it might be possible to simulate some of the schemes at a later stage, using information in the dataset about occupational status and job title, it would be important to ascertain how these schemes relate to the health insurance schemes as some overlap. So, it would be necessary to ensure that health insurance related contributions are not simulated twice.

2.3.4 Health insurance contributions (*National Health Insurance Fund*) (tscehl_tz and tscerhl_tz)

Liability to contributions

This is a mandatory scheme for civil servants. Non-civil servants can join the fund too, but voluntarily.

Income base used to calculate contributions

The employee's gross income.²

Contribution rates

The employer and employee each contribute 3 per cent of gross earnings.

TAZMOD notes

The main assumption here is that contributions are simulated for all individuals in the formal sector, as a proxy for relevant contributors. In reality, some people may contribute to schemes other than the NHIF as there are a number of different schemes in play.

² For those who are not formally employed but wish to contribute to the fund, a lump sum can be paid of 88,000 TShs per year per adult and 50,000 TShs per year per child.

2.4 Personal income tax

Personal income tax is typically divided into three categories: presumptive income tax, which is a simplified tax payable by people whose turnover from self-employment is less than TZS 20 million per year; personal income tax for account cases, which is payable by people whose self-employment income exceeds the presumptive tax threshold; and PAYE for those in receipt of income from salaries and wages.

2.4.1 Tax unit

The tax unit is at the level of the individual.

2.4.2 Exemptions

Schedule 2 of the Income Tax Act Chapter 332 (revised 2008) details the types of incomes that are exempt from income tax. These include alimony, maintenance, and child support. In addition, the Minister may by Order exempt other types of income.

2.4.3 Tax allowances

We define tax allowances as any amount subtracted from pre-tax income (including social insurance contributions). Differently from Verbist (2004), there is no distinction between those that are fixed amounts (tax allowances) and those whose level is a function of pre-tax income (deductions). Tax rebates are deductions from tax payable (as distinct from tax allowances that are deductions from pre-tax income).

In Tanzania, contributions to pensions and health insurance schemes are treated as tax allowances. In addition, there are various capital and depreciation allowances where an individual is undertaking a business that is not subject to turnover tax.

2.4.4 Tax base

Personal income tax: Income from employment, property, land, agriculture, 'other income', and, for those whose turnover exceeds TZS 20 million per year, self-employment income.

Presumptive income tax: Turnover from self-employment (for those whose turnover is less than TZS 20 million per year).

2.4.5 Tax schedule

Personal income tax has five tax bands (see Table 2.4). Between 2015 and 2017, the only change that occurred was the rate for the second tax band (band 2).

Table 2.4: Personal income tax bands (2015, 2016 and 2017)

Tax band	Income band (TZS per year)	2015 Rate (%)	2016 Rate (%)	2017 Rate (%)
1	0–2,040,000	0	0	0
2	2,040,001–4,320,000	11	9	9
3	4,320,001–6,480,000	20	20	20
4	6,480,001–8,640,000	25	25	25
5	≥8,640,001	30	30	30

Source: Tanzania Finance Act (2015, 2016, 2017).

Presumptive income tax also has five tax bands (see Table 2.5). No changes were introduced between 2015 and 2017.

Table 2.5: Presumptive income tax bands (2015, 2016 and 2017)

Tax band	Income band (TZS per year)	Rate (%)
1	0–4,000,000	0
2	4,000,001–7,500,000	3.0
3	7,500,001–11,500,000	3.8
4	11,500,001–16,000,000	4.5
5	16,000,001–20,000,000	5.3

Source: Tanzania Finance Act (2015, 2016, 2017).

TAZMOD notes

Personal income tax for account cases and for those in receipt of income from salaries and wages is treated as a single policy in TAZMOD as the rules are the same.

Withholding tax is not taken into account in TAZMOD because it is a payment administration mechanism rather than a tax (see Leyaro et al. 2015: 23–5).

