# EUROMOD

COUNTRY REPORT

LATVIA (LV)
2015 - 2018

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EUROMOD version I1.0

EUROMOD is a tax-benefit microsimulation model for the European Union (EU) that enables 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 and for the EU as a whole.

EUROMOD covers the 28 Member States and is updated to recent policy systems using data from the European Union Statistics on Income and Living Conditions (EU-SILC) as the input database, supported by DG-EMPL of the European Commission.

This report documents the work done in one annual update for Latvia. This work was carried out by the EUROMOD core developer team, based in ISER at the University of Essex, in collaboration with a national team.

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The results presented in this report are derived using EUROMOD version I1.0. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD. For more information, see:
https://www.euromod.ac.uk

Contents

1. BASIC INFORMATION

1.1. Basic information about the tax-benefit system

- Latvian tax-benefit system is unified across regions and local governments have little fiscal autonomy. Municipalities have the right to impose special municipal duties and decide on their rates (e.g., a duty on issuing local municipal documents, a duty on trade at public places). However, the special duties represent a minor source of local governments' budget revenues, the main source being revenues from personal income tax, which are partially transferred from the central government budget to local governments' budgets. On the expenditure side, municipalities may decide on the level of social assistance benefits to its residents (e.g., Riga municipality has a higher Guaranteed Minimum Income level for certain population groups and more generous housing benefits).

- Fiscal year runs from 1st January to 31st December.

- Starting from 2014, the retirement age is gradually increased (by three months every year) until it reaches 65 in 2025. Retirement age for both men and women was 62 years 6 months in 2015, 62 years 9 months in 2016, 63 in 2017, and 63 years and 3 months in 2018.

- Minimum school leaving age in Latvia is 15 years. For tax allowance purposes, a dependent child is defined as a child below 18 years and a child who continues secondary, professional, special or higher education but not after he/she reaches age of 24, or until he/she gets married. The definition of a dependent child for benefit purposes can be different for different types of benefits.

- Persons/households with low income represent socially protected category in Latvia. To be eligible for Guaranteed Minimum Income (GMI) benefit, a person/household has to have per person income below the determined threshold.

- Income is taxed on individual basis, spouses' or household members' income being assessed separately. Standard rate of personal income tax was 23% in 2015-2017. Starting with 2018, the flat personal income tax rate is replaced by a progressive rate structure with three brackets: a reduced 20% rate is applied to annual income not exceeding 20,004 EUR, 23% is applied to annual income above 20,004 EUR and below 55,000 EUR, and 31.4% is applied to annual income exceeding 55,000 EUR.

- Income from capital is taxed at a reduced rate of 10% or 20%.

- Generally the income tax system works to match tax withholdings with the exact amount due in the end of the financial year. However, there are certain groups of economic agents who have to file annual tax returns: e.g., civil servants, self-employed, people receiving income from abroad, people who receive income subject to a lowered tax rate (e.g., people receiving royalties). Also, people who are eligible for tax refund have to file annual tax return: these are individuals claiming deductible expenditures on education or health care. As of fiscal year 2016, people eligible for tax refund due to differentiated non-taxable allowance (see section 1.7.2 for more details) will have to fill in income declarations.

- There is a statutory indexing regime for the state pensions (old-age, disability, survivors and service pensions), which takes account of consumer price index (CPI) growth and average wage growth. Only pensions below a certain threshold are indexed. Also, there is an indexation regime for compensation for the loss of capacity for work due to a work

accident or occupational disease, and compensation for the loss of breadwinner, however, these benefits are minor.

- For the means-tested benefits, monthly income over the previous three months is assessed.

1.2.   Social Benefits

1.2.1.   Unemployment benefits

Unemployment benefit *(bezdarbnieka pabalsts)***:** A contributory benefit paid to registered unemployed, given that the person is actively looking for a job. Persons receiving old-age pensions (including early retired), persons engaged in commercial activities, persons who continue primary or secondary education self-employed, persons working while incarcerated are not eligible for unemployment benefit. There is a minimum length of service which makes a person eligible for the unemployment benefit. The benefit is not taxable.

Unemployment allowance during occupational training, retraining and raising of qualification and during obtaining of informal education *(bezdarbnieka stipendija profesionālās apmācības, pārkvalifikācijas un kvalifikācijas paaugstināšanas laikā un neformālās izglītības iegūšanas laikā)***:** The training allowance is paid to registered unemployed, who participate in a training programme. The allowance amounts to a fixed amount per month, or, if training takes less than one month, the allowance is paid proportionally to the time spent on training. Not taxable.

Paid temporary public works *(algotie pagaidu sabiedriskie darbi)***:** programme, which is aimed at long-term unemployed not receiving the unemployment benefit and covers up to four months of paid work in a 12-months period in local governments or non-profit organisations. Participants of the programme receive fixed-amount monthly payments, which are subject to social insurance contributions (for old-age pension). As of 2012, in EU-SILC data income from this programme is classified as employment income. This programme has replaced a temporary programme "Public works programme – workplaces with stipends in municipalities" that was implemented during the crisis in 2009-2012.

Mobility support benefit *(nodarbināto personu reģionālās mobilitātes veicināšana)*: compensation of commuting expenditures or rent expenditures during the first four months of employment, provided to previously registered unemployed who start a job in a location that is more than 20 kilometers away from the person's place of residence. The compensation is not paid to the unemployed residing in Riga. Total amount of compensation paid in the four months cannot exceed 400 EUR.

1.2.2.   Old-age benefits

Old-age pension (*vecuma pensija*)**:** Latvian pension system consists of three tiers: (i) mandatory state non-funded tier, (ii) mandatory state funded scheme and (iii) voluntary private pension scheme. The first tier is financed on the basis of pay-as-you-go. The second tier was created in 2001 and is obligatory for those who are born after 1st July 1971. Those who are born between 2nd July 1951 and 30th June 1971 can voluntarily participate in the second tier. Participation in the second tier does not require any additional contributions, as the amount contributed is split between the first and the second tiers. The third tier is voluntary. Old-age pensions are subject to personal income tax.

Service pension (*izdienas pensija*)**:** Service pensions are provided to representatives of certain professions (e.g., certain occupations in transport industry, certain artistic professions) before

the official retirement age if a person has been employed in a given profession for not less than ¾ of the period which makes the person eligible for the service pension. The size of the service pension depends on the length of service and on the average contribution wage. The service pensions are subject to personal income tax.

State social security benefit in case of old-age (*valsts sociālā nodrošinājuma pabalsts sakarā ar noteiktā vecuma sasniegšanu***):** A benefit paid to the elderly in case they are not entitled to the state old-age pension. The benefit is a fixed amount per month. Not taxable.

1.2.3. Survivor's benefits

Survivor's pension (*apgādnieka zaudējuma pensija***):** Survivor's pension is paid to the children of the deceased person (except if the death is caused by an occupational disease or a work accident, see "compensation for the loss of breadwinner"), irrespective of the fact whether they were dependent on the deceased person. Children below the age of 18 or children of any age if they are disabled from childhood are eligible for the survivor's pension. Other family members are eligible for the survivor's pension if they are not able to work and were dependent on the deceased person. The size of the pension depends on the prospective size of the deceased person's old-age pension and on the number of dependents, but there is a monthly minimum pension. The pension is subject to personal income tax.

Compensation for the loss of breadwinner due to accident at work or occupational disease (*atlīdzība par apgādnieka zaudējumu sakarā ar nelaimes gadījumu darbā vai arodslimību***):** The compensation is paid to family members of a person who died because of a work accident or an occupational disease, if the person had been insured, and if the family members are unable to work and were fully or partially supported by the person. The size of the benefit depends on the deceased person's previous wage, on the degree of kinship and on the number of dependents. The benefit is not taxable.

State social security benefit in case of a loss of a breadwinner (*valsts sociālā nodrošinājuma pabalsts apgādnieka zaudējuma gadījumā***):** A benefit paid to the survivors in case they are not entitled to the state survivor's pension. The benefit is a fixed amount per month. Not taxable.

1.2.4. Sickness benefits

Sickness benefit (*slimības pabalsts***):** sickness benefit is a contributory benefit paid to employees and socially insured self-employed. The benefit is also paid to a parent taking care of a sick child under age 14. During the first 10 days the benefit is paid by the employer, but starting from the 11th day, the benefit is paid by State Social Security Agency. The benefit is subject to personal income tax.

Sickness benefit in case of a work accident or an occupational disease (*slimības pabalsts sakarā ar nelaimes gadījumu darbā vai arodslimību***):** The benefit is paid to a socially insured person who has temporarily lost capacity for work due to a work accident or an occupational disease. The benefit amounts to a certain percentage of the previous average wage. The benefit is subject to personal income tax.

Health service benefit provided by municipalities (*pašvaldības pabalsts medicīnas pakalpojumiem***):** This benefit can be provided by municipalities to low income individuals/households. The size and eligibility conditions of the benefit are determined by municipal regulations. The benefit is not taxable.

1.2.5. Disability benefits

Disability pension (*invaliditātes pensija*): A person is eligible for disability pension if she/he has a disability status, is below the retirement age, has social contribution history of at least three years and if disability is not caused by an accident at work or occupational disease. The amount of the benefit depends on the previous average social contribution wage, on the length of social security history and on the degree of disability. The disability pension is subject to personal income tax.

State social security benefit in case of disability (*valsts sociālā nodrošinājuma pabalsts invaliditātes gadījumā*): A benefit paid to people with disability in case they are not entitled to the state disability pension. The benefit is a fixed amount per month. Not taxable.

Compensation for the loss of capacity for work due to a work accident or occupational disease (*atlīdzība par darbspējas zaudējumu*): Compensation is provided to persons who have permanently lost capacity for work due to a work accident or an occupational disease. The amount of compensation depends on the average social insurance contribution wage and the proportion of loss of work capacity.

Allowance to compensate transport expenses of persons with limited mobility (*pabalsts transporta izdevumu kompensācijai invalīdiem, kuriem ir apgrūtināta pārvietošanās*): The benefit is a fixed amount paid once per six months period to persons certified as needing a specialized care. Not taxable.

Benefit to disabled with special care need (*pabalsts invalīdam, kuram nepieciešama kopšana*): The benefit is assigned to a person above 18 years old, who has a disability status and certified by the Health and Capacity for Work Expert Physicians' Commission as needing special care. Not taxable.

1.2.6. Benefits for parents, adoptive parents and foster parents

Family state benefit *(ģimenes valsts pabalsts)*: Non-contributory. The benefit is paid to one of a child's parents or a person who actually takes care of a child according to a court's decision, or to the child himself after 18 years, if he/she was previously under guardianship. The benefit is a fixed sum per month. As of 2015, the amount for the second and each subsequent child is larger than the benefit paid for the first child. Until the end of 2017, the benefit is granted until the child reaches 15 years of age or, if he/she continues education, until he/she is 19 years old as long as he/she does not receive government scholarships or gets married. As of 2018, the benefit is paid until the child reaches the age of 20 (conditional only on continuing education and not getting married). New supplementary payments to family state benefit are introduced to households with 2 and more children starting with March, 2018 and are paid like the basic benefit, until the child reaches 15 or 20 years. The benefit is not taxable.

Child birth benefit (*bērna piedzimšanas pabalsts*): Non-contributory benefit. The benefit is a lump-sum, paid shortly after the child birth to one of the child's parents or a legal guardian. The benefit is not taxable.

Maternity benefit (*maternitātes pabalsts*): A contributory benefit paid to a woman before and after the child birth. Socially insured employees and self-employed persons are eligible for this benefit. The benefit is paid in two payments. Generally the first payment is made for last 70 days of pregnancy. And the second payment is made after the child birth and covers 56 days in the general case or 70 days in case the mother has had health problems during the pregnancy, childbirth or postpartum or two or more babies were born. The size of the benefit is equal to a percentage of the average contribution wage. The benefit is not taxable.

Paternity benefit (*paternitātes pabalsts*): A contributory benefit paid to socially insured father of a newborn child. The father can claim a ten days paternity leave in the first two months of a child's life. The benefit amounts to a certain percentage of the father's average contribution wage. The benefit is not taxable.

Child care benefit (*bērna kopšanas pabalsts*): Non-contributory benefit. The benefit is provided on the monthly basis to one of the child's parents, or to a legal guardian or a person who actually takes care of the child following the court's decision, until the child reaches the age of 2. The benefit can be received by all categories of parents, irrespective of their social contribution history[2]. The benefit is not taxable.

Parental benefit (*vecāku pabalsts*): This is a contributory benefit and it is equal to a percentage of the average contribution wage. The benefit is paid to one of the child's parents or to a person who actually takes care of the child in accordance with a court decision. A person is eligible for the parental benefit starting from the moment when maternity benefit is over and until the child is one year old. Since October 2014 the duration can be extended to one year and a half (in this case the monthly benefit amount is lower). The benefit is not taxable.

Disabled child care benefit (*bērna invalīda kopšanas pabalsts*): Non-contributory benefit. The benefit is a monthly lump-sum payment to one of the disabled child's parents or to a person who actually takes care of the child following the court decision. The benefit is paid until the child loses disability status or reaches the age of 18. The benefit is not taxable.

State support to the children suffering from celiac disease without formally stated disability (*valsts atbalsts ar celiakiju slimiem bērniem, kuriem nav noteikta invaliditāte*): Non-contributory benefit. This support is provided to children who have a diagnosis of celiac disease, but who are not certified as disabled. The benefit is not taxable.

Benefit to guardian for supporting a child (*pabalsts aizbildnim par bērna uzturēšanu*): Non-contributory benefit. This is a fixed monthly benefit paid to a legal guardian of a child. The benefit is not taxable.

Remuneration for the fulfillment of foster family duties (*atlīdzība par audžuģimenes pienākumu pildīšanu*): The remuneration is paid to the family or a person, who has obtained the status of a foster family. Not taxable.

Remuneration for the adoption of a child (*atlīdzība par bērna adopciju*): The remuneration is a lump-sum payment to one of the stepparents of the adopted child, paid upon the court decision on the adoption of the child. Not taxable.

Remuneration for the care of an adopted child (*atlīdzība par adoptējamā bērna aprūpi*): Remuneration for the care of an adopted child is granted to an adopter who takes care of a child. Not taxable.

1.2.7. Social exclusion benefits

Guaranteed minimum income benefit (*garantētā minimālā ienākuma pabalsts (GMI)*): A separately living person or a household with income below the determined threshold can receive this benefit to ensure basic subsistence needs. The minimum level of the guaranteed income is set at the national level by the Cabinet of Ministers, but municipalities have the right to set a higher level. The benefit is calculated as the difference between the determined guaranteed

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[2] In January-October 2014, parents with social contribution record were not eligible for the child care benefit (unless they were employed). Instead they received parental benefit until the child reaches the age of one. This restriction was abolished as of October 2014.

minimum income level for each household member and a household's (person's) actual income (excluding some income sources). The benefit is not taxable.

Municipal benefit in an extraordinary situation (*pašvaldības pabalsti ārkārtas situācijās*): Municipalities can provide support to individuals in extraordinary situations. The benefit is lump-sum payment and can be provided regardless of the beneficiary's income level. The benefit is not taxable.

**Other special purpose benefits provided by municipalities *(citi pašvaldību piešķirtie mērķa pabalsti):* Other municipality benefits include subsidized provision of lunches at schools and food in general, benefits for raising and educating children, allowances to cover transport expenses, benefits for foster families, benefits for orphans and people released from prison to start life, and benefits for other purposes.

Funeral benefit (*apbēdīšanas pabalsts*): Funeral benefit is a lump-sum payment paid to the family members of the deceased. The benefit is not taxable.

1.2.8.   Housing benefits

Housing benefit *(dzīvokļa pabalsts)*: This benefit is provided by local governments to low-income households. The benefit is based on the income test and assessment of legitimate housing expenses. Eligibility rules and benefit amounts are slightly different across municipalities. The benefit is not taxable.

- *Not strictly benefits*

Severance pay (*atlaišanas pabalsts*): is compensation paid by an employer to an employee if a labour contract is terminated on the employer's initiative for reasons other than breaking terms of the contract by the employee or, on the employee's initiative in case the employee has a good cause for being unable to continue employment relationships. The amount of the compensation depends on the length of service. The compensation is subject to personal income tax.

Pension from private pension fund (*pensija no privātā pensiju fonda*). A person making voluntary contributions to a private pension fund or having his/her employer making contributions on his/her behalf is entitled to additional old-age pension capital. Private pensions are not taxed.

State child support (alimony) (*valsts uztūrlīdzekļi bērniem (alimenti)*): state child support is provided to substitute for the child support payments that have to be paid by a child's parent in accordance with the court decision. The state support is provided in case the collection of the payments from the parent is declared impossible by law enforcement officer or in case the parent's provided support is below the minimum stipulated by the Civil Law. The amount of the state support is linked to the size of the minimum wage and is paid to a child until he/she reaches the age of 18.

