

EUROMOD

COUNTRY REPORT



ESTONIA (EE)

2015-2018

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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.

The European Commission is in the process of taking over responsibility for carrying out the annual update and release of EUROMOD. The transfer of responsibility is expected to be complete by the end of 2020 and the transition is being facilitated by close cooperation between the University of Essex and the Joint Research Centre (JRC) of the European Commission as well as Eurostat.

This report documents the work done in one annual update for Estonia. This work was carried out by the EUROMOD core developer team, based in ISER at the University of Essex and at JRC-Seville, 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>

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INTRODUCTION

This country report gives an overview of the Estonian country component of EUROMOD. The report presents the basic information on the Estonian tax-benefit system valid in 2015-18 (as of 30th June in corresponding year), it explains which taxes and benefits are simulated in EUROMOD, together with the key aspects of implementation, and how well the model represents actual income distribution and monetary aggregates.

The current Estonian country model uses European Union Survey of Income and Living Conditions 2015 (EU-SILC), complemented with a few extra variables from the Estonian Social Survey (Eesti Sotsiaaluuring, EE-SILC) 2015, which is a more detailed national version of the SILC survey from where the EU-SILC variables are derived.

The report adds to and builds on earlier reports: Lüksik et al. (2008); Võrk et al. (2010); Võrk and Paulus (2011, 2012, 2013, 2014); Võrk et al. (2015, 2016) and Masso et al. (2017). The latter covered policy years 2011-2016 based on a single combined dataset (EU-SILC 2012 with selected variables from EE-SILC 2012). The current report uses a new combined dataset of EU-SILC 2015 and EE-SILC 2015, updating information on policy rules (adds 2017 policies) as well as validation results. No changes have been made in the structure of the report compared to Võrk et al. (2016).

1. BASIC INFORMATION

1.1 Basic information about the tax-benefit system

- The tax system is largely a unified, national system consisting of income tax, value added tax, excise taxes, social tax and social insurance contributions. There are a few taxes set by local governments, such as land tax, motor vehicle tax, sales tax, but the share of these taxes in overall tax revenues is negligible.
- The benefit system is also a unified, national system. Municipalities provide a few local benefits, such as additional family and child benefits, and additional social assistance benefits, but the share in overall social expenditures is small. Social benefits and pensions are usually assessed and delivered on a monthly basis. Amounts are referred to in monthly terms.
- The fiscal year is 1st January – 31st December. Taxes and benefits are not indexed, with the exception of state pensions, which are indexed to the weighted average of inflation and social tax revenues, though further ad hoc pension increases are also common. Indexation takes place on 1st April every year. The tax system and other benefits are changed only in ad hoc manner, usually in the beginning of the year, though there have been also some occasional exceptions (e.g. changes in family benefits taking effect in July and September). Changes in indirect taxes have taken place more frequently, often within a year. Some thresholds of benefits (i.e. minimum or maximum levels) are linked to the minimum wage or average contribution base in the previous year. In addition, some parameters of benefit formulae are linked to past relative or absolute poverty lines.
- In 2014 and 2015, the statutory pension age was 63 for men and 62.5 for women (rounded to 63 in EUROMOD). For women it increased also to 63 in 2016. Furthermore, the pension age will increase to 65 between 2017-2026 for both sexes by 3-month steps. For those born between 1953 and 1961 the retirement age will depend on their birth year.

- Children are obliged to attend school from age 7 and until they acquire basic education or reach the age of 17.
 - Dependent children for family benefits, including needs-based family benefits (2013-2017), are defined as aged under 16, or under 19 and enrolled in basic school, upper secondary school or vocational school in daytime study or another form of study for medical reasons.
 - Dependent children for the subsistence benefit are defined as aged under 18.
 - For taxation purposes, dependent children are aged under 18. One of the parents may deduct an additional tax allowance from his or her income in the period of taxation depending on the number of children.
 - For needs-based family benefits, modified OECD equivalence scale is used. In this calculation a child is defined as aged under 14.
- For family benefit purposes single parents are the parents of resident dependent children whose birth registration certificate does not have an entry concerning the father. For social assistance purposes, single adult household is a household with a single adult and dependents aged under 18.
- The income tax system is an individual system. Before 2017, a married couple also had an option to file a joint tax report (which was beneficial if one had unused tax allowances which they could have shared then). Since 2017, joint declarations were abolished though a few tax allowances could still be shared between spouses. Income tax liability is based on annual income and allowances are referred to in annual terms, although 1/12 of the annual basic, pension and sickness allowance can be applied on a monthly basis to calculate withholding income tax. To make use of other allowances and deductions these have to be claimed in the following year (by 31st March) when filing the tax report. The latter determines the final tax liability, taking into account tax already withheld. Overall, there are relatively few allowances and deductions in the system. Different income sources are taxed uniformly, except private pensions which have a lower income tax rate.
- The means-tested benefit system assesses entitlement according to household income. Household consists of persons living together and sharing their income and expenditures. Income is assessed either on a monthly basis (in the case of subsistence benefits) or based on the average income in the previous three months (in the case of needs-based family benefits in 2013-2017). Nearly all income sources are taken into account. Assets are taken into account in an ad hoc manner.
- The social tax is a payroll tax and is paid by employers, although all tax payments are linked to individuals when calculating pensions, sickness benefits or maternity benefits. Employers pay also part of the unemployment insurance contributions. There are a few additional social contributions paid by employees: employees' part of the unemployment insurance contributions and contributions to the mandatory pension scheme.