2.5 Indirect taxes

2.5.1 VAT (tva_tz)

Tax unit

The tax unit is the household. VAT is simulated based on family purchases of goods and services.

Exemptions

VAT-exempted items are listed in the Value Added Tax Act 2014. These include supplies and imports of certain agricultural implements (e.g. tractors), agricultural inputs (e.g. fertilizers), livestock (e.g. cattle and swine), basic agricultural products (e.g. unprocessed fish), certain food items (e.g. rice and maize flour), fisheries implements, bee-keeping implements, dairy equipment, approved medicines, items for people with special needs, educational materials and services, types of healthcare provision, immovable property, certain petroleum products, and the supply of financial services.

Tax base

VAT is applied to transactions of certain goods and services.

Tax schedule

The standard rate of VAT is 18 per cent.

TAZMOD notes

The tax unit for the purposes of the VAT policy in TAZMOD is the household. VAT is simulated based on the household's purchases of goods and services. A total of 781 purchasable items are listed in the income list 'ils_exp_vat01', with zero-rated or VAT-exempt items shown as 'n/a'.

2.5.2 Excise duty (tex_tz)

Tax unit

The tax unit is the household. Excise duty is simulated based on family purchases of goods and services.

Tax base

Excise duty is payable on items specified in the Excise (Management and Tariff) Act, Chapter 147 (revised edition 2008).

Tax schedule

The Fourth Schedule of the Excise (Management and Tariff) Act, Chapter 147 (revised edition 2008) lists the excise duty payable on different items. However, this is updated annually.

TAZMOD notes

Excise duty is only simulated for certain items in TAZMOD (alcoholic drinks, tobacco products, and vehicle fuel including fuel levy).

Given that VAT is payable on the cost of these certain items *after* excise duty, a decision was made to simulate excise and VAT for these items in the same TAZMOD policy.

3 Data

3.1 General description

The TAZMOD database has been drawn from the Tanzania HBS 2011/12 (NBS 2014a), a cross-sectional survey that was conducted by the National Bureau of Statistics (NBS) (Table 3.1). The survey was conducted for mainland Tanzania as part of the monitoring and evaluation of the National Strategy for Growth and Reduction of Poverty master plan. The survey is representative at a national level and at a sub-national level for Dar es Salaam, other urban areas, and rural areas.

The survey was undertaken in Swahili, but the questionnaire is also available in English. It captures data on household expenditure and consumption; household members' income, education, economic activities, and health status; ownership of consumer goods and assets; housing structure and materials; household access to services and facilities; and food security.

Table 3.1: TAZMOD database description

Original name	Household Budget Survey
Provider	National Bureau of Statistics
Year of collection	2011–12
Period of collection	October 2011–October 2012
Income reference period	The previous month or year before the first date of interview
Sample size	46,593 individuals and 10,186 households
Response rate	94.1%

Note: For further details about the survey, see Leyaro et al. (2015) and NBS (2014a, 2014b).

Source: Authors' compilation.

HBS 2011/12 has been analysed by the NBS (2014a, 2014b), with analysis focusing on poverty relevant indicators. Arndt et al. (2014) cite trends in poverty based on the Tanzania HBS of 1991/92, 2000/01, 2006/07, and 2011/12, although their analysis is based on the Tanzania Demographic and Health Surveys. Arndt et al. (2015) and World Bank (2015) assess trends in poverty reduction using this and earlier surveys. Other publications that have made use of the HBS 2011/12 data are listed on the International Household Survey Network website (see IHSN 2012).

Sampling weights were defined as the inverse of each household's selection probability, taking into account the selection of the primary sampling unit (PSU) and stratification within the PSU. The weighting process also corrected for non-response. The weights were adjusted using the 2012 Population and Housing Census so that the sum of individuals by area was equal to its population for 2012.

Households are defined within the HBS as individuals who normally live and eat their meals together.³ The household head is identified by the household as the person who holds the role of decision maker and controls the welfare of the household.