EU support parcels (*ES atbalsta pakas*): As of end-2014, food products, hygiene and household goods, as well as essential school accessories are provided to the most deprived households and individuals if their per capita household income falls below a certain threshold or if the person or the household is in an extraordinary situation as a result of a natural disaster or other unpredictable event.

1.3. Social contributions

Social insurance contributions (*sociālās apdrošināšanas iemaksas*): There are three major social insurance regimes in Latvia: (i) general regime for **employees**, who are insured against all insurance cases, (ii) social insurance regime for **self-employed**, who are insured against all insurance cases except unemployment and work accidents or occupational disease, and (iii) **employees of enterprises that pay microenterprise tax**. Apart from the above three categories of economic agents, for whom social insurance is mandatory, there are certain categories of agents who can make voluntary contributions for pensions, disability, maternity, sickness and parents' insurance.

For employees, the base for social security contributions is all income received as remuneration for the work before any deductions. Self-employed can choose the level of income from which to make social security contributions, however, the base for the contributions may not be lower than a certain threshold set by the Cabinet of Ministers. If self-employment monthly income is lower than the threshold, contributions are not paid. As of 2018, if self-employment monthly income is below the minimum wage, contributions for pension insurance should be paid at the rate 5%. If the self-employment income in a calendar year is below 50 euro, contributions can be not paid. If self-employment monthly income reaches or exceeds the minimum wage, contributions should be made according to general rules from a freely chosen amount, which is not smaller than the minimum wage, and contributions for pension insurance at the rate of 5% should be made from the difference between actual income and the freely chosen amount.

There is also a maximum level of income from which social contributions can be made, which is binding for both employees and self-employed. For an employee of an enterprise that pays the microenterprise tax, the base for social security contributions depends on the company's turnover, company's wage bill and on the relative wage of the employee, compared to other employees of the enterprise.

1.4. Taxes

Personal income tax (*iedzīvotāju ienākuma nodoklis*): Personal income tax is paid on individual basis and is applied to income from regular employment and self-employment, state pensions, certain sickness benefits, as well as to dividends and other capital gains. As of 2018, dividends are subject to corporate income tax and are not taxed with personal income tax. Capital gains were taxed at a reduced rate in 2014-2017, but in 2018, the rate for other capital gains is set the same as for all kinds of income from capital. Until 2018, personal income tax rate was flat, but some progressivity was ensured by non-taxable minimum income, applying to income from regular employment and self-employment. As of 2018, the flat PIT rate is replaced by a progressive rate with three brackets. There are also fixed monthly allowances for dependents.

Solidarity tax (*solidaritātes nodoklis*): Solidarity tax was introduced in 2016. The tax is applied to incomes above a certain threshold. This is the same threshold which defines the maximum income subject to social insurance contributions. Effectively, solidarity tax substitutes social insurance contributions on high incomes.

Corporate income tax (*uzņēmuma ienākuma nodoklis*): Until 2018, corporate income tax rate in Latvia was 15%. The tax is levied on business income of resident companies and on non-resident companies permanently located in Latvia. As of 2018, corporate income tax is paid only when a company pays dividends or makes other payments with the aim of actual profit distribution. Individuals who receive these dividends will not be required to pay personal

income tax anymore. Tax rate of 20% is applied to the corporate income tax base which is equal to the value of the tax object divided by coefficient 0.8, resulting in effective tax rate of 25%.

Small companies complying with a set of criteria (referring to e.g. the number of employees and annual turnover) can choose to pay a **microenterprise tax** instead of the corporate income tax. The base for the microenterprise tax is enterprise turnover and the tax rate is lower than the standard enterprise tax. Microenterprise tax payments substitute corporate tax payments, as well as social security contributions and personal income tax payments for the employed personnel.

Property tax (*nekustamā īpašuma nodoklis*): Property tax is levied on buildings (including residential dwellings), constructions and land.

Value added tax *(pievienotās vērtības nodoklis)*: There are two different VAT rates in Latvia – a standard rate and a reduced rate applied to certain goods and services (e.g. medicines, energy, newspapers).

Excise tax *(akcīzes nodoklis)*: Excise tax is levied on alcoholic beverages, tobacco, oil products and some non-alcoholic beverages.

Tax on cars and motorcycles *(vieglo automobiļu un motociklu nodoklis)*: the tax is levied on cars and motorcycles which are registered in Latvia for the first time. The tax rate is dependent either on the amount of carbon dioxide emissions or age of a vehicle and engine capacity.

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1. Scope of simulation

Not all the taxes and benefits mentioned in the previous section are simulated by EUROMOD. Firstly, some are beyond its scope entirely and are neither included in the EUROMOD input database nor in its output income variables. Secondly, some are not possible to simulate accurately with the available data. They are included in the database and may be chosen as components of output variables, but the rules governing them may not be changed by the model. Here we distinguish benefits/taxes which are included as a separate variable and benefits/taxes which are included as a component of an aggregated variable (in case it is not possible to make a split). Thirdly, other benefits contain complicated rules and/or available data does not provide enough information to be able to simulate benefit in all detail; such benefits/taxes are partially simulated. Table 2.1 and Table 2.2 classify each of the tax-benefit instruments into one of these groups and provide a brief explanation as to why the instrument is not fully simulated if this is the case. There was one structural change in the model implemented in policy year 2016, 2017 and 2018: a new solidarity tax.

Table 2.1 Simulation of benefits in EUROMOD

Benefit name	Output variable	Treatment in EUROMOD				Why not fully simulated?
		2015	2016	2017	2018	
Unemployment benefits						
Unemployment benefit	bun00_s	PS	PS	PS	PS	No precise information on relevant social contribution history, average pre-unemployment wage, duration of unemployment benefit.
Other payments related to unemployment	bunot	I	I	I	I	The variable includes stipends for training courses of unemployed persons, severance pay, as well as public works programme (workplaces with stipends in municipalities). These variables cannot be simulated due to lack of data on employment history with a particular employer and lack of information on participation in either training or public works programme.
Old-age benefits						
Old-age pension (including service pension)	poatx	I	I	I	I	No data on full social contribution history.
State social security benefit (in case of old age)	poass_s	PS	PS	PS	PS	Eligibility is taken from the input data.
Survivor's benefits						
Survivor's pension	psutx	I	I	I	I	No information on deceased persons.
State social security benefit (in case of a loss of a breadwinner)	psuss_s	PS	PS	PS	PS	Eligibility is taken from the input data.
Sickness benefits						
Sickness benefit	bhl	IA	IA	IA	IA	No data on sickness duration.
Sickness benefit in case of a work accident or an occupational disease	bhl	IA	IA	IA	IA	No data on sickness cause and duration.

Benefit name	Output variable	Treatment in EUROMOD				Why not fully simulated?
		2015	**2016**	**2017**	**2018**	
Health service benefit provided by municipalities	bhl	IA	IA	IA	IA	No data on eligibility for benefit and municipality which rules apply.
Disability benefits						
Disability pension	pditx	I	I	I	I	No data on degree of disability and social contribution history.
State social security benefit (in case of disability)	pdiss_s	PS	PS	PS	PS	Eligibility is taken from the input data.
Compensation for the loss of capacity for work due to a work accident or occupational disease	pdint	I	I	I	I	No data on the cause of disability.
Family and children related allowances						
Family state benefit	bfana_s	S	S	S	S	-
Child birth benefit	bfaba_s	S	S	S	S	-
Child care benefit	bfacc_s	S	S	S	S	-
Parental benefit	bfawk_s	S	S	S	S	Average contribution wage before a child's birth is imputed.
Maternity benefit	bfama_s	S	S	S	S	Average contribution wage before a child's birth is imputed.
Paternity benefit	bfapl_s	PS	PS	PS	PS	Average contribution wage before a child's birth is imputed; non-take up is modelled based on eligibility from the data.
Other child-related income	bfaot	I	I	I	I	No data on health condition of a child, no data on adoption (if the child has been adopted), impossible to simulate local governments' specific rules related to child-related benefits.
Social exclusion benefits						
Benefit for ensuring the guaranteed minimum income level	bsamm_s	PS	PS	PS	PS	Specific municipality rules can't be simulated. Only standard rules and rules for Riga municipality are simulated. Residents of Riga are imputed based

Benefit name	Output variable	Treatment in EUROMOD				Why not fully simulated?
		2015	**2016**	**2017**	**2018**	
						on information from the national data.
Municipal benefit in an extraordinary situation	bsaot	IA	IA	IA	IA	Eligibility rules can't be simulated.
Other special purpose benefits provided by municipalities	bsaot	IA	IA	IA	IA	Eligibility rules can't be simulated.
Funeral benefit	bsafu	IA	IA	IA	IA	No information on deceased members of household.
Housing allowances						
Housing benefit	bho_s	PS	PS	PS	PS	Specific municipality rules can't be simulated. The rules of the largest municipality (Riga) are applied.

Notes: "-" policy did not exist in that year; "E" *excluded* from the model as it is neither included in the micro-data nor simulated; "I" *included* in the micro-data but not simulated; "IA" *included in the micro-data as a part of an aggregated variable* but not simulated; "PS" *partially simulated* as some of the relevant rules are not simulated; "S" *simulated* although some minor or very specific rules may not be simulated.

Table 2.2 Simulation of taxes and social contributions in EUROMOD

Tax name	Output variable	Treatment in EUROMOD				Why not fully simulated?
		2015	**2016**	**2017**	**2018**	
Social Insurance Contributions						
Employees	tscee_s	S	S	S	S	Impossible to simulate special rules for persons with disability and recipients of service pension.
Employers	tscer_s	S	S	S	S	Impossible to simulate special rules for persons with disability and recipients of service pension.
Self-employed	tscse_s	PS	PS	PS	PS	Assume that self-employed pay only mandatory part of social insurance contributions.
Direct taxes						
Solidarity tax						
Employees	txcee_s	-	S	S	S	Impossible to simulate special rules for persons with disability and recipients of service pension.
Employers	txcer_s	-	S	S	S	Impossible to simulate special rules for persons with disability and recipients of service pension.
Self-employed	txcse_s	-	S	S	S	-
Personal income tax	tin_s	S	S	S	S	Some exemptions and types of income are impossible to identify.
Corporate income tax	-	E	E	E	E	Out of scope of the model.
Property tax	tpr	I	I	I	I	Rules cannot be simulated.
Indirect taxes						
Value added tax	-	E	E	E	E	No information available, out of scope of the model
Excise tax	-	E	E	E	E	No information available, out of scope of the model
Tax on cars and motorcycles	-	E	E	E	E	No information available, out of scope of the model

Notes: "-" policy did not exist in that year; "E" policy is *excluded* from the model's scope as it is neither included in the microdata nor simulated by EUROMOD; "I" *included* in the micro-data but not simulated; "IA" *included in the micro-data as a part of an aggregated variable* 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.

2.1.1. Part-simulated tax-benefit components

The unemployment benefit (bun00_s), the state social security benefits (psuss_s, pdiss_s and poass_s) and paternity benefit (bfapl_s), are part-simulated. This is for the following reason: as previous earnings are not observed in the SILC data, they are imputed using information on the reported receipt of the respective benefit in the SILC data. Therefore, the benefit simulation is conditional on the reported benefit receipt in the micro-data. Housing benefit (bho_s) and the benefit for ensuring the guaranteed minimum income level (bsamm_s) are part-simulated because specific municipality rules can't be simulated. Therefore in case of bsamm_s we simulate only standard rules for all municipalities except Riga, but in case of bho_s the rules of the largest municipality (Riga) are applied.

The self-employed social security contributions are part simulated as we assume that self-employed individuals pay only mandatory part of social insurance contributions

2.2. Order of simulation and interdependencies

Table 2.3 presents taxes and benefits that are simulated in the Latvian EUROMOD. Order of simulation is the same in all years, but in 2016 three new policies are introduced to model: the solidarity tax paid by employees, employers and self-employed.

In all policy years, we start the spine with general policies that define some concepts and offer to choose alternative assumptions. First, we set default values for some variables. Then there is a switch to choose how pensions are uprated. By default, pensions are uprated according to indexation rules (see policy uprate_bands_lv). The alternative approach is to uprate pensions according to the average growth of pensions. This together with uprating of other monetary variables is implemented in policy uprate_lv. The uprating factors are based on aggregate data on growth of respective income components (see Annex 1). In the beginning of the spine we also define constants, income lists and tax units. This is followed by another switch to account for non-take-up of paternity benefit (by default it is ON); and by the minimum wage simulation (switched OFF in the baseline). The last general policy recodes negative self-employment income to zero.

The first simulated policy instruments are social insurance contributions; they have to be deducted from income before income tax is calculated. The next three policies simulate solidarity taxes (introduced in 2016). Solidarity taxes are simulated before income tax, as they are also deducted from income before income tax is calculated. Next we simulate non-means-tested benefits: state social security benefits, unemployment benefit, and family benefits. Then, we simulate income tax. Finally, means-tested benefits are simulated: first, the GMI benefit (as it depends on net income after taxation); second, the housing benefit (as it depends on all net income including the GMI).

The spine finishes with the policies that define output files (i.e. which variables are included, at which level, etc.).

Table 2.3 EUROMOD Spine: order of simulation

Policy	2015	2016	2017	2018	Description of the instrument and main output
setdefault_lv	On	On	On	On	Default settings for variables not included in the input data

UAA_lv	switch	switch	switch	switch	Switch for uprating pensions according to the average growth (OFF by default)
uprate_lv	On	On	On	On	Uprating factors defined
ConstDef_lv	On	On	On	On	Constants defined
Uprate_bands_lv	On	On	On	On	Uprating of pensions using indexation rules (indexes applied depend on the level of pensions)
ilsdef_lv	On	On	On	On	Standard income lists defined
tudef_lv	On	On	On	On	Tax units (assessment units) defined
BTA_lv	switch	switch	switch	switch	Switch for take-up adjustment for paternity benefit (ON by default)
yem_lv	Off	Off	Off	Off	Minimum wage (switched OFF in the baseline): *yem* (overwrite)
neg_lv	On	On	On	On	Negative self-employment income recoded to zero: *yse* (overwrite)
tscee_lv	On	On	On	On	Employee's social security contributions: *tscee_s*
tscer_lv	On	On	On	On	Employer's social security contributions: *tscer_s*
tscse_lv	On	On	On	On	Social contributions paid by self-employed: *tscer_s*
txcee_lv	n/a	On	On	On	Solidarity tax paid by employee: *txcee_s*
txcer_lv	n/a	On	On	On	Solidarity tax paid by employer: *txcer_s*
txcse_lv	n/a	On	On	On	Solidarity tax paid by self-employed: *txcse_s*
pss_lv	On	On	On	On	State social security benefit: *pss_s* (includes *poass_s, psuss_s,* and *pdiss_s*)
bun00_lv	On	On	On	On	Unemployment benefit: *bun00_s*
bfana_lv	On	On	On	On	State family benefit: *bfana_s*
bfapl_lv	On	On	On	On	Paternity benefit: *bfapl_s*
bfama_lv	On	On	On	On	Maternity benefit: *bfama_s*
bfaba_lv	On	On	On	On	Child birth benefit: *bfaba_s*
bfawk_lv	On	On	On	On	Parental benefit: *bfawk_s*
bfacc_lv	On	On	On	On	Child care benefit: *bfacc_s*
tin_lv	On	On	On	On	Personal income tax: *tin_s*
bsamm_lv	On	On	On	On	Guaranteed Minimum Income benefit: *bsamm_s*
bho_lv	On	On	On	On	Housing benefit: *bho_s*
output_std_lv	On	On	On	On	Standard EUROMOD output calculated on individual level

output_std_hh_lv	Off	Off	Off	Off	Standard EUROMOD output calculated on household level (OFF in the baseline)

2.3. General policies

2.3.1. Policy switches

Policy switches are clearly marked in the spine. They have the word "switch" for the years when they are defined and n/a otherwise. Switchable policies can be turned ON or OFF through the run dialog box without changing the model itself. In the baseline a switchable policy is set to its default (ON or OFF) as specified in this documentation and in the comments in the model.

The Latvian model has two switchable policies: UAA_lv and BTA_lv. The former allows choosing between two alternative approaches to pensions' uprating. By default, pensions (*poatx, pditx, psutx*) are uprated according to pension indexation rules (see Section 1.3.2 for details). As an alternative, pensions can be uprated according to the average growth of pensions. The second switch is adjustment for take-up of paternity benefit (*bfapl_s*). If the adjustment is OFF – full take up is simulated. This means all fathers of newly born babies will take up paternity leave of 10 days (if eligible). In reality, many fathers in Latvia do not apply for paternity benefit. If the adjustment is ON (which is the default) the benefit will be simulated only to those fathers who have the benefit in the input data.

