

# SOUTHMOD

Country report

# Bolivia

BOLMOD v2.0

2019–2022

Cristina Arancibia and David Macas

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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](#)), Southern African Social Policy Research Insights ([SASPRI](#)) and the International Inequalities Institute at the London School of Economics and Political Science ([LSE](#)) 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 Bolivia (BOLMOD), Colombia (COLMOD), Ecuador (ECUAMOD), Ethiopia (ETMOD), Ghana (GHAMOD), Mozambique (MOZMOD), Peru (PERUMOD), Rwanda (RWAMOD), Viet Nam (VNMOD), Tanzania (TAZMOD), Uganda (UGAMOD), and Zambia (MicroZAMOD). SOUTHMOD models are updated to recent policy systems using national household survey data. This report documents BOLMOD, the SOUTHMOD model developed for Bolivia. This work was carried out independently by Cristina Arancibia and David Macas.

The results presented in this report are derived using BOLMOD version 2.0 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 BOLMOD results against external data sources. For further information on access to BOLMOD and other SOUTHMOD models, see the [SOUTHMOD page](#).

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## Acronyms

ACE	School complementary feeding ( <i>Alimentación Complementaria Escolar</i> )
AN	National Customs ( <i>Aduana Nacional</i> )
AFP	Funds Pension Administrator ( <i>Administradoras de Fondos de Pensiones</i> )
ASUSS	Short-Term Social Security Supervisory Authority ( <i>Autoridad de Supervisión de la Seguridad Social de Corto Plazo</i> )
BIK	Benefits in kind
BJA	Juana Azurduy bonus ( <i>Bono Juana Azurduy</i> )
BJP	Juancito Pinto bonus ( <i>Bono Juancito Pinto</i> )
BOB (Bs)	Boliviano (national currency of Bolivia)
BOLMOD	EUROMOD based microsimulation model for Bolivia
CCT	Conditional cash transfer
COSSMIL	Military Social Security Corporation ( <i>Corporación del Seguro Social Militar</i> )
CPI	Consumer price index
ECE	Continuous Employment Survey ( <i>Encuesta Continua de Empleo</i> )
EGSSCP	Short-Term Social Security Management Entities System ( <i>Entes Gestores de la Seguridad Social de Corto Plazo</i> )
EH	National Household Survey ( <i>Encuesta de Hogares</i> )
HDI	Household disposable income
HFS	Health funds system
IBC	Bolivian Institute for the Blind ( <i>Instituto Boliviano de la Ceguera</i> )
ICE	Excise duties ( <i>Impuesto a los Consumos Especiales</i> )
IDH	Direct tax on hydrocarbons ( <i>Impuesto Directo a los Hidrocarburos</i> )
IEHD	Special tax on hydrocarbons and their derivatives ( <i>Impuesto Especial a los Hidrocarburos y sus Derivados</i> )
IGF	Tax on large fortunes ( <i>Impuesto a las Grandes Fortunas</i> )
IJ	Gambling tax ( <i>Impuesto al Juego</i> )
IPJ	Tax on games participation ( <i>Impuesto a la Participación en Juegos</i> )
ISAE	Aerial departures abroad tax ( <i>Impuesto a las Salidas Aéreas al Exterior</i> )
IT	Transaction tax ( <i>Impuesto a las Transacciones</i> )
ITF	Tax on financial transactions ( <i>Impuesto a las Transacciones Financieras</i> )
IUE	Company revenues tax ( <i>Impuesto sobre las Utilidades de las Empresas</i> )
RC-VAT	Complementary regime to value added tax ( <i>Régimen Complementario al Valor Agregado</i> )
RD	Universal old-age pension ( <i>Renta Dignidad</i> )
SICs	Social insurance contributions
SIN	National Tax Service ( <i>Servicio de Impuestos Nacionales</i> )
SIP	Comprehensive pension system ( <i>Sistema Integral de Pensiones</i> )
SIPRUNPCD	System of the National Single Registry Programme for Persons with Disabilities ( <i>Sistema de Información del Programa de Registro Único Nacional de Personas con Discapacidad</i> )
TGB	Tax on free transfer of goods
VAT	Value added tax

# 1 Basic information

## 1.1 Basic information about the tax–benefit system

The boliviano is the national currency of Bolivia; US\$=BOB6.96 (or Bs6.96) under a fixed exchange rate system.

The organizational structure of the social security system in Bolivia is divided into short-term and long-term benefits. The short-term social security system comprises the health benefits in kind and in cash from the sickness, maternity, and professional risks schemes. The long-term social security system comprises the basic and complementary benefits of the disability, old age, death, and professional risks regime.

The contributory health system in Bolivia is administered by both public and private managing entities of the Short-Term Social Security Management Entities system (*Entes Gestores de la Seguridad Social de Corto Plazo*, EGSSCP). Services are provided by health institutions (*Cajas de Salud*). The system is administered and regulated by the Short-Term Social Security Supervisory Authority (*Autoridad de Supervisión de la Seguridad Social de Corto Plazo*, ASUSS), which is dependent on the Ministry of Health.

The old-age pension in Bolivia is universal through the contributory, semi-contributory, and non-contributory regimes. Under the contributory regime, the old-age pension can be received at any age provided that the contributory payment balance is sufficient to finance a monthly pension of at least 60 per cent of the insured's covered average monthly earnings in the previous two years. Under the semi-contributory regime (solidarity pension), the old-age pension can be received from the age of 58 (age 56 for miners) if at least ten years of contributions have been made and the account balance is insufficient to finance a monthly pension above a legally defined minimum monthly amount. The non-contributory regime (*Renta Dignidad*) applies to all Bolivian citizens over 60 years of age residing in the country.

In Bolivia the fiscal year for taxes and benefits runs from 1 January to 31 December. Bolivian taxation has two tax administrations: the National Tax Service (*Servicio de Impuestos Nacionales*, SIN), which is responsible for administering the tax system of the national tax domain; and the National Customs (*Aduana Nacional*, AN), which is responsible for monitoring and controlling the passage of goods through the borders, ports, and airports of the country, for intervening in the international traffic of goods for the purposes of collecting the taxes levied on them, and for generating statistics about that movement.

The tax system of Bolivia does not include a personal income tax policy as such. To address this gap, Bolivia created the complementary regime to value added tax (*Régimen Complementario al Valor Agregado*, RC-VAT) with the purpose of regulating the personal incomes of employees and the self-employed (when it applies). This regime also serves to control the payment of VAT. Additionally, self-employed income taxation in Bolivia is applied through a company revenues tax (*Impuesto sobre las Utilidades de las Empresas*, IUE) and a transaction tax (*Impuesto a las Transacciones*, IT). Both are applied to the self-employed, considering them as one-person businesses.

There are no 'authentic' means-tested benefits in Bolivia. There are three main social assistance benefits. These are: the *Bono Juancito Pinto*, which is a conditional cash transfer programme (CCT) established as an incentive for enrolment in, retention at, and completion of the school year aimed at students in primary and secondary levels of education; the *Bono Juana Azurduy*, which aims to

promote higher coverage of institutional child births; and the *Renta Dignidad*, which is a non-contributory life pension that aims to protect the income of the elderly. Bolivia does not have a unified registry of beneficiaries of social transfers; each CCT has different criteria.

## 1.2 Social benefits

### 1.2.1 Contributory social protection

The organizational structure of the social security system in Bolivia is divided into short-term and long-term benefits. The long-term social security system benefits are the old-age pensions, complementary benefits of the disability pension, survivors' pension, and funeral grant. The short-term social security system benefits are the occupational risk insurance, temporary sickness absence, maternity leave, nursing subsidy for employed mothers, natality bonus, and paternity leave.

**Benefit 1**—Old-age pensions (*Pensión de Vejez, Régimen Contributivo*, mandatory individual account). The long-term social security system in Bolivia has undergone structural reform. The two most recent systems are the former pay-as-you-go system (*Sistema de Reparto*) (enacted in 1996), and the current comprehensive pension system (*Sistema Integral de Pensiones, SIP*) (enacted in 2010) which added a solidarity component to the previous system. Those insured can access an old-age pension under any of the following conditions:

- Under the SIP retirement can be at any age if the account balance is sufficient to finance a monthly pension of at least 60 per cent of the insured's covered average monthly earnings in the previous two years (or over the total contribution period if the insured has less than two years of contributions), funeral expenses, and survivor benefits for the insured's dependents.
- Under the old pay-as-you-go system, the insured can retire at age 55 (men) or age 50 (women) with accrued rights under the old social insurance programme if the account balance is sufficient to finance a monthly pension of at least 60 per cent of the insured's covered average monthly earnings in the previous two years (or over the total contribution period if the insured has less than two years of contributions), funeral expenses, and survivor benefits for the insured's dependents.
- From the age of 58, if the insured has at least 120 contributions and sufficient resources accumulated in their personal pension account, they can finance an old-age pension whose amount is greater than the old-age solidarity pension<sup>1</sup> that they would have been entitled to. The age when this applies is reduced in two cases: first, women are allowed to retire up to three years earlier (retirement at 55) if they have had pension contributions for at least ten years; and second, due to the harsh conditions of their work, metallurgical mining workers are able to retire from 56 years of age.

**Benefit 2**—Disability pension (*Pensión por Invalidez, Régimen Contributivo*, mandatory individual account). Disability pension is paid to an insured person who, following treatment for a common illness, maternity, or non-professional accident, is declared to be an invalid by the fund's Benefits Commission, with a permanent incapacity for work of more than 60 per cent. The pension is paid until the individual is 65 years of age, or until their death if this occurs before they reach 65. Moreover, the insured person must have made at least five years of contributions to the social insurance or individual account programmes, or have contributed during half the period from the date of the first individual account contribution to the date the disability began, and must have contributed during the 12

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<sup>1</sup> Which is financed by the insured's resources accumulated in their personal pension account, the yields that these would have generated, plus a solidarity component called the 'solidarity fraction', which allows them to improve their pension based on the years contributed.

months before the disability began. If the disability is due to an illness, the insured must also have made at least 18 months of contributions over the 36 months before the disability began.

**Benefit 3**—Survivors' pension (*Pensión por Muerte, Régimen Contributivo*, mandatory individual account). The survivors' pension is paid where the deceased received or was entitled to receive an individual account old-age or disability pension, had made at least five years of contributions to the social insurance or individual account programmes or over half the period from the date of the first individual account contribution to the date of death, and contributed during the 12 months prior to their death. If the death was the result of an illness, the deceased must also have had at least 18 months of contributions in the 36 months before the date of death. Eligible survivors include a widow(er) or cohabiting partner and orphans younger than 18 (age 25 if a student; no limit if disabled). If there is no eligible widow(er), partner, or orphan, other eligible survivors include the deceased's parents, brothers, and sisters younger than 18, or other survivors named by the insured.

**Benefit 4**—Funeral grant (*Gastos Funerarios, Régimen Contributivo*, mandatory individual account). The funeral grant is paid when an insured person aged 60 or over who receives or is entitled to receive an individual account old-age, disability, or solidarity pension dies. It is granted by the Pension Funds Administrator (*Administradoras de Fondos de Pensiones, AFP*) to the rights holders<sup>2</sup> of the insured deceased. It is a single payment of Bs1,800. Those entitled to the grant can claim it up to 18 months after the deceased's death.

**Benefit 5**—Occupational risk insurance (*Seguro de riesgos de trabajo*). In the case of temporary incapacity due to an accident at work or occupational disease, the insured is entitled, from the fourth day following the accident or recognition of illness by a professional, to a daily subsidy equivalent to 100 per cent of the national minimum wage plus 70 per cent of the difference between the current worker's salary and the national minimum wage (if the worker's salary is higher than the national minimum wage), to be paid for the duration of the assistance or if permanent disability is declared.

**Benefit 6**—Temporary sickness absence benefit (*Seguro de Enfermedad Común*). This covers all the immediate contingencies of daily life, such as common illnesses and accidents, covering any pathological state, organic injury or functional disorder contracted in daily life which is not related to work activity. The first three days are 100 per cent the responsibility of the employing company and, from the fourth day, only 75 per cent of their contributory salary is recognized, meaning that 25 per cent is not covered by the company. If recovery is not possible within the established periods, individuals may be transferred to the long-term pension, i.e. retirement.