3.2 Data adjustment

The survey was supplied directly by the NBS as 43 separate data files that were merged with the appropriate linkage variables *hhid* (household ID) and *memid* (person ID). No cases were dropped.

Within the non-agriculture and business file, there were four cases that could not be matched with the main person file because the *memid* had been incorrectly coded. Manual cleaning was possible. There were 11 cases within the same file with duplicate *memids*; inspection revealed that this occurred when a household member was running two businesses and therefore income and expenditure had to be summed in these instances before merging.

3.3 Imputations and assumptions

The data as provided by the NBS did not contain any derived variables, and values for missing data were not been imputed by the NBS.

Generalized cautionary notes about using income data rather than consumption data were issued within the main report (NBS 2014a: 91) and the technical report (NBS 2014b: 48), as is common in low- and middle-income countries.

The consumption data contained some obvious anomalies and were cleaned. Specifically, the quantities of 'other tobacco', 'petrol' and 'diesel' were capped at the 95th percentile for those reporting the units as 'kilograms' and 'litres' respectively; and any 'other tobacco', 'petrol' or 'diesel' expenditure and quantity values were set to zero where the base expenditure (after having subtracted the quantity-based excise) yielded a negative figure.

There were no missing ages (*dag*), but ages 98 and 99 years were given as codes for 'don't know' or 'not stated' cases, respectively. For the 16 cases that had a value of '98' or '99', it was possible to calculate their age from the year of birth variable for 15 cases (of which three were genuinely aged 98 years). Case 16 was imputed from information about relationship to head of household.

The possible responses to the question on marital status are: monogamous married, polygamous married, living together, separated, divorced, never married, widow, and 'not stated'. The 'not stated' cases were recoded '-2'. For the 15,325 cases with a missing value, 15,313 were aged below 12 years. Tanzania's Marriage Act sets the minimum age for marriage as 18 years for boys and 15 years for girls (with parental consent) but both girls and boys can marry at 14 years of age with the court's permission. In consequence, the eight 12-year-olds and all those below 12 years were recoded as 'never married'. The two 16-year-olds and one 19-year-old with a missing value were examined and recoded as 'never married'. The 22-year-old with a missing value was recoded as 'monogamously married' (using the relationship to head of household).

The *idpartner* variable could only be constructed using the relationship to head of household. For polygamous marriages, the senior wife (i.e. spouse with lowest *memid*, who was usually the oldest wife) was identified and defined as the partner. The *idpartner* of junior spouses was set to '0', although this may be changed if there are policies that take into account additional wives.⁴

The compulsory variables *idmother* and *idfather* were created using the variable 'where is your biological mother/father?'. For children whose parent is in the household, these variables return the *memid* of the mother/father. Code '96' is assigned in situations where the parent is alive but living elsewhere, and code '97' if they are dead. This still left a large number of missing *idmother/idfather* cases. However, some additional cases were captured where *idmother/idfather* was missing but where the child was assigned as the son/daughter or stepson/

3 On the challenge of defining a household in the Tanzanian context, see Randall and Coast (2015).

4 It might be possible to produce a 'married' flag for additional household members who have children by identifying children in the household who have common parents by using the child's relationship to the mother and father. However, this would be a laborious process and could not be undertaken for the first version of the model.

stepdaughter of the household head. After this step, there were 6,909 cases below 18 years of age where *idfather* could not be coded; of these cases, 5,317 of the children had a father living elsewhere (code '96') and 1,389 had a dead father (code '97'), leaving just 203. The same was undertaken for *idmother*, leaving just 63. These 203 cases with no *idfather* and 63 cases with no *idmother* were assigned a value of '0'.