2.3.2. Statutory indexation of public pensions

By default, public old-age, disability and survivors' pensions (*poatx, pditx and psutx*) in the model are uprated according to the statutory indexation rules. Pensions in Latvia are indexed once a year, on 1 October. The indexation rules stipulate that only pensions below a threshold, which is set at 50% of the average wage in the previous calendar year, are indexed. Pensions that exceed the threshold are indexed partially – only part below the threshold is indexed. The index is composed of CPI in the 12 months preceding the indexation and a fraction of real wage growth in the previous calendar year. In 2015-2016, the fraction was 25%, but starting with the indexation in October 2017, the fraction was raised to 50%. Starting with October 2018, for pensioners with longer contribution histories the index is computed taking into account a larger share of the wage growth ensuring that pensioners with longer contribution histories will have their pensions indexed with a higher value of index. Thus, the index takes into account 60% of the average wage growth for pensioners with contribution histories from 30 to 39 years, and 70% of the average wage growth for pensioners with contribution histories 40 years or more.

The pensions are not indexed in case the index is below 1. In case real wage growth in the previous calendar year exceeds 15%, 15% growth is used in the index. Table 2.4 shows indexation indices and thresholds that were applied in 2015-2018.

Table 2.4: Pension indexation in 2015-2018

Date of indexation	Threshold for indexation, EUR	Contribution history	Index
October 2015	311		1.0158
October 2016	332		1.0186
October 2017	349		1.0439
October 2018[1]	382	Less than 30 years	1.0597
		30-39 years	1.0660
		40 years and more	1.0724

Notes: (1) authors' forecast

In the model, we take into account that pensions are indexed in October. Thus, the average pension in a given year is computed as a weighted average of monthly pensions before the October indexation and after the October indexation.

- *EUROMOD notes*

Starting with July, 2018, the supplement payments for one year of insurance period accumulated up to December 31, 1995 will be increased from current EUR 1 to EUR 1.5 for people who retired before 1996. These changes are not simulated because the person who retired before 1996 and the length of social security contributions prior and after December 31, 1995 cannot be precisely identified using EU-SILC data.

2.3.3.   Minimum wage

In Latvia minimum monthly wage is set every year by the Cabinet of Ministers. The minimum wage rule covers employees in all sectors. It is not differentiated between the types of employees. The level of minimum (gross) monthly wage was 360 EUR in 2015, 370 EUR in 2016, 380 EUR in 2017 and 430 EUR in 2018. The simulation of the minimum wage is switched off in the baseline.

2.3.4.   Recoding negative self-employment income to zero

The first policy which is run before simulation of social benefits is recoding of negative self-employment income into zeros. This is done in order to prevent incorrect calculation of taxes, social contributions and means-tested benefits for self-employed persons with losses in the income reference period. There are 10 individuals with negative self-employment income in the Latvian input data (based on UDB EU-SILC 2016).

2.4.   Social benefits

2.4.1.   Unemployment benefit (bun00_s)

The benefit is provided to a previously employed and socially insured person in case of unemployment (self-employed are not insured against the risk of unemployment and hence are not eligible for unemployment benefit). The maximum duration of unemployment benefit in 2015-2018 was 9 months. The benefit amount per month gradually decreases with time in order to provide incentives to look for a new job.

- *Definitions*

The unit of analysis is an individual.

- *Eligibility conditions*

(1) First of all, a person must register as unemployed in the State Employment Agency (SEA). There is no information on registration at the SEA in the input data. We assume that all people who report unemployment are registered.

(2) Second, there are some restrictions on age. Only people above 15 years and people below the statutory retirement age are eligible for the unemployment benefit. In case a person below

the statutory retirement age is granted an old-age pension (including early retirement), the person is not eligible for unemployment benefit. In the model, we simulate the benefit to people below or at the statutory retirement age to account for situations when people retire in the course of the year, but receive unemployment benefit before the retirement.

(3) Third, a person must have paid social insurance contributions for no less than 12 months in total (we use variable *liwwh* as a proxy for this).

(4) Finally, in 2015-2016 an individual has to make social insurance contributions for at least 9 months during the 12 months preceding unemployment status. As of 2017, the rules were changed so that the contributions have to be made for at least 12 months over the 16 months before unemployment.

- *EUROMOD notes*

For people who are currently unemployed and receive unemployment benefits we assume that the eligibility criterion (4) is met (as this can't be checked with the input data).

For those who are currently unemployed but do not receive unemployment benefits we assume that the eligibility criterion (4) is not met.

Finally, for calculation of replacement rates or modelling labour market transitions, we assess eligibility of currently employed individuals based on the number of months currently in work (*liwmy*).

- *Income test*

The benefit is not means-tested.

- *Benefit amount*

The full amount of the benefit is a percentage of the previous average income (from which social insurance contributions were paid) and it depends on working experience:

1) If working experience is 1 to 9 years the full benefit equals 50% of the gross average wage from which social contributions were made;

2) If working experience is 10 to 19 years the full benefit equals 55% of the gross average wage;

3) If working experience is 20 to 29 years the full benefit equals 60% of the gross average wage;

4) If working experience is above 30 years the full benefit equals 65% of the gross average wage.

Average contribution wage is calculated over the twelve months period which ends two months before the person obtains unemployment status. Two months – the month with the highest income and the month with the lowest income – are excluded from the average wage calculations. If a person does not receive income in some of these months, these months are excluded from calculations of the average wage. If the person is on child care leave, the average wage is calculated over the 12-months period ending before the child care leave.

- *EUROMOD notes*

For those who are currently unemployed and receive unemployment benefit accurate information on the gross average wage cannot be obtained from the data. Therefore, we reverse

the rules for benefit calculations, and impute the gross average wage before unemployment (*yempv*) based on the total amount of unemployment benefit, approximate duration of unemployment, and working history.

- *Benefit duration*

In 2015-2018, the maximum duration of the benefit was 9 months irrespective of the length of previous working history. For the first three months, the benefit is paid in full amount (see the sub-section "Benefit amount" above), but then the size of the benefit is gradually tapered off to give stronger incentives for job search (see Table 2.5)

Table 2.5 Calculation of the unemployment benefit in 2015-2018

Work experience	Max duration	Proportion of the full benefit received		
		100%	75%	50%
All unemployed	9 months	1st - 3rd month	4th - 6th month	7th - 9th month

Table 2.6 summarizes unemployment benefit rules in 2015-2018.

Table 2.6 Characteristics of the unemployment benefit in 2015-2018

		2015-2016	**2017-2018**
Eligibility	Contribution period (in months)	9	12
	Other conditions	contributions made for at least 9 months in 12 months preceding unemployment	contributions made for at least 12 months in 16 months preceding unemployment
	Eligibility of self-employed	no	no
Payment	Contribution base	yem	yem
	Basic amount	50% - 65% of wage, depending on working history	50% - 65% of wage, depending on working history
	Additional amount	n/a	n/a
	Floor	n/a	n/a
	Ceiling	n/a*	n/a*
Duration	Standard (in months)	9	9
	Special cases (in months)	n/a	n/a
Subject to	Taxes	no	no
	SIC	no	no

Notes: There is an implicit ceiling on the benefit, ensured by a cap on social insurance contributions (see Table 2.12).

EUROMOD notes

For identification of work experience we use variable *liwwh*. As a proxy of unemployment duration we use *lunmy*.

2.4.2.   Family state benefit (bfana_s)

- *Definitions*

The benefit is a lump sum granted to one of the parents of a dependent child. There is a basic benefit paid to all eligible persons and a supplementary payment, which is paid only to eligible families with two or more dependent children.

The unit of analysis is a family with a dependent child.

The child is considered to be dependent if:

a)   a child is between 1-15 years old *(dag>=1 & dag<15)*;

b)   Until 2018, a child is between 1-19 years old *(dag>=1 & dag<19)* and continues secondary/professional education *(dec > 2)*, is not married *(dms = 1)*, and does not receive any education related stipends *(bed = 0)*.

c)   As of 2018, a child is between 1-20 years old *(dag>=1 & dag<20)* and continues secondary/professional education *(dec > 2)*, is not married *(dms = 1)*.

- *Eligibility conditions*

The benefit is assigned to one of the parents of a dependent child in a family. Usually a mother applies for the benefit. In the model we assign the benefit to the mother. If there is no mother, then a father is eligible.

- *Income test*

The benefit is not means-tested.

- *Benefit duration*

The benefit is paid while the child is considered as dependent. The supplementary payments are paid as long as the person has at least two dependent children.

- *Benefit amount*

The size of the benefit for the first child is 11.38 EUR per month. For each subsequent child, the benefit is higher: for the second child the benefit equals the standard amount multiplied by the coefficient of 2. In 2015-2016, the size of the benefit for the third and each consequent child was multiplied by the coefficient of 3. As of 2017, the coefficient applied to the amount of the benefit that is paid for the fourth and each consecutive child was raised to 4.4.

Starting with March, 2018, new supplementary payments to the family state benefit are introduced to households with 2 and more dependent children. The size of the supplementary payments is EUR 10 per month if there are two dependent children in the family and EUR 66 if there are 3 dependent children in the family. For each subsequent child in the family, the supplementary payment is increased by EUR 50 per month.

- *Subject to taxes/SIC*

The benefit is tax exempt.

- *EUROMOD notes*

When calculating the amount of the benefit, the number of children is determined taking into account all children raised by a recipient, even if some of them are no longer dependent, as well as deceased children of the recipient. The amount of the benefit is determined by the child`s sequential number in the family according to the birth date, e.g. if there is one adult child in a

family and one child below the age of 15, the child aged below 15 will be treated as the second child.

A different approach is applied to the calculation of the number of children which is used to determine the amount of the supplementary payment. The amount of the supplementary payment is determined taking into account the actual number of dependent children in a family, i.e., taking into account only those children for whom the state family benefit is paid.

In EUROMOD, we simulate both the family state benefit and the supplementary payments based on the actual number of dependent children in a household, because it is not possible to identify adult children of a person based on EU-SILC data.

2.4.3.   Child birth benefit (bfaba_s)

- *Definitions*

The benefit is a lump sum granted to one of the parents of a newborn child. The unit of analysis is a family with a newborn child.

- *Eligibility conditions*

The benefit is granted to one of the parents of a child. Usually a mother applies for the benefit. In the model we assign the benefit to the mother. If there is no mother, then a father is eligible. A parent can apply for the benefit starting from the child's eighth day of life.

- *Income test*

The benefit is not means-tested.

- *Benefit duration*

This is a lump sum benefit.

- *Benefit amount*

The amount of the benefit for a newly born child is 421.17 EUR.

- *Subject to taxes/SIC*

Exempt.

- *EUROMOD notes*

We identify eligible parents by selecting households with a newborn child. A child is considered newborn if his/her precise age (*dag00*) is less than 1 year: *dag00 <= 1*, which implies that the child is born during the income reference year.

2.4.4.   Maternity benefit (bfama_s)

The benefit is paid to socially insured mothers covering the period shortly before and shortly after the childbirth. The size of the benefit is tied to the mother's previous earnings.

- *Definitions*

The unit of analysis is a family with a newborn child.

- *Eligibility conditions*

A mother is eligible for the benefit in case she has registered the pregnancy and is socially insured. In case of mother's death a farther (or a person who actually cares about a baby) is eligible for the second part of maternity benefit.

- *Income test*

The benefit is not means-tested.

- *Benefit duration.*

The benefit is paid in two installments. The first part is given for the last 70 calendar days of pregnancy (56 days if a mother registered pregnancy later than after 12 weeks). The second part is generally given for a period of 56 days after a child's birth. In case two or more children were born or if a mother has health problems related to a child's birth, then 70 days after birth are covered by the benefit.

- *Benefit amount*

The benefit is calculated as a share of the previous average income from which social insurance contributions were paid. The size of the benefit equals 80% of the relevant average income.

For employees, the relevant income is average income received over twelve months ending two months before the person is entitled to the benefit.

For self-employed, the relevant income is calculated over the period of 12 months ending three months before the quarter in which the person is entitled to the benefit.

If a person's income is a mixture of employment and self-employment income, then a weighted average is taken.

- *Subject to taxes/SIC*

Exempt.

- *EUROMOD notes*

Since there is no information on registration of pregnancy or health status of a mother, we assume benefit duration of 70+56 days (i.e. 126 days in total). If more than one child is born, then benefit duration is assumed to be 70+70 days (140 in total).

A person is considered to be socially ensured for maternity if she has a positive working history (*liwwh > 0*).

We can identify recipients of maternity benefit by selecting households which have children below one year old. Like with the childbirth benefit, a newborn child is identified based on the variable *dag00* (*dag00 <= 1*). However, we do not simulate pregnancy benefit received in the end of income reference period in case children are born after the reference period.

Simulations are based on previous average wage, which was calculated by using data on maternity benefit (imputed from the national data) and by inverting maternity benefit rules to obtain the benefit recipient's previous earnings. For mothers of newly born children for whom we do not observe maternity benefit in the data, we use earnings predicted by a wage equation.

2.4.5.   Paternity benefit (bfapl_s)

The benefit is paid to socially insured fathers covering a short period after the childbirth. The size of the benefit is tied to the father's previous earnings.

- *Definitions*

The unit of analysis is a family with a newborn child.

- *Eligibility conditions*

A father of a newborn child is eligible for the benefit in case he is socially insured. The benefit can be claimed during the first two months of a child's life.

- *Income test*

The benefit is not means-tested.

- *Benefit duration*

The benefit is paid to a child's father during 10 days of a paternity leave.

- *Subject to taxes/SIC*

Exempt.

- *Benefit amount*

Relevant income which is used to calculate the paternity benefit is calculated similar to that for maternity benefit (see the previous section).

Similar to maternity benefit, the benefit equals 80% of the relevant average income.

- *EUROMOD notes*

We identify newborn children based on variable *dag00* (precise age). The child is considered newborn if *dag00 <=1*. We assume that a father is socially ensured for paternity leave if he works as an employee or self-employed *(yemmy>0 or ysemy>0)*.

Similar to maternity benefit, previous earnings for paternity benefit recipients were calculated by using data on paternity benefit (imputed from the national data) and by inverting paternity benefit rules.

Many fathers do not apply for paternity benefit. We account for non-take-up (see switch BTA_lv) if the model is used with the input datasets based on SILC 2010, SILC 2012, SILC 2015 or SILC 2016 data. The eligibility for paternity benefit is restricted to those fathers who receive the benefit in the data. For earlier datasets the non-take-up is not modeled. Full take-up can be simulated turning BTA_lv switch OFF when running the model.

2.4.6.   Parental benefit (bfawk_s)

The benefit is targeted at socially insured parents of a newly born child. It is not paid during the months in which a mother receives the maternity benefit.

- *Definitions*

The unit of analysis is a family with a small child.

- *Eligibility conditions*

A socially insured parent is eligible for the benefit during the first year of a child's life. Only one of parents can receive the benefit.

Until October 1, 2014 it was not possible to work and at the same time receive parental benefit. In order to be eligible, one had to take a parental leave. Therefore, it was common that a parent staying at home with a child (usually a mother) applied for the benefit.
As of October 1, 2014 (implemented in EUROMOD in policy year 2015) parents can work and at the same time receive the parental benefit. If a person chooses to work while receiving the parental benefit, only 30% of the benefit amount is paid. In Latvia it is common that a mother stays at home with a child. So we assume that if a woman applies for parental benefit she will not work and she will receive the full amount of the benefit. If a man applies for the benefit, he will continue working and he will receive 30% of the benefit (unless he is a lone father). We assume that the parent who can claim the highest benefit applies for it. Therefore, in EUROMOD we assign the benefit to a mother if her previous earnings exceed 30% of the father's previous earnings.

- *Income test*

The benefit is not means-tested.

- *Subject to taxes/SIC*

Exempt.

- *Benefit amount*

Starting from October 1, 2014 (implemented in EUROMOD in policy year 2015), a recipient of the benefit may choose the period over which the benefit is received: 1 year or 1.5 years. If 1 year is chosen, the size of the benefit is 60% of the relevant income; if 1.5 years is chosen - 43.75%. In EUROMOD we assume that all parents choose to receive the benefit for 1.5 years. First, this is more widespread according to State Social Insurance Agency data, and second, cumulatively this results in a higher total benefit amount (by one month average gross earnings). This change affected parents of children born after October 1, 2014. Parents of children who were born before October 1, 2014 and were receiving the benefit at the moment this reform became effective became eligible for a transitory compensation of 100 EUR per month that was paid for children aged 1-1.5 years.