**Benefit 7**—Maternity Leave (*Licencia de maternidad*). This consists of 90 days of paid leave for women: 45 prenatal and 45 postnatal.<sup>3</sup> To be eligible, the worker must be registered with the health funds system (HFS). The benefit consists of a payment made under the EGSSCP which is equivalent to the individual's wage in the month prior to the leave.

**Benefit 8**—Nursing subsidy for employed mothers (*Subsidio de Lactancia*). This consists of the delivery to the insured or beneficiary mother of a monthly allowance in kind or products equivalent to Bs2,000 (US\$290) for each child during their first twelve months of life (Presidencia del Estado Plurinacional de Bolivia 2018).

**Benefit 9**—Nativity bonus (*Bono de Natalidad*). This consists of a single payment equivalent to the national minimum wage to the surrogate, insured, or beneficiary mother for the birth of each child.

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<sup>2</sup> They are the surviving spouse or common-law partner (for life) and the offspring until they turn 18 years of age, or up to 25 years of age if they maintain their student status (temporarily).

<sup>3</sup> Reforms to the Bolivian Social Security System, Decree Law 13214 of December 24, 1975, article 31.



This benefit is received prior to a child's affiliation with the insurance system and expires one year after their date of birth.

**Benefit 10**—Paternity leave (*Licencia de paternidad*). This consists of three working days of paid leave for men from the date of the child's birth. To be eligible, the worker must have contributed during the whole pregnancy period. The benefit consists of a payment made under the EGSSCP, which is equivalent to the daily wage in the month prior to the leave.<sup>4</sup>

**Benefit 11**—Vacations. The length of annual leave varies with the seniority of the worker (length of service with the company). Both workers and employees with one to five years of service are entitled to 15 days of annual vacation; with five to ten years of service, the length of annual leave is 20 days; and from the tenth year onwards, the duration of the annual leave is 30 days.

### 1.2.2 Semi-contributory social protection

**Benefit 12**—Solidarity old-age pension (*Pensión solidaria de vejez, régimen semicontributivo*). The new Pension Law of 2010 introduced sectors that until then were not covered by an old-age pension and which can now access a pension. Thus, independent workers, drivers, bricklayers, farmers, trade unionists, and housewives can retire with the solidarity pension, which aims to cover individuals with low incomes and who have made a small number of contributions. The solidarity pension is a monthly benefit for life, which is financed with the insured's resources accumulated in their personal pension account, the yields that these would have generated, plus a solidarity component called the 'solidarity fraction', which enables them to improve their pension based on the years contributed. There are two criteria for accessing the solidarity pension: individuals must have a minimum age of 58 and have made at least 120 contributions to the AFP.

**Benefit 13**—Funeral grant (*Gastos Funerarios, Régimen Semicontributivo*, mandatory individual account). This is paid when an insured person aged 60 or over who receives or is entitled to receive an individual account old-age, disability, or solidarity pension dies. It is granted by the AFP to the rights holders<sup>5</sup> of the insured deceased. It is a single payment of Bs1,800 (US\$258.62). The rights holders can claim the grant up to 18 months after the deceased's death.

### 1.2.3 Non-contributory social protection

**Benefit 14**—Juancito Pinto bonus (*Bono Juancito Pinto, BJP*). This is a CCT, established under Supreme Decree No. 28899 and implemented since 2006 by the Ministry of Education (Ministry of Education 2006). The aim of this benefit is to encourage children and adolescents to enrol, remain in school, and complete the school cycle in public education establishments across the country. For this, the government grants a bonus of Bs200 per year (equivalent to US\$28.2). In the long term the BJP is expected to contribute to the accumulation of human capital to break the cycles of inter-generational poverty.

**Benefit 15**—Juana Azurduy Bonus (*Bono Juana Azurduy, BJA*). Since 2009, Bolivia has been applying a CCT to the health sector which aims to improve the health and nutrition of pregnant women and children under the age of two (Ministry of Health and Sport 2009). The long-term orientation of the BJA, according to the Ministry of Health and Sports, is to reduce the high rates of malnutrition and infant and maternal mortality in Bolivia. The bonus takes the form of a monetary incentive of Bs1,820 (equivalent to US\$263) for the use of maternal health services.

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<sup>4</sup> Bolivia: Supreme Decree No. 1212, May 1, 2012.

<sup>5</sup> They are the surviving spouse or common-law partner (for life) and the offspring until they turn 18 years of age, or up to 25 years of age if they maintain their student status (temporarily).

**Benefit 16**—Universal old-age pension (*Renta Dignidad, RD*). This is a universal unconditional monetary transfer for people over 60 years of age. It was enacted in November 2007, but its payment became effective in February 2008. The purpose is to enable older adults to have a dignified old age, with quality and human warmth. For 2022 the benefit is Bs4,550 (US\$653.74) per year for those who do not have an old-age pension; for those who have an old-age pension it is Bs3,900 (US\$560.34) per year.

**Benefit 17**—Prenatal care subsidy (*Subsidio Universal Prenatal por la Vida*). This is a benefit for pregnant women who do not have health insurance and it is granted from the fifth to the ninth months of pregnancy to improve the health of the mother and reduce neonatal mortality. It consists of the delivery to the beneficiary of four packages (one package per month from the fifth to the ninth months of pregnancy) of food products with a value equivalent to Bs300 each (equivalent to US\$43 per month).

**Benefit 18**—Funeral grant (*Gastos Funerarios, Régimen No Contributivo*). This is a one-time payment of Bs1,800 (equivalent to US\$259) which can be requested upon the death of a beneficiary of the dignity income.

**Benefit 19**—Veterans' pension (*Pensión para veteranos*). Article 69 of the Political Constitution of the State of Bolivia determines that veterans deserve gratitude and respect from public and private institutions and from the population in general, that they will be considered heroes and defenders of Bolivia and will receive a lifetime pension from the state. The amount of the pension varies each year. For 2021 it was a single payment of Bs15,500 (equivalent to US\$2,253) per year.

**Benefit 20**—Social assistance to blind people (*Bono Anual de Indigencia por Ceguera*). This benefit is a means-tested payment paid to blind and visually impaired people. The payment is made by the Bolivian Institute for the Blind (*Instituto Boliviano de la Ceguera*). The amount varies each year. It began in the amount of Bs235 (equivalent to US\$34) per year, and for 2021, it was a single payment of Bs6,890 (equivalent to US\$1,001) per year. To qualify for this benefit, individuals must supply an eye test from an ophthalmic surgeon to verify their visual impairment (Bolivian Institute for the Blind 1991).

**Benefit 21**—Social assistance for people with disabilities (*Bono mensual para personas con discapacidad grave y muy grave*). Law 977 on Labour Insertion and Economic Aid for Persons with Disabilities establishes a monthly payment of Bs250 (equivalent to US\$36). The beneficiaries must be registered with the Information System of the National Single Registry Programme for Persons with Disabilities (*Sistema de Información del Programa de Registro Único Nacional de Personas con Discapacidad, SIPRUNPCD*) from the Ministry of Health and have a current disability card.

#### 1.2.4 Not strictly benefits

**Not strictly benefit 1**—School complementary feeding (*Alimentación Complementaria Escolar, ACE o Desayuno Escolar*). This programme aims to provide free school meals to all students at public school institutions in order to reduce the gap in access to universal education, to improve school performance and to promote the retention of students in schools through the provision of healthy, timely, and culturally appropriate food.

### 1.3 Social contributions

**Social insurance contribution 1**—Social insurance contributions in Bolivia are administered by two operating systems: the Short-Term Social Security Management Entities System (*Entes Gestores de la Seguridad Social a Corto Plazo, EGSSCP*) and the pension fund administrators system (*Administradoras de Fondo de Pensiones, AFP*). The EGSSCP provides services through different health institutions (*Cajas de Salud*) and covers three types of insurance (occupational risk insurance, temporary sickness absence, and maternity leave) and two types of benefits in kind (BIK) (nursing subsidy for employed

mothers and natality bonus). The AFPs are responsible for the management and administration of four types of insurance: old-age pensions, disability pension, survivors' pension, and funeral grant.

**Social insurance contribution 2**—For the armed forces (*Aportaciones a COSSMIL*). Members of the armed forces are affiliated to special social security regimes with the Military Social Security Corporation (*Corporación del Seguro Social Militar, COSSMIL*). Contributions to this programme finance contributory health insurance benefits.

## 1.4 Taxes

**Overview:** Bolivian plurinational government revenue comes mainly from two sources: taxes and hydrocarbons. Table 1.1 presents the tax revenue sources for the years 2019 to 2021. Most of the revenue comes from value added tax (VAT) (18.5 per cent, 18.8 per cent, and 20.1 per cent, respectively for each year), The second most important tax is the company revenues tax (IUE) (19.5 per cent, 16.3 per cent, and 14.7 per cent, respectively for each year). There was an increase in the transaction tax in 2021 compared to 2020 as a result of the increase in payments from the trade, crude oil and natural gas, public administration services, business services, transportation and storage sectors. Customs collections contributed 26.8 per cent to total income in 2021 where the most relevant tax was VAT imports, which contributed 19.1 per cent of income.

**Table 1.1: Bolivian government tax revenue sources (2019–21)**

Tax	Share (2019)	Share (2020)	Share (2021)
<i>Internal Market</i>	74.2%	77.0%	73.2%
Value added tax (VAT)	18.5%	18.8%	20.1%
Company revenues tax (IUE)	19.5%	16.3%	14.7%
Transaction tax (IT)	9.0%	9.3%	10.3%
Complementary regime to VAT (RC-VAT)	0.9%	1.1%	0.9%
Excise duties (ICE)	3.4%	3.6%	3.4%
Aerial departures abroad tax (ISAE)	0.2%	0.1%	0.1%
Special tax on hydrocarbons and their derivatives (IEHD, Internal Market)	4.4%	5.7%	4.9%
Direct tax on hydrocarbons (IDH)	11.6%	13.5%	11.1%
Tax on financial transactions (ITF)	0.9%	1.0%	1.0%
Gambling tax (IJ)/Tax on games participation (IPJ)	0.2%	0.1%	0.1%
Various concepts	5.3%	7.4%	6.0%
Other taxes <sup>6</sup>	0.1%	0.1%	0.6%
<i>Customs</i>	25.8%	23.0%	26.8%
VAT imports	18.2%	16.7%	19.1%
ICE imports	1.4%	1.3%	1.4%
Tariff Levy	6.1%	4.9%	6.1%
IEHD imports	0.1%	0.1%	0.1%
<i>Total</i>	100.00%	100.00%	100.00%

Source: National Tax Service (2022).

**Tax 1**—Value added tax (VAT). VAT is regulated by Law No. 843 and applies to both national and imported operations at a rate of 13 per cent. This indirect tax excludes some goods and services.

**Tax 2**—Company revenues tax (*Impuesto sobre las Utilidades de las Empresas, IUE*). This is also regulated by Law No. 843 and applies to the profits, income, benefits, or gains of companies and

<sup>6</sup> Includes tax regimes, temporary programmes, tax on the sale of foreign currency (IVME), tax on free transfer of goods (TGB), tax on large fortunes (IGF) and other cash income.

professionals (considered as one-person companies) that are derived from assets located or used economically in the country.

**Tax 3**—Transaction tax (*Impuesto a las Transacciones*, IT). This is a tax that applies to anyone who has income. It taxes 3 per cent of all gross income, i.e. income without any discount.

**Tax 4**—Complementary regime for VAT (RC-VAT) (*Régimen Complementario al Impuesto al Valor Agregado*, RC-IVA). The tax system of Bolivia does not include a personal income tax policy as such. To fill this gap, Bolivia created the RC-VAT to regulate the personal income of employees and control the payment of VAT. The base tax, obtained from a withholding rate of 13 per cent, can be deducted with the presentation of invoices, so that it indirectly encourages consumption with invoices to reduce the tax base up to a certain level. Therefore, the RC-VAT does not tax income but simply acts as an indicator of the levels of consumption and VAT.

**Tax 5**—Excise duties (*Impuesto a los Consumos Especiales*, ICE). Excise duties are levied on the manufacture, importation, and distribution of cigarettes and tobacco, soft drinks, alcoholic beverages, undenatured alcohol, and motor vehicles. The rates vary widely with respect to the type of good. Manufacturers and people who import these goods pay this tax.