The compulsory *idparent* variable was constructed for each child, with the ID of the mother preferred over the ID of the father. For the *idparent* variable, 3,408 children had neither a mother nor a father in the household; these 'loose children' were assigned to the household head as the majority of them were grandchildren (or other close relative) of the household head. The exceptions were nine cases where the child was the head of the household, and these were not assigned an *idparent* value.⁵

Employment income was separated into 'primary occupation' and 'secondary occupation', along with a periodicity variable that specified whether the money was paid monthly, weekly, hourly, or daily. There were 71 cases (for primary and secondary occupations) where the periodicity could not be readily determined, although the periodicity was specified in a free-form text field in Swahili. Some of these could be recoded into conventional periods, but others patently could not; for example, answers were given such as 'when I have finished making it'.

In order to calculate net taxable income for self-employed income (*yse*), it was necessary to deduct expenses from sales. Unfortunately, this was dealt with only at a monthly level and so a large number of negative values were generated where expenses exceeded sales in that particular month. However, many of these cases will be covered by presumptive tax (a tax on turnover, which does not require information on expenses).

Employment net income was converted to employment gross income (*yem*) using a technique described below. Prior to the conversion, implausible incomes were dealt with as follows. It was clear from close scrutiny of the data that the highest employment incomes (for both primary and secondary jobs) were implausible. Furthermore, in these cases the periodicity of the income was reported to be for an hour per day. However, these individuals were all working more or less full time for four weeks per month and 11 or 12 months a year, and therefore would have been paid a monthly salary. Thus, it was decided that these cases must have been erroneously coded regarding periodicity. Accordingly, the incomes were recoded as being monthly if the hourly rate exceeded 5,000 TShs or the daily rate exceeded 100,000 TShs. In addition, the upper limit of employment income was set at the 99th percentile (of cases with *yem*). In the 2017 work programme, further work will be undertaken to clean the income data.

A new methodology for modelling VAT and Excise duties was introduced in the model 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, an imputed income tax variable was also imputed and a number of other variables were constructed (see DRD).

3.3.1 Time period

The survey data were collected between October 2011 and October 2012. Income data were gathered in relation to the previous month or year before the first date of interview.

3.3.2 Gross incomes

The HBS does not contain information about gross employment income. It had been hoped that it would be possible to use the Labour Force Survey (LFS) to generate a net to gross ratio for employment income (by area and employment type) which could be applied to the HBS data.

5 A total of 179 child servants aged 6–17 years (of which 53 were aged below 15 years) and 36 child spouses were identified. These children were all assigned an *idparent* value of the *memid* of the household head, although it may be that for policy purposes they should be treated differently.

However, following enquiries with the NBS and scrutiny of the LFS data, it was ascertained that the LFS does not capture information on net incomes so this option was not possible.

Therefore, an alternative approach had to be applied in order to obtain a net to gross ratio for employment income within the HBS. This involved computing net income for a series of gross incomes using the information on tax bands, tax rates, and health insurance employee contribution rates (i.e. reverse-engineering the tax system). Grossing up factors were calculated accordingly for various income bands

3.3.3 Disaggregation of harmonized variables

It was not necessary to disaggregate composite variables for the TAZMOD 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.

The NBS was approached for the appropriate consumer price index data. They provided the team with separate indices for food items and non-food items, rebased to December 2015. Given that the Tanzanian financial year 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.

In addition, the Fisher index is being investigated which takes into account spatial variation for all regions in the country, allowing for the differential between urban and rural areas.

Table 3.2: Raw indices for deriving TAZMOD uprating factors

Index	Constant name	Values of the raw indices							Source	Income components uprated by the index	Notes
		2011	2012	2013	2014	2015	2016	2017			
Overall CPI (base December 2015=100)	<i>\$f_CPI_Overall</i>	69.78	80.75	86.83	92.51	98.48	103.5	108.85	NBS		Rebasing involved methodology change
Food CPI (base December 2015=100)	<i>\$f_CPI_Food</i>	62.87	75.65	82.14	88.68	97.94	105.56	115.39	NBS	Food	
Non Food CPI (base December 2015=100)	<i>\$f_CPI_Non_Food</i>	79.03	86.92	93.29	97.88	99.22	102.41	105.64	NBS	Non-food	
Alcohol CPI (base December 2015=100)	<i>\$f_CPI_Alcohol</i>	69.28	81.78	91.55	95.85	98.82	104.22	106.68	NBS	Alcohol	Same as for tobacco
Tobacco CPI (base December 2015=100)	<i>\$f_CPI_Tobacco</i>	69.28	81.78	91.55	98.85	98.82	104.22	117.79	NBS	Tobacco	Same as for alcohol
Fuel (base December 2015=100)	<i>\$f_CPI_Fuel</i>	68.83	80.06	90.39	103.03	100.89	108.28	117.79	NBS	Energy and fuels—combining electricity and other fuels for use at home with petrol and diesel	
Earnings index											Not available