In the model, the reform of October 2014 is implemented in 2015. We do not simulate the transitory compensation rule, instead we assume that the reform is fully effective in 2015. This serves as a good approximation.

If the parent is working while receiving the benefit, only 30% of the benefit is paid.

Until October 1, 2014, the monthly benefit amount could not be less than 171 EUR. As of October 1, 2014 (implemented in EUROMOD policy year 2015) the minimum amount of the benefit was abolished. However, the child care benefit (see next section) effectively serves as the minimum amount.

- *Benefit duration*

We model benefit duration based on the child's precise age (*dag00*) derived from the quarter of birth. Table 2.7 shows the maximum number of months (during the income reference year) in which the benefit can be received depending on the age of the child in the end of that year. E.g., if the child's age is ≤0.25 (see the first row of Table 2.7), i.e., the child is born in the 4th quarter

of the income reference year, the child will be observed for a maximum of three months in the income reference year, and he/she will be below the age of 1 during this period (columns 5 and 6 of Table 2.7). Parents of children aged below 1 are eligible for the parental benefit after the maternity benefit expires. Hence, as columns 6 and 7 of Table 2.7 show, duration of the parental benefit for a child aged 0.25 or less is 3 months, but, if the maternity benefit is paid, duration of the maternity benefit should be subtracted. This approach to modelling benefit duration allows to more precisely model the benefit amount and to capture benefit recipients whose children were born before the income reference year and are above the benefit eligibility age threshold at the end of the income reference year. E.g., despite in 2014 parents were eligible for the benefit only until the child reaches the age of 1, we assign the benefit to parents of children aged 1.25-1.75 years, but not for the full year.

The change in benefit duration that was introduced in October 2014 is implemented in the model in policy year 2015: in policy year 2014, parents of children aged 1.25 were eligible for the benefit for 9 months, but in 2015 - 2018, after the maximum duration of the benefit was extended to 1.5 years, these parents could receive the benefit for 12 months.

Table 2.7: Modelling duration of parental benefit in 2015-2018

Age (*dag00*) of the child in the end of the income reference year	Child's age in income reference year by quarters[1]				Number of months the child belongs to the indicated age group in the income reference year		Duration of parental benefit (months)[2]
	Q1	Q2	Q3	Q4	0-1 years	1-1.5 years	
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
<=0.25					3	0	3
0.5					6	0	6
0.75					9	0	9
1					12	0	12
1.25					9	3	12
1.5					6	6	12
1.75					3	6	9
2					0	6	6
2.25					0	3	3

Notes: (1) ▬ age 0-1 years, ▨ age 1-1.5 years, ▨ age 1.5-2 years; (2) duration of maternity benefit should be subtracted.

- *EUROMOD notes*

Relevant income which is used to calculate the parental benefit is calculated similar to that for maternity/paternity benefits.

2.4.7.   Child care benefit (bfacc_s)

The benefit is provided on a monthly basis to one of a child's parents during the first two years of a child's life. All parents, regardless of their employment status, are eligible for this benefit. For socially insured parents, the childcare benefit is complimented by a more generous parental benefit (see description of the parental benefit), while for socially uninsured parents the childcare benefit is the key benefit that they are eligible for during the first two years of a child's life.

- *Definitions*

The unit of analysis is a family with a small child.

- *Eligibility conditions*

One of a child's parents is eligible for the benefit (usually mother). In the model the benefit is assigned to the mother, if there is no mother, then to the father.

- *Income test*

The benefit is not means-tested.

- *Subject to taxes/SIC*

Exempt.

- *Benefit amount*

A. For a child under 1.5 years of age:

The monthly benefit amounts to 171 EUR. The benefit is paid from the first month of a child's life or after maternity benefit expires.

B. For a child above 1.5 and below 2 years of age:

The monthly benefit amount is 42.69 EUR.

- *Benefit duration*

Duration of the childcare benefit is modelled in a very similar way to duration of parental benefit. Parents eligible for the childcare benefit are identified based on the detailed age of a child - *dag00* (see Table 2.8 and previous section for details). The table also shows how the amount of the childcare benefit (low or high) depends on the child's age.

Table 2.8: Modelling duration of childcare benefit in 2015-2018

Age (*dag00*) of the child in the end of the income reference year	Child's age in income reference year by quarters[1]				Number of months the child belongs to the indicated age group in the income reference year			Benefit duration (months)	
	Q1	Q2	Q3	Q4	0-1 years	1-1.5 years	1.5-2 years	High childcare benefit[2]	Low childcare benefit[3]
<=0.25					3	0	0	3	-
0.5					6	0	0	6	-
0.75					9	0	0	9	-
1					12	0	0	12	-
1.25					9	3	0	12	-
1.5					6	6	0	12	-
1.75					3	6	3	9	3
2					0	6	6	6	6
2.25					0	3	6	3	6
2.5					0	0	6	-	6

29

Age (*dag00*) of the child in the end of the income reference year	Child's age in income reference year by quarters[1]				Number of months the child belongs to the indicated age group in the income reference year			Benefit duration (months)	
	Q1	Q2	Q3	Q4	0-1 years	1-1.5 years	1.5-2 years	High childcare benefit[2]	Low childcare benefit[3]
2.75					0	0	3	-	3

Notes: (1) ▬ age 0-1 years, ▮ age 1-1.5 years, ▨ age 1.5-2 years; (2) duration of maternity benefit should be subtracted; (2) paid until the child reaches 1.5 years; (3) paid after the child reaches the age of 1.5 and until he/she reaches the age of 2.

2.4.8. Guaranteed minimum income benefit (bsamm_s)

The benefit is provided to households with low income to ensure primary needs and survival.

- *Definitions*

The unit of analysis is a household or a separately living person with low income level per household member.

- *Eligibility conditions*

In order to be eligible for the guaranteed minimum income (GMI) benefit a separately living person or a household have to be classified as "being in need", which requires income per family member in the last three months to be lower than 128.06 EUR per month. A person must have no deposits or other financial assets, private property from which it could get income (we can identify income from property rent or land: *ypr*).

The eligibility for the benefit is reassessed every three months. Since this is not possible in EUROMOD, the assessment is made on annual basis.

- *Income test*

The benefit is means-tested. A person or a household can receive the benefit if net income per household member is below the GMI level. Income test includes all net income excluding income from municipal social benefits *(bsaot)*, the child birth benefit *(bfaba_s)* and the funeral benefit *(bsafu)*. As of 2017, the income test also excludes the family state benefit *(bfana_s)*.

- *Subject to taxes/SIC*

Exempt.

- *Benefit amount*

A) Standard rules

The benefit amount is calculated as the difference between the GMI level and all relevant net income:

$$GMI\ benefit = B - I,$$

where *B* is the total sum of GMI levels for all household members and *I* is monthly net income calculated as an average for three months of a given household.

The standard level of GMI is set by the Cabinet of Ministers, but municipalities have the right to set a higher level for certain population groups. In 2015-2017, the standard level of GMI was 49.80 EUR per month. As of 2018, the standard level of GMI is set at 53 EUR

B) Rules of Riga municipality

We cannot account for all municipality differences in the model, because there is no detailed information on people's residence in the input dataset. However, we try to model the rules of Riga municipality separately (as this is the biggest municipality).

Standard GMI level in Riga is higher than the level set by the Cabinet of Ministers: 56.91 EUR per month (instead of usual 49.80 EUR in 2015-2017 and 53 EUR in 2018). Riga municipality sets a higher GMI levels also for certain population groups (see Table 2.9). In case a person belongs to several categories, the highest GMI level is applied (but GMI levels cannot be added up).

Table 2.9 GMI levels for certain population groups in Riga municipality in 2015-2018, EUR per month

	Definition	Amount, EUR
Target group		
Children	Children below 18 years old	64.03
Pensioners	Recipients of disability pensions (id variables: pdiss_s, pditx)	128.06
	Recipients of old-age pensions: (id variables: poass_s, poatx)	128.06

- *EUROMOD notes*

Municipalities have the right to substitute part of the calculated benefit amount by in-kind provisions. This is decided on a case-by-case basis by social workers. We model the total benefit amount as a cash payment because it is not possible to separate the part of the benefit that is paid in kind. EU-SILC data contains information on the total amount of the benefit (both cash and in-kind). In model validation, we report external statistics on total expenditures on GMI, which include both cash and in-kind GMI benefit.

One of the components of sickness benefits (*bhl*) is health service benefit provided by municipality. It should not be included in the income test. However, it is not possible to separate this component from the aggregate benefit. This should not create big distortions in the income test, because health service benefit provided by municipality is a rather small benefit.

2.4.9. Housing benefit (bho_s)

The benefit is provided to families with low income to support their primary needs for living space. Each municipality can determine own rules on eligibility and amount of this benefit.

Since rules of municipalities differ, and we have no detailed information on the residence of people, we model only rules applied by the largest municipality of Latvia: Riga municipality. We apply these rules to all population of Latvia. Since the rules of Riga municipality are more generous than elsewhere, the simulated benefit is likely to be overestimated.

- *Definitions*

The unit of analysis is a household or a separately living individual.

- *Eligibility conditions*

In order to be eligible for household allowance a separately living person or a household has to be classified as a "low-income household". In addition a person must have no deposits or other financial assets, private property from which it can get income.

The income per household member must not exceed 284.57 EUR per month or must not exceed 355.72 EUR for a separately living person.

The eligibility for the benefit is reassessed every three months. This is not possible to simulate in EUROMOD, so the assessment is made on an annual basis.

- *Income test*

The benefit is means-tested. The income test is the same as in case of the GMI benefit. The only difference is that the GMI benefit itself (*bsamm_s*) is also taken into account.

- *Subject to taxes/SIC*

Exempt.

- *Benefit amount*

The benefit is calculated according to the following formula:

$$Housing\ benefit = B + K - I \ ,$$

where *B* is the total sum of GMI levels for all household members, *K* are normative expenses for rent and utilities and *I* is a total net monthly income (including an average amount of actual GMI benefit for the last three months).

Each municipality has its own rules for determining normative housing expenses (*K*). In many cases normative housing expenses will not cover all the housing expenses that households have. To determine normative housing expenses we use a proxy variable *xhc*, which shows actual housing expenses. However, since actual expenses in some cases are quite high we introduce an upper bound. It is equal to the average housing expenditure calculated based on Household Budget Survey data separately in urban and rural areas and in households of different size (see Table 2.10).

Table 2.10 Average household housing expenditure by number of persons in the household (EUR per month), 2015-2018

Year	URBAN Number of household members				RURAL Number of household members			
	1	2	3	>3	1	2	3	>3
2015*	89.2	61.7	46.3	36.4	59.6	44.0	30.7	23.4
2016**	88.0	60.9	45.6	35.9	58.8	43.4	30.2	23.1
2017**	87.6	60.6	45.5	35.8	58.6	43.3	30.1	23.0
2018***	90.0	62.3	46.7	36.8	60.2	44.4	31.0	23.7

Note: The numbers show total expenditure on housing, water, electricity, gas, and other fuels (excluding expenditure on maintenance and repair of the dwelling).
Source:
* Household Budget Survey microdata, calculated on request by Central Statistical Bureau of Latvia.
** Actual data on housing expenditure from the Household Budget Survey is not available; the figures for 2016 and 2017 are estimated by uprating previous year's figures using HICP component that accounts for price changes in actual rentals for housing (item CP041).
*** Actual data on housing expenditure from the Household Budget Survey is not available; the figures for 2018 are estimated by uprating 2017 figures using European Commission's projected change in overall HICP in 2018 Spring economic forecasts (European Commission, 2018).

- *EUROMOD notes*

Municipalities have the right to substitute part of the calculated benefit amount by in-kind provisions. This is decided on a case-by-case basis by social workers. We model the total benefit amount as a cash payment because it is not possible to separate the part of the benefit that is received in kind. EU-SILC data contains information on the total amount of the benefit (both cash and in-kind). In model validation, we report external statistics on total expenditures on the housing benefit, which include both cash and in-kind benefits.

To receive housing allowance a person has to reside and declare his/her address in a certain municipality, however we are not able to check whether the person has actually declared his residence from the data available.

2.4.10. State social security benefit (pss_s including poass_s, psuss_s, and pdiss_s)

The benefit is aimed to ensure minimum income for old-age people who are not eligible for old-age pension, dependent children of a deceased person in case they are not entitled to the survivor's pension, and disabled people who do not have right for a disability pension.

- *Definitions*

The unit of analysis is an individual.

- *Eligibility conditions*

A. Old age

In case of old age, a person is eligible for the benefit if his or her age exceeds pension age by more than five years, but, starting from 2017 – if the person reached the pension age, and if the

person is not eligible for old-age pension (i.e. working experience is less than 15 years). Also a person should not receive any compensation related to the accident at work or occupational disease (including compensation for the death of a spouse).

In order to be eligible for the benefit a person has to reside in Latvia at least 5 years of his/her life and last 12 months in a row before receiving the benefit. However, we are not able to check this information from the data available.

- *EUROMOD notes*

Since eligibility conditions cannot be simulated accurately enough, the eligibility is taken from the data.

B. Survivors

Children of age below 18 or below 24 if they continue secondary, professional or higher full-time education and are not married are eligible for the state social security benefit in case they are not eligible for survivor's pension. The benefit amount is the same independently of whether there are one or more dependent children.

- *EUROMOD notes*

From the structure of a household we cannot identify the cases when a breadwinner was lost. And we do not have information on whether a breadwinner was socially insured or not (therefore we don't know if children are eligible for survivor's pension or state social security benefit). So we take eligibility for the benefit from the data.

C. Disabled

A person has to be classified as disabled but should not receive disability pension or compensation related to the accident at work or occupational disease (including compensation for the death of a spouse).

In order to be eligible for the benefit a person has to reside in Latvia for at least five years and for the last 12 months in a row before receiving the benefit. However we are not able to check this information from the data.

- *EUROMOD notes*

Since it is not possible to simulate eligibility criteria, eligibility is assigned from the data.

- ***Income test***

The benefit is not means-tested.

- ***Benefit amount***

The benefit amount equals 64.03 EUR per month for old-age people. For survivors, until 2017, the size of the benefit was 64.03 EUR per month independently of the child's age. In 2017, the benefit was increased to 92.5 EUR per month for children below 7, and to 111 EUR per month for children aged 7 -18 (24) years. In case of disability, for those disabled of Group I the benefit is 83.24 EUR per month, of Group II – 76.84 EUR, to the disabled of Group I since childhood – 138.74 EUR, and to the disabled of Group II since childhood – 128.06 EUR. Since we have no information about the degree of disability in the data, we simulate the benefit in case of disability and in case of disability from childhood to be equal to simple average across the three groups of disability.

2.5. Social contributions

Social contributions are mandatory for all employees and self-employed persons (if their income exceeds the minimum threshold). The contribution rate is flat and in case of private/public employment it is split between an employee and an employer.

The employees who work at enterprises that pay microenterprise tax face a special social contributions regime. However, we are not able to simulate it, because it requires information about income of all employees of the enterprise. Therefore, we simulate social contributions for all employees assuming they face a regular social contributions regime[3].

Total contribution rate may vary, depending on the insured person's employment status, age and disability status: e.g., in general, employees are insured against all insurance cases, but employees above the retirement age are not insured against unemployment and disability.

2.5.1. Employee social contributions (tscee_s)

- *Liability to contributions*

All employees are liable to social security contributions.

- *Income base used to calculate contributions*

Social security payments are calculated based on gross income from employment (*yem*). Income from which social insurance contributions are made is capped (see Table 2.12).

- *Contribution rates*

A person below the retirement age faces the standard social security contributions rate which includes all insurance cases. After the person reaches the pension age, he/she is not insured against the risk of unemployment and disability and his/her wage becomes subject to a lower contributions rate. An employee receiving service pension or qualified as disabled-receiver of the state special pension is not insured against unemployment. Table 2.11 summarizes the rates of social security contributions faced by employees in 2015-2018 and the distribution of the rate across different insurance cases. Starting 2018, contribution rate for all types of payers is increased by 1 percentage point due to additional health insurance contributions.

- *EUROMOD notes*

It is impossible to simulate special social insurance rules for persons with disability and recipients of service pensions, because there is no information on disability level and service pensions.

2.5.2. Employer social contributions (tscer_s)

- *Liability to contributions*

All employers in public/private sector are liable to paying social security contributions on behalf of employees.

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[3] According to the data of State Revenue Service, employees of firms paying the microenterprise tax accounted for approximately 10% of total number of employees in 2015.

- *Income base used to calculate contributions*

Social security payments are calculated based on gross income from employment (*yem*). Income from which employers make social contributions on behalf of the employees is capped (see Table 2.12).

