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Tax-benefit microsimulation model in developing countries

A feasibility study for an extension of SOUTHMOD in Indonesia

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Abstract: This study aims to expand the use of tax-benefit microsimulation tools in Indonesia. In particular, it reviews the feasibility of expanding SOUTHMOD, a tax-benefit microsimulation model being applied in developing countries that was developed based on the European Union tax-benefit microsimulation tool (EUROMOD) framework. First, the study reviews the tax and benefits system in Indonesia, followed by an explanation of possible data set and data requirements for simulation. Two potential sources of data are the fifth round of the Indonesia Family Life Survey and the National Socio-Economic Survey. Despite advantages and disadvantages to each, the results of the feasibility study show that both data sets could support the extension of the microsimulation model. This extension should be adjusted to the conditions of the data. For instance, we can focus on simulating indirect taxes, which are more relevant as they represent one of the core revenue sources in developing countries.

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Abbreviations and acronyms

ASLUT	Elderly social services, Asistensi Sosial Lanjut Usia Terlantar
ASODKB	Disabled social services, Asistensi Sosial Orang dengan Kecacatan Berat
BLT	Conditional cash transfer programme, Bantuan Langsung Tunai
BLSM	Conditional cash transfer programme, Bantuan Langsung Sementara Masyarakat
BPS	Indonesian Statistical Office, Biro Pusat Statistik
BSM	Poor students' support programme, Bantuan Siswa Miskin
EUROMOD	European Union Tax-Benefit Microsimulation Model
IFLS	Indonesian Family Life Survey
ISER	Institute for Social and Economic Research
Jamkesmas	National Health Insurance for poor and near-poor households, Jaminan Kesehatan Masyarakat
JKN-PBI	Recipient of Government-Paid Health Insurance Premium, Penerima Bantuan Iuran (within the National Health Insurance programme)
JSLU	Elderly social services, Jaminan Sosial Lanjut Usia
JSPACA	Disabled social services, Jaminan Sosial Paca Berat
KIS	Indonesian Health Card, Kartu Indonesia Sehat
KPS	Social Protection Card, Kartu Perlindungan Sosial
LKPP	Central Government Financial Report, Laporan Keuangan Pemerintah Pusat
NJOP	Sales value of taxable object, Nilai Jual Objek Pajak
PIP	Smart Indonesia Program, Program Indonesia Pintar
PKH	Conditional cash transfer programme, Program Keluarga Harapan
PKSA	Child social services, Program Kesejahteraan Sosial Anak
PPLS	Data Collection for Social Protection Programmes survey, Pendataan Program Perlindungan Sosial
PTKP	Deductible income, Pendapatan Tak Kena Pajak
Ranstra	Subsidized rice for poor households, Beras Sejahtera
Raskin	Subsidized rice for poor households, Beras untuk Rakyat Miskin
RPJMN	National medium-term development planning, Rencana Pembangunan Jangka Menengah Nasional
RPJPN	National long-term development planning, Rencana Pembangunan Jangka Panjang Nasional
SASPRI	Southern African Social Policy Research Institute
SJSN	National Health Insurance system, Sistem Jaminan Sosial Nasional
SUSENAS	National Socio-Economic Survey, Survei Sosial Ekonomi Nasional
TNP2K	National Team for the Acceleration of Poverty Reduction, Tim Nasional Percepatan Pemberantasan Kemiskinan
UDB	Unified Database
UNU-WIDER	United Nations University World Institute for Development Economics Research
VAT	Value-added tax

1   Introduction

Poverty and inequality are common problems in developing countries, and every government has its own poverty- and inequality-reduction programmes—for instance, cash transfer programmes, health insurance subsidies, and community development programmes. Measuring the effect of poverty- and inequality-reduction programmes in developing countries is challenging, primarily due to the multiple channels of impact and the limited availability of data.

Microsimulation models, in particular tax-benefit microsimulation models, which are useful in ex-ante analysis, can simulate the future impact of poverty- and inequality-reduction programmes. Then, an ex-post evaluation can be used to analyse the impact of the programme after its implementation. The advantages of microsimulation tools are the possibility of fully capturing the heterogeneity of economic agents and the possibility of precisely evaluating the total financial cost and benefit of the programme (Bourguignon and Spadaro 2006).

However, tax-benefit microsimulation tools for developing countries are not as abundant as those for developed countries. Tax-benefit microsimulation models are concentrated mainly in Europe, Australia, Northern America, and Latin America (Sutherland 2014). EUROMOD is one of the top microsimulation tools that is heavily applied in European countries (Sutherland and Figari 2013). However, the combination of computable general equilibrium and macro modelling techniques has more received considerable interest in developing countries (Davies 2009)—for instance, in the context of Madagascar (Cogneau and Robilliard 2007) and Pakistan (Ahmed et al. 2010; Feltenstein et al. 2013).

Significant progress in applying tax-benefit microsimulation models in developing countries has been made by SOUTHMOD, a microsimulation tool that uses EUROMOD's framework. SOUTHMOD is a joint project between the United Nations University World Institute for Development Economics Research (UNU-WIDER) in Helsinki (Finland), the Institute for Social and Economic Research (ISER) in Essex (United Kingdom), and the Southern African Social Policy Research Institute (SASPRI) in Cape Town (South Africa). Currently, SOUTHMOD is available in a number of countries, including Ecuador (Jara et al. 2017), Ethiopia (Mengistu et al. 2017), Ghana (Kwabena et al. 2017), Mozambique (Vanda et al. 2017), Tanzania (Vincent et al. 2017), and Zambia (Pamela et al. 2017).

Indonesia is the world's fourth most populous country, with a population of more than 260 million people. Currently, according to the World Bank's definition, 17.8 million Indonesians are poor (i.e., living on US$1.9 per day or less) (World Bank 2017a). Poverty decreased significantly after the economic crisis of 1998, but at a slower pace than during the pre-crisis period. Currently, the pace of poverty reduction is slowing. In terms of inequality, the Gini index in the country increased significantly from 0.36 in 1993 to 0.41 in 2013 (Yusuf et al. 2014).

With regard to microsimulation models in Indonesia, previous studies have mainly employed the CGE-microsimulation model. Robilliard et al. (2001) examined the effect of the Asian financial crisis on poverty and inequality in Indonesia using a CGE method based on a Social Accounting Matrix with 38 sectors and 15 factors of production. The microsimulation model captured the income generation model at the household level. Robilliard and Robinson (2005) examined the impact of the World Trade Organization agreement at the household level in Indonesia. Yusuf (2007) and Yusuf and Resosudarmo (2015) applied the CGE-microsimulation model to studying the effect of environmental policies on poverty and income distribution. In particular, Yusuf and Resosudarmo (2007) focused on the distributional effect of a carbon tax in Indonesia. A CGE-microsimulation model was also applied by Dartanto (2010, 2013). Dartanto's 2010 study assessed

the impact on poverty in Indonesia of world price and import tariffs on rice, while his 2013 study examined the effect on the poverty rate in Indonesia of reducing fuel subsidies. Finally, Dartanto and Usman (2011) measured the impact on poverty of the volatility of the world price and import tariffs for soybeans.

With regard to the use of the tax-benefit microsimulation model in Indonesia, to the best of our knowledge there has only been one previous study: Yuwono (2009). The author estimated the relationship between tax-reporting decisions and the change in marginal rate. However, the model did not offer a user-friendly interface for policymakers. Given the previous literature, there is a gap in relation to the topic of tax-benefit microsimulation models in Indonesia.