Note: CPI, consumer price index.

Source: Authors' compilation, based on information supplied by NBS (2014a, 2014b) from NBS website.

4 Validation

4.1 Aggregate validation

TAZMOD results have been validated against external benchmarks where feasible. Detailed comparisons of the number of people receiving a given income component and total yearly amounts are shown in Annex 1 (Tables A1–A5). The main discrepancies between TAZMOD results and external benchmarks are discussed in the following sub-sections. Factors that may explain the observed differences are also discussed.

Apart from income and inequality data, it was not possible to obtain validation data for 2012 and so, where obtained, validation data are reported for 2015 and 2016. Validation data for 2017 (i.e. financial year 2017/18) is not yet available.

4.1.1 Validation of incomes inputted into the simulation

It was not possible to validate the number of recipients of various types of market income in the input dataset using external statistics, nor the aggregate annual amounts of various types of market income. It was also not possible to assess the extent to which non-simulated policies are adequately captured.

4.1.2 Validation of outputted (simulated) incomes

Table A2 in Annex 1 compares the number of recipients of various types of simulated benefits/ number of payers of simulated taxes or simulated social insurance contributions in TAZMOD with external statistics. The external figures for PSSN were obtained at household level and so reported simulations are also presented at household level – TAZMOD simulates approximately two-thirds of the reported number of beneficiary households. There are several reasons why the simulated and reported numbers of beneficiary households may differ (see Wright et al., forthcoming). The simulated number of NHIF contributors in TAZMOD is almost double the reported number of contributors in 2015/16 (196 per cent of the reported figure) – this will partly be due to the fact that the . policy is now applied in TAZMOD to all formal sector employees and not just certain occupational classes. The simulated figure for individual tax payers (PAYE and those with prepared accounts) for 2015 has changed considerably since the release of the first country report due to ongoing data cleaning and improvements to the model.

Table A3 compares the simulated and published aggregate yearly amounts for these simulated taxes and benefits in 2015 and 2016. For direct taxes in 2015 (i.e. presumptive tax plus PAYE plus those who prepare accounts), TAZMOD simulates 287 per cent of the figure provided by the TRA. The external figure is calculated as the sum of TRA's totals for Direct tax from Domestic Revenue (Individuals plus PAYE) plus Direct Tax from Large Taxpayers (PAYE).

Although certain data cleaning steps have already been undertaken (see Section 3.3), further cleaning of the income data may well reduce the amount of tax simulated.

As can be seen, TAZMOD simulates much higher employer and employee contributions to NHIF than the reported figures. Again this will partly be due to the fact that the policy in TAZMOD has been amended to apply to all formal sector employees and not just certain occupation classes.

Simulated estimates of excise duty payments fell in 2016 due to a large drop in the excise duty rates for diesel and petrol that year. The external figures for excise duty are the sum of domestic revenue from Excise on spirits, wine & liquor, and cigarettes, plus income from the Fuel Levy, plus the sum of revenue from Large Tax Payers from Excise on beer, cigarettes, and Spirits & Konyagi.