- *Contribution rates*

An employer pays the standard social security contribution rate on behalf of an employee below the pension age. The rate is lower if the insured employee has reached the retirement age, receives a service pension or is disabled-receiver of the state special pension (see Table 2.11).

- *EUROMOD notes*

It is impossible to simulate special social insurance rules for persons with disability and recipients of service pensions, because there is no information on disability level and service pensions.

Table 2.11 Social security contributions rate faced by employee and employer, 2015-2018

	2015	2016	2017	2018
Employee under the retirement age: **Total rate/ Employee rate/ Employer rate, %**	**34.09/ 10.50/ 23.59**	**34.09/ 10.50/ 23.59**	**34.09/ 10.50/ 23.59**	**35.09/ 11.00/ 24.09**
of which				
Pension social insurance	24.39	23.86	24.54	24.50
Unemployment social insurance	2.10	2.08	1.90	1.84
Insurance against work accidents and occupational diseases	0.53	0.54	0.48	0.53
Disability social insurance	3.14	3.11	2.30	2.23
Maternity and sickness social insurance	2.79	3.05	3.49	3.65
Parents' social insurance	1.14	1.45	1.38	1.34
Health insurance	-	-	-	1.00
Employee above the retirement age: **Total rate/ Employee rate/ Employer rate, %**	**28.70/ 8.84/ 19.86**	**28.75/ 8.85 / 19.90**	**29.73/ 9.16 / 20.57**	**30.87/ 9.56/ 21.31**
of which				
Pension social insurance	24.39	23.86	24.54	24.50
Insurance against work accidents and occupational diseases	0.53	0.54	0.48	0.53
Maternity and sickness social insurance	2.64	2.90	3.33	3.50
Parents' social insurance	1.14	1.45	1.38	1.34
Health insurance	-	-	-	1.00
Employee receiving service pension or disabled-receiver of the state special pension: **Total rate/ Employee rate/ Employer rate, %**	**31.07/ 9.57/ 21.50**	**31.08/ 9.57/ 21.51**	**31.57/ 9.72 / 21.85**	**32.64/ 10.12 / 22.52**
of which				
Pension social insurance	24.39	23.86	24.54	24.50
Insurance against work accidents and occupational diseases	0.53	0.54	0.48	0.53
Disability social insurance	2.37	2.33	1.48	1.77
Maternity and sickness social insurance	2.64	2.90	3.33	3.50
Parents' social insurance	1.14	1.45	1.38	1.34
Health insurance	-	-	-	1.00

Source: Latvijas Vēstnesis (2018)

Table 2.12 Income ceiling for employees and employers for obligatory social contributions in 2015-2018, EUR per year

2015	2016	2017	2018
48,600	48,600	52,400	55,000

Source: Latvijas Vēstnesis (2018)

2.5.3. Self-employed social contributions (tscse_s)

- *Liability to contributions*

All self-employed are liable to social security contributions if their income exceeds the minimum threshold (see Table 2.13). As of 2018, if self-employment monthly income is below the threshold, contributions for pension insurance should be paid at the rate of 5%. If self-employment income in a calendar year is below 50 euro, a self-employed can choose not to pay social insurance contributions.
 Similar to employees, income from which self-employed make social contributions is capped (see Table 2.12).

- *Income base used to calculate contributions*

Social security payments by self-employed are calculated based on gross income from self-employment (*yse*). In 2015-2017, a self-employed person can choose the level of income from which to make social security contributions, but there is a minimum level of income from which contributions have to be made. This boundary is linked to the minimum monthly wage and is stipulated in annual terms in the law (see Table 2.13). Assessment of self-employment income is made on the monthly basis - if self-employment monthly income is below $1/12^{th}$ of the annual boundary, paying social insurance contributions for the month when income falls below the threshold is not mandatory.

As of 2018, if self-employment monthly income is below the threshold (the minimum wage), contributions for pension insurance should be paid at the rate of 5%. If self-employment income in a calendar year is below 50 euro, a self-employed can choose not to make the contributions. If self-employment monthly income reaches or exceeds the threshold (the minimum wage), contributions should be made in accordance with general rules from any chosen amount that is not lower than the minimum wage, and contributions for pension insurance at the rate of 5% should be made from the difference between the actual income and the chosen amount.

Table 2.13 Minimum income from which self-employed can make social security contributions in 2015-2018, EUR per year

	2015	2016	2017	2018
Minimum	4,320	4,440	4,560	5,160*

Source: Latvijas Vēstnesis (2018)
* Note: as of 2018, if self-employment income is below the threshold but exceeds 50 EUR per year, the self-employed is obliged to pay 5% contributions towards old-age pensions.

- *Contribution rates*

A self-employed person below the retirement age has to make obligatory social security contributions against all insurance cases except unemployment, work accidents and occupational diseases. Thus, a self-employed person faces a lower contributions rate than the total rate borne by an employee and an employer. When a self-employed person reaches the retirement age, he or she is also not insured against the risk of disability (see Table 2.14).

Table 2.14 Social security contributions rate faced by self-employed, 2015-2018

	2015	2016	2017	2018
Self-employed under the retirement age: Total rate, %	**30.58**	**30.58**	**31.13**	**32.15**
of which:				
Pension social insurance	24.39	23.86	24.54	24.50
Disability social insurance	2.37	2.33	1.84	1.77
Maternity and sickness social insurance	2.68	2.94	3.37	3.54
Parents` social insurance	1.14	1.45	1.38	1.34
Health insurance	-	-	-	1.00
Self-employed above the retirement age: Total rate, %	**28.17**	**28.21**	**29.25**	**30.34**
of which:				
Pension social insurance	24.39	23.86	24.54	24.50
Maternity and sickness social insurance	2.64	2.90	3.33	3.50
Parents` social insurance	1.14	1.45	1.38	1.34
Health insurance	-	-	-	1.00

Source: Latvijas Vēstnesis (2018)

- *EUROMOD notes*

A self-employed person can pay social insurance contributions from any amount of income above the minimum threshold. In the model for 2015-2017 it is assumed that if income of a self-employed exceeds the threshold, he/she makes contributions only from the mandatory part, this being the most common practice observed in Latvia. If monthly income of a self-employed person is less than 1/12 of the annual threshold, the person doesn't make any social contributions. For 2018, we assume that if income of a self-employed exceeds the threshold, he/she makes contributions at the general rate faced by self-employed person from the minimum threshold and contributions for pension insurance at the rate of 5% from the difference between income and the minimum threshold. We assume, that if in 2018 monthly income of a self-employed person is less than 1/12 of the annual threshold but annual income is above 50 EUR,

the person pays contributions at the rate 5%. We assume, that if in 2018 annual income is below 50 EUR, the person does not make any social contributions.

2.6. Solidarity tax

Solidarity tax was introduced in 2016. The aim of the new tax was to eliminate regressivity from the tax system that was generated by a cap on social insurance contributions, i.e. to tax income above the threshold above which social insurance contributions are not applied. Except the fact that solidarity tax payments are not taken into account when contributory benefits are calculated (i.e., income that determines the size of contributory benefits remains capped), the solidarity tax is in all respects identical to the social insurance contributions. Effectively, the new tax removed the cap on social insurance contributions, but the payments that are collected from income exceeding the threshold are classified as revenues from the solidarity tax.

As of 2018, revenues from the solidarity tax are partly used to finance the top PIT rate (i.e., the difference between the middle rate of 23% and the top PIT rate of 31.4%), and therefore, those falling into the top PIT bracket effectively pay only the middle PIT rate of 23% (for more details, see section 2.7). Part of the solidarity tax (1% rate) is transferred to the state basic budget revenues for the financing the health services, but another part is allocated to the taxpayer's state funded pension scheme (2nd pillar), private voluntary pension scheme (3rd pillar) and to the state pension special budget.

All statutory rates (including the tax rates that are faced by individuals above the retirement age or individuals with disability) and income base are the same as the rates and income base used in calculation of social insurance contributions (see Section 1.5).

2.7. Personal income tax (tin_s)

2.7.1. Tax unit

Taxation in Latvia is on the individual level. However, for tax allowance purposes an extended family unit is defined. It includes a partner, dependent children and dependent parents.

2.7.2. Tax allowances

The following tax allowances are simulated in EUROMOD:

- Non-taxable minimum income allowance

There is a standard non-taxable income allowance which is applied to employees or self-employed persons who do not receive old-age or disability pensions. Persons who receive pensions are eligible for a higher non-taxable minimum income allowance. In 2015 non-taxable allowance was flat amount, irrespective of the income level. As of 2016, the tax allowance is differentiated with respect to the level of income – the higher the income, the lower the allowance. The law stipulates that in 2016 and 2017 during a calendar year all individuals are taxed, assuming they are eligible for the minimum possible tax allowance. Individuals receiving low income and eligible for a higher allowance can apply for a tax refund at the beginning of the next calendar year by filling in an income declaration. In EUROMOD we assume that everyone eligible for a higher allowance claims the tax refund.

In 2018, the non-taxable allowance is forecasted using information on the taxpayer`s previous earnings. Thus, non-taxable allowance for the period from January 1, 2018 to July 31, 2018 is determined by the taxpayer's earnings in the period October 1, 2016 - September 30, 2017. The non-taxable allowance for the period August 1, 2018 – December 31, 2018 is determined by the

taxpayer's earnings in the period December 1, 2017 - May 31, 2018. Any overpaid (underpaid) tax amount can be recovered (reimbursed to state budget) at the beginning of the next calendar year by filling in an income declaration. In EUROMOD we assume that everyone claims the tax refund.

- Allowance for a dependent child, spouse or parent

A child is considered dependent if he/she is below 18 years old or below 24 years old and continues secondary, professional, special or higher education. Tax allowance for a dependent child is assigned to one of the parents (we assume that the parent with the highest taxable income gets the allowance). In 2015, there were tax allowances for dependent spouse and parents, but as of 2016 these allowances were abolished. As of 2016, the allowances for dependent spouse or parents are applicable only if the spouse or parents are disabled. Generally, for tax allowance purposes a child, a spouse or a parent can be considered dependents of a tax payer only if they do not work, do not receive unemployment benefit (or unemployment stipend), old-age or disability pension, do not receive taxable income above the allowance amount, and are not dependents of any other person.

- Social insurance contribution by employees and self-employed

- Solidarity tax payments by employees and self-employed

If a person is dependent she or he is not eligible for non-taxable minimum allowance. The income of dependents is declared in the income declaration of a person responsible for them (i.e. the person who receives tax allowance for these dependents).

The following tax allowances are not simulated in EUROMOD because of lack of information:
- for a grandchild or a child taken for raising;
- for siblings until the age of 18 or below 24 years old and continues secondary, professional, special or higher education, if they don't have parents capable of working;
- for a person benefiting from alimony (abolished as of 2016);
- for a person under guardianship or trusteeship of the payer;
- for politically repressed persons;
- additional allowances for disabled persons.

Table 2.15 summarizes the size of tax allowances that are applicable in the cases listed above; Table 2.16 shows parameters of the differentiated basic non-taxable allowance that was introduced in 2016.

Table 2.15 Personal income tax allowances, EUR per month, 2015-2018

Allowances	2015	2016	2017	2018
Standard non-taxable minimum income	75	replaced by differentiated non-taxable allowance (see Table 2.16)		
Non-taxable minimum for pensioners	235	235	235	250
Allowance for a dependant	165	175	175	200
Additional allowance for the disabled of 1st and 2nd degree [a]	154	154	154	154
Additional allowance for the disabled of 3rd degree [a]	120	120	120	120
Additional allowance for a politically repressed person [a]	154	154	154	154

Notes: [a] Not simulated in the model.

Source: Latvijas Vēstnesis (2018)

Table 2.16 Parameters of the differentiated basic non-taxable allowance, 2016-2018

Differentiated basic non-taxable allowance	2016	2017	2018
Maximum size of the non-taxable allowance, EUR per year	1,200	1,380	2,400
Income level below which the maximum allowance is applied, EUR per year	4,560	4,800	5,280
Minimum size of the non-taxable allowance, EUR per month	75	60	0
Income level above which the minimum allowance is applied, EUR per year	12,000	13,200	12,000

Source: Latvijas Vēstnesis (2018)

The allowance withdrawal rate, i.e., the amount by which the allowance is reduced with each additional euro of income, is calculated according to the following formula:

$$K = (A^{max} - A^{min} \times 12)/(Y^{lim1} - Y^{lim2})$$

Where K is the withdrawal rate, A^{max} is the maximum size of non-taxable allowance (EUR per year), A^{min} is the minimum size of non-taxable allowance (EUR per month), Y^{lim1} is income level above which the minimum allowance is applied (EUR per year) and Y^{lim2} is income level below which the maximum allowance is applied (EUR per year).

2.7.3.   Tax base

Income from the following sources is included in the taxable income:
- income from employment including wage premiums, systematic or one time compensations and other work-related income (*yem* and *yot*);
- income from individual work or enterprise if it is not subject to enterprise tax (*yse*);
- income from renting private property (*ypr*);
- state pensions (*poatx, pditx, psutx*);
- taxable benefits (sickness benefit – *bhl*);
- dividends and interests (*yiy*).

The tax base is defined as the taxable income minus tax allowances (see section 1.7.2) and deductible expenditures (see section 1.7.5).

In the years when different tax rates are applied to different taxable income components we assume that tax allowances are first subtracted from the income with the highest tax schedule.
In 2015 - 2017, income from property is taxed in the same way as self-employment income. In 2018, income from property is subject to the same rate as income from self-employment if the recipient of this income registers as self-employed. In the model, we assume that everyone receiving this income is registered as self-employed and hence applies progressive tax schedule to this type of income. Sickness benefit and pensions are taxed similar to employment income.

2.7.4.   Tax schedule

In 2015-2017, PIT tax was flat at 23%. In 2018, the flat PIT rate is replaced by a progressive rate with three brackets: a reduced rate of 20% is applied to annual income not exceeding 20,004 EUR; 23% is applied to annual income above 20,004 EUR and below 55,000 EUR; and 31.4% is applied to annual income exceeding 55,000 EUR. It is important to emphasize that the

income threshold for the top PIT rate is the same as the income threshold that determines a taxpayer's obligation to pay the solidarity tax.

The bottom and the middle tax rates are applied to taxpayers' income in the course of the year, depending on the amount of received income. Income exceeding the threshold of 55,000 EUR is subject to the solidarity tax and at the same time is subject to the top PIT rate. The tax rules of 2018, however, stipulate that revenues from the solidarity tax are used to finance the top PIT rate, i.e., the difference between the middle rate of 23% and the top rate of 31.4%. This effectively means that income above the threshold of 55,000 EUR per year is taxed at the PIT rate 23%, not the top rate of 31.4%. In EUROMOD, this is modelled by introducing a parameter that defines the share of the top PIT rate that is financed from the solidarity tax revenues. In 2018 system, this parameter is set at 1.

In 2015-2017, income from capital was taxed at a reduced rate of 15% (capital increase) or 10% (other income from capital). The input dataset does not provide detailed information on the types of capital income; we assume that the entire income from capital represents interest, dividends or other types of income not associated with capital increase and hence in 2015-2017 systems in EUROMOD all capital income is taxed at 10%.

In 2018, the tax rate applied for income from capital is increased to 20% (both for capital increase and other income from capital).

All tax schedules are demonstrated in Table 2.17.

The minimum annual personal income tax for self-employed is 50 EUR. This does not apply to the self-employed who made social insurance contributions in the fiscal year or paid income tax and/or social contributions also as an employee. This provision does not apply to the taxpayers in the first two years of their economic activity, as well as in the last year (i.e. in the year when economic activity is terminated). These exemptions can't be simulated because the duration of self-employment is not known.

Table 2.17 Personal income tax rate (%), 2015-2018

Income source	2015	2016	2017	2018
Regular rate (e.g. income from employment)	23	23	23	Progressive rate with three brackets: 20%, 23% and 31.4%
Income from capital:				
capital increase	15	15	15	20
other income from capital	10	10	10	20
Income from self-employment	23	23	23	Progressive rate with three brackets: 20%, 23% and 31.4%

Source: Latvijas Vēstnesis (2018)

2.7.5. Deductible expenditure

Before calculating his/her tax obligations, a resident taxpayer is authorized to reduce his/her taxable income by the amount of the following expenditures:

- expenditures on education, health services and health insurance premiums (there is a maximum level of expenditures that can be deducted, being stipulated in the Cabinet of Ministers' regulations);
- gifts and donations to foundations and religious organisations registered in Latvia;
- expenditures on creation, publication, performance or other utilisation of works of arts, science or inventions, for which the authors receive royalty fees;
- contributions to private pension funds;
- life insurance premiums;
- donations to political parties (as of 2016).

It is not possible to simulate deductible expenditures in EUROMOD because the data on expenditure is not available in the input dataset. The only exception is contributions to private pension funds *(xpp)*.