This study proposes a way to assess the effect of taxes and benefits policies on poverty and inequality in Indonesia. In particular, we offer a feasibility study to assess the potential of expanding EUROMOD in Indonesia. Applying the EUROMOD/SOUTHMOD framework has an advantage in the context of the tax-benefit microsimulation model in Indonesia. EUROMOD is a well-known tax-benefit microsimulation model that has been used in the EU for over 20 years (Sutherland and Figari 2013). The model is open-access, with an increasing number of users across the EU and elsewhere. The main advantage of EUROMOD is a user-friendly interface that allows users to calculate the effect of taxes and benefits policies in a particular country and across countries. Generally, EUROMOD can estimate the redistributive effect of tax-benefit policies, provide policy swapping analysis, estimate the budget effect of the policy reform, estimate work incentive, and perform data imputation.

The rest of the paper is structured as follows. The next section provides contextual information on institutional conditions in Indonesia. The third and fourth sections present detailed information on the tax and benefits systems in Indonesia, respectively. The fifth section explains the data that could be used in the simulation. The sixth section presents the results of the assessment of tax-benefit simulation feasibility. The last section concludes.

2   Contextual information

This section aims to provide contextual information about the institutional conditions in Indonesia. The government of Indonesia is pursuing an ambitious long-term development plan (RPJPN) which runs from 2005 to 2024. The long-term development planning consists of four medium-term development plans (RPJMN): 2005–09, 2010–14, 2015–19, and 2020–24. The medium-term development planning consists of annual development planning that is represented by the national budget system (APBN) as the fiscal policy of the government.

The national budget system is scheduled from 1 January to 31 December of each year. Tax revenue is the main contribution to the national revenue, constituting around 85 per cent of the budget. Some types of taxes are collected by the central government, while local governments collect other types at the province and district levels. The Ministry of Finance collects most of the taxes at the central level. The Directorate General of Taxes, under the Ministry of Finance, collects personal income tax, corporate income tax, VAT, stamp tax, and land and building tax. The Directorate General of Customs and Excise, also under the Ministry of Finance, collects excise, import, and export taxes. Meanwhile, the provincial governments collect vehicle tax, tax on the transfer of vehicle ownership, and surface water tax. Lastly, the district governments collect hotel tax, restaurant tax, leisure tax, advertisement tax, tax for roadway lighting, tax for non-metallic and non-rock minerals, parking tax, and soil and water tax. The most important sources of tax revenue

are income tax (including personal income tax and corporate tax), followed by VAT, and then the excise collected by the central government (Ministry of Finance 2017).

The government of Indonesia has expanded its social protection system to improve the quality of life across the archipelago. Public expenditure on social protection has increased significantly. The most significant contributors to social protection expenditure are health insurance for poor households and subsidized rice (World Bank 2017b). The rest of the expenditure is absorbed into several programmes, such as the conditional cash transfer programme, the cash transfer programme for poor and at-risk students, child social services, disabled social services, and elderly social services.

Currently, health insurance for poor households is a part of the universal health insurance scheme (JKN) that was initiated in January 2014. The programme falls under the responsibility of BPJS Kesehatan, a state-owned company in Indonesia. This programme is intended to make health care services affordable and available to all members of the Indonesian population.

The government of Indonesia stipulates that all citizens should complete 12 years of education: six years in elementary school, three years in middle school, and three years in high school. General schools are under the responsibility of the Ministry of Education and Culture, while Islamic schools are under the responsibility of the Ministry of Religious Affairs. Typically, parents also send their children to pre-school education, which consists of a playgroup school (ages 3–4) and kindergarten (ages 4–6). Tertiary education falls under the responsibility of the Ministry of Research, Technology, and Higher Education.

The labour force encompasses any person at least 15 years old who was working as of the previous week, who may have been temporarily absent from work but still has a job, or who is looking for a job (Indonesian Statistical Office 2016). An employed person is a person who worked at least one hour during the previous week. The pension age usually ranges from 55 to 60 years old.

3   The tax system

According to the Central Government Financial Report (LKPP), the taxes that are collected by the central government of Indonesia include domestic taxes and international trade taxes. Domestic taxes contributed more than 97 per cent of the total tax revenues in 2016 (Table 1). More than half of the tax revenue was contributed by income taxes (52 per cent), followed by VAT (32 per cent) and excise taxes (11 per cent). Income taxes are contributed by personal income taxes (32 per cent) and corporate income taxes (20 per cent), while the excise taxes are mainly from tobacco products (11 per cent).

Table 1: The tax classification system in Indonesia

No.		Type of tax	Contribution (%)
1		Domestic taxes	97.20
	A	Income taxes	51.80
		Income-sharing from oil and gas	2.80
		Income-sharing from oil	0.85
		Income-sharing from gas	1.90
		Income taxes not from oil and gas	49.00
		Personal income taxes on labour income	9.00
		Personal income taxes on non-labour income	11.50
		Personal and corporate income taxes for the foreign taxpayer	2.80
		Personal income taxes from other sources (mainly tax amnesty)	8.80
		Corporate income taxes	17.10
	B	VAT	32.10
	C	Land and building taxes	1.50
	D	Excise taxes	11.20
		From tobacco products	10.70
		From ethyl and alcohol products (except for drink)	0.01
		From ethyl and alcohol drink	0.41
	E	Other domestic taxes	0.60
2		Taxes from international trade	2.70

Source: Ministry of Finance (2017).

3.1 Income tax

Personal income tax on labour income is imposed on individuals who receive earnings from either wages or self-employed income. This tax contributes around 9 per cent of the national tax revenue. The personal income tax rate is progressive, ranging from 5 per cent to 30 per cent, depending on the value of taxable income in each year (Table 2). For instance, if a person has a taxable income of IDR400,000,000 in a specific year, the tax rates are 5 per cent for the first level (IDR50,000,000), 15 per cent for the second level (IDR200,000,000), and 25 per cent for the third level (IDR150,000,000). Thus, the tax invoice would equal IDR70,000,000 (= (5% × 50,000,000) + (15% × 200,000,000) + (25% × 150,000,000)).

Table 2: Annual personal income tax rates

Taxable income	Tax rate (%)
First level: first IDR50,000,000	5
Second level: more than IDR50,000,000 and up to IDR250,000,000	15
Third level: more than IDR250,000,000 and up to IDR500,000,000	25
Fourth level: exceeding IDR500,000,000	30

Source: Law No. 7/1983, article 17.

Table 3: Deductible income

Condition	Deductible income
Non-married (men/women)	
Without dependent	IDR54,000,000
1 dependent	IDR58,500,000
2 dependents	IDR63,000,000
3 dependents	IDR67,500,000
The couple, one earner	
Without dependent	IDR58,500,000
1 dependent	IDR63,000,000
2 dependents	IDR67,500,000
3 dependents	IDR72,000,000
The couple, two earners	
Without dependent	IDR112,500,000
1 dependent	IDR117,000,000
2 dependents	IDR121,500,000
3 dependents	IDR126,000,000

Source: Ministry of Finance (PMK No. 101/PMK.010/2016).

Taxable income equals gross income minus deductible income (non-taxable income) in the specific year. The calculation of deductible income depends on marital status and number of dependents in the household (Table 3). Dependents are non-taxable persons in the household (i.e., non-workers), excluding the spouse. Tax dependents from biological relationships include father, mother, children, and siblings. Tax dependents from non-biological relationships include father-in-law, mother-in-law, non-biological children, and brothers/sisters-in-law. The maximum number of dependents is three persons for each taxing unit. For instance, a household consists of a spouse and four children. The husband has an annual gross income of IDR500,000,000, and the wife does not work. The taxable income in that case would be IDR428,000,000 (= IDR500,000,000 − IDR72,000,000).

According to the law, any person or household with an income below the deductible income does not have an obligation to register with the tax office. Those who are registered with the tax office nonetheless must provide a report to the tax office by 30 March every year.