Finally, TAZMOD simulates an implausibly high amount of VAT for 2015 and 2016. Unlike with personal income tax, it would never be expected that TAZMOD would simulate the full VAT tax take. The expenditure data were scrutinized but, unlike the income data, there were no obvious cleaning steps that could be implemented within the timeframe. However, further investigation during the 2018 programme of work may result in additional data cleaning steps that would reduce the amount of VAT simulated. The external figure for VAT is the sum of 'VAT-local' from the Domestic Revenue Department and from the Large Taxpayer Department.

4.2 Income distribution

In Tanzania, poverty analysis is undertaken using consumption data, so the income-based poverty analysis of the TAZMOD output data will differ greatly from the published figures, but the consumption-based poverty analysis is similar to the published figures. The coefficients for the Adult Equivalence Scale used by the NBS are shown in Table 4.1.

Table 4.1: Coefficients for the Adult Equivalence Scale

Age (years)	Male	Female
0–2	0.40	0.40
3–4	0.48	0.48
5–6	0.56	0.56
7–8	0.64	0.64
9–10	0.76	0.76
11–12	0.80	0.88
13–14	1.00	1.00
15–18	1.20	1.00
19–59	1.00	0.88
60+	0.88	0.72

Source: NBS (2014b: 52).

4.2.1 Income inequality

In Tanzania, inequality is measured with reference to consumption, not income. Table A4 in Annex 1 shows the published figure for 2012 of 0.34. Analysis of the TAZMOD output data for the same 2012 time-point yields a Gini coefficient of 0.40—also using consumption data (falling to 0.39 for 2015, 2016 and 2017). Using income data, the Gini coefficient in 2012 was 0.71 (increasing to 0.74 for 2015, 2016 and 2017). Although it is to be expected that an income-based measure of inequality would be higher than a consumption-based measure, it is likely that the income data still contains implausibly high incomes that will drive the Gini upwards.

4.2.2 Poverty rates

Table A5 in Annex 1 shows that the TAZMOD output data for 2012 yields a similar level of basic needs poverty (28,6 per cent) compared to the published figure of 28.2 per cent using the consumption data. The same threshold was used of TZS 36,482 per adult equivalent per month. Income-based poverty levels are much higher at 48.1 per cent in 2012 rising to 54.3 in 2015, 2106 and 2017.

4.3 Summary of ‘health warnings’

As far as we have been able to ascertain, the income data in the HBS has not been used previously for research purposes. Although some data cleaning processes have been undertaken, there are several ways in which this work could be extended and this is clearly necessary.

Every effort has been made to collate the precise tax and benefit rules for 2015, 2016 and 2017 but this was difficult to achieve and has been an iterative process. The work plan for 2018 will include continued validation of the interpretation of the policy rules in TAZMOD, with key stakeholders as well as any consequent refinement of the implementation of those rules within TAZMOD. Options for improving the quality of the income data will also be explored. Finally, although extensive efforts have been made to obtain external validation data, this process will need to continue with the assistance of key government stakeholders.