2.7.6. Special taxation rules for pensioners

There are some special rules of taxation which are applied to pensioners.

- For non-working pensioners:
  Non-taxable minimum allowance is applicable to pensions.
- For working pensioners:
  Non-taxable minimum is applicable to the whole income (pension + other taxable income).

3. DATA

3.1. General description

The EUROMOD database is derived from EU-SILC, UDB version 2.

The Latvian EU-SILC survey is an annual survey with a four-year rotational panel. The 2016 year survey took place in March 2016 - July 2016 and contains data on 2015 year incomes. The database is provided by Eurostat.

Table 3.1 EUROMOD database description

EUROMOD database	LV_2016_a1
Original name	EU-SILC, UDB_cLV16_release_18-03
Provider	Eurostat
Year of collection	2016
Period of collection	March – July
Income reference period	2015
Sample size	6 042 households 13 833 individuals
Response rate	76.3%

3.2. Data adjustment

In order to preserve consistency between demographic data (refers to data collection moment) and income data (refers to the previous calendar year), children born after the income reference period were dropped from the sample (31 children in total).

3.3. Imputations and assumptions

3.3.1. Time period

Socio-demographic characteristics of the respondents contained in EU-SILC 2016 refer to the time of data collection, i.e., March – July 2016. Most economic and labour variables also refer to the time of the interview, however, the database also contains some information referring to the income reference period (2015), e.g., employment status of the respondent in each month of 2015. Whenever possible, the corresponding demographic, labour and socio-economic information in the EUROMOD database was based on the EU-SILC variables referring to the income reference period. The EU-SILC UDB does not provide information on the number of periods a particular income was paid to a respondent. In some cases the number of periods was derived from non-monetary variables, e.g., the number of periods a respondent receives income from employment is based on the number of months spent at full-time or at part-time work, the number of months a respondent receives unemployment benefit is based on the number of months spent in unemployment.

3.3.2. Gross incomes

In Latvian SILC, gross employee cash or near cash income (PY010G) is calculated by summing net employee cash or near cash income (PY010N) and paid income taxes and social security contributions, obtained from State Revenue Service (SRS) data. Data on net employee cash or near cash income (PY010N) is also obtained from SRS data except cases when net income reported by a respondent in the survey is higher than suggested by the SRS data. Most of data on benefits is also obtained from administrative data (from the State Social Insurance Agency and local governments).

3.3.3. Disaggregation of harmonized variables

Some information important for simulations was not available in the EU-SILC UDB dataset, hence it was obtained from aggregated harmonized variables through imputations. The following key variables were fully imputed:

- Detailed degree of urbanization: residents of Riga (*dgrur00 = 1*) are imputed based on the national data[4].

- Unemployment benefit: UDB variable PY090G in the Latvian case includes unemployment benefit, stipends for training courses of unemployed persons and mobility support benefit (compensation of transport expenditures and/or covering the rent). The unemployment benefit *(bun00)* was imputed from aggregated PY090 variable using information from the national database.

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[4] Selected variables from national EU-SILC 2016 survey dataset were provided by the Central Statistical Bureau of Latvia under a separate contract. These variables were used for indirect imputations in the EUROMOD input data.

- Previous income from employment *(yempv)* for people who receive unemployment benefit was imputed by inverting unemployment benefit rules and using information about the benefit amount.

- Family/children-related benefits: UDB variable HY050G contains information about all benefits that are paid to families with children. Information from the Latvian national database is used to impute major child-related benefits that exist in Latvia: state family benefit *(bfana)*, childcare benefit *(bfacc)*, parental benefit *(bfawk)*, maternity benefit *(bfama)*, paternity benefit *(bfapl)* and childbirth benefit *(bfaba)*.

- Previous employment income for parents *(yivwg02)* eligible for contributory family benefits (maternity benefit, paternity benefit and parental benefit) was imputed by inverting maternity and paternity benefit rules and using information about the size of these benefits. For those parents of small children who do not receive maternity or paternity benefit in the database, we predict previous earnings using wage equation.

- Social exclusion benefits: information from the national database is used to impute GMI benefit *(bsamm)* and funeral benefit *(bsafu)* from the UDB variable HY060G (social exclusion not elsewhere classified).

- State social security benefit for old-age *(poass)*, survivors *(psuss)* or disabled *(pdiss01* and *pdiss02)*: recipients imputed based on information from the national database and size of the benefit.

- Disability pension *(pditx)* was obtained by comparing net and gross values of the aggregate disability benefits. The number of recipient was adjusted in accordance with the national statistics.

- Old-age pension *(poatx)*, survivors' pension *(psutx)*, non-taxable disability benefits *(pdint)*, as well as other minor unemployment *(bunot)*, family *(bfaot)* and social exclusion *(bsaot)* benefits were calculated as residual components of aggregate variables.

3.4.   Updating

To account for any time inconsistencies between income levels in the input dataset and the target policy year, updating factors are used. Each non-simulated monetary variable (i.e. market incomes, non-simulated benefits and expenditure) is updated so as to account for changes that have taken place between the income data year and the year of the simulated tax-benefit system. Updating factors are generally based on changes in the average value of an income component or on statutory indexation or policy rules. For detailed information about the construction of each updating factor as well as the sources that have been used, see Annex 1.

4. VALIDATION

4.1.   Aggregate Validation

EUROMOD results are validated against external benchmarks. Detailed comparisons of the number of people receiving a given income component and total yearly amounts are shown in Annex 3. Both market incomes and non-simulated taxes and benefits in the input dataset as well as simulated taxes and benefits are validated against external official data. The main

discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1.   Components of disposable income

The differences between the definition of disposable income in EUROMOD and SILC are minor (see Table 4.1). In EU-SILC, variable HY020 (total disposable income) includes company car (variable PY021G), while in EUROMOD the variable *kfbcc* (company car) does not enter the definition of disposable income.

Table 4.1 Components of disposable income

	EUROMOD 2015	EU-SILC 2016
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
Company car	0	+
Cash benefits or losses from self-employment	+	+
Pension from individual private plans	+	+
Unemployment benefits	+	+
Old-age benefits	+	+
Survivor' benefits	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
Family/children related allowances	+	+
Social exclusion not elsewhere classified	+	+
Housing allowances	+	+
Regular inter-household cash transfer received	+	+
Interests, dividends, etc.	+	+
Income received by people aged under 16	+	+
Regular taxes on wealth	-	-
Regular inter-household cash transfer paid	-	-
Tax on income and social contributions	-	-
Repayments/receipts for tax adjustment	+	+

4.1.2.   Validation of incomes inputted into the simulation

Latvia is a country with a high proportion of informal employment. Informal employment may take a form of unregistered employment/self-employment or registered employment/self-employment with tax evasion (e.g. a part of wage is paid informally and is not subject to taxes and social contributions). The 2016 EU-SILC data may partly cover unreported employment as it collects information on income both from the registers and survey of individuals.

Table 4.2 in Annex 3 shows the number of employed and unemployed in the EUROMOD input data and in the external statistics, which is based on Labour Force Survey. On the whole, both the number of employed and the number of unemployed in EU-SILC data are very close to the LFS figures. A slight undervaluation of the number of employed might be due to different definitions of employment status in two surveys or different degree of undeclared employment covered by SILC and LFS. Another possible reason for the slight underestimation of the number of employed is that in EUROMOD it is computed in full-time units (accounting for number of

months in work), while LFS data shows the number of employed (employees and self-employed) irrespective of the number of months or hours worked.

The number of unemployed in 2015 in EUROMOD is very close to the LFS figures, but in 2016 and 2017 the gap starts to increase with EUROMOD data notably overestimating LFS figures. This is due to the fact that the Latvian EUROMOD input data is not adjusted for the changes in the labour market characteristics of individuals which occurred over the period 2015 – 2017.[5] Taking into account that unemployment declined in 2016 and 2017 (from 9.9% in 2015 to 9.6% and 8.7% in 2016 and 2017, respectively), the gap between SILC data on unemployment and external statistics slightly widened. The number of employed, on the other hand, virtually did not change in 2015-2017, hence the difference between the EUROMOD and external data remained stable.

Table 4.3 reports the number of market income recipients. Here SILC data strongly overestimates number of employees receiving income from employment as compared to LFS, while the number of self-employed is underestimated. First, the reason for the fact that in Table 4.3 we report overestimation for the number of employees, while reporting underestimation in Table 4.2 is that in Table 4.3 we report the number of employees receiving income from employment without adjusting it for the number of months worked. Another reason for overestimation compared to LFS data is different degree of shadow economy covered by different databases.

In terms of the total aggregate amount of market income received, the only income component that we can validate against the external statistics is income from employment, due to lack of external statistics on other income types. Total income from employment is validated against the national accounts item (D11 "Wages and salaries"). The EU-SILC data corresponds to the external data quite well (see Table 4.4). Average annual income per person is however undervalued in EU-SILC data compared to the national accounts data (D11 item divided by the number of employees from the national accounts).

In the Latvian EU-SILC, starting from survey year 2015, information on all major benefits comes from the administrative records (State Social Insurance Agency and local governments), therefore, all major non-simulated benefits included in the EUROMOD data correspond quite well to external statistics (see Tables 4.5 and 4.6). The only benefit that is not well captured in the input data is the funeral benefit, which is a relatively minor benefit. Due to lack of external statistics on property tax revenues collected from households, we cannot validate this tax component.

4.1.3. Validation of outputted (simulated) incomes

Table 4.7 and Table 4.8 in Annex 3 provide comparison of the benefits and taxes simulated in the model to external statistics.

The number of unemployment benefit recipients in 2015 is simulated very precisely. In 2016, we simulate a slight increase in the number of benefit recipients, which is due to an increase in the retirement age in 2016 (by 3 months, reaching 62.75 years). Since individuals above full retirement age are not eligible for the unemployment benefit, the increase in the number of the benefit recipients is due to those who are aged 62.75 and consequently are not eligible for the benefit in 2015, but become eligible in 2016. The gap between the simulated number and external statistics widened in 2016, because the actual number of the recipients strongly increased in 2016, despite a reduction in the number of unemployed. In 2017, due to a reduction

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[5] Labour market adjustments are included in EUROMOD for Latvia as a part of a separate exercise on estimating current poverty indicators. More information is available in Rastrigina et al. (2016).

in the actual number of the benefit recipients, we slightly oversimulate the number of recipients. The annual amount of unemployment benefit (see Table 4.8) is undersimulated due to both undersimulated number of benefit recipients and an underestimation of the size of the benefit.

The number of recipients of child-related benefits is modelled quite precisely, with the exception of the childbirth and the maternity benefit, where we oversimulate the number of recipients. The reason for this is the way we identify the newborn children, whose parents are eligible for these two benefits. The benefit is granted to parents shortly after the child is born, however in EUROMOD we assign the benefits to parents with children aged 1 or less, using the precise age variable *dag00* (based on the quarter of birth). This implies that we assign the benefit to parents if the child is born during the income reference year and we manage to correctly assign the benefit to parents even if their child was born at the end of the year. At the same time, however, we incorrectly assign the benefit to parents of children who were born at the end of the year preceding the income reference period, which results in the oversimulation of the number of recipients.

The number of GMI recipients is slightly overestimated in 2015, while the number of recipients of the housing benefit is strongly underestimated. The main reason for the overestimation of GMI is that we assume full take-up, while in reality some eligible persons do not apply for the benefits because benefits are rather small. With respect to the housing benefit, there are two possible reasons for the underestimation. First, this is partly due to the fact that we overestimate GMI – it is possible that GMI is assigned to persons who in fact receive the housing benefit. Second, the definition of the measurement units in external statistics on the housing benefit might be different than the one used in EUROMOD; comparability of the units needs to be further investigated. In terms of the benefit amounts, GMI is overestimated, while the housing benefit is simulated quite precisely.

The number of tax payers and people who pay social insurance contributions is overestimated in the model because (1) the data is likely to include a part of people employed in the shadow economy, (2) some tax allowances and deductible expenses cannot be simulated. Tax revenues are overestimated for the same reasons. The model especially poorly simulates social contributions of self-employed. However, this is a very small group of people. It is also likely that tax evasion is more widespread among self-employed (because it is more difficult to control their income and expenditure flows).

4.2. Income distribution

All income distribution results presented here are computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

4.2.1. Income inequality

Table 4.9 in Annex 2 compares income distribution generated by the EUROMOD with external statistics from Eurostat based on the EU-SILC data. The mean and the median income are underestimated in the model. This partly due to oversimulation of taxes (as full tax compliance is assumed). The income quintile ratio in 2015-2016 and GINI coefficient in 2015 are also lower than in the external statistics. This is mainly because income at the bottom is overestimated, which in turn is (1) due to oversimulation of social assistance and housing benefits and (2) due to different degree of overestimation of taxes for individuals with different income levels (for

more details, see section Poverty rates below). In 2016, GINI coefficient is modelled very precisely, which is mainly due to smaller overestimation of incomes in the bottom decile.

4.2.2.   Poverty rates

Table 4.10 shows the poverty rates calculated by the model and compares them to external statistics from the Eurostat based on the EU-SILC data. The model underestimates poverty rates for the cut-off points 40% and 50%, however, in the baseline for the cut-off points of 60% and 70% the estimates are closer to the external figures. By age groups, the poverty rate is most strongly underestimated for the elderly. The main reason for the underestimation is overestimation of tax payments. As we cannot account for tax evasion and some tax deductions, we simulate higher tax payments and hence lower disposable income of working-age population. For elderly people who mainly get their income from old-age pensions, taxes constitute a smaller share of their income due to a higher non-taxable allowance, and, even though we overestimate tax payments also for pensioners (mainly because we can't account for all tax deductions), the resulting effect on disposable income of the elderly is smaller. As a result, we undersimulate disposable income in all income groups, but the degree of underestimation for the elderly is smaller and hence we underestimate poverty rate for the elderly.

4.3.   Summary of "health warnings"

This section summarizes particular aspects of the Latvian part of EUROMOD or its database that should be borne in mind when planning appropriate uses of the model and in interpreting results.

- The EUROMOD input data is not adjusted for any demographic or labour market changes taking place in the period from 2015 to 2018 (except for updating of monetary incomes).

- Tax evasion is widely spread in Latvia, however, the model does not account for it. This results in overestimation of simulated taxes and social insurance contributions.

- Full take up of benefits is assumed for simulation of GMI benefit. This results in overestimation of both number of recipients and aggregate expenditure on this benefit.

- Income test for GMI and housing benefit cannot be simulated precisely because some benefits (which must be included) in the income test cannot be separated from aggregate variables. This should not create big distortions in the income test, nevertheless a user of the model should be aware of this. Moreover, in the model income test is performed on annual income while in reality income of the previous three months is assessed.

- Simulating municipality benefits (GMI benefit and housing benefit) we cannot reproduce all the rules of Latvia's municipalities because they are quite complicated and the data does not provide detailed regional information. Therefore we model only rules applied by the largest municipality of Latvia, Riga municipality (and in case of GMI we also model the standard GMI regime). In case of housing benefit we use Riga rules for all citizens of Latvia.

5. REFERENCES

European Commission (2018). "European Economic Forecast – Spring 2018", Institutional Paper 077. May 2018. Brussels.

Latvijas Vēstnesis (2018). Database on Latvian legislation. Available at http://www.likumi.lv

Rastrigina, Olga, Chrysa Leventi, Sanja Vujackov and Holly Sutherland (2016). "Nowcasting: estimating developments in median household income and risk of poverty in 2014 and 2015", Research note 1/2015, European Commission, April 2016.