Personal income tax on non-labour income is imposed on individuals who receive non-labour incomes such as dividends, interests, patents, prizes, consulting fees, related service/management fees, and rental incomes (excluding property). These taxes contribute around 12 per cent of the national tax revenue. The rates are 2 per cent and 15 per cent, depending on the type of income. The tax rate of 15 per cent is for dividends, interests, patents, and prizes. The tax rate of 2 per cent is for rental income (excluding property), technical services, management services, construction services, consulting fees, appraisal fees, actuarial fees, accounting fees, design fees, drilling fees, vendor fees in the oil and gas sector, outsourcing fees, and other service fees. These taxes must be paid at the payment time set for incomes.

Personal and corporate income taxes for foreign taxpayers are imposed on individuals who reside in Indonesia for fewer than 184 days of the year. This tax is also imposed on companies that have not established and do not have an office in Indonesia but conduct business activities in the country. The tax rate is 20 per cent for dividend, interest, patent, prize, and pension payments.

The government of Indonesia launched a tax amnesty programme from 18 July 2016 to 31 March 2017. The programme aimed to increase tax compliance, increase government revenue, and encourage the repatriation of offshore assets of wealthy Indonesians held in tax haven countries. The government of Indonesia estimated that more than US$300 billion was secretly being saved in tax havens such as Singapore, Panama, and the British Virgin Islands. The incentive offered by the government was a small penalty to be paid to the tax office.

Individuals wishing to join the tax amnesty programme could choose to report only the value of undeclared assets (declaration of funds) or to move the assets to Indonesia (repatriation of funds). The tax rate applied increased over the duration of the programme, which encouraged individuals to join the programme as early as possible. There was more incentive to repatriate the funds than to declare them. Repatriation of funds meant that the money would be moved to specific instruments such as government bonds, state-owned enterprises' bonds, corporate bonds, mutual funds, collective investment contracts, or property investments.

Income taxes from corporations include (1) income-sharing from oil and gas companies and (2) corporate income tax. Income-sharing from oil and gas companies contributes around 2.8 per cent of the national tax revenue. Indonesia's Production Sharing Contract system for the oil and gas sector means that income-sharing is calculated based on the contract between the government of Indonesia and the company. Thus, the rate of income-sharing may differ among contracts. Oil and gas companies pay double taxes: income-sharing tax and common corporate income tax. Corporate income tax contributes around 17 per cent of the national tax revenue. The tax rate depends on the annual gross revenue, so bigger companies receive higher tax rates.

3.2 Non-income tax

Value-added tax (VAT) is an indirect tax that is levied incrementally at each stage of production or distribution of goods and services. The general VAT rate is 10 per cent for domestic products and 0 per cent for exported products. According to Law No. 42/2009, some goods have zero VAT. Examples include daily food; food and beverages served in hotels, restaurants, and small restaurants (*warung*) or used in catering; and money, gold, and bonds. However, there is an additional VAT rate for some luxury goods—for instance, motorcycles with high cylinder capacity (more than 250 cc), cars, golf carts, specific vehicles for off-road areas, caravans, trucks, and buses. Non-vehicle luxury goods include air conditioners, heaters, electronics, sports equipment, movie production equipment, expensive housing, musical instruments, yachts and ferries except for public transportation, alcoholic beverages, aeroplanes and related products, and weapons except for those of the military services.

Land and building tax is an ad valorem tax on land and buildings. According to Law No. 28/2007, land and building tax is paid directly to the district government, except in some sectors. The central government collects land and building tax in the mining, forestry, and plantation sectors only. The tax rate depends on the sales value of the taxable object (NJOP) of the land or building. The calculation of the NJOP depends on the average market value of the land or building as announced by the Indonesian Minister of Finance that year. The official average market value of land depends on location, usage, and environmental conditions. The official average market value of buildings depends on location, building structure, raw material, and environmental conditions. A rate of 0.2 per cent of the NJOP applies to private land and buildings with a minimum NJOP of IDR1,000,000,000—usually plantations with a minimum area of 25 hectares—and forestry areas. Otherwise, 0.1 per cent of the NJOP applies to the rest of the land and buildings.

Excise tax is imposed for specific goods to control the consumption rate, restrict the circulation of goods, and reduce the adverse effect of consumption on society and the environment. The main

contribution of excise tax is from cigarettes (tobacco products), which contribute around 11 per cent of the total tax revenue in Indonesia. The excise rate for cigarette products depends on the type of cigarette and the size of the factory. Examples of types of cigarettes include *kretek* (cigarettes made with a blend of tobacco, cloves, or other flavours), cigarettes without cloves and related flavours, and other tobacco products. Excise from ethyl and alcohol products, in comparison, contributes less than 0.5 per cent of national tax revenues.

4   The benefits system

The government of Indonesia is enhancing social protection programmes to improve the quality of life of poor and vulnerable households. Currently, public expenditure on social protection programmes has risen significantly. However, expenditure on this area remains low in terms of its share of national expenditure and GDP. Namely, Indonesia spends less than 0.7 per cent of its GDP on social protection—less than half of the average spending of lower-middle-income countries and even low-income countries (World Bank 2017b), which spend 1.5 per cent of their GDP in this area.

Table 4 presents the major social protection programmes in Indonesia. Four of these make up around 88 per cent of the budget: health insurance for the poor (35 per cent), subsidized rice (28 per cent), cash transfer for students (14 per cent), and conditional cash transfer (11 per cent). The rest of the budget is distributed among several programmes, including child social services (PKSA), disabled social services (JSPACA/ASODKB), and elderly social services (JSLU/ASLUT).

The unconditional cash transfer programme (BLT/BLSM) is a temporary benefit provided by the government to poor households to balance out the macroeconomic effect of reducing the fuel subsidy. Under the compensation policy, the government provides a cash transfer to supplement consumption for poor households. The Ministry of Social Affairs is the primary institution responsible for managing this programme.

The government of Indonesia increased the price of fuel by 33 per cent in June 2013. Thus, around 15.5 million households received a cash transfer of IDR600,000 (US$53) per household that was paid in two phases. The total cost of the transfer was IDR9.3 trillion. In November 2014, the government increased the price of fuel again, by 30 per cent. Around 15.5 million and 15.8 million households received a cash transfer in 2014 and 2015, respectively. The total transfer per household was IDR400,000 in 2014 and IDR600,000 in 2015. The total cost of the transfer was IDR6.2 trillion and IDR9.5 trillion in 2014 and 2015, respectively. However, the unconditional cash transfer programme was terminated in 2015.

The government of Indonesia introduced the Family Welfare Card (KKS) and Family Welfare Saving Card (KSKS) to disburse an unconditional cash transfer in 2014 and 2015. In the first phase, 1 million KKS/KSKS were provided to recipients as part of a pilot project. The remaining 14.8 million households received their cards later. These cards can also prove eligibility for BLSM and other social protection programmes.

Table 4: List of major benefits in Indonesia

Programme	Short description	Notes
Unconditional cash transfer (BLT/BLSM)	The BLSM 2013 and 2014 provided IDR600,000 per household per year.	The programme covered 15.5 million households in 2013/2014. It was terminated in 2015.
Conditional cash transfer (PKH)	Initiated in 2007; households receive cash transfer when individuals meet specified health or education requirements. The annual benefits are IDR1,200,000 for pregnant/breastfeeding mothers, IDR450,000 per elementary school student, IDR750,000 per junior high school student, and IDR1,000,000 per senior high school student. The annual benefit will be continued conditionally on requirements.	The programme absorbed 11% of the national benefits budget and covered 8.5 million households in 2016.
Subsidized rice (Rastra/Raskin)	Each household receives subsidized rice of 15 kg per month. The household only pays IDR1,600 per kg.	The programme absorbed 28% of the national benefits budget and covered 15.5 million households in 2016.
Health insurance for the poor (Jamkesmas/JKN-PBI/KIS)	This is part of the National Health Insurance scheme (universal coverage). The recipient of health insurance for the poor receives a premium-waiver (IDR25,500 per month per person).	The programme absorbed 35% of the national benefits budget and covered 92 million people in 2016.
Cash transfer for poor and at-risk students (BSM/PIP)	This is a scholarship programme for students from poor households. It helps cover out-of-pocket costs to attend an educational institution, such as transport, school committee fees, uniforms, books, and supplies. It provides annual cash transfer of IDR450,000 (elementary), IDR750,000 (junior high school), and IDR1,000,000 (senior high school).	The programme absorbs 14% of the national benefits budget. It covered 19.5 million students in 2016.