**Tax 6**—Aerial departures abroad tax (*Impuesto a las Salidas Aéreas al Exterior*, ISAE). This tax covers departures abroad via aerial transportation undertaken by Bolivians and foreign residents in Bolivia, and is paid through the airline. The rate is a fixed amount to be paid and is updated annually.

**Tax 7**—Special tax on hydrocarbons and their derivatives (*Impuesto Especial a los Hidrocarburos y sus Derivados*, IEHD). This tax is applied to the import of and commercialization in the internal market of hydrocarbons and their derivatives. People and companies in the mining sector are liable for this if they import and commercialize hydrocarbons and their derivatives. The tax is applied at the respective specific rates, updated annually.

**Tax 8**—Direct tax on hydrocarbons (*Impuesto Directo a los Hidrocarburos*, IDH). The direct tax on hydrocarbons is applied on the production of hydrocarbons throughout the national territory, carried out by people and companies within the public or private sectors who produce hydrocarbons at any point. The volumes of gas intended for productive social use in the domestic market are not liable for this tax. The rate is 32 per cent on the volumes of hydrocarbons measured at the wellhead inspection point.

**Tax 9**—Tax on financial transactions (*Impuesto a las Transacciones Financieras*, ITF). This taxes transactions in foreign or national currencies related to the following operations: withdrawals from or deposits to current accounts and savings accounts, payments or transfers of funds, acquisition of cashier's checks or other similar financial instruments existing or to be created, and transfers or remittances of money abroad or within the country. The rate that applied in 2022 was 0.30 per cent of the value of the transfer.

**Tax 10**—Gambling tax (*Impuesto al Juego*, IJ). All companies that provide activities and games of chance for profit are taxed at the rates of 30 per cent for games of chance or raffles and 10 per cent for business promotions.

**Tax 11**—Tax on games participation (*Impuesto a la Participación en Juegos*, IPJ). This tax is levied on participation in games of chance and raffles. Individuals who participate in games of chance and raffles, as well as participants who purchase raffles, checkbooks, forms, bingo, tokens, tickets, cards, coupons, and any other instrument or means that allows access to gambling, pay this tax. The tax is applied at a rate of 15 per cent, and the operators of games of chance are responsible for its collection.

**Tax 12**—Tax on large fortunes (*Impuesto a las Grandes Fortunas*, IGF). This is an annual tax which the Bolivian state has collected since 2021 through the National Tax Service (SIN) from the very wealthy in the country. It is worth mentioning that this tax is applied only to personal assets and not to companies. The rate is applied according to an income scale.

## 1.5 COVID-19-related tax and benefit measures

On 11 March 2020, the World Health Organization announced that COVID-19 had been classified as a pandemic due to the rapid increase in cases at the international level. Bolivia declared a COVID-19 pandemic emergency on 25 March 2020 in order to curb the spread of the virus.

A few weeks later, the government enacted policies to support families during the state of emergency. These policies were aimed at families with low incomes, and they were designed to soften the economic impact of the curfews as some Bolivians had to stop working to avoid contracting COVID-19.

The following policies were enacted during and after the state of emergency:

**COVID-19 Social Assistance 1**—Family bonus (*Bono Familia*). Aimed at families with children attending primary and secondary education in public, public-funded, and private schools, the *Bono Familia* was enacted to financially support education and health expenses during the state of emergency. This social assistance consisted of one cash transfer of Bs400 per child during April, May, and June of 2020 (Presidencia del Estado Plurinacional de Bolivia 2020a).

**COVID-19 Social Assistance 2**—Family basket (*Canasta Familiar*). This was aimed at low-income families whose main source of income was affected by the COVID-19 quarantine, as most of the heads of the households worked in the informal labour sector. The *Canasta Familiar* was conceived as a way to give people some economic relief while they had no income from their economic activities. This social assistance consisted of one payment of Bs400, which could be paid either in cash or in kind during April, May, and June of 2020 (Presidencia del Estado Plurinacional de Bolivia 2020b).

**COVID-19 Social Assistance 3**—Universal bonus (*Bono Universal*). Aimed at the unemployed and people without any pension, *Bono Universal* was a way to support those who did not have a fixed income, whether pensions, bonuses, or private transfers. This benefit consisted of one-off payment of Bs500 during April, May, and June of 2020. Those who benefited directly or through an immediate family member from either the *Bono Familia* or *Canasta Familiar* could not collect this benefit (Presidencia del Estado Plurinacional de Bolivia 2020c).

**Post COVID-19 Social Assistance 4**—Bonus against hunger (*Bono contra el Hambre*). Enacted towards the end of the state of emergency, the *Bono contra el Hambre* was conceived as a way to tackle the effects of the COVID-19 pandemic once the country had rolled out the COVID-19 vaccination programme and was preparing for economic reactivation. This benefit was aimed at beneficiaries of the *Bono Universal*, women collecting the *Bono Juana Azurduy*, people with disabilities, and voluntary or self-insured persons in the social security system. The single payment of the *Bono contra el Hambre* consisted of Bs1,000. People were able to collect this benefit until May 2021 (Presidencia del Estado Plurinacional de Bolivia 2020d).

**COVID-19 Social Assistance 5**—Exceptional deferral of credit payments<sup>7</sup> (*Diferimiento de pago de créditos con el sistema financiero*). To alleviate strains in the financial system and the economy, the government enacted this benefit to support bank lending to businesses and households. The financial intermediation institutes were authorized to automatically defer instalments corresponding to the payment of capital and interest credit amortizations for the months of March, April, and May 2020.

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<sup>7</sup> Law No. 1294, of April 1, 2020

These institutes deferred instalments in the special accounts established for this purpose. The deferred instalments were not able to generate or accrue extraordinary interest, the interest rate could not be increased, and no sanctions or penalties of any kind could be executed.

**COVID-19 Social Assistance 6**—Temporary reduction in the payment of basic services (*Reducción Temporal en el Pago de Servicios Básicos*). The government established the temporary reduction of electricity, drinking water, and household gas rates for domestic users and/or residential categories throughout the country. An example is the beneficiaries of the dignity rate, which applied to the fiscal periods of April, May, and June 2020.

**COVID-19 Other policies**—The cutting of basic services during the pandemic was prohibited and maximum prices for health products and services were set.

## 2 Simulation of taxes and benefits in BOLMOD

### 2.1 Scope of simulation

The tax and benefits components included in BOLMOD are presented in tables 2.1 and 2.2. Both tables show whether the policy was simulated or not and include a brief explanation of the policies that were not fully simulated in BOLMOD.

**Table 2.1: Taxes and social contributions included in BOLMOD**

	Variable name(s)	Treatment in BOLMOD 2019–22	Why not fully simulated?
Complementary regime to VAT (employees with non-taxable non-labour income)	tin01_s	S	
Complementary regime to VAT (employees with taxable non-labour income)	tin02_s	S	
Complementary regime to VAT (independent workers with taxable non-labour income)	tin03_s	S	
Company revenue tax (self-employed income tax)	tinse_s	S	Tax is simulated based on the assumption that half of income is used to pay business-related expenses.
Transaction tax (self-employed income tax)	tinpr_s	S	Tax is simulated only using the self-reported income from property leasing.
Retirement pension contribution	tsceepi_s	S	
Severance pay insurance contribution	tsceeu_i_s	S	
Administration costs and solidarity contribution	tsceeo_t_s	S	
National solidarity contribution	tsceeo01_s	S	
Retirement pension contribution (self-employed)	tscesepi_s	S	
Severance pay insurance contribution (self-employed)	tscseui_s	S	
Laboural insurance contribution	tscseac_s	S	
Administration costs and solidarity contribution (self-employed)	tscseot_s	S	
National solidarity contribution (self-employed)	tscseot01_s	S	
Value added tax	tva_s	S	

Notes: '-' policy did not exist in that year; 'E' policy is excluded from the model as it is neither included in the microdata nor simulated; 'I' policy is included in the microdata but not 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.

**Table 2.2: Benefits simulated in BOLMOD**

	Variable name(s)	Treatment in BOLMOD 2019–22	Why not fully simulated?
Old-age pension	poa	I	Not possible to model eligibility due to non-standardized conditions to receive this benefit.
Disability pension	pdi	I	Not possible to model eligibility due to non-standardized conditions to receive this benefit.
Survivors' pension	psu	I	Not possible to model eligibility due to non-standardized conditions to receive this benefit.
Veterans' pension	pml	I	Not possible to model eligibility due to non-standardized conditions to receive this benefit.
Social assistance to blind people	bbi	I	Not possible to model eligibility
Nursing subsidy for employed mothers	bfacc01	I	Not possible to model eligibility
Prenatal care subsidy	bfacc02	I	Not possible to model eligibility
Natality bonus	bfaba	I	Not possible to model eligibility
Education bond – <i>Juancito Pinto</i>	bed_s	S	
Pregnancy and maternity bond (mother) – <i>Juana Azurduy</i>	bmapr_s	S	
Pregnancy and maternity bond (child) – <i>Juana Azurduy</i>	bmacc_s	S	
Old-age pension – <i>Renta Dignidad</i>	bsaoa_s	S	
COVID-19 social assistance – <i>Bono Familia</i>	bfaot_s	S	
COVID-19 social assistance – <i>Canasta Familiar</i>	bcaot_s	S	
COVID-19 social assistance – <i>Bono Universal</i>	bwkot_s	S	
Post COVID-19 social assistance – <i>Bono contra el Hambre</i>	brwot_s	S	

Notes: '-' policy did not exist in that year; 'E' policy is excluded from the model as it is neither included in the microdata nor simulated; 'I' policy is included in the microdata but not simulated; 'P' 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 Structural changes

From 2019 to 2021 there were no structural changes in the tax–benefit system in Bolivia, except for COVID-related policies. Parameter changes made due to increases to the minimum wage and updates on thresholds for taxation are explained in the following sections.

From April to June 2020, the Bolivian government introduced three cash transfers to address the economic crisis caused by the COVID-19 pandemic: *Bono Familia* (aimed at students), *Canasta Familiar* (aimed at mothers and the elderly), and *Bono Universal* (aimed at individuals not affiliated to social security and not enrolled in other social assistance programmes). Combined, the three cash transfers covered 66 per cent of the population.

In December 2020, a new cash transfer was introduced. It aimed to push economic reactivation once the COVID-19 pandemic had eased. This new cash transfer was paid until May 2021 and covered 38 per cent of the population.

## 2.3 Order of simulation and interdependence

Table 2.3 shows the order in which the policies in BOLMOD are simulated. Social insurance contributions for employees and the self-employed are simulated first as they are deducted from

labour income. Then income-related taxes for employees and the self-employed are simulated. Lastly, benefits are simulated as they are not deductible.

**Table 2.3: BOLMOD spine: order of simulation**

Policy	BO_2019	BO_2020	BO_2021	BO_2022	Description of the instrument and main output
uprate_bo	on	on	on	on	DEF: Uprating factors
constdef_bo	on	on	on	on	DEF: Constants
ilsdef_bo	on	on	on	on	DEF: Standard income lists
ildef_bo	on	on	on	on	DEF: Model specific income lists
ildef_stats_bo	on	on	on	on	DEF: Stats presenter income lists
ildef_exp_bo	on	on	on	on	DEF: Expenditure income lists (COICOIP)
tuddef_bo	on	on	on	on	DEF: Assessment units
neg_bo	on	on	on	on	DEF: Recode negative incomes to zero
ses_bo	on	on	on	on	INC: Equivalence scales
spl_bo	on	on	on	on	INC: Poverty lines
tscee_bo	on	on	on	on	SIC: Employee social insurance contributions
tscese_bo	on	on	on	on	SIC: Self-employed social insurance contributions
tva_bo	on	on	on	on	TAX: VAT – all goods and services, except imports, exports, hospitality services, cultural events.
Tin_bo	on	on	on	on	TAX: Personal income tax (RC-IVA Laboural)
tinse_bo	on	on	on	on	TAX: Self-employed income tax
tinpr_bo	on	on	on	on	TAX: Transaction tax ( <i>Impuesto a las Transacciones</i> )
tex_bo	on	on	on	on	TAX: Special consumption tax- excise and ad valorem ( <i>Impuesto a los Consumos Especiales</i> )
bed_bo	on	on	on	on	BEN: Bono Juancito Pinto (education cash transfer)
bja_bo	on	on	on	on	BEN: Bono Juana Azurduy (pregnancy and maternity transfer)
bsaoa_bo	on	on	on	on	BEN: Old-age assistance ( <i>Renta Dignidad</i> )
bfaot_bo	N/A	on	off	N/A	BEN: COVID-19 social assistance – <i>Bono Familia</i> (one-off cash transfer)
bcaot_bo	N/A	on	off	N/A	BEN: COVID-19 Social Assistance – <i>Canasta Familiar</i> (one-off cash transfer)
bwkot_bo	N/A	on	off	N/A	BEN: COVID-19 social assistance – <i>Bono Universal</i> (one-off cash transfer)
brwot_bo	N/A	N/A	on	N/A	BEN: Post COVID-19 Social Assistance – <i>Bono contra el Hambre</i> (one-off cash transfer)
xhhadj_bo	on	on	on	on	INC: Adjust consumption to new disposable income
output_std_bo	on	on	on	on	DEF: Standard output individual level
output_std_hh_bo	off	off	off	off	DEF: Standard output household level

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

Source: authors' compilation.