- *Sources for tax-benefit descriptions/rules*

On-line legislation (mainly in Latvian):

http://www.likumi.lv

ANNEX 1: UPRATING FACTORS

Table A1: Updating factors in 2015-2018

Name	Notation used in the model	Applied to variables	2015	2016	2017	2018	Source
Harmonised CPI (index 2015=100)	$f_cpi	*afc, bed, kfb, kfbcc, yiynt, yiytx, ypp, yot, xmp, xpp*	100.0	100.1	103.0	105.8	Eurostat, 2015=100 (prc_hicp_aind).
HICP - actual rentals for housing, item CP041 (index 2015=100)	$f_house	*bho, kivho, ypr, xhc, xhcrt, xhcmomi, xhcot*	100.0	98.6	98.3	100.9	Eurostat, 2015=100 (prc_hicp_aind).
Average monthly wage in the economy, gross, EUR	$f_wageoffic	*ypt, tad, tis, tscer*	818.0	859.0	926.0	1003.0	Central Statistical Bureau of Latvia (DSG01).
Average monthly wage in the public sector, gross, EUR	$f_wageoffic_pu	*yem* (if employed in the public sector)	855.0	886.0	951.0	1030.1	Central Statistical Bureau of Latvia (DSG01).
Average monthly wage in the economy, gross, EUR (with one year lag)	$f_wageoffic_1	*yempv, pdint, bhl, bsafu*	765.0	818.0	859.0	926.0	Central Statistical Bureau of Latvia (DSG01).
Average compensation per employee, total in the economy, based on national accounts, EUR per year per employee	$f_wagena	*yem_a, yempv_a, yivwg*	11722.7	12459.2	13429.4	14546.1	Eurostat (nama_10_a10 and nama_10_a10_e) and authors' calculations.
Average compensation per employee in the private sector, based on national accounts, EUR per year per employee	$f_wagena_pr	*yem* (if employed in the private sector), *yse*	11898.8	12718.7	13735.3	14877.4	Eurostat (nama_10_a10 and nama_10_a10_e) and authors' calculations.
Average compensation per employee, total in the economy, based on national accounts, EUR per year per employee (with one year lag)	$f_wagena_1	*yivwg01, yivwg02, yempv01*	10867.3	11722.7	12459.2	13429.4	Eurostat (nama_10_a10 and nama_10_a10_e) and authors' calculations.
Unemployment benefit, average	$f_bun	*bunot*	220.4	244.4	264.6	286.6	State social security agency of Latvia,

Name	Notation used in the model	Applied to variables	2015	2016	2017	2018	Source
monthly benefit, EUR							average unemployment benefit, derived from monthly data.
Social assistance benefit, weighed average, EUR	$f_bsa	bsaot	457.0	465.9	476.5	489.4	Welfare ministry (Local governments' reports), Central statistical bureau (SDG05 and SDG06), authors' calculations. Weighted average of GMI and funeral benefit.
Property tax, average monthly payment, EUR	$f_tpr	tpr	203.6	227.2	235.8	242.2	State Treasury (Monthly reports on budget revenues), State land service, authors' calculations.
Disposable income, average per household per month, EUR	$f_yds	yds, ydses_o	996.9	1017.6	1097.0	1188.2	Central Statistical Bureau (IIG04).
Old age pension - taxable part, based on average pension, EUR	$f_poatx_av	poatx[1]	288.6	296.2	311.0	335.3	State social security agency of Latvia, average old-age pension, derived from monthly data.
Disability pension - taxable part, based on average pension, EUR	$f_pditx_av	pdintx[1]	169.4	168.7	177.2	191.0	State social security agency of Latvia, average old-age pension, derived from monthly data.
Survivor's pension - taxable part, based on average pension, EUR	$f_psutx_av	psutx[1]	135.2	137.5	144.4	155.6	State social security agency of Latvia, average old-age pension, derived from monthly data.
Family benefits, weighed average, EUR	$f_bfa	bfaot	161.7	170.4	175.6	190.2	State social security agency of Latvia, weiged average of family state benefit, childcare benefit, maternity benefit, childbirth benefit, paternity benefit and parental benefit.

Notes: (1) By default, pensions in the model are updated according to indexation rules (see Section 1.3.2). These indices are used if the switch UAA_lv is ON (off by default). In this case, pensions are updated according to the average growth of pensions.

Table A2: Updating factors in 2016 - 2018 (Index = 100 in 2015)

Name	Notation used in the model	2016	2017	2018
Harmonised CPI (index 2015=100)	$f_cpi	1.001	1.030	1.058[1]
HICP - actual rentals for housing, item CP041 (index 2015=100)	$f_house	0.986	0.983	1.009[1]
Average monthly wage in the economy, gross, EUR	$f_wageoffic	1.050	1.132	1.226[2]
Average monthly wage in the public sector, gross, EUR	$f_wageoffic_pu	1.036	1.112	1.205[2]
Average monthly wage in the economy, gross, EUR (with one year lag)	$f_wageoffic_1	1.069	1.123	1.211
Average compensation per employee, total in the economy, based on national accounts, EUR per year per employee	$f_wagena	1.063	1.146	1.241[2]
Average compensation per employee in the private sector, based on national accounts, EUR per year per employee	$f_wagena_pr	1.069	1.154	1.250[2]
Average compensation per employee, total in the economy, based on national accounts, EUR per year per employee (with one year lag)	$f_wagena_1	1.079	1.147	1.236
Unemployment benefit, average monthly benefit, EUR	$f_bun	1.109	1.201	1.300[2]
Social assistance benefit, weighed average, EUR	$f_bsa	1.019	1.043	1.071[1]
Property tax, average monthly payment, EUR	$f_tpr	1.116	1.158	1.189[1]
Disposable income, average per household per month, EUR	$f_yds	1.021	1.100	1.192[2]
Old age pension - taxable part, based on average pension, EUR	$f_poatx_av	1.026	1.078	1.162[3]
Disability pension - taxable part, based on average pension, EUR	$f_pditx_av	0.996	1.046	1.128[3]
Survivor's pension - taxable part, based on average pension, EUR	$f_psutx_av	1.017	1.068	1.151[3]
Family benefits, weighed average, EUR	$f_bfa	1.054	1.086	1.176[2]

Notes: (1) European Commission's spring 2018 economic forecast for HICP change in 2018 (European Commission, 2018); (2) Ministry of Finance's forecast for average wage growth in the economy in 2018; (3) Assume growth equal to the growth of the average wage.

ANNEX 2: POLICY EFFECTS IN 2015-2016, 2016-2017 AND 2017-2018

Table A1 and Figure A1 show the effect of policy changes in 2015-2016 on mean equivalised household disposable income by income component and income decile group, as a percentage of mean equivalised household disposable income in 2015. Tables A2.1, A2.2 and Figure A2 show the effect of policy changes in 2016-2017, Table A3 and Figure A3 show the effect of policy changes in 2017-2018.

Each policy system has been applied to the same input data, deflating monetary parameters of Year 2 policies (i.e., 2016 in case of Table A1 and Figure A1, 2017 in case of Table A2.1 and Figure A2, and 2018 in case of Table A3 and Figure A3) by Eurostat's Harmonized Index of Consumer Prices (HICP) – 0.1% in 2016, 2.9% in 2017, and 2.7% in case of 2018[6].

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[6] Actual HICP change in 2016 and 2017, and EC forecast for HICP change in 2018.

Table A1: Policy effects in 2015-2016, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.00	0.16	-0.11	0.16	0.00	-0.02	-0.21	-0.01
2	0.00	0.19	0.00	0.17	0.00	-0.01	-0.14	0.21
3	0.00	0.15	0.00	0.24	0.00	-0.01	0.15	0.53
4	0.00	0.11	0.00	0.19	-0.01	-0.01	0.40	0.68
5	0.00	0.07	0.00	0.18	0.00	-0.01	0.36	0.60
6	0.00	0.05	0.00	0.15	-0.01	0.00	0.20	0.39
7	0.00	0.04	0.00	0.17	0.00	-0.01	0.21	0.41
8	0.00	0.03	0.00	0.13	-0.01	-0.02	0.11	0.25
9	0.00	0.02	0.00	0.13	-0.01	-0.01	0.11	0.25
10	0.00	0.01	0.00	0.09	-0.01	0.00	-0.32	-0.23
Total	0.00	0.05	0.00	0.14	0.00	-0.01	0.04	0.22

Notes: shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2015, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2016 policies by 0.1% - Eurostat's Harmonized Index of Consumer Prices (HICP) in 2016.

Figure A1: Policy effects in 2015-2016, using the CPI-indexation, %
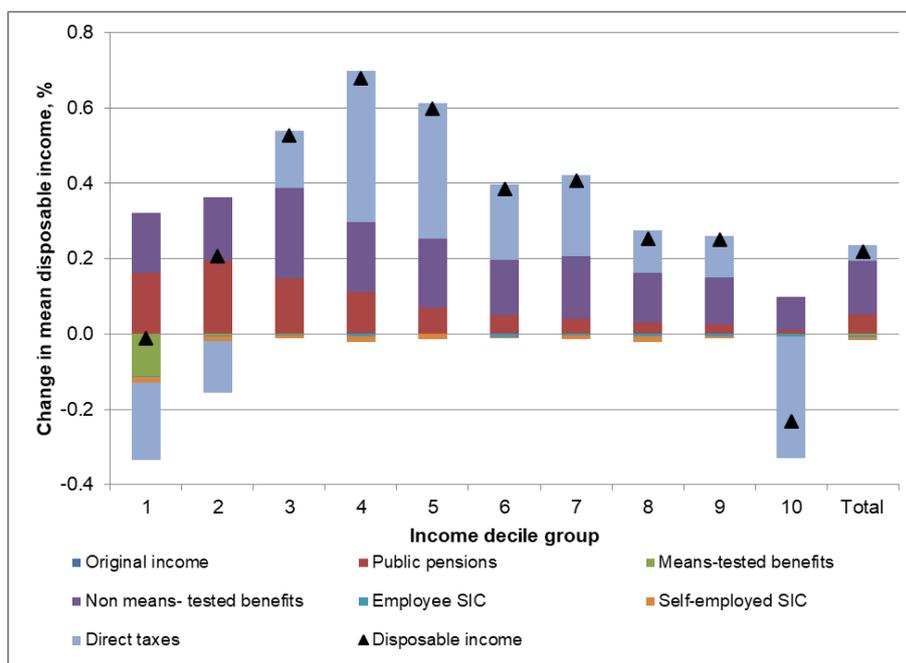
The effect of policies in 2015-2016 was on the whole progressive – disposable income increased in all deciles except the top decile, which saw a slight reduction in disposable income, and the bottom decile, where income almost did not change. The biggest gainers of the tax-benefit policies implemented in 2016 where those in the middle of income distribution, in particular in

the 4th and 5th deciles. Progressivity of the effect was mostly driven by public pensions and to some extent the direct taxes. There were two main reasons for the progressive effect of pensions. First, only part of the pensions below a certain threshold was indexed in October 2015, which produced a proportionally stronger effect on low pensions. The second reason is that pensioners in Latvia are clustered at the lower tail of income distribution.

There were several major reforms of direct taxes in 2016, which had an effect on incomes across the entire income distribution. First, the new solidarity tax, which was introduced in 2016, had a negative effect on the disposable income in the 10th decile. Second, an increase in the allowance for dependents, which is defined in absolute terms, had a proportionally stronger effect on incomes at the lower tail of income distribution, however, this effect was offset by the fact that allowances for dependent spouse and parents were abolished as of 2016 (unless the spouse or the parent are disabled) and this resulted in a negative net effect in the bottom decile. Third, the introduction of differentiated basic allowance had a progressive positive effect on disposable income, however, the effect in the bottom deciles is weaker as the share of employed individuals in the bottom deciles is relatively small. On the whole, these were households in the middle deciles who benefited most from changes in the direct taxes.

The effect of non-means-tested benefits in 2015-2016 was positive and was evenly distributed across income deciles, which mainly reflected growth in average earnings.

Despite no policy changes in means-tested benefits (GMI and housing benefit), these benefits had a negative effect on disposable income in the bottom decile, which was driven by changes in other policies that had a positive effect on low income households.

Table A2: Policy effects in 2016-2017, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.0	-0.25	1.09	0.09	0.0	-0.01	0.12	1.04
2	0.0	-0.23	0.18	0.07	0.0	-0.01	-0.08	-0.08
3	0.0	-0.19	0.03	0.08	0.0	-0.01	-0.04	-0.13
4	0.0	-0.17	0.0	0.03	-0.02	-0.01	-0.04	-0.20
5	0.0	-0.14	0.0	0.08	-0.02	-0.01	-0.04	-0.13
6	0.0	-0.12	0.0	-0.02	-0.01	-0.01	-0.14	-0.29
7	0.0	-0.11	0.0	0.0	-0.02	-0.01	-0.20	-0.33
8	0.0	-0.09	0.0	0.0	-0.02	-0.01	-0.24	-0.37
9	0.0	-0.09	0.0	0.0	-0.02	-0.01	-0.24	-0.37
10	0.0	-0.11	0.0	0.0	-0.08	-0.01	-0.14	-0.34
Total	0.0	-0.13	0.04	0.02	-0.03	-0.01	-0.15	-0.26

Notes: shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2016, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2017 policies by 2.9% - Eurostat's Harmonized Index of Consumer Prices (HICP) in 2017.

Figure A2.1: Policy effects in 2016-2017, using the CPI-indexation, %
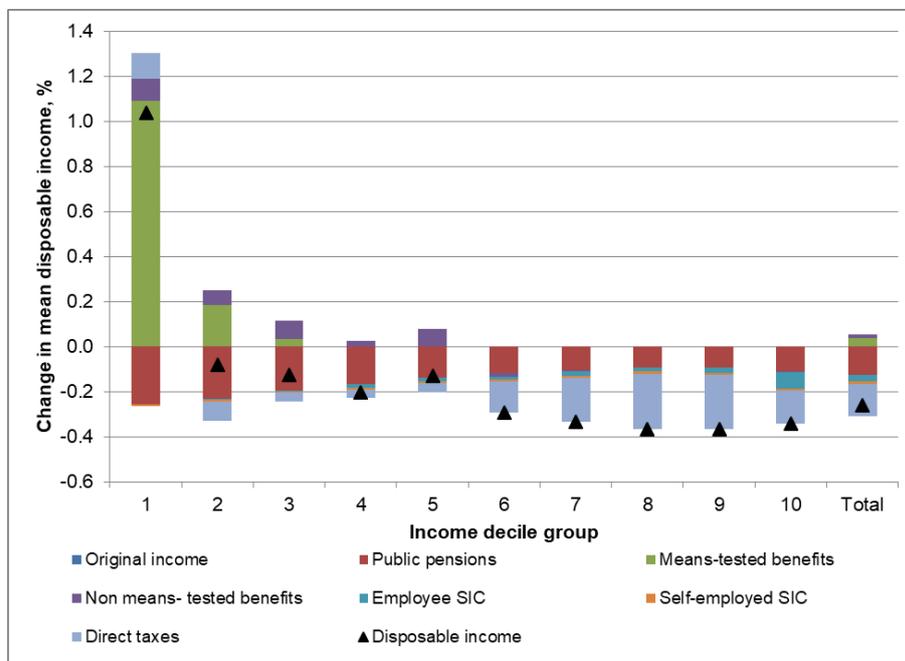
Figure A2.2: Policy effects in 2016-2017, nominal, %
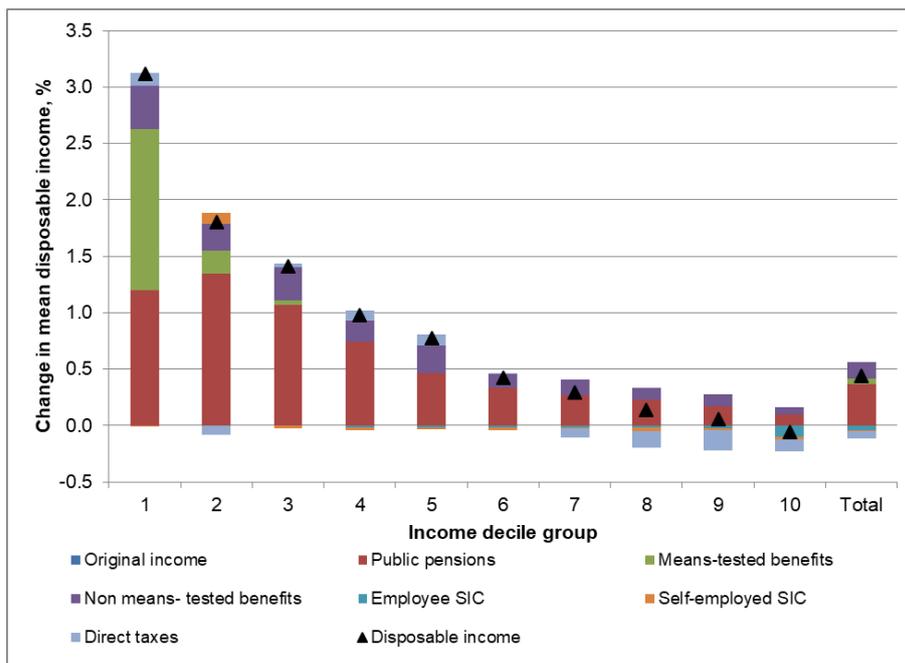
The effect of policies in 2016-2017 was clearly progressive, and the progressivity was mainly ensured by means-tested benefits and direct taxes. Change in disposable income in all deciles was negative except the bottom decile (see Figure A2.1). This negative change is due to the effect of inflation, which increased notably in 2017. The nominal policy effect on income in 2017 was positive in all deciles except the top decile (see Figure A2.2). This nominal increase in income was to the largest extent driven by indexation of pensions, while the negative change in the top decile was due to changes in PIT allowances. The basic allowance was made progressive in 2016, but in 2017 it was further increased for low wage earners and reduced for high wage earners, producing a positive effect on disposable income at the bottom of income distribution and a negative effect at the top of income distribution. A small negative effect of direct taxes in the 2nd decile is due to higher tax liability of pensioners whose pensions grew as a result of pension indexation.