Source: World Bank (2017).

The government of Indonesia introduced the Family Welfare Card (KKS) and Family Welfare Saving Card (KSKS) to disburse an unconditional cash transfer in 2014 and 2015. In the first phase, 1 million KKS/KSKS were provided to recipients as part of a pilot project. The remaining 14.8 million households received their cards later. These cards can also prove eligibility for BLSM and other social protection programmes.

The poorest 25 per cent of Indonesian households qualified for an unconditional cash transfer. The data used to identify beneficiaries were based on Indonesia's Unified Database (UDB) for social protection programmes, housed on the central government's server. The UDB contains names, addresses, and socioeconomic data for Indonesia's poorest households, which number around 25 million.

4.1 Conditional cash transfers

The conditional cash transfer (PKH) programme was launched in 2007. The primary goal of the programme is to alleviate short-term poverty and to increase the education and health qualities of poor households. These households receive a cash transfer upon meeting the specified requirements in education and health. In the first phase, the programme covered fewer than 500,000 households across seven provinces. The government expanded the programme to cover 6 million households in 2016. As a result, the total cost of the programme increased to IDR8.5 trillion in 2016.

The Ministry of Social Affairs executes the programme. First, the list of beneficiaries is extracted from the UDB. Households must be considered to be in the bottom 14 per cent of households in the UDB. There are additional requirements that must be fulfilled: a household member is pregnant or breastfeeding, the household includes at least one child below six years old, at least one child in the household is 6 to 15 years old and attending primary or secondary school, or at least one adult in the household is 16 to 18 years old and has not completed compulsory education. The list of beneficiaries is distributed to the local office for eligibility to be confirmed. After the verification process, a cash transfer is disbursed to the mother in each household.

The benefit received by the household depends on which conditions are met by that household. Households that have at least one child under six years old or a mother who is pregnant or breastfeeding receive IDR1,200,000 per year. Households that have at least one child in elementary school receive IDR450,000 per year. Lastly, households that have at least one child in junior secondary or senior secondary school receive IDR750,000 and IDR1,000,000, respectively.

Subsequent payments of the benefit depends on the achievement of household education and health (Ministry of Social Affairs 2016). Pregnant women, for example, must complete four antenatal care visits, take iron tablets during pregnancy, and have the baby delivered by skilled medical services (e.g., a midwife). Breastfeeding women must complete two postnatal visits within one month of delivering the baby. Children under six years old must receive complete immunization, take vitamin A twice a year, and be taken for monthly monitoring check-ups. Household members 6 to 21 years old must attend school for at least 85 per cent of school days. Older adults and people with severe disabilities in the household must complete health check-ups at health services facilities or receive them via home care.

4.2 Subsidized rice

Subsidized rice for the poor (Raskin/Ranstra) allows households to purchase rice at a subsidized price. Generally, food expenditures account for two-thirds to three-quarters of household expenditure, and rice consumption expenditure represents around two-thirds of food expenditures. However, food prices are sometimes less stable in developing countries such as Indonesia. Poor and near-poor households are mostly consumers of rice rather than producers. Consequently, they are more sensitive to the volatility of food prices.

The motivation for the programme is to provide poor and near-poor households with financial stability and thereby allow them to cope with the volatility of the price of rice. In terms of the budget, Ranstra is the second-largest social protection programme in Indonesia. The total cost of the programme was IDR22 trillion in 2016. It provides subsidized rice to 15.5 million households. Each household receives a maximum of 15 kg of rice each month at the price of IDR1,600 per kg.

Poor and vulnerable households are eligible for Ranstra. The list of beneficiaries was extracted from the UDB in 2012. The central government set the eligibility for the programme to include the poorest 25 per cent of households. The list of beneficiaries was sent to the village level to be verified, and is updated each year at a meeting at the village level.

4.3 Health insurance for the poor

Health insurance for the poor (Jamkesmas/JKN-PBI/KIS) has become the primary driver of the recent increase in social protection programme expenditure. The initial health care programme for poor and near-poor households in Indonesia was started in 2005, when the government initiated National Health Insurance for poor and near-poor (Jamkesmas). Poor and vulnerable households

typically have a higher rate of non-utilization, a lower rate of preventive activities, and a higher rate of income loss due to health events (Harimurti et al. 2013).

Jamkesmas was merged under the universal health coverage of the National Health Insurance scheme (SJSN) in early 2014. Currently, the programme is known as the Recipient of Government-Paid Health Insurance Premium (JKN-PBI). The programme provides insurance fee waivers to poor and near-poor households. From 2013 to 2014, around 10 million beneficiaries were added to the programme, increasing the number of beneficiaries from 76 million to 86 million. From 2015 to 2016, another 6 million beneficiaries were added. Consequently, the total number of beneficiaries was 92 million people in 2016, making JKN-PBI the largest social protection programme in the world from the perspective of budget and coverage today. Each beneficiary received a total amount of IDR23,000 per month, or IDR276,000 per year, in 2016. The total cost of the programme in the same year was IDR24.8 trillion. The premium was recently increased to IDR25,500 per month. The data used to identify beneficiaries are extracted from the UDB, and beneficiaries must fall within the poorest 40 per cent of the households ranked.

The new government of Indonesia under Joko Widodo introduced the Indonesian Health Card (KIS) in late 2014. In the first phase, around 4.6 million cards were sent to individuals in 1 million targeted households. In the next phase, all JKN-PBI recipients received the cards. The programme provides additional benefits to JKN-PBI recipients, including preventive care and early detection services. Recipients of JKN-PBI and KIS have a right to free services at public health centres at the district level and any necessary referrals. Individuals in the most deprived 40 per cent of households are eligible to receive the KIS card.

4.4 Cash transfers for poor and at-risk students

Cash transfers for poor and at-risk students (BSM/PIP) are intended to help cover the out-of-pocket costs (including transportation) incurred by students. Depending on the level of the educational institution, the out-of-pocket costs of a poor student are approximately IDR1.1 million (elementary school), IDR2.5 million (junior secondary school), and IDR3.5 million (senior secondary school) per year (World Bank 2017b: 56). In contrast, a student from a non-poor household pays IDR2.2 million, IDR3.7 million, and IDR5.5 million annually at the elementary school, junior secondary school, and senior secondary school, respectively.

The Ministry of Education and Culture (MoEC) and the Ministry of Religious Affairs (MoRA) are responsible for conducting the programme. The primary aim is to decrease the barriers to education for students in poor households. For instance, students can use the benefit to buy uniforms, books, and supplies. Each student from a poor household receives a cash transfer of IDR450,000 (elementary school), IDR750,000 (junior secondary school), or IDR1,000,000 (senior secondary school) annually.

The programme provides national coverage, encompassing any students from the poorest 25 per cent of households who have either a Smart Indonesia Program Card (KIP) or a Social Protection Card (KPS). In 2016, the programme covered nearly 20 million students from poor households in Indonesia.

4.5   Unified Database (UDB)

The UDB has become the primary source for determining eligibility for social protection programmes. It contains data on the 40 per cent of families with the lowest socioeconomic status. Currently, the data consist of 25 million households and 96 million people. Importantly, these data a significant role in improving the targeting of beneficiaries of social protection programmes in Indonesia.