References

- Arndt, C., V. Leyaro, and K. Mahrt (2014). 'Multi-dimensional Poverty Analysis for Tanzania: First Order Dominance Approach with Discrete Indicators'. WIDER Working Paper 2014/146. Helsinki: UNU-WIDER.
- Arndt, C., L. Demery, A. McKay, and F. Tarp (2015). 'Growth and Poverty Reduction in Tanzania'. WIDER Working Paper 2015/051. Helsinki: UNU-WIDER.
- Government of Tanzania (1963). Tanzania Local Customary Law. Available at: http://www.africanchildforum.org/clr/Legislation%20Per%20Country/Tanzania/tanzania_guardianship_1963_en.pdf (accessed April 2017).
- Howland, R.J., and A. Koenen (n.d.). 'Divorce and Polygamy in Tanzania'. *Social Justice*, Paper 15. Available at: http://ecommons.luc.edu/social_justice/15 (accessed April 2017).
- IHSN (2012). *Tanzania—Household Budget Survey 2011–2012*. IHSN Survey Catalog. International Household Survey Network. Available at: http://catalog.ihsn.org/index.php/catalog/4846/related_citations (accessed April 2017).
- Leite, P. (2012). 'Targeting PSSN in Tanzania'. Unpublished report for TASAF, 20 June.
- Leyaro, V., E. Kisanga, G. Wright, H. Barnes, and M. Mpike (2015). 'Tax–Benefit Microsimulation Modelling in Tanzania: A Feasibility Study'. UNU-WIDER Working Paper 2015/145. UNU-WIDER: Helsinki.
- Ministry of Labour, Youth Development and Sports (2003). 'The National Social Security Policy', January. The United Republic of Tanzania. Available at: <http://www.tccia.com/tccia/wp-content/uploads/legal/policy/socialsecuritypolicy.pdf> (accessed April 2017).
- Ministry of Health (MOH) (1999). *Community Health Fund Design*. Dar es Salaam: URT.
- Munishi, G. (2001). 'Constraints to Scaling Up Health Interventions: Country Case Study: Tanzania'. CMH Working Paper Series WG5:16. Dar es Salaam: Commission on Macroeconomics and Health. Available at: http://library.cphs.chula.ac.th/Ebooks/HealthCareFinancing/WorkingPaper_WG5/WG5_16.pdf (accessed April 2017).
- NBS (2013). *2011/12 Household Budget Survey: Key Findings*. Dar es Salaam: Tanzania National Bureau of Statistics (NBS).
- NBS (2014a). 'Tanzania Household Budget Survey: Main Report 2011/12'. Dar es Salaam: Tanzania National Bureau of Statistics (NBS).
- NBS (2014b). 'Tanzania Household Budget Survey: Technical Report 2011/12'. Dar es Salaam: Tanzania National Bureau of Statistics (NBS).
- Randall, S., and E. Coast (2015). 'Poverty in African Households: The Limits of Survey and Census Representations'. *Journal of Development Studies*, 51(2): 162–77.
- Tanzania Social Action Fund (TASAF) (2014). 'Tanzania Social Action Fund Productive Social Safety Net Programme: Fourth Quarter Implementation Progress Report, April–June 2014'. Dar es Salaam: TASAF.
- TRA (n.d.). 'Taxation in Tanzania: The Tanzania Investment and Trade Promotion'. Dar es Salaam: Tanzania Revenue Authority. Available at: <http://www.sanec.org/themes/sanec/uploads/files/TANZANIA%20INVESTMENT%20AND%20TRADE%20PROMOTION%20final%20version.pdf> (accessed April 2017).
- Ulriksen, M. (2016). 'The Development of Social Protection Policies in Tanzania, 2000–2015'. CSSR Working Paper 377. Cape Town: Centre for Social Science Research, University of Cape Town.
- United Republic of Tanzania (2001). 'The Community Health Fund Act'. Dar es Salaam: United Republic of Tanzania.
- Verbist, G. (2004). 'Redistributive Effect and Progressivity of Taxes: An International Comparison Across the EU Using EUROMOD'. EUROMOD Working Paper EM5/04. Colchester, UK: Institute for Social and Economic Research, University of Essex.
- World Bank (2015). *Tanzania Mainland Poverty Assessment*. Washington, DC: The World Bank.
- Wright, G, Leyaro, V., Kisanga, E. and Byaruhanga, C. (forthcoming) 'Policy transparency in the public sector: the case of social benefits in Tanzania'. UNU-WIDER Working Paper 2017/x. UNU-WIDER: Helsinki

Annex

Table A1: Unemployment and employment figures

	TAZMOD 2012 (A)	External 2012 (B)	Ratio (A/B)
Number of employed individuals	4,246,293	Could not be obtained	/
Number of unemployed individuals	247,431	Could not be obtained	/

Note: '/' indicates 'not possible'. Employed individuals = weighted total of those whose employment status is 'employer or self-employed' or 'employee', aged 60 years or less; unemployed individuals excludes those aged above 60 years.

Source: Column A: TAZMOD version 1.0.