## 2.4 Policy switches

By default BOLMOD uses the national poverty line to calculate headcount poverty rates. The model also contains an extension switch ('POV'), which allows the user to employ the extreme poverty line for model simulations instead of the standard line.

## 2.5 Social benefits

### 2.5.1 Bono Juancito Pinto (bed\_s)

#### Definitions

The objective of *Bono Juancito Pinto* is to increase enrolment in, retention at, and completion of school.



## Eligibility

*Bono Juancito Pinto* targets:

- Students attending the primary education or secondary education level in public and public-funded schools in the regular education subsystem, who have not reached 21 years of age by the end of the calendar year.
- Students enrolled and receiving care in public and public-funded special education centres in the alternative and special education subsystems, without any age limit or teaching grade restriction.

## Conditionality

Payments are made through an enrolment control and with attendance records of at least 80 per cent of the school year. To receive the transfer students should be accompanied by their parents or guardians. Each school and special education centre submits the list of students who have enrolled to receive the bond.

## Benefit amount

The annual benefit amount for each student is Bs200 (US\$28.74).

## BOLMOD notes

This benefit is fully simulated in the model as the National Household Survey (*Encuesta de Hogares*, EH) includes detailed information on school attendance and enrolment. In 2020, during the COVID-19 pandemic, the payment was made by bank transfer to students enrolled for the 2020 school year, which started in February 2020.

### 2.5.2 Bono Juana Azurduy (bj\_a\_s)

#### Definitions

The objective of the *Bono Juana Azurduy* is to incentivize safe motherhood and the development of children from zero to two years of age, increasing the demand for health services for pregnant women and children under two while helping to reduce the prevalence of acute and global malnutrition among children under two years of age.

#### Eligibility

The *Bono Juana Azurduy* is aimed at:

- pregnant women aged 13 to 50 who do not have health insurance;
- imprisoned pregnant women; and
- children under one year of age at the time of enrolment until they reach two years of age.

#### Conditionality

Mothers and children become beneficiaries of the transfer after voluntary registration. Conditionality is subject to the pregnancy stage at which the women and the children enrol for the programme.

For pregnant women conditionality includes attending the corresponding prenatal check-ups at the assigned health centre, according to the schedule provided at the time of enrolment, and complying with medical recommendations. They also must attend education sessions and activities.

Once women go into labour, they must give birth at a public hospital/health centre and attend a postpartum check-up up to ten days after delivery. They must also comply with medical recommendations.

For children, mothers must attend the health check-ups at the assigned health centre and comply with nutritional recommendations and the immunization schedule. Mothers must also attend education sessions and activities.

### Benefit amount

Payment of this benefit is made on completion of the health controls and conditions. If enrolled at the first month of pregnancy, the programme lasts for 33 months, and the total transfer is Bs1,820 (US\$260) (Table 2.4).

**Table 2.4: Bono Juana Azurduy components**

Beneficiary	Stage	Description	Amount
Mother	Pregnancy	4 prenatal controls.	Bs50 for each control
Mother	Birth	Birth at a public hospital/health centre and a post-labour health control	Bs120
Child	First 24 months	12 bimonthly health controls	Bs125 for each control

Source: authors' compilation.

### BOLMOD notes

This benefit is simulated in two parts as both the mothers and the children must enrol in the programme to receive the payment. In BOLMOD the variables that sum the total payments received as part of the *Bono Juana Azurduy* are *bmapr\_s* and *bmacs\_s*, which save the simulated payments received by the mother and the child respectively and are built identifying pregnant women and children under two years who could be beneficiaries according to the given conditionality.

In 2020, due to the COVID-19 pandemic, questions about pregnancy and birth were dropped from the survey and the policy switched from fully simulated to partially simulated.

### 2.5.3 Renta Dignidad (*bsaoa\_s*)

#### Definitions

The objective of *Renta Dignidad* is to allow elderly Bolivians to have a dignified old age, with quality and human warmth. It is a monthly, universal, and lifelong benefit.

#### Eligibility

*Renta Dignidad* is aimed at:

- elderly individuals aged 60 and over who are covered by the contributory regime (pensioners); and
- elderly individuals aged 60 and over who are NOT covered by the contributory regime (non-pensioners).

#### Conditionality

To become a beneficiary of the *Renta Dignidad*, elderly individuals over 60 must be permanent residents in Bolivia and cannot be in receipt of any salary or compensation included in the General Budget of the Nation as a worker, consultant, or supplier of the state (Pension and Insurance Supervisory and Control Authority 2007).

The beneficiaries should be suspended from receiving payments for abusing the benefit by collecting the payment more than once in the same month or collecting the payment without being of the minimum age (Pension and Insurance Supervisory and Control Authority 2007).

## Benefit amount

*Renta Dignidad* is paid monthly and includes a bonus paid at the end of the year alongside the monthly amount (Table 2.5).

**Table 2.5: Renta Dignidad payment**

Beneficiary	Description	Annual total
People over 60	Elderly receiving a pension from social security	Bs3,900 (US\$560) (11 payments of Bs300 plus a Bs600 payment at the end of the year.)
People over 60	Elderly NOT receiving a pension from social security	Bs4,550 (US\$647) (11 payments of Bs350 plus a Bs700 payment at the end of the year.)

Source: authors' compilation.

## BOLMOD notes

*Renta Dignidad* is fully simulated in the model as the National Household Survey (*Encuesta de Hogares*, EH) includes enough data on pensioners.

### 2.5.4 COVID-19-related social assistance

Bolivia faced the COVID-19 pandemic in a context of social and political instability. The peak of the pandemic was managed by a transitional government, while the post-pandemic recovery was managed by the new elected government in 2020. The transitional government introduced three monetary transfers—*Bono Familia*, *Canasta Familiar*, and *Bono Universal*—and the newly elected government introduced a new monetary transfer—*Bono contra el Hambre*.

#### 2.5.4.1. Bono Familia (bfaot\_s)

##### Definitions

The objective of *Bono Familia* was to contribute to the health care expenses, extraordinary transportation, and special food for children of low-income families during the quarantine period resulting from the COVID-19 pandemic.

##### Eligibility

*Bono Familia* was aimed at:

- families with children enrolled in primary education or secondary education in public and public-funded schools in the regular education subsystem;
- families with children with disabilities enrolled in primary or secondary education, in public and public-funded special education centres in the alternative and special education subsystems; and
- families with children enrolled in primary or secondary education in private schools.

##### Conditionality

There were no conditions for receiving this cash transfer. Families received one cash transfer per child and had up to three months to collect the bonus.

##### Benefit amount

The benefit was a one-off cash payment of Bs500 (US\$71.83) per child.

##### BOLMOD notes

*Bono Familia* is fully simulated in the model. As the benefit is a one-off transfer, the benefit amount is divided by 12 in the model to represent the average over the whole year.

#### 2.5.4.2. Canasta Familiar (bcaot\_s)

##### Definitions

The objective of *Canasta Familiar* was to support people directly affected by the sudden halting of economic activities because of the quarantine declaration to deal with the COVID-19 pandemic.

##### Eligibility

*Canasta Familiar* was aimed at:

- the elderly enrolled in the *Renta Dignidad* programme who were not covered by the contributory regime;
- mothers enrolled in the *Juana Azurduy* programme; and
- people with disabilities.

##### Conditionality

There were no conditions for receiving this cash transfer. Families had up to three months to collect the bonus.

##### Benefit amount

The benefit was a one-off cash payment of Bs400 (US\$57.47) which could be paid in cash or in kind.

##### BOLMOD notes

*Canasta Familiar* is fully simulated in the model. Beneficiaries enrolled in the *Renta Dignidad* were identified through the amount they reported receiving. As the benefit is a one-off transfer, the benefit amount is divided by 12 in the model to represent the average over the whole year.

#### 2.5.4.3. Bono Universal (bwkot\_s)

##### Definitions

The objective of *Bono Universal* was to support people not receiving a fixed economic income during the COVID-19 pandemic.

##### Eligibility

*Bono Universal* was aimed at:

- people aged between 18 and 60 not receiving the *Canasta Familiar*;
- people aged between 18 and 60 not receiving the *Bono Familia* and/or who had children receiving the *Bono Familia*;
- people between 18 and 60 who were not receiving any pension or assistance including old-age, disability, veterans', and survivors' pensions; and
- unemployed people aged between 18 and 60.

##### Conditionality

There were no conditions for receiving this cash transfer. People had up to three months to collect the bonus.

##### Benefit amount

The only payment was Bs500 (US\$71.83).

##### BOLMOD notes

*Bono Universal* is fully simulated in the model.

#### 2.5.4.4. Bono contra el Hambre (brwot\_s)

##### Definitions

The objective of *Bono contra el Hambre* was to tackle the effects of the COVID-19 pandemic, benefiting people whose income level had been adversely affected. It was enacted towards the end of the interim government and regulated by the incoming government.

##### Eligibility

*Bono contra el Hambre* was aimed at Bolivians aged over 18 years as of 16 September 2020 who belonged to one of the following groups:

- women who were collecting the *Bono Juana Azurduy*;
- visually impaired people enrolled in the Bolivian Institute for the Blind who were collecting the *Bono de Indigencia*;
- individuals with a severe or very severe disability registered in the information system of the National Single Registry Programme for Persons with Disabilities (SIPRUNPCD);
- beneficiaries of the *Bono Universal*, including those who did not receive any type of salary remuneration from the public or private sector as of 16 September; and
- voluntary or independent insured individuals in the social security system.

##### Conditionality

Employees and workers contributing to the social security system, beneficiaries of the social security death pension, and beneficiaries of the *Bono Familia* were not eligible for the *Bono contra el Hambre*. Initially, people had up to three months to collect the bonus, but this was later extended until May 2021 (six months).

##### Benefit amount

The only payment was Bs1,000 (US\$143.68).

##### BOLMOD notes

*Bono contra el Hambre* is fully simulated in the model. The visually impaired and those with disabilities were identified as the ones who would be eligible to receive a disability pension and/or the *Bono de Indigencia*.

## 2.6 Social contributions

In Bolivia, social insurance contributions depend on workers' status, i.e. whether they are dependent or independent. Because of its importance, employers in the mining sector make an additional contribution and have a different set of conditions within the social insurance system.

All the contributions last until the insured individual reaches the age of 65. However, an insured person can retire under any of the following circumstances:

- at any age, if their personal pension account enables them to fund 60 per cent of their old-age pension, their funeral expenses, and the death pension for their heir;
- women aged 50 and men aged 55 years who contribute to the pensions system and whose personal pension account enables them to fund 60 per cent of their old-age pension, their funeral expenses, and their heir's death pension;
- people aged 58 who have made at least 120 contributions, the amount of which enables them to have an old-age pension that surpasses the old solidarity pension that they would have been entitled to; and

- workers in the mining industry aged 56 who have made at least 120 contributions, the amount of which enables them to have an old-age pension that surpasses the old solidarity pension that they would have been entitled to. Workers in the mining sector can also retire in either of the first two circumstances.