1.2 Social Benefits

1.2.1 Pensions

The Estonian pension system is based on three pillars: state pension insurance (the 1st pillar) – a pay-as-you-go scheme; a mandatory funded pension scheme (the 2nd pillar); and a supplementary (voluntary) funded pension scheme (the 3rd pillar). The first pillar provides protection against the risks of old age, disability and survivorship, and comprises two separate tiers: a) residence-based national pensions and b) employment-based old-age, work incapacity and survivors' pensions.

The mandatory funded pension scheme covers the risks of old-age and survivorship, the voluntary funded pension scheme covers the risks of old-age, disability and survivorship. All pensions are taxable with income tax. Before 2018 an additional tax-free pension allowance applied.

The old-age pension from the state pension system (*riiklik vanaduspension*) is calculated according to a formula, which consists of three additive elements: a flat-rate element; a length-of-service element (applies only to pensionable service until 31st December 1998); and an insurance element applying to periods after 1st January 1999. The pension components are indexed annually by an arithmetic weighted average of annual increases of consumer prices and social tax revenues, ad hoc increases are also allowed.

Additional old-age pensions from the mandatory funded pension scheme (*kohustuslik kogumispension*) depend on total contributions over the working career and yields of pension funds. When people reach the pension age they can withdraw their accumulated assets. Currently, the accumulated assets are relatively small (14.7% from GDP at the end of 2016) as the scheme only started in 2002.

National pension (*rahvapension*) is a flat-rate minimum guaranteed pension for those persons who do not fulfil the minimum length of service requirement to be eligible for old-age pensions or pension for incapacity for work, or in the case of survivor's pension a provider did not fulfil the length of service requirement.

Early retirement pension (*ennetähtaegne vanaduspension*) is available up to three years before the legal pension age. The amount of pension is calculated on the basis of old-age pension formula, but permanently reduced by 0.4% for every month of earlier retirement. Pensions are suspended when the person returns to work before the pension age. Working while receiving retirement pensions is allowed after the person has reached the statutory pension age.

Deferred old-age pension (*edasiliikatud vanaduspension*): A type of state old-age pension. Pension is increased by 0.9 per cent for every month that exceeds the statutory pension age.

Old age pension under favourable conditions (*soodustingimustel vanaduspension*): Under the *State Pension Insurance Act (Riikliku pensionikindlustuse seadus)*, one of the parents who has raised three or more children or a disabled child has the right to retire up to five years earlier before the legal pension age and there is no reduction in pension amount. *Old-age Pensions Under Favourable Conditions Act (Soodustingimustel vanaduspensionide seadus)* states that persons who have worked under hazardous or hard working conditions (defined by categories of professions) for a certain period of time have the right to retire up to ten years before the legal pension age. The value of a year of pensionable service is also increased, the size depending on the profession.

Superannuated pension (*väljateenitud aastate pension*): For specific professions (e.g. police officers, pilots, seamen, artists etc.) pension is available before normal retirement age, given that they have the required length of service. The amount of the pension depends on the profession. Upon attaining the general pensionable age, the person may switch to the old-age pension. In additions, there are a few special occupational pensions (e.g. judges, chancellor of justice, army, etc.), regulated by special acts.

Pension for incapacity to work (*töövõimetuspension*) or disability pension: is granted to people aged 16 and above who are declared permanently incapacitated for work with the 40 to 100 per cent loss of the capacity for work, and who have the required length of service, which depends on the age of the person. The pension depends on the same three components as the state old-age pension, but also on the extent of person's work incapacity. There is no restriction on work and full accumulation with earnings is possible. Upon attaining the pension age, the person is transferred to old-age pension.