The source of the data in the UDB is the Data Collection for Social Protection Programmes (PPLS) 2011 survey, conducted by BPS. Compared with PPLS 2008, the latest PPLS has two advantages. First, the methodology had been adjusted based on the poverty map and on direct consultation with poor families during the fieldwork. Additionally, BPS includes the results of the Population Census in 2010, the National Socio-Economic Survey in 2010, and Village Potential Statistics (PODES). Second, the coverage of PPLS 2011 was more extensive than that of PPLS 2008: 45 per cent and 29 per cent, respectively. The UDB was updated in 2015 to take account of changes in the socioeconomic characteristics of each household.

The UDB is also a part of Open Government Indonesia, under which local governments (province and district) can request to utilize the data. There are three types of data. The first is individual data with names and addresses. This type of data is used only for social protection programmes by ministry and local government officials. The second type is individual data without names and addresses. This type of data is used for planning by either central or local government. Academicians and researchers can also request these data. The third type is aggregate data that can be accessed through the TNP2K website.

5   Description of possible data

Two alternative sources of micro-level data are available for the proposed study: the Indonesian Family Life Survey (IFLS) and the National Socio-Economic Survey (SUSENAS). In this section, this study identifies the main differences between these two data sets, highlighting the advantages and disadvantages of each (Table 5).

The IFLS is the most comprehensive, well-recognized, and high-quality data set for Indonesia. The first wave of the IFLS was conducted in 1993 and represented about 83 per cent of the Indonesian population in 13 of the 27 provinces in the country (currently, the country has 34 provinces), most of which were in the western region (Frankenberg and Karoly 1995). Following the same households, the second wave of the IFLS was conducted in 1997, the third wave in 2000, the fourth wave in 2007, and the fifth wave in 2014/15.

This study proposes that the latest data from IFLS in 2014/15 could be used in the model. The RAND Corporation (California, USA) conducted IFLS 2014/15 (hereafter written as 2015) in collaboration with Survey METER (Yogyakarta, Indonesia). The survey contains several modules, including household characteristics, household economy, consumption, education, health conditions, and children's conditions. The household head and the spouse are the primary respondents in the survey. A maximum of two children are chosen in each household to be the subjects of an interview about children's conditions, such as child's education, acute morbidity, child self-treatment, outpatient care, food frequency, inpatient care, and parental information. A person aged 50+ and her/his spouse are randomly selected from the rest of the household members. Then, for 25 per cent of the household sample, a person aged 15–49 and her/his spouse

are selected from the rest of the household members. These selections produce a sample of more than 16,000 households and 80,000 individuals.

Table 5: Data comparison

	IFLS	SUSENAS
Time	1993, 1997, 2000, 2007, 2014/2015	Each year
Latest available	2014/15 (more than 16,000 households and 80,000 individuals)	2016 (more than 300,000 households and 1,300,000 individuals)
Type	Longitudinal	Cross-sectional
Access to data	Free, from the RAND website	Not free; need to purchase the data from BPS
Representation	Designed to represent around 83% of the national population, mainly in the western region	Designed to represent 100% of the national population
Expenditure variable	Available and disaggregated into a list of items	Available and disaggregated into a list of items
Income variable	Individual wage income and individual self-employed income are available. Household business income is available, including farm business and non-farm business. Household investment income can be calculated from the rent/lease/interest/profit-sharing of non-business household assets (assets that not used in business activities). Other household incomes are pension/retirement funds, scholarship, insurance, winnings/lottery	Not available
Information about social protection	Some questions about unconditional cash transfer (BLT/BLSM), conditional cash transfer (PKH), and subsidized rice (Rastra/Raskin)	Some questions about subsidized rice (Rastra/Raskin), health insurance for the poor (Jamkesmas/JKN-PBI/KIS), and cash transfer for poor and at-risk students (BSM/PIP)

Source: Authors' summary from both data sets.

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SUSENAS is a potential alternative data set for tax-benefit microsimulation. It is a cross-sectional data set compiled annually by BPS. The latest available survey is SUSENAS 2016, which can be purchased from the Statistical Office. The survey contains several modules, including demographic characteristics, education conditions, criminality experiences, health conditions, information technology, labour market, dwelling conditions, social assistance, and expenditure. The primary respondents are the household head and the spouse. Each person aged 10+ is interviewed for the labour market module. There are more than 300,000 households and 1,300,000 individuals in the sample in more than 500 districts in 34 provinces. Unlike the IFLS, SUSENAS is designed to

represent 100 per cent of the national population. The larger number of observations is motivated by the primary goal of the survey, namely to monitor poverty at the district level.

6   Assessment of tax-benefit simulation feasibility

This section aims to outline the possibilities for simulating taxes and benefits given different policy scenarios and data availability. The possibilities depend on which data set is chosen, IFLS or SUSENAS (Table 6). Some taxes cannot be simulated. First, simulation of personal income taxes on labour income is only possible using the IFLS data, because there is no labour income data in SUSENAS. Second, simulation of personal income taxes on non-labour income is not possible, as non-labour income information, such as dividends, patents, and prizes, is not available in either data set. Third, the simulation of personal income taxes for the foreign taxpayer is not possible, as no information is available about the days when the foreign taxpayer is residing outside of Indonesia. The main difference between domestic and foreign taxpayers is the number of days residing in Indonesia. Those who live in Indonesia fewer than 184 days of the year are categorized as foreign taxpayers. However, neither data set has any information about foreign taxpayers. Fourth, the simulation of personal income taxes from tax amnesty is not possible. Access to tax amnesty data is strictly monitored, and the data are generally kept private by the tax office. Fifth, simulation of land and building tax is not possible using SUSENAS data. Even though SUSENAS has building area as a variable, the official market value according to the Ministry of Finance is not publicly available. As a consequence, the total market value of housing and the building tax cannot be calculated.

One of the most critical factors in simulating personal income tax is the tax ratio in the country. In reality, only around 33 million workers were registered with the tax office in 2016 (out of more than 130 million workers). Most unregistered workers were in the informal sector. Furthermore, only one-third of the 33 million registered workers provided an annual income report to the tax office. Of those who did so, less than 10 per cent paid tax.

Regarding the simulation of benefits, an unconditional cash transfer cannot be simulated because the most recent survey, SUSENAS, was carried out in 2016, and the unconditional cash transfer programme did not exist in 2016. Furthermore, adjustments should be applied to define the eligibility of a person or a household for the programme. The raw data on beneficiaries is based on the UDB kept by the central government. Depending on the programme's requirements, central government provides a list of beneficiaries to the village level. During a community meeting at the village level, representatives must approve or revise the list of beneficiaries based on an assessment of additional requirements, such as household characteristics, dwelling conditions, education, and health characteristics.

Table 6: Simulation feasibility in Indonesia

Main policy	Simulated?	Why not fully simulated?	
		IFLS	**SUSENAS**
Personal income taxes on labour income	Yes (IFLS only)		Insufficient information in the survey
Personal income taxes on non-labour income	No	Insufficient information in the survey	Insufficient information in the survey
Personal income taxes for the foreign taxpayer	No	Insufficient information in the survey	Insufficient information in the survey
Personal income taxes from other sources (mainly tax amnesty)	No	Insufficient information in the survey	Insufficient information in the survey
VAT	Yes		
Land and building tax	Yes (IFLS only)		Insufficient information in the survey
Excise tax (tobacco)	Yes		
Excise tax from ethyl and alcohol drink	Yes		
Fuel tax	Yes		
Unconditional cash transfer (BLT/BLSM)	Yes (IFLS only)		The programme was terminated in 2015
Conditional cash transfer (PKH)	Yes		
Subsidized rice (Rastra/Raskin)	Yes		
Health insurance for the poor (Jamkesmas/JKN-PBI/KIS)	Yes		
Cash transfer for poor and at-risk students (BSM/PIP)	Yes		

Source: Authors' summary from both data sets.