### Bolivia's Integral Pension System (*Sistema Integral de Pensiones, SIP*)

In 2010 a new social security system was enacted in Bolivia aimed at guaranteeing the protection and access of all Bolivians to long-term social security without discrimination based on the type of work they do, the type of remuneration they receive, or their economic level, gender, and/or religion.

This new system has three regimes: contributory, semi-contributory, and non-contributory regimes. The benefits of all the regimes are financed by contributions made by employers, dependent insurers, and the self-insured.

#### 2.6.1 Retirement pension contribution

This contribution funds the retirement pensions for the contributory and semi-contributory regimes. The percentage is the same for dependent and independent workers and it is made a monthly basis (Table 2.6).

**Table 2.6: Retirement pension contribution (2019–22)**

	Employees	Self-employed under 65 years	Self-employed over 65 years	Employer
Taxable income	<i>Monthly wage</i>	<i>Monthly income freely declared. It cannot be less than the national minimum wage and no more than 60 times the minimum wage</i>		<i>Employee wage. Paid with employer earnings.</i>
Fee for retirement pension	10%	10%	10%	Not Applicable

Source: authors' compilation based on Central Bank of Bolivia (2010).

#### 2.6.2 Severance pay insurance contribution

The severance pay contribution funds a disability or death pension derived from accidents or illnesses that occur for reasons unrelated to occupational accidents, illnesses, or diseases, and which result in the disability or death of the insured (Table 2.7).

**Table 2.7: Severance pay contribution (2019–22)**

	Employees	Self-employed under 65 years	Self-employed over 65 years	Employer
Taxable income	<i>Monthly wage</i>	<i>Monthly income freely declared. It cannot be less than the national minimum wage and no more than 60 times the minimum wage</i>		<i>Employee wage. Paid with employer earnings.</i>
Fee for severance pay	1.71%	1.71%	Not applicable	1.71%

Source: authors' compilation based on Central Bank of Bolivia (2010).

#### 2.6.3 Administration costs and solidarity contribution

To support the management of the of the Public Pension System Authority, all those insured must pay an administrative fee.

The solidarity contribution aims to fund the solidarity fund of the semi-contributory regime and must be paid monthly (Table 2.8).

**Table 2.8: Administration costs and solidarity contribution (2019–22)**

	Employees	Self-employed under 65 years	Self-employed over 65 years	Employer
Taxable income	<i>Monthly wage</i>	<i>Monthly income freely declared. It cannot be less than the national minimum wage and no more than 60 times the minimum wage</i>		<i>Employee wage. Paid with employer earnings.</i>
Administration costs	0.5%	0.5%	0.5%	Not applicable
Solidarity contribution	0.5%	0.5%	0.5%	3%

Source: authors' compilation based on Central Bank of Bolivia (2010).

## 2.6.4 National solidarity contribution

In addition to the solidarity contribution, workers with income over a certain threshold must make an additional solidarity contribution of 1 per cent, 5 per cent, or 10 per cent depending on which threshold the difference falls between.

A worker is liable to make this contribution only when the difference between their gross labour income and the threshold is greater than Bs1 (US\$0.14).

The national solidarity contribution is progressive, with three bands and three rates of 1 per cent, 5 per cent, and 10 per cent, as detailed in Table 2.9.

**Table 2.9: National solidarity contribution (2019–22)**

	Employees	Self-employed under 65 years	Self-employed over 65 years
Taxable income	<i>Positive difference between threshold and monthly wage</i>	<i>Positive difference between threshold and monthly income freely declared. It cannot be less than the national minimum wage and nor more than 60 times the minimum wage</i>	
Taxable threshold	Contribution		
> Bs13,000 (US\$1,867)	1%	1%	1%
> Bs25,000 (US\$5,591)	5%	5%	5%
> Bs35,000 (US\$5,028)	10%	10%	10%

Source: authors' compilation based on Central Bank of Bolivia (2010).

## 2.6.5 Other contributions

### Employers' contribution (2019–22)

Employers must also make a contribution of 2 per cent of the total amount paid to their workers to a housing fund managed by the Public Pension System Authority.

### Laboural insurance contribution (2019–22)

Self-employed individuals aged under 65 years must also make an occupational insurance contribution of 1.71 per cent of their freely declared monthly income to fund a probable disability pension.

### Mining sector-specific contributions (2019–22)

Employers in the mining sector make an extra contribution of 2 per cent for each of their employees. The total amount collected adds to the other contributions to fund the semi-contributory system solidarity fund.

## 2.7 Income taxes

Bolivia does not have a personal income tax policy in the strict sense. Instead, personal income is subject to different taxes based on workers' status:

- Employed workers' personal income is taxed through the complementary regime to VAT: RC-VAT.
- Self-employed workers' personal income is taxed through the RC-VAT, depending on the type of income they receive, and direct taxes aimed at companies.

### 2.7.1 Personal income tax (tin\_s)

The RC-VAT is the tax imposed on the income of individuals. Its purpose is to complement the value-added tax regime on the income of individuals and undivided successions from the investment of capital, labour, or the joint application of both factors.

#### Tax unit

The RC-VAT is assessed at the individual level.

#### Taxable income, exemptions, and deductions

The tax rate for the RC-VAT is 13 per cent and must be paid monthly only if the tax incurred is greater than Bs1 (Table 2.10).

**Table 2.10: Complementary regime to VAT calculation**

Category	Element	Description	BOLMOD variables
Labour Income	Gross labour income		yem
	+ Bonuses	Productivity, housing, dietary	yemxp
	+ Overtime		
	+ Compensations	Consultants, fees	
Capital investment income	Leasing of property/machinery		ypr
	= Taxable Income		
Deductions	- Social security contributions	Total contribution 12.71%	
	- Invoiced expenditures	Equivalent up to four (4) minimum wages	\$ITThreshold
	- Two (2) minimum wages		
	= Preliminary tax base		
RC-VAT rate	* 13%	Tax rate	
	= Nominal tax		
Deductible	- 13% of two (2) minimum wages	Tax rate applied to the two (2) minimum wages	
	= Incurred tax		tin01_s+tin02_s

Source: authors' compilation based on National Tax Service. (n.d.).

Definition of income: the main income component of the RC-VAT includes labour earnings, including bonuses of any kind, monetary and in-kind compensations, and any ordinary or extraordinary remuneration. The only extraordinary incomes excluded are pensions of any kind, the Christmas bonus, subsidies, and benefits derived from the social security system.

The secondary income component of the RC-VAT includes income from leasing property and machinery, and income from investments not subject to company tax revenue.

Deductions and exemptions: to obtain deductions from this tax, liable workers must present invoices for purchases of goods and services up to four months old, which must be in their name, except for education, water, electricity, or telephone bills, which may be in the name of a third party (Table 2.11).



**Table 2.11: Deduction and exemptions**

	2019	2020	2021	2022	Description
Deduction threshold	Bs9,724 (US\$1,397)	Bs9,724 (US\$1,397)	Bs9,917 (US\$1,425)	Bs10,311 (US\$1,481)	Workers whose net income surpasses 4 minimum wages are liable for the complementary regime to VAT.

Source: authors' compilation based on National Tax Service. (n.d.).

## BOLMOD notes

The RC-VAT is simulated under the assumption that all the workers are liable for the tax deductions.

### 2.7.2 Self-employed income taxes

The Bolivian tax system classifies self-employed workers as one-person companies, and they are liable for any tax aimed at companies. They are also liable for the RC-VAT if they receive income from activities liable for the RC-VAT.

#### 2.7.2.1. Complementary regime to VAT (tin03\_s)

Self-employed individuals must pay the RC-VAT if they receive income from:

- property or machinery rents;
- interest on time deposits and current account deposits;
- fees of directors of corporations and syndicates;
- salaries of personnel hired locally by diplomatic missions, international organizations, and foreign governments; and
- incomes of persons hired by the public sector (consultants).

For the self-employed, the calculation of the amount of the RC-VAT follows a simplified version of the one presented in Table 2.10, excluding income from labour and social insurance contributions (Table 2.12).

**Table 2.12: Complementary regime to VAT calculation for self-employed with taxable non-labour income**

Category	Element	Description	BOLMOD variables
Capital investment income	Leasing of property/machinery		ypr
	= Taxable income		
Deductions	- Two (2) minimum wages		
	= Preliminary tax base		
RC-VAT rate	* 13%	Tax rate	
	= Nominal tax		
Deductible	- 13% of two (2) minimum wages	Tax rate applied to the two (2) minimum wages	
	= Incurred tax		tin03_s

Source: authors' compilation based on National Tax Service. (n.d.).

#### 2.7.2.2. Company revenue tax (tinse\_s)

The tax rate of the company revenue tax is 25 per cent of the presumed net revenue (Table 2.13).

**Table 2.13: Company revenue tax calculation**

Category	Element	Description	BOLMOD variables
Income	Income	Income from the exercise of liberal professions	yse
Presumed expenditures	- 50% business-related expenditures	Fixed and variable business expenditures	
	= Taxable income		
Company revenue tax rate	* 25%	Tax rate	
	= Incurred company revenue tax		tinse_s

Source: authors' compilation based on National Tax Service. (n.d.).

### 2.7.2.3. Transaction tax (tinpr\_s)

The tax rate of the transaction tax is 3 per cent of the income received from renting property or machinery. Note that, with this tax, income from renting property or machinery is liable for the RC-VAT and the transaction tax. Employed individuals are not liable for the transaction tax (Table 2.14).

**Table 2.14: Company revenue tax calculation**

Category	Element	Description	BOLMOD variables
Rents	Nominal rent	Income from renting property or machinery.	Ypr
	= Taxable income		
Transaction tax	* 3%	Tax rate	
	= Incurred transaction tax		tinpr_s

Source: authors' compilation based on National Tax Service. (n.d.).

### BOLMOD notes

The company revenue tax is simulated assuming that all the self-employed individuals are liable for the tax. The RC-VAT is simulated conjointly with the employed.

## 2.8 Indirect taxes

### 2.8.1 Value added tax (tva\_s)

The VAT rate is 13 per cent on taxable income and 0 per cent on specific items, and it is paid monthly. Individuals and companies involved in the activities shown in Table 2.15 are liable.

**Table 2.15: Value added tax (2019–22)**

13% VAT	0% VAT
- Sales of personal property	- Sales of imported or national-fabricated books
- Rental of property or machinery	- Sales of official publications made by governmental institutions
- Services under a work contract	- International cargo land transportation
- Imports	- Food, alcoholic beverages, and non-alcoholic beverages
- Financial leasing of property and personal property	- Personal care goods
	- Fuel

Source: authors' compilation based on National Tax Service. (n.d.).

Imports made by diplomats, cash transfers, exports, tourist services, lodging of foreign tourists, and cultural activities sponsored by the Ministry of Culture are exempt.

### BOLMOD notes

VAT is fully simulated in 2019 as the National Household Survey gives a detailed list of expenditures. In 2020 the whole expenditures section was dropped from the survey, and therefore the outcome of the VAT policy is zero.

## 3 Data

### 3.1 General description

For BOLMOD the Household Survey (*Encuestas de Hogares*, EH) is used. EH is a nationally representative cross-sectional survey of households in Bolivia. The survey aims to provide statistics and socioeconomic and demographic indicators for the Bolivian population which are necessary for the formulation, evaluation, and monitoring of public policies. In addition EH is the main source of information for measuring poverty by income in Bolivia. Tables 3.1 and 3.2 describe the scope of the 2019 and 2020 EH databases respectively. For this project the EH holds useful information, such as the main general characteristics of households and their members, educational characteristics, employment, net income from employed and self-employed workers, secondary activity, labour income from secondary occupations, and household non-labour income such as transfers and remittances. Data on household expenditures is also available, as is information about social security contributions and tax payments, social transfers in cash, and public pensions.

The geographic coverage of the 2019 EH is nationwide. The information is collected in the nine departments of the country, both in urban and rural areas, based on a previously determined sample design.

**Table 3.1: BOLMOD 2019 database description**

BOLMOD database	BO_2019_a1
Original name	Household Survey 2019: BOL-INE-EH-2019-V1
Provider	National Institute of Statistics ( <i>Instituto Nacional de Estadística</i> , INE)
Year of collection	2019
Period of collection	21-10-2019/20-12-2019
Income reference period	2019
Sample size	11,869 households / 39,605 individuals
Response rate	99%

Source: INE (2020).