Due to the work ability reform that started in January 2016 there is a new work ability allowance (*töövõimetoetus*) that gradually replace the pension for incapacity to work. The sum of the new allowance depends whether the person has partial or no work ability and on the amount of concurrent labour market earnings. Assessment of ability to work for new entrants started from July 2016. Those who are currently receiving pension for incapacity for work are gradually transferred to the new benefit scheme through new assessments from January 2017 to the end of 2021.

Survivor's pension (*toitjakaotuspension*): Upon the death of a provider, family members who were maintained by him or her have the right to receive a survivor's pension. The pension depends on rights to the old-age pension earned by the provider and the number of family members. There are lower limits to pensions.

1.2.2 Benefits for families with children

There are various forms of support for families with children.

- 1) Universal family benefits that mainly depend on the age and number of children.
- 2) Needs-based family benefit (*vajaduspõhine peretoetus*) that depends both on the household income and the number of children.
- 3) Benefits that compensate periods when a parent is out of the labour market and which depend on the parent's previous earnings – maternity benefit (*sünnitushüvitis*), parental benefit (*vanemahüvitis*), care benefit for nursing a child under 12 years of age who is ill (*hooldushüvitis*), etc.
- 4) Tax allowances and deductions depending on the number of children or expenditures on children. These are described in detail below where we discuss income taxation.
- 5) Benefits and services provided by local municipalities – additional birth grants, additional social assistance benefits, child's school allowance (at the beginning of the school year), etc.
- 6) Special benefits for disabled children.
- 7) Free or subsidised services for children (e.g. subsidised school meals; free health care, including dental care; subsidised childcare in kindergarten, etc) – these in-kind services are not discussed in detail as they are not simulated in EUROMOD.

State family benefits

The types and extent of state family benefits and the conditions under which they are granted were regulated until the end of 2016 by the *State Family Benefits Act (Riiklike peretoetuste seadus)* and from January 1, 2017 by *Family Benefits Act (Perehüvitiste seadus)*. If a person is entitled to several types of family benefits, these benefits are usually determined and disbursed simultaneously. Dependent children for family benefits are defined as aged under 16, or under 19 and enrolled in basic school, upper secondary school or vocational school in daytime study or another form of study for medical reasons. All family allowances paid under the Family Benefits Act are non-taxable with income tax and non means-tested. The new Family Benefits Act also covers (taxable) parental pay (see below), which was earlier legislated separately. In 2013-2017, there was also needs-based family benefit (see also below), which is means-tested, but legislated separately (part of the Social Welfare Act).

Child allowance (*lapsetoetus*): a non means-tested benefit per dependent child per month. The amount depends on the birth rank of the child in the family.

Single parent's child allowance (*üksikvanema lapse toetus*): a non means-tested benefit, paid as a supplement to the child allowance. Single parents are the parents of resident dependent children whose birth registration certificate does not have an entry concerning the father or the other parent is officially declared missing/wanted.

Childcare allowance (*lapsehooldustasu*): a non means-tested monthly benefit paid to one of the parents in respect of children under 3 years of age and in respect of children from 3 to 8 years of age if there are 3 or more children or children under 3 years of age in the family. Since 1st January 2009 if a parent receives parental benefits then the parent cannot receive the child care allowance also for any other children. Parents are allowed to work when receiving childcare allowance without reduction in the benefit.

Parent's allowance for families with 7 or more children (*seitsme- ja enamalapselise pere vanema toetus*): It is a special monthly allowance for the parent of seven or more children. From July 2017, this became **allowance for families with many children (*lasterikka pere toetus*)** with two tiers: 300 EUR per month for families with three to six children and 400 EUR per month for families with at least seven children.

Conscript's child allowance (*ajateenija lapse toetus*) is a monthly allowance applicable to the child whose parent serves in the Estonian Defence Forces in case the child receives child allowance.

Foster care allowance (*eestkostel või perekonnas hooldamisel oleva lapse toetus*) is paid for a child who is raised by foster parents, and who receives child allowance payments.

Childbirth allowance (*sünnitoetus*). One of the parents has the right to receive childbirth allowance. An adoptive parent, guardian or caregiver has the right to receive childbirth allowance, if childbirth allowance has not been paid for the same child earlier.

Allowance for multiple birth of three or more children (*kolmikute ja enamaarvuliste mitmike toetus*) is a new benefit effective from March 1, 2018. It is a monthly benefit (€1,000) paid for one parent, foster parent or guardian of triplets or higher order multiples until the children reach 18 months of age.

Adoption allowance (*lapsendamistoetus*). An adoptive parent has the right to receive adoption allowance, if childbirth allowance has not been paid to the family for the same child earlier. The amount of the allowance is equal to the childbirth allowance.