One important factor in the targeting of social protection programmes is the ranking system used in the UDB. The government creates the ranking of households from poor to rich to decide which families should receive support via social protection programmes. It applies proxy-means testing (PMT) to create the ranking across households. The functioning of PMT is based on household and regional characteristics. Household characteristics for PMT include household members, education status, dwelling conditions, household assets, and many more. However, the government of Indonesia also considers the disparity across regions in the equation. The PMT model may differ between regions.

This study suggests employing several variables in IFLS and SUSENAS to mimic the ranking of beneficiaries in the updated UDB based on the PMT model. UDB, IFLS, and SUSENAS have common household variables, such as household structure (e.g. marital status, number of children, number of dependents), education enrolment, health conditions (e.g. pregnancy, history of medical check-ups), and dwelling conditions. Regarding household assets, SUSENAS does not have this variable but IFLS does.

7   Concluding remarks

This study evaluates the potential for expanding the SOUTHMOD microsimulation model to Indonesia (Indonesian EUROMOD/SOUTHMOD), in particular to assess the effect of government programmes aimed at addressing poverty and inequality. Rather than providing a final version of an Indonesian EUROMOD/SOUTHMOD, we undertake a feasibility study of EUROMOD/SOUTHMOD implementation in Indonesia. Specifically, we analyse the tax and benefits systems and possible data sources in Indonesia.

The results of the feasibility study show that the IFLS and SUSENAS are possible data sets that could inform an Indonesian SOUTHMOD. However, each data set has advantages and limitations. The limitation of the IFLS is that it is not nationally representative: it was designed to represent only around 80 per cent of the national population. SUSENAS, in comparison, is nationally representative. However, it does not have an income variable, so it would be impossible to perform a simulation on labour income tax. Given these challenges, future studies should take account of the limitations of each data set. For instance, the IFLS could be used to simulate specific regions in Indonesia, such as the Java region, which comprises more than 50 per cent of the population with only 6 per cent of the land area.

In the context of microsimulation models in developing countries, this study provides a novel contribution to the feasibility results of SOUTHMOD as an extension of EUROMOD. Thus, by proposing the use of a real tax-benefit microsimulation tool in Indonesia, this paper opens up new ways to use microsimulation models in developing countries.

Our approach is to extend the use of EUROMOD in Indonesia with some adaptations. Previous extensions of EUROMOD in developing countries have been conducted in Ecuador (Jara et al. 2017), Ethiopia (Mengistu et al. 2017), Ghana (Kwabena et al. 2017), Mozambique (Vanda et al. 2017), Tanzania (Vincent et al. 2017), and Zambia (Pamela et al. 2017). The extension of EUROMOD should be adjusted to the conditions of the household survey. For instance, instead of using income variables when simulating income tax, we can focus on simulating indirect taxes, which are more relevant as they represent one of the core revenue sources in developing countries. Indirect taxes comprise VAT, excise tax, and ad valorem tax. To measure the level of welfare, most household surveys in developing countries have expenditure modules instead of income modules. Future work should focus on the extension of a real microsimulation model, i.e. creating a real interface for an Indonesian EUROMOD/SOUTHMOD.

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Appendix 1: Tax rates

Table A1: Additional VAT rate for luxury goods

Tariff	Vehicles
10%	• Vehicles with a capacity of 10 to 15 persons (including the driver), with spark-ignition engine or compression combustion engine (diesel/semi-diesel), and with cylindric capacity • Vehicles with a maximum capacity of 10 persons (including the driver) other than sedans or station wagons, with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with one-axle system 4×2 and a maximum cylindric capacity of 1,500 cc
25%	• Vehicles with a maximum capacity of 10 persons (including the driver) other than sedans or station wagons, with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with one-axle system 4×2 and maximum cylindric capacity of 1,500 to 2,500 cc • Vehicle with a double cabin (open or closed tub), with a capacity of more than 3 persons (including the driver), with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with one-axle system 4×2 or two-axle system (4×4), and a maximum weight of 5 tons
30%	• Vehicles other than sedans or station wagons, with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with a maximum cylindric capacity of 1,500 cc • Vehicles other than sedans or station wagons, with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with two-axle system (4×4) and a maximum cylindric capacity of 1,500 cc
50%	• Vehicles with a maximum capacity of 10 persons (including the driver) other than sedans or station wagons, with spark-ignition engine or compression combustion engine (diesel/semi-diesel), with one-axle system 4×2 and maximum cylindric capacity of 2,500 to 3,000 cc • Vehicles with a maximum capacity of 10 persons (including the driver) classified as sedans or station wagons, with spark-ignition engine, with two-axle system 4×4 and maximum cylindric capacity of 1,500 to 3,000 cc • Vehicles with a maximum capacity of 10 persons (including the driver) classified as sedans or station wagons, with compression combustion engine (diesel/semi-diesel), with two-axle system 4×4 and maximum cylindric capacity of 1,500 to 2,500 cc • Golf cart
60%	• Motorcycle with cylindric capacity of 250 to 500 cc • Special vehicle for snow, beach, or mountain terrain
75%	• Vehicles with a maximum capacity of 10 persons (including the driver), with spark-ignition engine, with one-axle system 4×2 or two-axle system 4×4 and minimum cylindric capacity of 3,000 cc • Vehicles with a maximum capacity of 10 persons (including the driver), with compression combustion engine (diesel/semi-diesel), with one-axle system 4×2 or two-axle system 4×4 and minimum cylindric capacity of 2,500 cc • Motorcycle with cylindric capacity of more than 500 cc • Trailer or semi-trailer caravan, for camping and home
	Non-vehicles
10%	• Household appliances, refrigerators, household heaters, and TV broadcasting receivers (specific items) • Sports equipment (specific items) • Air conditioning • Image or movie recording tools, radio broadcast receiver • Photography, cinematography, and related equipment
20%	• Household appliances other than the 10% tariff group • Luxury housing, such as luxury apartment, condominium, townhouse, and related housing • TV broadcasting receivers other than the 10% tariff group • Dishwasher and dryer • Electromagnetic appliances and musical instruments • Perfumes
30%	• Ship and water transportation, except for public transportation and government's needs (specific items) • Sports equipment other than the 10% tariff group
40%	• Alcoholic drinks (specific items) • Leather and artificial leather

	• Tapestries from silk or wool
	• Glassware of lead crystals of a kind used for desks, kitchens, dressers, offices, indoor decorations, or similar purposes
	• Precious/noble metal, partly or entirely
	• Ship and water transportation other than the 30% tariff group, except for public transportation and government's needs
	• Air balloons and aircraft without propulsion
	• Weapons, except for government's needs (specific items)
	• Footwear
	• Porcelain, china clay, or ceramics
	• All stone other than road stone
50%	• Tapestries from animal hair
	• Aircraft without propulsion other than the 40% tariff group, except for government's needs and public transportation
	• Sports equipment other than the 10% and 30% tariff group
	• Weapons other than the 40% tariff group, except for government's needs
75%	• Alcoholic drinks other than the 40% tariff group
	• Precious/noble metal, partly or entirely
	• Luxury ships, except for government's needs and public transportation