The December 2020 data contains information for 11,056 households (Table 3.2).

**Table 3.2: BOLMOD 2020 database description**

BOLMOD database	BO_2020_a1
Original name	Household Survey 2020: BOL-INE-EH-2020-V2
Provider	National Institute of Statistics ( <i>Instituto Nacional de Estadística</i> , INE)
Year of collection	2020
Period of collection	03-11-2020/30-11-2020
Income reference period	2020
Sample size	11,056 households / 37,092 individuals
Response rate	98%

Source: INE (2020).

### 3.2 Data adjustment

Adjustments to the data and variables are kept to a minimum.

Missing values in income and expenditure variables were replaced by zero to facilitate the imputation of composite variables.

### 3.3 Imputations and assumptions

The information collected through the EH in Bolivia is consistent over the years. It is important to note that for 2020 questions about household health focused on the effects of the COVID-19 pandemic and omitted other health issues such as pregnancy and birth.

#### 3.3.1 Time period

The demographic variables in each of the EH surveys refer to the year the data was collected.

Data from labour income, social assistance bonus, payments, agricultural property rents, revenues from investments, and private transfers is examined in yearly terms and includes a variable containing the frequency of their collection within the year (daily, weekly, biweekly, monthly, bimonthly, quarterly, semi-annually, or annually).

Data from pensions (old-age, veterans', disability, survivors'/orphans') and rents (interest, real estate, and others) is collected in monthly terms.

Food expenditure data is collected in monthly terms.

Data for *Bono Juana Azurduy* includes registration of the mother, type of health unit (public or private) of birth of her children, number of prenatal health check-ups, and number of bimonthly health check-ups of the children.

Data for *Renta Dignidad* includes whether the beneficiary collected the 'Christmas bonus'.

Data for *Bono Juancito Pinto* refers to the year prior to the year in which the data is collected.

All monetary values are converted to monthly terms, as required for the BOLMOD database. Note that BOLMOD calculations implicitly assume that the income, rents, payments, pensions, and other monetary values are received at the same rate throughout the year. However, this may not be the case for individuals reporting transfers or payments other than monthly. The latter also impacts the calculation of the RC-VAT (monthly), company revenues tax (monthly), and transaction tax (monthly).

#### 3.3.2 Gross incomes

##### Employee income

The EH collects net income data, which means it has already deducted contributions to social security and taxes.

For BOLMOD, an imputation of employees' gross income is made taking account of the fact that all employees affiliated to a Funds Pension Administrator are liable for contributions to the pensions system and to the RC-VAT. The imputation followed the following steps for the 2019 and 2020 systems:

**Step 1.** Net income is divided by  $(1-0.1271)$ , where  $0.1271 = 12.71$  per cent, which is the total contribution to social security (10 per cent for retirement, 1.71 per cent for severance pay, 0.5 per cent for administration, and 0.5 per cent for the solidarity contribution).

**Step 2.** The EH includes a labour income variable (net income + overtime and other additional labour-related payments) which is divided by  $(1-0.1271)$  to calculate the taxable income liable for the national solidarity contribution (1 per cent, 5 per cent, or 10 per cent) based on the threshold presented in Table 2.9.

**Step 3.** Two auxiliary variables containing the deductibles are calculated. The first contains the total of multiplying the minimum wages by two (as ruled). The second contains the result of multiplying two minimum wages by the percentage of deduction, which is 13 per cent.

**Step 4.** The first auxiliary variable is subtracted from the net income to obtain the taxable income, which then is multiplied by the tax rate of 13 per cent.

**Step 5.** The RC-VAT value is the result of subtracting the second auxiliary variable referred to in step 4 from the result of applying step 5.

**Step 6.** Employees' gross income results from adding the results of step 1, step 2, and step 5 to the variables containing production bonus (yem01), Christmas bonus (yemhl), compensations (yem02), and overtime (yemxp).

### Self-employed income

The EH collects the total incomes of the self-employed, including business-related expenditures.

To obtain the gross income for the self-employed the following business-related expenditures, also collected through the EH, are subtracted from the total income:

- raw material expenditures;
- third-party services payments;
- employees' salaries and employer liable contributions;
- local or motor vehicle renting;
- basic services;
- loans;
- economic activity specific taxes; and
- subscriptions to unions, guilds, or associations.

The result from subtracting all these business-related expenditures is the self-employed gross income.

### 3.3.3 Labour market formality

In BOLMOD employees and the self-employed are considered to be in formal employment if they report affiliation to a Pension Funds Administrator (*Administradora de Fondos de Pensiones*, AFP).

### 3.3.4 In-kind payments in income lists

In Bolivia the EH also asks about the in-kind payments and benefits that a worker collects and their economic value. In BOLMOD these in-kind payments are identified by the prefix *k* and the value they refer to is the economic value of the in-kind payment. These payments refer only to in-kind payments from employment.

## 3.4 Updating

BOLMOD is constructed from the 2019 and 2020 Ehs. This means that, for 2021 and 2022, uprating factors are used to account for any time inconsistencies between the input dataset and the policy year. In this sense 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.

As a rule uprating factors are provided for simulated and non-simulated income components in the input dataset. However, in the case of simulated variables, the actual simulated amounts are used in

the baseline rather than the updated original variables in the dataset. Updating factors for the simulated variables are provided to ease the use of the model in cases when the user would turn off the simulation of a particular variable. The list of updating factors as well as the sources used to derive them can be found in Table 3.3.

### **3.5 Consumption levels**

Consumption levels are updated from the base year to the policy year and adjusted by absolute changes in disposable income from the base year to the policy year. The change in disposable income takes account of changes in market incomes and changes in benefits and social insurance contributions. The underlying assumption is that changes in disposable incomes lead to the same changes in consumption levels.

**Table 3.3: Raw indices for deriving BOLMOD uprating factors**

Index	Constant name	Value of raw indices				Source
		2019	2020	2021	2022	
Average wage (monthly) – national currency	\$f_yem	2,967.40	2,992.82	2,981.66	3,067.83	National Institute of Statistics
Consumer price index, World Bank	\$f_cpi	148.32	149.71	150.82	152.95	World Bank (2022a)
GDP deflator, World Bank	\$f_gdp_wb	573.70	563.06	585.40	593.69	World Bank (2022b)
Consumer price index	\$f_cpi_ine	103.45	104.42	105.19	106.68	National Institute of Statistics
Minimum national salary (monthly) – national currency	\$f_minwage	2,122	2,122	2,164	2,250	
Unity index	\$f_unit	1	1	1	1	

Notes: uprating indices for 2022 are calculated based on the growth of CPI from December 2020 to December 2021.

Source: authors' compilation, based on reports from the INE (2022a, 2022b, 2022c).

## 4 Validation

### 4.1 Aggregate validation

The BOLMOD outcomes have been validated against external information. Detailed comparisons of the number of recipients of a given income component and total yearly amounts are shown in the Annex. Market incomes, non-simulated taxes and benefits, and simulated taxes and benefits are compared to official data. The main differences between BOLMOD outcomes and external benchmarks are discussed in the following sub-sections. Factors that could explain the observed differences are also discussed.

#### 4.1.1 Validation of income input into the simulation

Table A1 in the Annex shows the number of employed, unemployed, and individuals outside of the labour force in the dataset used for BOLMOD simulations against the Continuous Employment Survey (*Encuesta Continua de Empleo, ECE*), which is the main labour survey. The database only slightly under-represents the number of people in work (-12 per cent in 2019 to -22 per cent in 2022). On the other hand, over the years, the number of unemployed people varies from underestimations in 2019 (-34 per cent) and 2020 (-11 per cent) and overestimations in 2021 (+7 per cent) and 2022 (+4 per cent). The underestimations may be related to the scope of the different surveys, as the EH is undertaken on an annual basis and the ECE is done on a quarterly basis. These may be specific for the last quarter of 2019 (political instability during September and October affected labour market) and the first quarter of 2020 (which is the only quarter that the employment survey was carried out during 2020).

Table A2 presents the aggregate amount of employment and self-employment income obtained with BOLMOD and with the external data from ECE. The number of recipients of employment income in BOLMOD well represents the number of people in employment according to ECE. The number of employees with income is well represented in the input dataset based on BOLMOD compared with external information. However, the number of recipients of self-employment income in the BOLMOD input data under-represents the number of people reporting to be in self-employment, which could be explained by the self-reporting of occupation collected in the surveys, as people may include themselves in other categories due to the informality of their activities.

Table A3 presents the aggregate amount of employment and self-employment income obtained using BOLMOD. These numbers are then compared to the statistics provided by the National Statistical Institute, which are mainly obtained from the 2019 and 2020 Household Surveys. On the one hand employment incomes are slightly overestimated in the 2019 and 2020 BOLMOD by around 18 per cent and 9 per cent respectively in comparison to external statistics. For 2021 BOLMOD underestimates against the external source.

On the other hand self-employment income is underestimated compared to the external data from 2019, 2020 to 2021 (by -49 per cent, -32 per cent, and -44 per cent, respectively).

Tables A4 and A5 show the validation of benefits included in BOLMOD but not simulated. All the BOLMOD outcomes are from the input data based on the EH. Table A4 reports the number of recipients of the tax-benefit instruments that are included but not simulated:

- **Old-age pension:** BOLMOD overestimates the number of recipients by about 69 per cent in 2019 and 83 per cent in 2020. Being a non-simulated benefit, the overestimation may come from the collection of data. There is no external information available for 2022.



- **Disability pension:** BOLMOD underestimates the number of recipients of this pension by about -18 per cent in 2019 and -37 per cent in 2020. There is no external information available for 2022.
- **Survivors' pension:** Compared to the external data, BOLMOD overestimates the number of recipients of this pension over all the years simulated. The ratio varies from 2.4 times in 2019 to 1.9 times in 2021. Being a non-simulated benefit, it may be affected by the same issue as with the old-age pension. There is no external information available for 2022.
- **Veterans' pension:** BOLMOD underestimates the number of recipients of this pension by about -45 per cent in 2019 to -36 per cent in 2021. In 2022 the estimate has little variation from the external data.
- **Social assistance for blind people:** In 2019 the EH data matches external data. In 2020, due to the COVID-19 pandemic, the EH collected aggregate information on social assistance for the disabled (including blind people). Therefore the number of recipients in BOLMOD is the result of disaggregating pension payments and is underestimated by 42 per cent. The number of recipients is also underestimated for 2021 and 2022.
- **Nursing subsidy for employed mothers:** No external information about recipients is available for this benefit.
- **Prenatal care subsidy:** The 2019 and 2022 EH data matches external data in 2019 and 2020 and underestimates the number of recipients in 2021. There is no external information available for 2022.
- **Natality bonus:** No external information about recipients is available for this benefit.

Table A5 reports the aggregate amounts of the tax–benefit instruments that are included but not simulated:

- **Old-age pension:** BOLMOD overestimates the annual amount of this pension compared with the external data, with ratios varying from 24 times in 2019 to 22 times in 2021. Being a non-simulated benefit, it may be related to the collection of data. There is no external information available for 2022.
- **Disability pension:** Compared to the external data, BOLMOD overestimates the 2019 annual amount of this pension by 53 per cent. For 2020 and 2021 BOLMOD underestimates the annual amount of this pension. There is no external information available for 2022.
- **Survivors' pension:** BOLMOD overestimates the amount of this pension, with ratios of 18 times in 2019 to 13 times in 2021. Being a non-simulated benefit, it may be affected by the same issue as with the old-age pension. There is no external information available for 2022.
- **Veterans' pension:** BOLMOD underestimates the amount paid for the veterans' pension, varying by about -52 per cent in 2019 to -63 per cent in 2022.
- **Social assistance for blind people:** BOLMOD underestimates the annual amount of this benefit by about -56 per cent in 2019 to -70 per cent in 2022.
- **Nursing subsidy for employed mothers:** No external information about payments is available for this benefit.
- **Prenatal care subsidy:** BOLMOD underestimates the total annual amount of this benefit by about -21 per cent in 2019 to -44 per cent in 2021.
- **Natality bonus:** No external information about payments is available for this benefit.