Start in independent life allowance (*elluastumistoetus*) is a one-time benefit paid to the person without parental care who has been raised in a social welfare institution or a school for children with special needs in case the person starts living independently in a new residence.

Needs-based family benefit (*vajaduspõhine peretoetus*) was a means-tested monthly benefit that was paid to households with children whose average income during previous three months is below a certain threshold or who receive the subsistence benefit. The benefit was introduced in July 2013 and abolished since 2018.

Benefits compensating the periods out of the labour market

Maternity benefit (*sünnitushüvitis*) is one of the benefits for temporary incapacity for work, regulated by the *Health Insurance Act (Ravikindlustuse seadus)*. It is paid to an insured person in the event of pregnancy and maternity leave. A pregnant woman has the right to receive maternity benefit for 140 calendar days (or in the case of a multiple birth or a delivery with complications, for 154 calendar days) if the pregnancy and maternity leave of the woman commences at least 30 calendar days before the estimated date of delivery. The entitlement is based on her average gross

income taxed with social tax (i.e. earnings) in the previous calendar year. It is subject to the income tax.

Parental benefit (*vanemahüvitis*) compensates for labour income not received by stay-at-home parent after a child birth. The size of the benefit is calculated according to the applicant's average gross income taxed with social tax (i.e. earnings) in the previous calendar year. Partial accumulation with labour earnings allowed. Duration is up to 18 months. The parental benefit is subject to income tax. The first set of amendments to the legislation were accepted in December 2017 and the new policy rules take effect gradually in 2018-2020.

Further amendments to the parental leave and benefit system are currently in the preparatory phase in the Ministry of Social Affairs and will be introduced to the Government in the forthcoming months.

1.2.3 Unemployment benefits and social assistance benefits

Unemployment insurance benefit (*töötuskindlustushüvitis*) is a benefit financed from the unemployment insurance contributions. The level of the UI benefit depends on the previous average gross earnings with an upper ceiling and a floor. The maximum duration of benefits ranges from 180 to 360 days, depending on the length of contribution period. In order to receive an unemployment insurance benefit, additional requirements have to be met, such as being involuntarily unemployed, being registered as unemployed and looking actively for a job. UI benefit is subject to income tax.

Unemployment allowance (*töötutoetus*) is a flat rate benefit for those who do not fulfil the eligibility criteria for UI benefit (e.g. students, persons who terminated their previous employment voluntarily) or who have exhausted their UI benefits. The person must have been employed or engaged in activity equal to work (e.g. studying) for at least 180 days during the 12 months prior to filing an application in order to receive UA benefits. Additional activity criteria must be fulfilled. The UA benefits are not subject to income tax. UA benefit is formally income tested: only the unemployed whose income is below the unemployment assistance are entitled to the benefits. Maximum duration is generally 270 days.

Severance payments (*koondamishüvitis*): According to the *Employment Contract Act (Töölepingu seadus)* and *Unemployment Insurance Act (Töötuskindlustuse seadus)* upon cancellation of an employment contract due to lay-off, an employer shall pay an employee compensation to the extent of one month's average wages of the employee, additionally, an employee has the right to receive a benefit upon lay-offs from unemployment insurance – i.e. insurance benefit in case of lay-offs. An insurance benefit shall be paid to an employee whose employment relationship with an employer lasted for: 1) five to ten years - in the amount of one month's average salary or wages; 2) over ten years - in the amount of two months' average salary or wages.

There are also **training allowances (*stipendium*)** and **transport and accommodation allowances (*sõidu- ja majutustoetus*)** for the unemployed that are meant to cover actual costs of participation in active labour market measures (training, work practice). Since 1 May 2017 there are also allowances for formal training (*tasemeõppes osalemise toetus*), which are offered to unemployed as well as employed people who do not have professional training, who acquired their education more than 15 years ago or who cannot continue in their current work due to health reasons. The allowance is paid for taking up studies in vocational or higher education. In May 2017 training vouchers (*koolituskaart*) and support towards acquiring qualification certificate (*kvalifikatsiooni saamise toetamine*) were also introduced for employed people. These are not strictly benefits and therefore not included in EUROMOD.

Subsistence benefit (*toimetulekutoetus*) is the main means-tested benefit guaranteeing a minimum income to all residents. Households whose income after payment for housing expenses, calculated according to certain general criteria and specific rules set by municipalities, is below the subsistence level are entitled to these benefits. Duration is unlimited, but granted and renewed on a monthly basis.