Table A2: Excise rates for cigarettes

Type of cigarette	Size of factory	Market price of cigarette	Excise tax
SKM	> 3 billion pieces	≥ IDR1,120 per piece	IDR590 per piece
	≤ 3 billion pieces	> IDR895 per piece	IDR385 per piece
		≥ IDR715 per piece and ≤ IDR895 per piece	IDR370 per piece
SPM	> 3 billion pieces	≥ IDR1,130 per piece	IDR625 per piece
	≤ 3 billion pieces	> IDR935 per piece	IDR370 per piece
		≥ IDR640 per piece and ≤ IDR935 per piece	IDR355 per piece
SKT or SPT	> 2 billion pieces	> IDR1,260 per piece	IDR365 per piece
		≥ IDR890 per piece and ≤ IDR1,260 per piece	IDR290 per piece
	> 500 million pieces and ≤ 2 billion pieces	≥ IDR470 per piece	IDR180 per piece
	≤ 500 million pieces	≥ IDR400 per piece	IDR100 per piece
SKTF or SPTF		≥ 1,120 per piece	IDR590 per piece
TIS		> IDR275 per piece	IDR30 per piece
		> IDR180 per piece and ≤ IDR275 per piece	IDR25 per piece
		≥ IDR55 per piece and ≤ IDR180 per piece	IDR10 per piece
KLB		≥ IDR290 per piece	IDR30 per piece
KLM		≥ IDR200 per piece	IDR25 per piece
CRT		> IDR198,000	IDR110,000
		> IDR55,000 and ≤ IDR198,000	IDR22,000
		> IDR22,000 and ≤ IDR55,000	IDR11,000
		> IDR5,500 and ≤ IDR22,000	IDR1,320
		≥ IDR495 and ≤ IDR5,500	IDR275
HPTL		57%	

Notes: SKM (*Sigaret Kretek Mesin*): Cigarette with a blend of tobacco, cloves, and other flavours, made using a machine; SPM (*Sigaret Putih Mesin*): Cigarette with only tobacco, without cloves or other flavours, made using a machine; SKT (*Sigaret Kretek Tangan*): Cigarette with a blend of tobacco, cloves, and other flavours, made by hand; SPT (*Sigaret Putih Tangan*): Cigarette with only tobacco, without cloves or other flavours, made by hand; SKTF (*Sigaret Kretek Tangan Filter*): Cigarette with a blend of tobacco, cloves, and other flavours, with additional filter, made by hand; SPTF (*Sigaret Putih Tangan Filter*): Cigarette with only tobacco, without cloves or other flavours, with additional filter, made by hand; TIS (*Tembakau Iris*): a type of tobacco; KLB (*Rokok daun/klobot*): a type of cigarette; KLM (*Sigaret Kelembak Kemenyan*): tobacco with *kelembak* and *kemenyan*; CRT (*cerutu*): a type of tobacco; HPTL (*Hasil Pengolahan Tembakau Lain*): other tobacco products.

Source: Ministry of Finance, No. 146/PMK.010/2017.

Appendix 2: Structure of household survey

Table A3: Household survey comparison

	IFLS	SUSENAS
General content of the questionnaire	Control module: main household information, such as tracking code, demographic, education, dwelling (16 pages)	Core module: demographic, education, criminality experiences, health (immunization, outpatient, and inpatient), information technology, labour market, dwelling, social assistance (24 pages)
	Book 1: consumption (expenditure module), social assistance, health-family planning programme (19 pages)	Expenditure-income module: food and non-food consumption and list of income (20 pages)
	Book 2: household economy including household characteristics (mode detail), farm business, non-farm business, household assets for business activities, non-labour income, natural disaster, loan/debt (28 pages)	Respondents in the household: Core module: the household head and his/her spouse Core module (labour market): person aged 10+ Expenditure module: wife or someone who knows better
	Book 3A: education (more detail), subjective wellbeing, positive and negative feeling, household assets, non-labour income, household assets for non-business activities, non-labour income, marital history, household decision-making, pregnancy history, migration, employment (wage and self-employment), retirement, risk and time preferences, and trust (59 pages)	
	Book 3B: smoking behaviour, health conditions, chronic conditions, mental health, personality, cognitive capacity, acute morbidity, sleep, early health, childhood, health insurance, self-treatment, outpatient care, food frequency, inpatient care, community participation, other transfers, and life expectancy (67 pages)	
	Book 4: marital history, pregnancy history, life expectancy, contraceptive (37 pages)	
	Book 5: child's education, acute morbidity, child self-treatment, outpatient care, food frequency, inpatient care, parental information (26 pages)	
	Control book: household head Book 1: wife or someone who knows better Book 2: household head or person 18+ Book 3: adult 15+ Book 4: ever-married woman age 15–49 Book 5: child less than 15 yrs	

Respondents in the household:
- Household head and his/her spouse
- Max 2 children (0–15 yrs)
- A person 50+ yrs and his/her spouse, randomly selected from the rest of the household members (outside the household head and spouse)
- From 25% of household, a person 15–49 yrs and his/her spouse are selected (outside the household head and spouse)

Expenditure module (detailed information)	This is for the household level (wife or someone who knows better): Book 1	This is for the household level (wife or someone who knows better), except for prepared foods/beverages and tobacco, which are asked for each person in the household

Left column:

1. Food (reference: last week's consumption). Note: the surveyors ask the total value of expenditure and the total value of self-produced for each item.
   - Staple food (hulled, uncooked rice)
   - Corn
   - Sago/flour
   - Cassava, tapioca, dried cassava
   - Other staple food, such as sweet potatoes, potatoes, yams
   - Vegetables
   - Beans, such as mung beans, peanuts, soybeans, etc.
   - Fruits, such as papaya, mango, banana, etc.
   - Dried foods, e.g., noodles, rice noodles, macaroni, etc.
   - Cookies, bread, crackers
   - Meat and fish, e.g., beef, mutton, water buffalo, etc.
   - Chicken, duck, etc.
   - Fresh fish, oysters, shrimp, squid, etc.
   - Salted fish, smoked fish
   - Other dishes, e.g., jerky, shredded beef, canned meat, sardine, etc.
   - Tofu, tempeh, other side dishes
   - Milk/egg
   - Fresh milk, canned milk, powdered milk, etc.
   - Spices (sweet and salty soy sauce)
   - Salt
   - Shrimp paste
   - Chilli sauce, tomato sauce, etc.
   - Shallots, garlic, chilli, candlenuts, coriander, MSG, etc.
   - Javanese (brown) sugar
   - Butter

Right column:

1. Food, beverages, and tobacco (reference: last week's consumption). Note: the surveyors ask for the total quantity and the total value.
   - Cereals, e.g., rice, glutinous rice, fresh corn with husk, dry shelled corn, rice meal
   - Tubers, e.g., cassava, sweet potatoes, sago flour, taro, potatoes, dried cassava
   - Fish/shrimp/squid/shell, e.g., tuna, fusilier, mackerel, trevally, Indian mackerel, anchovy, milkfish, snakehead, Mozambique tilapia, common carp, catfish, etc.
   - Meat, e.g., beef, buffalo, lamb, pork, broiler chicken meat, local chicken meat, poultry meat, other meat
   - Eggs and milk, e.g., broiler egg, local chicken egg, duck egg, quail egg, other egg, salted egg, fresh milk, preserved milk, sweet canned milk, baby powder milk, cheese, etc.
   - Vegetables, e.g., spinach, swamp cabbage, cabbage, Chinese cabbage, mustard greens, beans, string beans, tomato, etc.
   - Legumes, e.g., peanuts without shell, peanuts with shell, soybeans, red kidney beans, other beans, tofu, fermented soybean cake, etc.
   - Fruits, e.g., orange, mango, apple, avocado, rambutan, lanzon, durian, pineapple, papaya, rose apple, etc.
   - Oil and fats, e.g., coconut oil, corn oil, other frying oil, coconut, margarine, others
   - Beverages, e.g., cane sugar, brown sugar, tea, powdered/bean coffee, instant cocoa, etc.
   - Spices, e.g., salt, candlenut, coriander, pepper, tamarind, etc.
   - Prepared food and beverages, e.g., instant noodle, wheat noodle, rice noodle, macaroni, etc.