#### 4.1.2 Validation of output (simulated) incomes

Table A6 reports the number of recipients of each of the simulated benefits, as well as the number of payers of taxes and social security contributions compared to external information. The external statistics provide information about taxpayers, those affiliated to social security, recipients of the three main social assistance programmes (*Bono Juancito Pinto*, *Bono Juana Azurduy*, and *Renta Dignidad*), and recipients of social assistance during the COVID-19 pandemic.

### *Taxes and SICs*

- **Complementary regime to VAT (RC-VAT):** No external information about payers is available for this tax policy.
- **Company revenue tax of small firms:** No external information about payers is available for this tax policy.
- **Transaction tax of small firms:** No external information about payers is available for this tax policy.
- **Social insurance contributions made by employees:** BOLMOD underestimates the number of employees that contribute to social security. Compared to the external data from the Social Insurance Authority, the estimates vary from the external data by about -56 per cent in 2019 to -61 per cent in 2021. There is no external information available for 2022.
- **Social insurance contributions made by self-employees:** BOLMOD underestimates the number of self-employees that contribute to social security. Compared to the external data, BOLMOD estimates vary from the external data by about -36 per cent in 2019 to -30 per cent in 2021. There is no external information available for 2022.
- **VAT:** No external information about payers is available for this tax policy.

### *Social assistance programmes*

- **Education bond (*Bono Juancito Pinto*):** As explained in section 2, EH collects data on the *Bono Juancito Pinto* for the year prior to the year of the survey. In this sense the 2019 BOLMOD estimate should be compared against 2018 external data, and so on. BOLMOD estimates match well with external data. In 2019 there is an 18 per cent overestimate, but from 2020 through 2022 the estimates do not exceed a 4 per cent variance.
- **Mother-child bond (*Bono Juana Azurduy*):** When referring to mothers enrolled in the *Bono Juana Azurduy* programme, BOLMOD underestimates the number of recipients by about -15 per cent in 2019 to -26 per cent in 2021. For children BOLMOD overestimates the number of recipients with variations by about 8 per cent in 2019 to 21 per cent in 2021. There is no external information available for 2022 for the *Bono Juana Azurduy* programme.
- **Old-age pension (*Renta Dignidad*):** BOLMOD estimates of the number of recipients surpass external data by about 19 per cent in 2019 to 31 per cent in 2021. There is no external information available for 2022.
- **COVID-19 family bond:** Enacted during the COVID-19 pandemic, the BOLMOD outcome matches well with the external data, with a 6 per cent variation.
- **COVID-19 family basket:** Enacted along with the family bond in 2020. BOLMOD overestimates the number of recipients of this benefit by about 36 per cent.
- **COVID-19 universal bond:** Enacted along with the Family Bond and the Family Basket in 2020, the BOLMOD estimate matches well with the external data, with an 8 per cent variation.
- **COVID-19 bond against hunger:** Enacted by the end of 2020 and during the first five months of 2021, the BOLMOD estimate of the numbers of recipients matches well with the external data, with a variation of 3 per cent.

Table A7 present a comparison between BOLMOD estimates and external information on the aggregated annual revenue from taxes and SICs and expenditure in social benefits.

### *Taxes and SICs*

- **Complementary regime to VAT (RC-VAT):** BOLMOD estimate of the annual revenue from this tax policy matches well with the external data. The difference varies from 4 per cent in 2019 to -11 per cent in 2021. There is no external information available for 2022.
- **Company revenue tax of small firms:** No external information disaggregated by firm size is available for this policy.

- **Transaction tax of small firms:** No external information disaggregated by firm size is available for this policy.
- **Social insurance contributions:** No external information disaggregated by labour type is available for this policy and only the total contribution made by both employees and self-employees is available.
- **VAT:** Due to the COVID-19 pandemic, expenditure data was not collected in 2020. Therefore, BOLMOD only estimated value-added tax revenues for 2019. The model underestimates the annual amount by about -34 per cent.

#### *Social assistance programmes*

- **Education bond (*Bono Juancito Pinto*):** BOLMOD estimates of the annual expenditure amount match well with the external data. In fact the higher variation is about 18 per cent in 2019, while from 2020 to 2022 neither of the estimates surpass 4 per cent.
- **Mother-child bond (*Bono Juana Azurduy*):** BOLMOD outcomes underestimate the annual amount paid to mothers enrolled in 2019 (-43 per cent) and 2021 (-21 per cent), and match well the outcome of 2020 (2 per cent of variation). Regarding the annual expenditure amount for children enrolled, BOLMOD underestimates it by about -57 per cent in 2019 to -51 per cent in 2021. There is no external information available for 2022 for the *Bono Juana Azurduy* programme.
- **Old-age pension (*Renta Dignidad*):** BOLMOD overestimates the annual amount paid to *Renta Dignidad* by about 33 per cent in 2019 to 29 per cent in 2021. There is no external information available for 2022.
- **COVID-19 family bond:** For this COVID-19 policy BOLMOD overestimates the total paid amount by about 17 per cent.
- **COVID-19 family basket:** For this COVID-19 policy BOLMOD overestimates the total paid amount by about 36 per cent.
- **COVID-19 universal bond:** BOLMOD estimate of this policy matches well with the external data. It has a -8 per cent variation.
- **COVID-19 bond against hunger:** BOLMOD outcome matches well with the external information. It only has a -3 per cent variation.

## 4.2 Income distribution

This section presents income inequality and poverty estimates. The results are computed for individuals according to their household disposable income, equalized by the number of people in the household. Household disposable income (HDI) is calculated as the sum of all income sources of all household members net of income tax and SICs.

### 4.2.1 Income inequality

Table A8 compares income inequality from the BOLMOD results and official statistics from the EH using the Gini coefficient as an inequality measure. BOLMOD estimates of the Gini coefficient match accurately with the EH, showing a variation between -8 per cent to 4 per cent.

### 4.2.2 Poverty rates

Table 4.1 presents official poverty and extreme poverty lines for the urban and rural areas in Bolivia. One issue worth highlighting is that there are no national poverty lines. To overcome this BOLMOD estimates national poverty lines using the weighted average based on the share of people living in urban and rural areas. For 2022 poverty lines are estimated using the CPI.

**Table 4.1: Poverty and extreme poverty lines in monthly Bs (2019–22)**

	2019	2020	2021	2022b
Poverty <sup>a</sup>	838.96	822.74	824.28	834.66
Urban	911.70	902.20	902.30	913.65
Rural	668.10	635.10	637.50	645.51
Extreme poverty <sup>a</sup>	428.94	407.75	408.68	413.83
Urban	449.30	434.60	434.50	439.99
Rural	381.10	344.40	346.80	351.19

Note: <sup>a</sup> national poverty and extreme poverty lines are weighted averages based on the share of people living in urban and rural areas.

<sup>b</sup> 2022 poverty and extreme poverty lines are estimated using the CPI.

Source: authors' compilation based on INE (2022d).

Table A8 also provides the poverty and extreme poverty rates of urban and rural areas in Bolivia. According to the results, poverty rates simulated in BOLMOD are, overall, very similar to official ones obtained from the EH. For 2019 BOLMOD overestimates poverty by 2 per cent. Conversely, in 2020, the pattern reverses and BOLMOD depicts a lower poverty rate of -6 per cent compared to the EH official information. In 2021 BOLMOD overestimates the poverty rate by 11 per cent. For 2022, there is still no official data regarding poverty.

When referring to areas BOLMOD underestimates poverty in urban areas while overestimating poverty in rural areas. In fact, from 2019 to 2022, BOLMOD urban poverty rates are -24 per cent to -12 per cent compared to official data. In contrast BOLMOD rural poverty rates are 19 per cent to 44 per cent higher. This variation could be explained by how the collection of data is carried out by the INE.

Extreme poverty rates show more variation than poverty rates. Compared to official data from the EH, BOLMOD overestimates national extreme poverty rates in 2019 (+11 per cent) and 2021(+51 per cent). And when it comes to areas, the urban extreme poverty rate in 2020 is underestimated by 24 per cent, and then, in 2021 the model overestimates the urban extreme poverty rate by 22 per cent. The rural poverty rates are overestimated from 2019 to 2021, with 2021 being the highest variation (+67 per cent).

### 4.3 Statistics presenter

A series of variables and income lists was created in BOLMOD for the use of the Statistics Presenter tool in the EUROMOD platform. This section describes the elements implemented in the model for the use of the tool.

Two constants were created in the model to define the values of the poverty line (\$Povline) and extreme poverty line (\$ExtPovline) in Bolivia, according to the values in Table 4.1.

A variable defining the size of the household (ses) was created in the model to be used as an equivalence scale for the household. The variable is attributed to the head of the household as defined in the survey (dhh), whereas for all other household members the value zero is attributed.

The following income lists were created in the model for the use of the Statistics Presenter tool:

- *ils\_taxind*: indirect taxes, containing VAT;
- *ils\_sic*: social security contributions by employees, self-employed and employers;
- *ils\_bch*: child-related benefits, containing the *Bono Juana Azurduy* aimed at childcare from zero to two years and maternity leave bonus (*Subsidio de lactancia*);
- *ils\_bsa*: social assistance-related benefits, containing the education bonus (*Bono Juancito Pinto*), the old-age bonus (*Renta Dignidad*), the maternity-related bonus (*Bono Juana Azurduy*),

the maternity leave bonus, maternity universal subsidy, the birth bonus, and the COVID-related bonuses enacted during 2020 and 2021;

- *ils\_bsu*: orphans' and widows' benefits, none in BOLMOD;
- *ils\_bdi*: disability benefits, bonus for the blind and injury benefit;
- *ils\_bun*: unemployment-related benefits, including one unemployment benefit;
- *ils\_bag*: agricultural benefits, none in BOLMOD;
- *ils\_dispyx*: disposable income accounting for own produce; this income list is identical to *ils\_dispy*;
- *ils\_dispyx\_pf*: post-fiscal income taking account of own produce, defined as disposable income accounting for own produce (*ils\_dispyx*) minus indirect taxes (*ils\_taxind*);
- *ils\_con*: simulated consumption (*xhh\_s*), defined as household expenditure as recorded in the data (*xhh*), uprated from the base year to the policy year and adjusted by absolute changes in disposable income from the base year to the policy year; and
- *ils\_con\_pf*: post-fiscal simulated consumption, defined as simulated consumption (*ils\_con*) minus simulated indirect taxes (*ils\_taxind*).

#### 4.4 Summary of 'health warnings'

BOLMOD simulation has the following health warnings:

- **Social assistance for the blind (*Bono de Indigencia*):** For 2020 the question regarding pension for the disabled includes the blind people. Therefore the recipients of the *Bono de Indigencia* were skimmed based on the frequency of reception reported as, due to the COVID-19 pandemic, all the questions regarding type and grade of disabilities were cut out.
- **National poverty and extreme poverty lines:** The Bolivian Institute of Statistics calculates specific poverty and extreme poverty lines for urban and rural areas. Urban poverty lines are calculated using average prices and the CPI, while rural poverty lines are calculated using unit values of food expenditures from the EH. For BOLMOD, weighted average poverty lines are calculated using the share of people living in urban and rural areas. Also, for 2022, poverty lines were estimated using the CPI.

The policy systems provided in BOLMOD v2.0 reflect the policies as they were in place as of 30 June of the specific year, providing a 'snapshot' of the situation of the Bolivian tax-benefit system at this date. The COVID-19 policies were in effect on the cut-off date for 2020 and 2021. The family bond, family basket, and universal bond were in force during the second quarter of 2020, while the bond against hunger was in force from December 2020 to May 2021. To consider the duration of these benefits, they were all included in BOLMOD using the full year adjustment switch in EUROMOD, dividing the total benefit amount over the year by 12.

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## 6 Annex: Macro validation tables

**Table A1: Number of employed and unemployed (in thousands)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Number of employed	5,047.1	5,109.6	5,109.6	5,109.6	5,744.5	5,788.1	6,487.3	6,511.6	0.88	0.88	0.79	0.78
Number of unemployed	1,298.7	1,733.8	1,733.8	1,733.8	1,966.5	1,949.4	1,615.0	1,671.8	0.66	0.89	1.07	1.04

Note: the population of reference of INE statistics is working-age population aged 14 years or more.