Table A2: Tax and benefit instruments simulated in TAZMOD: Number of recipients/payers

Tax–benefit policy	TAZMOD 2015 A	TAZMOD 2016 B	TAZMOD 2017 C	External 2015 D	External 2016 E	Ratio 2015 F	Ratio 2016 G
Presumptive income tax	436,879	449,144	481,292	Not available	Not available	/	/
Personal income tax (PAYE and prepared accounts)	3,824,136	3,938,828	4,148,253	Not available	Not available	/	/
VAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excise duty	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NHIF contributors	1,378,098	1,378,098	1,378,098	702,598	753,892	196	183
PSSN	711,994 households	711,994 households	711,994 households	1,099,289 households	1,055,098 households	65	67

Source: Columns A–C: TAZMOD version 1.6. Columns D–E: PSSN data was supplied by TASAF for 2015/16 and 2016/17. NHIF data was supplied by NHIF for 2014/15 and 2015/16.

Note: The TAZMOD 2015 figures differ from those reported in the previous country report due to further cleaning of the dataset and improvements to the model between Version 1.0 and 1.6.

Table A3: Tax and benefit instruments simulated in TAZMOD: Annual amounts (TZS)

Tax–benefit policy	TAZMOD 2015, million TZS A	TAZMOD 2016, million TZS B	TAZMOD 2017, million TZS C	External 2015, million TZS D	External 2016, million TZS E	Ratio 2015 F	Ratio 2016 G
Presumptive income tax	66,120.7	70,935.4	76,562.6	2,388,577.90	2,456,775.9	287	293
Personal income tax (PAYE and accounts)	6,783,475.6	7,122,051.9	7,605,093.7				
VAT	2,953,443.5	3,076,959.0	3,218,935.9	1,855,522.9	2,158,527.2	159	143
Excise duty	59,846.8	48,772.7	53,555.9	1,158,815.5	1,219,081.5	5	4
NHIF contributions (employer and employee)	598,289.8	628,787.4	661,290.0	354,446.7	363,349.5	169	173
PSSN	194,197.9	194,197.9	194,197.9	138,023.1	227,007.2	141	86

Source: Column A–C: TAZMOD version 1.6. Columns D–E: Direct and indirect tax data for relevant categories in 2015/16 and 2016/17 obtained from TRA website. NHIF data was supplied by NHIF for 2015/16 and 2016/17. PSSN data was supplied by TASAF for 2015/16 and 2016/17.

Note: The TAZMOD 2015 figures differ from those reported in the previous country report due to further cleaning of the dataset and improvements to the model between Version 1.0 and 1.6.

Table A4: Income inequality

Year	TAZMOD		External
	Income-based Gini (A)	Consumption-based Gini (B)	Consumption-based Gini (C)
2012	0.71	0.40	0.34
2015	0.74	0.39	-
2016	0.74	0.39	-
2017	0.74	0.39	-
Gini	0.70	0.34	

Notes: TAZMOD and External source both use the same equivalence scale.

Source: Columns A and B: TAZMOD version 1.60 using income data. Column B: NBS (2013: 6).

Table A5: Poverty rates

Year	TAZMOD (income-based)		TAZMOD (consumption based)		External (consumption-based)	
	Basic needs poverty (A)	Food Poverty (B)	Basic needs poverty (C)	Food Poverty (D)	Basic needs poverty (E)	Food Poverty (F)
2012	48.1	40.1	28.6	10.7	28.2	9.7
2015	54.3	46.5	28.6	6.1	-	-
2016	54.3	46.6	28.6	6.3	-	-
2017	54.3	46.6	28.7	6.5	-	-

Notes: TAZMOD and External source both use the same equivalence scale. The 2011–12 HBS food poverty line is TZS 26,085.50 per adult equivalent per month. The 2011–12 HBS basic needs poverty line is TZS 36,482 per adult equivalent per month. These figures were inflated using the CPI for the years 2015–2017.

Source: Columns A–D: TAZMOD version 1.6. Column B: NBS (2014a: 97).