- Cooking oil, such as coconut oil, peanut oil, corn oil, palm oil, etc.
- Beverages and other drinks/consumer products
- Granulated sugar
- Coffee
- Tea
- Cocoa
- Soft drinks
- Alcoholic beverages, e.g., beer, palm wine, rice wine, etc.
- Betel nut (for chewing, traditional drug, other)
- Cigarettes, tobacco
- Prepared food (eaten at home)
- Prepared food (eaten away from home)

2. Non-food (reference: last month). Note: the surveyors ask the total value in the last month for a specific list of items.
- Electricity
- Water
- Fuel
- Telephone
- Toiletries, e.g., soap, shaving supplies, cosmetics, etc.
- Household items, e.g., laundry soap, cleaning supplies, anti-mosquitoes, etc.
- Domestic services and servants' wages
- Recreation and entertainment, e.g., movies, theatres, outing, etc.
- Transportation, e.g., bus fare, cab fare, vehicle repair costs, gasoline, etc.
- Sweepstakes and the like
- Regular social gathering (*arisan*)
- Non-food items given to others outside the household on a regular basis (including debt repayment)

3. Non-food (reference: last year). Note: the surveyors ask the total value in the last year for a specific list of items.
- Clothing, including shoes, hats, shirts, trousers, children's clothing, etc.
- Household supplies and furniture, including tables, chairs, kitchen tools, bed sheets, towels, etc.
- Medical costs, including hospitalization costs, clinic charges, physician's fee, traditional drugs, etc.
- Ritual ceremonials, charities, and gifts, including weddings, circumcisions, etc.

- Prepared food and beverages for each individual, e.g., ordinary bread, other bread, cookies, boiled or steamed cake, fried food, fried rice, soup, alcohol, etc.
- Tobacco for each individual, e.g.: clove filter cigarettes, clove non-filter cigarettes, other cigarettes

2. Non-food (reference: last month and last year). Note: the surveyors ask the total value in the last month for a specific list of items and last year for another specific list of items.
- Housing and household facilities
  - Rent; if owned, please predict the rent value
  - Cooking, e.g., electricity, water, gas, cooking fuel, firewood
  - Generator, e.g., lubricant oil, gasoline, maintenance
  - Transportation, e.g., gasoline, diesel, solar, lubricant oil, etc.
  - Post and telecoms, e.g., home phone bill, mobile phone credit, post materials, internet, etc.
- Goods and services
  - Bathroom and cosmetic, e.g., soap, shampoo, skin treatment, etc.
  - Health care (including birth delivery and other drugs that cannot be specified), e.g., public hospital, private hospital, local-level health care, medical doctor, paramedical, etc.
  - Drugs costs (only drugs from pharmacies, drug store, etc), e.g., medicine without a receipt, self-treatment, traditional medicine, glasses
  - Health preventive costs, e.g., pregnancy examination, immunization, medical check-up, contraception
  - Education, e.g., admission fee, tuition fee, books, stationery, non-formal education
  - Public transportation, e.g., bus, aeroplane, ship/ferry, other
  - Other, e.g., hotel, leisure, domestic servant salary, financial services fee, other services.
- Clothing, footwear, and headgear, e.g., ready-made clothes for men, ready-made clothes for women, material clothing, sewing wages, footwear, headgear for men, headgear for women, others
- Durable goods, e.g., furniture (tables, chairs, etc.), electronic goods (refrigerators, fans, washing machine, etc.), household equipment (mattresses, pillows, etc.), home appliances (iron, broom, scissors, etc.), kitchen utensils (rack plate, stove, pots,

	- Taxes, including property tax, vehicle tax, income tax, sales tax, etc. - Other expenditure not specified above, including the purchase of cars, house, TV sets, handphones, beds, livestock, etc. - Non-food expenditure given to others outside the household on an irregular basis Additional information about the quantity of food: - Rice - Beef - Chicken - Fish - Kangkung - Spinach - Cooking oil - Granulated sugar - Kerosene - Vehicle fuel	pans, buckets, etc.), decorations, handphone and accessories, umbrella, jewellery, etc. - Taxes and insurances, e.g., land and building tax, vehicle tax, community contribution, health insurance, life insurance, and others - Parties and ceremonies, e.g., wedding ceremonies, circumcision, birthday celebration, religious festival, pilgrimage cost, traditional ceremony, funeral expenses

Income variable (detailed information)	Wage/self-employed income (individual level): Book 3A
	- Self-employed, self-employed with unpaid family workers/temporary workers, self-employed with permanent workers
	    o Net profit in the last month (after taking out business expenses)
	    o Net profit in the last year (after taking out business expenses)
	- Regular wage: govt workers, private workers, casual workers
	    o Salary/wage in the last month (including benefits)
	    o Salary/wage in the last year (including benefits)
	
	Business income (household level): Book 2
	- Farm business
	- Net profit in the last year (after taking out business expenses)
	- Rent/lease/profit-sharing from farm business assets in the last year (only for the main farmland, poultry, livestock/fishpond, and other farmland)
	- Non-farm business (up to 2 business units per household).For each business unit, the surveyors ask:
	    o Net profit in the last year (after taking out business expenses)
		Limitations
		- Income module does not collect self-employed income
		- Income module is collected by the Statistical Office, but they do not release the result (mainly due to reliability)
		
		Wage income (individual level)
		- Wage income in last month
		
		Business income (household level), reference: last three months
		- Farm business: Agricultural crops
		- Farm business: Other, e.g., non-food crops, livestock, poultry, forestry, and hunting
		- Non-farm business, e.g., industry, commerce, transportation, services, building, excavation, etc.
		
		Investment income (household level), reference: last three months
		- Rental homes
		- Other, e.g., interest savings, lease of land, dividends, royalties, sales of used goods, etc. (only in total, not disaggregated into each item)
		
		Other incomes (non-labour income: household level)

	o Revenue of rent/lease/profit-sharing from non-farm business assets in the last year	• Private transfers, e.g., scholarships, pensions, claims, etc. (only in total, not disaggregated into each item)

Investment income (household level): Book 2. The surveyors ask for total income from the rent/lease/interest/profit-sharing of non-business household assets (assets not used in business activities). The reference is last year.
- House and land (residence)
- Other house/building (outside of residence)
- Land
- Poultry
- Livestock/fishpond
- Hard stem plant
- Vehicles (cars, boats, bicycles, motorbikes)
- Household appliances (radio, tape recorder, TV, fridge, sewing machine, VCD player, HP, etc)
- Saving/certificate of deposit/stocks
- Receivables
- Other assets

Other incomes (non-labour income: household level)
- Pension/retirement funds
- Scholarship
- Insurance
- Winning/lottery

Social protection programme

This is for the household level (wife or someone who knows better): Book 1 (Section KSR)

Unconditional cash transfer (BLT/BLSM)
- When was the first time you received this programme?
- How many times?
- When was the last time you received this programme?
- What was the amount?

Conditional cash transfer (PKH)
- When was the first time you received this programme?
- How many times?
- When was the last time you received this programme?
- What was the amount?

Subsidized rice (Rastra/Raskin)

This is for household level: Section social assistance

Subsidized rice (Rastra/Raskin)
- Total quantity of rice in the last three months
- How much price?

Health insurance for the poor (Jamkesmas/JKN-PBI/KIS)
- Did household have health insurance in the last year?
- Does household have Social Protection Card?

Cash transfer for poor and at-risk students (BSM/PIP)
- Did students in the household receive this programme last year?
- If yes, how much money was received from August to March?

- How many times last year?
- Total quantity of rice in last month
- Total quantity of rice in the last year
- What price?