Source: authors' compilation based on BOLMOD calculations and INE (2019, 2020, 2021, 2022).

**Table A2: Market income: number of recipients (in thousands)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020a	2021	2022b	2019	2020	2021	2022
Employment income	1,909.3	1,705.2	1,705.2	1,705.2	1,735.9	1,667.5	1,852.7	1,871.3	1.10	1.02	0.92	0.91
Self-employment income	2,552.3	2,735.4	2,735.4	2,735.4	3,889.4	3,996.5	4,498.1	4,490.2	0.66	0.68	0.61	0.61

Note: the population of reference of INE statistics is working-age population aged 14 years or more. <sup>a</sup> external data for 2020 refers to the first quarter of 2020. <sup>b</sup> external data for 2022 refers to the second quarter of 2022.

Source: authors' compilation based on BOLMOD calculations and INE (2019, 2020, 2021, 2022).

**Table A3: Market income: annual amounts (in millions)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020a	2021	2022	2019	2020	2021	2022
Employment income	92,490.9	80,935.3	80,935.3	80,935.3	78,682.6	73,963.7	82,033.9	N/A	1.18	1.09	0.99	N/A
Self-employment income	78,955.2	94,817.9	94,817.9	94,817.9	154,712.5	140,246.9	169,806.9	N/A	0.51	0.68	0.56	N/A

Note: N/A, not available. <sup>a</sup> external data for 2020 refers to the first quarter of 2020.

Source: authors' compilation based on BOLMOD calculations and INE (2019, 2020, 2021, 2022)



**Table A4: Tax–benefit instruments included but not simulated: number of recipients/payers (in thousands)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Old-age pension <sup>a</sup>	259.6	298.5	298.5	298.5	154.0	163.5	186.7	N/A	1.69	1.83	1.60	N/A
Disability pension <sup>a</sup>	10.2	8.3	8.3	8.3	12.5	13.1	14.5	N/A	0.82	0.63	0.57	N/A
Survivor pension <sup>a</sup>	47.8	44.2	44.2	44.2	19.7	18.8	22.7	N/A	2.42	2.35	1.95	N/A
Veterans pension <sup>b</sup>	1.2	1.0	1.0	1.0	2.1	1.8	1.5	1.1	0.55	0.54	0.64	0.87
Social assistance for blind people ( <i>Bono de Indigencia</i> ) <sup>c</sup>	6.1	3.6	3.6	3.6	6.1	6.3	6.3	6.5	1.00	0.58	0.57	0.56
Nursing subsidy for employed mothers ( <i>Subsidio de Lactancia</i> )	38.9	37.2	37.2	37.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prenatal care subsidy ( <i>Subsidio Prenatal</i> ) <sup>d</sup>	95.0	61.5	61.5	61.5	97.4	68.9	84.7	N/A	0.97	0.89	0.73	N/A
Nativity bonus ( <i>Bono de Natalidad</i> )	33.4	27.3	27.3	27.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: N/A, not available.

Source: authors' compilation based on BOLMOD calculations; a Pension and Insurance Supervisory and Control Authority (Autoridad de Fiscalización y Control de Pensiones y Seguros) (2021); b National Service of the Delivery System. (2022); c Bolivian Institute for the Blind (Instituto Boliviano de la Ceguera) (2022); d Ministry of Health and Sports (Ministerio de Salud y Deportes) (2022).

**Table A5: Tax–benefit instruments included but not simulated: annual amounts (in millions)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Old-age pension <sup>a</sup>	9,516.6	10,744.0	10,744.0	10,744.0	402.8	425.5	482.5	N/A	23.63	25.25	22.27	N/A
Disability pension <sup>a</sup>	83.3	50.3	50.7	50.9	54.5	56.8	65.2	N/A	1.53	0.89	0.78	N/A
Survivor pension <sup>a</sup>	1,264.9	1,074.7	1,082.6	1,088.2	67.9	66.5	85.5	N/A	18.63	16.17	12.67	N/A
Veterans pension <sup>b</sup>	37.9	19.3	19.3	19.3	79.3	69.4	56.9	51.6	0.48	0.28	0.34	0.37
Social assistance for blind people ( <i>Bono de Indigencia</i> ) <sup>c</sup>	18.3	13.7	13.8	13.9	41.9	43.9	44.4	46.0	0.44	0.31	0.31	0.30
Nursing subsidy for employed mothers ( <i>Subsidio de Lactancia</i> )	488.4	483.8	487.3	489.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prenatal care subsidy ( <i>Subsidio Prenatal</i> ) <sup>d</sup>	92.1	56.3	56.7	57.0	116.9	82.6	101.6	N/A	0.79	0.68	0.56	N/A
Nativity bonus ( <i>Bono de Natalidad</i> )	66.9	54.5	54.9	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: N/A, not available.

Source: authors' compilation based on BOLMOD calculations; <sup>a</sup> Pension and Insurance Supervisory and Control Authority (Autoridad de Fiscalización y Control de Pensiones y Seguros) (2019, 2020, 2021); <sup>b</sup> National Service of the Delivery System. (2022); <sup>c</sup> Bolivian Institute for the Blind (Instituto Boliviano de la Ceguera) (2022); <sup>d</sup> Ministry of Health and Sports (Ministerio de Salud y Deportes) (2022).

**Table A6: Tax–benefit instruments simulated: number of recipients/payers (in thousands)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
<i>Taxes and SICs</i>												
Complementary regime to VAT (RC-VAT)	82.9	69.8	63.4	48.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Company revenue tax (small firms)	83.9	115.1	115.1	115.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transaction tax (small firms)	7.0	5.0	5.0	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SIC contributions – employed <sup>a</sup>	935.7	874.6	874.6	874.6	2,145.6	2,190.0	2,249.9	N/A	0.44	0.40	0.39	N/A
SIC contributions – self-employed <sup>a</sup>	145.5	183.1	183.1	183.1	228.1	241.5	262.1	N/A	0.64	0.76	0.70	N/A
Value added tax	3,450.3				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>Benefits</i>												
Education bond ( <i>Bono Juancito Pinto</i> ) <sup>b</sup>	2,568.9	2,281.9	2,281.9	2,281.9	2,182.8	2,192.6	2,221.5	2,263.7	1.18	1.04	1.03	1.01
Pregnancy and maternity bond – mother ( <i>Bono Juana Azurduy</i> ) <sup>c</sup>	92.0	78.9	78.9	78.9	108.8	101.8	106.8	N/A	0.85	0.77	0.74	N/A
Pregnancy and maternity bond - child ( <i>Bono Juana Azurduy</i> ) <sup>c</sup>	118.3	131.8	131.8	131.8	109.5	108.2	108.5	N/A	1.08	1.22	1.21	N/A
Old-age pension ( <i>Renta Dignidad</i> ) <sup>a</sup>	1,312.2	1,496.9	1,496.9	1,496.9	1,101.0	1,136.0	1,146.0	N/A	1.19	1.32	1.31	N/A
<i>COVID-19 Benefits</i>												
COVID-19 social assistance – <i>Bono Familia</i> <sup>d</sup>		2,729.8				2,907.0				0.94		
COVID-19 social assistance – <i>Canasta Familiar</i> <sup>d</sup>		1,424.1				1,050.9				1.36		
COVID-19 social assistance – <i>Bono Universal</i> <sup>d</sup>		3,353.0				3,658.9				0.92		
Post COVID-19 social assistance – <i>Bono contra el Hambre</i> <sup>d</sup>			4,010.5				4,148.9				0.97	

Note: N/A, not available.

Source: authors' compilation based on BOLMOD calculations; <sup>a</sup> Pension and Insurance Supervisory and Control Authority (Autoridad de Fiscalización y Control de Pensiones y Seguros) (2019, 2020, 2021); <sup>b</sup> Ministry of Education (Ministerio de Educación) (2022); <sup>c</sup> Ministry of Health and Sports (Ministerio de Salud y Deportes) (2022); <sup>d</sup> Ministry of Economy and Public Finances (Ministerio de Economía y Finanzas) (2021).

**Table A7: Tax–benefit instruments simulated: annual amounts (in millions)**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
<i>Taxes and SICs</i>												
Complementary regime to VAT (RC-VAT) <sup>a</sup>	539.7	424.4	405.8	372.5	517.6	470.4	456.6	N/A	1.04	0.90	0.89	N/A
Company revenue tax (small firms) <sup>a</sup>	458.9	850.4	850.4	850.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transaction tax (small firms) <sup>a</sup>	3.8	1.9	1.9	1.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SIC contributions – employed <sup>b</sup>	7,042.0	6,599.3	6,601.2	6,606.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SIC contributions – self-employed <sup>b</sup>	925.5	1,315.2	1,320.4	1,331.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Value added tax <sup>a</sup>	6,823.5				10,271.0	8,027.0	9,869.0	N/A	0.66	0.00	0.00	N/A
<i>Benefits</i>												
Education bond ( <i>Bono Juancito Pinto</i> ) <sup>c</sup>	513.9	456.5	459.8	462.2	436.6	438.5	444.3	452.7	1.18	1.04	1.03	1.02
Pregnancy and maternity bond – mother ( <i>Bono Juana Azurduy</i> ) <sup>d</sup>	11.7	16.4	16.5	16.6	20.6	16.0	21.0	N/A	0.57	1.02	0.79	N/A
Pregnancy and maternity bond – child ( <i>Bono Juana Azurduy</i> ) <sup>d</sup>	55.4	58.0	58.4	58.7	127.4	99.7	118.8	N/A	0.43	0.58	0.49	N/A
Old-age pension ( <i>Renta Dignidad</i> ) <sup>b</sup>	5,800.3	6,105.1	6,150.1	6,182.1	4,355.0	4,685.0	4,764.0	N/A	1.33	1.30	1.29	N/A
<i>COVID-19 Benefits</i>												
COVID-19 social assistance – <i>Bono Familia</i> <sup>e</sup>		1,365.0				1,162.8				1.17		
COVID-19 social assistance – <i>Canasta Familiar</i> <sup>e</sup>		569.6				420.3				1.36		
COVID-19 social assistance – <i>Bono Universal</i> <sup>e</sup>		1,676.6				1,829.5				0.92		
Post COVID-19 social assistance – <i>Bono contra el Hambre</i> <sup>e</sup>			4,010.4				4,148.9				0.97	

Note: N/A, not available. <sup>b\*</sup> SIC contributions reported are not disaggregated by worker status. Pension and Insurance Authority only reports a total.

Source: authors' compilation based on BOLMOD calculations; <sup>a</sup> Ministry of Economy and Public Finances (Ministerio de Economía y Finanzas) (2021); <sup>b</sup> Pension and Insurance Supervisory and Control Authority (Autoridad de Fiscalización y Control de Pensiones y Seguros) (2019, 2020, 2021); <sup>c</sup> Ministry of Education (Ministerio de Educación) (2022); <sup>d</sup> Ministry of Health and Sports (Ministerio de Salud y Deportes) (2022); <sup>e</sup> Ministry of Economy and Public Finances (Ministerio de Economía y Finanzas) (2022).

**Table A8: Poverty rates and income inequality**

	BOLMOD				External				Ratio			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
<i>Poverty</i>												
Total	38.1	35.5	40.6	41.2	37.2	39.0	36.4	N/A	1.02	0.91	1.12	N/A
Urban	27.5	23.9	28.3	28.9	31.3	32.4	31.5	N/A	0.88	0.74	0.90	N/A
Rural	61.9	63.0	69.2	69.8	50.8	54.7	48.1	N/A	1.22	1.15	1.44	N/A
<i>Extreme poverty</i>												
Total	14.5	12.5	17.0	17.2	12.9	13.7	11.1	N/A	1.12	0.91	1.53	N/A
Urban	6.5	4.8	7.8	8.0	6.4	7.2	6.1	N/A	1.01	0.67	1.28	N/A
Rural	32.8	30.7	38.4	38.8	27.8	28.8	23	N/A	1.18	1.06	1.67	N/A
<i>Inequality</i>												
Gini	39.7	41.3	43.9	43.9	42.5	45.2	42.0	N/A	0.93	0.91	1.05	N/A

Note: N/A, not available.

Source: authors' compilation based on BOLMOD calculations and National Household Survey (EH) (2019–21).