The effect of means-tested benefits was driven by changes in the income test for GMI, which, as of 2017, excludes the state family benefit.

Like in 2015-2016, change in pensions had a progressive effect on income, and it was mainly due to pension indexation rules, i.e., only pensions below a certain threshold are indexed. The progressive effect of non-means-tested benefits was mainly due to increased family state benefit for 4th and each consecutive child.

Table A3: Policy effects in 2017-2018, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.0	1.04	0.12	1.66	-0.14	-0.05	1.35	3.97
2	0.0	1.24	0.0	0.77	-0.20	-0.05	1.81	3.57
3	0.0	0.91	0.01	1.14	-0.27	0.02	2.18	3.98
4	0.0	0.57	0.0	0.84	-0.39	-0.05	2.80	3.77
5	0.0	0.33	0.0	0.86	-0.46	-0.09	2.75	3.39
6	0.0	0.23	0.0	0.51	-0.50	-0.16	2.66	2.73
7	0.0	0.18	0.0	0.38	-0.54	-0.15	2.54	2.41
8	0.0	0.14	0.0	0.36	-0.55	-0.20	2.45	2.20
9	0.0	0.09	0.0	0.30	-0.58	-0.10	2.32	2.03
10	0.0	0.0	0.0	0.16	-0.58	-0.26	1.34	0.66
Total	0.0	0.26	0.0	0.48	-0.50	-0.15	2.15	2.24

Notes: shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2017, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2018 policies by 2.7% - European Commission's forecast for Harmonized Index of Consumer Prices (HICP) in 2018.

Figure A3: Policy effects in 2017-2018, using the CPI-indexation, %
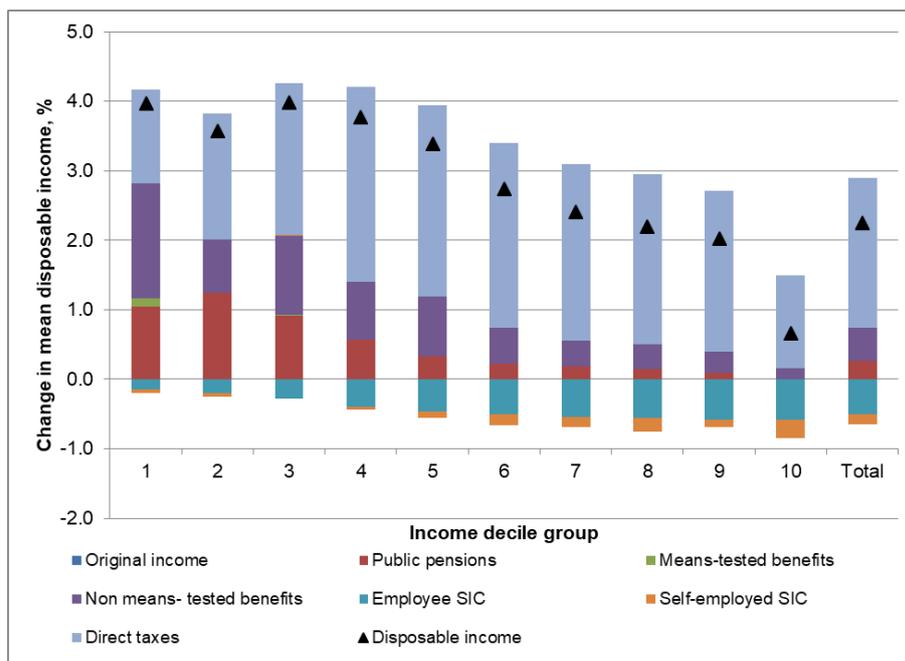
Policies implemented in 2018 produced a strong and slightly progressive effect on disposable income. The main contribution to the increase in income came from direct taxes, being driven

by the major PIT reform implemented in 2018. First, a reduction in the PIT rate from 23% to 20% for annual income not exceeding 20 thousand EUR effectively produced an across-the-board reduction in tax liability and contributed to an increase in the disposable income in all income deciles, and a particularly strong increase in the middle of income distribution. The positive effect of direct taxes in upper deciles was smaller for two main reasons. First, individuals in upper deciles have part of their employment income (income exceeding 20 thousand EUR per annum) taxed at the pre-reform rate of 23%. Second, the basic allowance in 2018 was further increased for low wage earners and reduced for high wage earners, producing a progressive impact on income distribution. The smaller effect of direct taxes in the bottom deciles is due to a smaller proportion of employed individuals, higher proportion of pensioners who are eligible for a higher non-taxable allowance, and due to the fact that for many low wage earners their income was fully covered by non-taxable allowances that were effective before the reform, hence they do not gain from changes in the PIT rules that came into force in 2018.

Like in previous years, changes in pensions had a progressive effect on income, mainly due to pension indexation rules, which imply a larger proportional increase in low pensions. The effect of non means-tested benefits is more uniform across the income distribution, but the largest positive contribution is observed in the bottom decile, mainly due to the introduction of special supplementary payments to families with two children or more.

The effect of changes in social insurance contributions was negative and progressive, being driven by an increase in the SIC rate. The progressivity of the effect is due to the higher proportion of non-employed individuals at the bottom of income distribution.

The effect of self-employed SIC was negative and progressive. First, because of the reduction in the income threshold that obliges self-employed to make social contributions, the number of self-employed paying SIC increased in all deciles of income distribution[7]. At the same time, however, SIC rate for income below the minimum wage is low, thus the reduction in the income threshold produced a very small increase in the amount of payable SIC for individuals with low income from self-employment. Therefore, the effect of self-employed SIC in the bottom deciles is very small. Second, individuals with high income from self-employment, who are concentrated in the top deciles, faced an increase in payable SIC because of an increase in the SIC rate for self-employed.

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[7] Before 2018, a self-employed could choose not to make social contributions if his/her monthly income was below the minimum wage; as of 2018, if his/her annual income is above 50 EUR, contributions in the amount of 5% become mandatory. If his/her monthly income exceeds the minimum wage, he/she has to pay SIC in accordance with the general rules.

ANNEX **3. VALIDATION TABLES**

Table 4.2-Number of employed and unemployed (in thousands)

	EUROMOD	External			Ratio		
	2015	2015	2016	2017	2015	2016	2017
Number of employed	859.5	896.1	893.3	894.8	0.96	0.96	0.96
Number of unemployed	99.7	98.2	95.3	85.4	1.02	1.05	1.17

Table 4.3-Market income in EUROMOD -Number of recipients (in thousands)

	EUROMOD	External			Ratio		
	2015	2015	2016	2017	2015	2016	2017
Employment income	1011.6	817.4	811.9	807.1	1.24	1.25	1.25
Self-employment income	94.0	113.5	115.8	113.5	0.83	0.81	0.83
Private pensions	2.8						
Rent income	17.4						
Investment income	231.6						

Table 4.4-Market income in EUROMOD -Annual amounts (in mil.)

	EUROMOD				External			Ratio		
	2015	2016	2017	2018	2015	2016	2017	2015	2016	2017
Average employment income (in EUR)	8699.4	9224.8	9946.7	10774	11722.7	12459	13450	0.74	0.74	0.74
Employment income	8800.4	9332.0	10062.2	10899	9090.7	9599	10390	0.97	0.97	0.97
Self-employment income	402.0	429.7	464.0	503						
Private pensions	2.5	2.5	2.6	3						
Rent income	16.5	16.3	16.2	17						
Investment income	105.1	105.2	108.2	111						

Table 4.5-Tax benefit instruments included but not simulated in EUROMOD
-Number of recipients/ payers (in thousands)

	EUROMOD	External			Ratio		
	2015	2015	2016	2017	2015	2016	2017
Benefits							
Sickness and injury benefits	211.1	214.6	223.3		0.98	0.95	
Old-age pensions	471.4	467.5	462.1	457.0	1.01	1.02	1.03
Disability pensions	71.4	73.1	73.9	74.6	0.98	0.97	0.96
Survivor pensions	16.5	17.3	16.5	15.8	0.95	1.00	1.04
Funeral benefit	11.5	26.6	26.7	26.5	0.43	0.43	0.44
Taxes and Social Insurance contributions							
Property tax	624.0						

Table 4.6-Tax benefit instruments included but not simulated in EUROMOD -Annual amounts (in mil.)

	EUROMOD				External			Ratio		
	2015	2016	2017	2018	2015	2016	2017	2015	2016	2017
Benefits										
Sickness and injury benefits	114.7	122.7	128.8	138.8	120.5	142.2	153.9	0.95	0.86	0.84
Old-age pensions	1678.7	1685.4	1721.8	1797.9	1601.6	1627.5	1696.9	1.05	1.04	1.01
Disability pensions	139.8	140.4	143.6	150.1	147.6	149.6	150.1	0.95	0.94	0.96
Survivor pensions	22.9	23.0	23.6	24.7	28.2	27.4	31.2	0.81	0.84	0.76
Funeral benefit	6.7	7.2	7.5	8.1	13.2	13.7	14.2	0.51	0.52	0.53
Taxes and Social Insurance contributions										
Property tax	57.4	64.0	66.5	68.26						

Table 4.7-Tax benefit instruments simulated in EUROMOD -Number of recipients/ payers (in thousands)

	EUROMOD				SILC	Ratio	External			Ratio		
	2015	2016	2017	2018	2015	2015	2015	2016	2017	2015	2016	2017
Benefits												
State social security benefit	21.4	21.4	21.4	21.4	21.4	1.00	19.3	19.7	20.5	1.11	1.09	1.05
Unemployment benefit	92.7	93.1	93.1	93.1	95.0	0.98	95.3	98.7	89.5	0.97	0.94	1.04
Childbirth benefit	25.0	25.0	25.0	25.0	22.3	1.12	21.7	21.6	20.3	1.15	1.16	1.23
Maternity benefit	20.1	20.1	20.1	20.3	19.5	1.04	18.3	18.5	17.9	1.10	1.09	1.12
Paternity benefit	11.4	11.4	11.4	11.4	13.0	0.87	10.6	11.1	11.0	1.07	1.03	1.04
Parental benefit	34.9	34.9	34.9	36.2	34.2	1.02	30.1	37.5	39.5	1.16	0.93	0.88
Childcare benefit	59.6	59.6	59.6	59.6	57.3	1.04	56.4	57.7	58.4	1.06	1.03	1.02
State family benefit	218.4	218.4	218.4	230.7	228.2	0.96	230.7	230.2	228.8	0.95	0.95	0.95
Benefit for ensuring GMI level	36.6	34.3	40.1	40.0	32.2	1.13	34.2	27.8	25.8	1.07	1.24	1.55
Housing benefit	44.0	42.4	41.8	39.8	127.6	0.34	113.0	100.8	93.7	0.39	0.42	0.45
Taxes and Social Insurance contributions												
Income tax	1220.8	1221.5	1233.7	1221.8								
Employee SIC	1011.6	1011.6	1011.6	1011.6			790.8	789.5	794.7	1.28	1.28	1.27
Self-employed' SIC	39.9	41.6	45.7	93.5			9.0	9.0	10.0	4.44	4.63	4.57
Employer SIC	1011.6	1011.6	1011.6	1011.6	940.5	1.08	790.8	789.5	794.7	1.28	1.28	1.27

Table 4.8-Tax benefit instruments simulated in EUROMOD -Annual amounts (Mil.)

	EUROMOD				SILC	Ratio	External			Ratio		
	2015	2016	2017	2018	2015	2015	2015	2016	2017	2015	2016	2017
Benefits												
State social security benefit	27.2	27.2	27.4	27.4	26.0	1.05	22.6	22.7	23.85	1.20	1.20	1.15
Unemployment benefit	87.3	93.6	98.2	105.9	95.5	0.91	102.1	116.2	112.82	0.86	0.81	0.87
Childbirth benefit	10.6	10.6	10.6	10.6	9.4	1.12	9.3	9.2	8.68	1.14	1.14	1.22
Maternity benefit	51.0	55.1	58.5	63.3	46.8	1.09	40.4	44.5	45.53	1.26	1.24	1.29
Paternity benefit	2.8	3.0	3.2	3.5	3.2	0.88	2.8	3.1	3.24	1.00	0.99	1.00
Parental benefit	72.3	77.9	82.6	89.9	69.5	1.04	76.4	92.6	98.96	0.95	0.84	0.83
Childcare benefit	68.2	68.2	68.2	68.1	67.1	1.02	58.2	65.4	65.96	1.17	1.04	1.03
State family benefit	73.3	73.3	76.1	108.9	75.1	0.98	72.5	73.4	77.87	1.01	1.00	0.98
Benefit for ensuring GMI level	11.3	11.0	13.2	13.8	6.0	1.89	7.8	6.7	6.49	1.44	1.64	2.04
Housing benefit	15.5	14.4	14.5	14.0	16.7	0.92	18.4	16.7	16.57	0.84	0.87	0.87
Taxes and Social Insurance contributions												
Income tax	1681.0	1777.6	1944.1	1889.5			1444.6	1587.20		1.16	1.12	
Employee SIC	906.6	960.6	1037.9	1176.8			585.1	530.40		1.55	1.81	
Self-employed' SIC	44.0	46.6	53.9	73.2			12.4	13.20		3.55	3.53	
Employer SIC	2036.8	2158.3	2331.8	2579.1	1716.3	1.19	1432.3	1516.00		1.42	1.42	

Table 4.9-Distribution of equivalised disposable income

	EUROMOD				External		Ratio	
	2015	2016	2017	2018	2015	2016	2015	2016
D1	2.6	2.6	2.5	2.5	2.3	2.3	1.149	1.116
D2	4.4	4.3	4.2	4.2	4.3	4.2	1.026	1.027
D3	5.5	5.5	5.4	5.4	5.4	5.3	1.027	1.035
D4	6.6	6.6	6.6	6.6	6.5	6.5	1.015	1.012
D5	7.8	7.8	7.7	7.8	7.8	7.7	0.995	1.008
D6	9.1	9.1	9.1	9.1	9.1	9.3	1.003	0.982
D7	10.6	10.6	10.6	10.7	10.7	10.9	0.988	0.973
D8	12.5	12.5	12.6	12.6	12.6	12.8	0.991	0.978
D9	15.4	15.6	15.6	15.6	15.5	15.7	0.995	0.991
D10	25.4	25.5	25.6	25.5	25.6	25.2	0.994	1.012
Median	5981.0	6268.1	6664.3	7351.7	6365.0	6607.0	0.94	0.95
Mean	7105.0	7446.2	7911.4	8644.8	7526.0	7831.1	0.94	0.95
Gini	33.8	34.1	34.4	34.3	34.5	34.5	0.98	0.99
S80/S20	5.8	6.0	6.1	6.1	6.2	6.3	0.93	0.95

Table 4.10-Poverty rates by gender and age

	EUROMOD				External		Ratio	
	2015	2016	2017	2018	2015	2016	2015	2016
40% median HDI								
Total	7.4	7.8	8.2	8.8	8.1	8.2	0.91	0.96
Males	7.8	8.1	8.3	8.5	8.4	8.5	0.93	0.96
Females	7.0	7.6	8.1	9.1	7.9	8.0	0.89	0.95
50% median HDI								
Total	13.3	14.3	14.7	15.3	14.4	15.4	0.93	0.93
Males	12.4	13.0	13.1	13.3	13.2	13.6	0.94	0.95
Females	14.1	15.4	16.1	17.0	15.5	16.9	0.91	0.91
60% median HDI								
Total	20.6	21.4	21.8	22.4	21.8	22.1	0.94	0.97
Males	18.3	19.0	19.4	19.9	19.4	19.1	0.95	1.00
Females	22.5	23.4	23.8	24.5	23.9	24.6	0.94	0.95
70% median HDI								
Total	27.8	28.6	29.0	29.3	29.2	30.1	0.95	0.95
Males	25.3	26.1	26.5	26.8	26.7	27.0	0.95	0.97
Females	29.9	30.7	31.1	31.4	31.2	32.7	0.96	0.94
60% median HDI								
0-15 years	16.4	16.3	15.9	15.7	17.8	17.9	0.92	0.91
16-24 years	18.0	18.3	18.2	18.0	19.0	17.4	0.95	1.05
25-49 years	13.8	14.0	13.8	13.8	14.5	14.6	0.95	0.96
50-64 years	23.1	23.7	23.9	24.0	23.1	22.7	1.00	1.04
65+ years	34.5	37.6	40.1	43.4	38.1	39.9	0.90	0.94