Annual refund to low-paid employees (*madala sissetulekuga töötava isiku iga-aastane tagasimakse*) is a benefit scheme which was in effect in 2016 only. The only pay-outs will be delivered in spring 2017 on the basis of submitted tax report for 2016. It is an annual non-taxable income support for low-paid workers to tackle in-work poverty, create incentives for people who are out of the labour market to enter/return and move to full-time employment, and also to facilitate declared employment relationships. People who are at least 18 years old residents of Estonia and have been in full-time employment for at least six months in the previous calendar year are considered to be eligible for the benefit if their annual taxable income is smaller than the ratio of annual benefit rate divided by 0.35. The entitlement is calculated according to the recipient's annual taxable income, final tax liability (limits the maximum amount of benefit), months in work and the annual benefit rate, which is established for every year in the State Budget Act. The sum of benefit is proportional to the months spent in the employment in the previous year.

Additional annual allowance for pensioner's living alone. To reduce the risk of poverty among elderly single people, on June 2015 the Government approved an additional annual benefit €115 to be paid to pensioners who live alone and whose pension is smaller than an established line from 2017.

1.2.4 Social benefits for the disabled

The **social benefits paid to people with disabilities (*puuetega inimeste sotsiaaltoetused*)** depend on the extent of their disability, divided into three categories: moderate, severe and profound. The degree of severity of disability and the necessity for additional expenses due to the disability of a person is established taking into account restrictions on participation in daily activity and social life and the need for personal assistance, guidance or supervision. There are several different benefits: **disabled child allowance, the disability allowance for a person of working age, the disability allowance for a person of retirement age, disabled parent's allowance, a rehabilitation allowance, an education allowance, an in-service training allowance, and a work allowance.** The benefits are calculated on the basis of the rate of social benefits for disabled persons. Benefits are non-taxable. It often accumulates with pension for incapacity to work (*töövõimetuspension*) and old-age pension (*vanaduspension*). Since 1st January 2016, the administration of rehabilitation allowance and work-related allowance moved from the Estonian National Insurance Board to the Unemployment Insurance Fund as part of the Work Ability Reform.

The state also compensates a part of the cost of the device to disabled people, the elderly and children, who need prostheses, orthopaedic and other aids. Local municipalities may pay additional allowances for caregivers.

1.2.5 Health insurance benefits

Health insurance benefits (*ravikindlustushüvitis*) are regulated by the *Health Insurance Act (Ravikindlustuse seadus)* and compensate the insured persons for the cost of disease prevention and treatment, the cost of medicines and medical appliances and provide benefits for temporary incapacity for work and other benefits. Insured persons are residents for whom the social tax is paid by their employer, the state or by themselves if self-employed (this is discussed in detail in

section 1.4), as well as equivalent persons under the Health Insurance Act for whom social tax is not paid. Health insurance benefit is either in kind (health service, necessary medicinal products or medical device), or in cash. Health insurance benefits in cash are the following.

Benefits for temporary incapacity for work (*ajutise töövõimetuse hüvitis*) provide an earnings-related benefit for periods of absence from work due to illness or for caring for another person. The types of benefit for temporary incapacity for work are: **sickness benefit**; **maternity benefit** (see above); **adoption benefit** and **care benefit**. The benefits for incapacity for work are calculated on the basis of the insured person's income (on which the social tax was paid during the previous year). The replacement rate and duration of benefits varies.

Adult dental care benefit (*täiskasvanute hambaraviteenuse hüvitis*) compensates for some groups (such as old-age pensioners, work incapacity pensioners, pregnant women and mothers of children up to 1 year of age and those having greater need for dental treatment because of sickness) a certain amount of their dental treatment and dentures.

Supplementary benefit for pharmaceuticals (*täiendav ravimihüvitis*) is for those people who have high expenditures on medical products.

1.2.6 Local benefits

According to the *Local Government Organisation Act (Kohaliku omavalitsuse korralduse seadus)* local municipalities can provide local benefits to their residents. Local benefits vary largely across municipalities, differing by type, amounts, application conditions etc. Ainsaar and Soo (2012) showed that the majority of the municipalities give family and child support related local benefits. The most common are benefits for birth support, in addition emergency support, large family benefits etc are present in many municipalities.

1.3 Social contributions

Social insurance contributions finance pensions, health care, and unemployment insurance benefits. Previous contributions determine the eligibility and amount of contributory benefits (unemployment insurance benefits, maternity benefits, incapacity to work benefits, pensions).

Social tax (*sotsiaalmaks*) is paid by employers and self-employed¹ and funds state pension insurance and health insurance. Tax rate is 33% and the tax base is gross wage. 13% is transferred into the Estonian Health Insurance Fund and 20% transferred into pension insurance schemes.

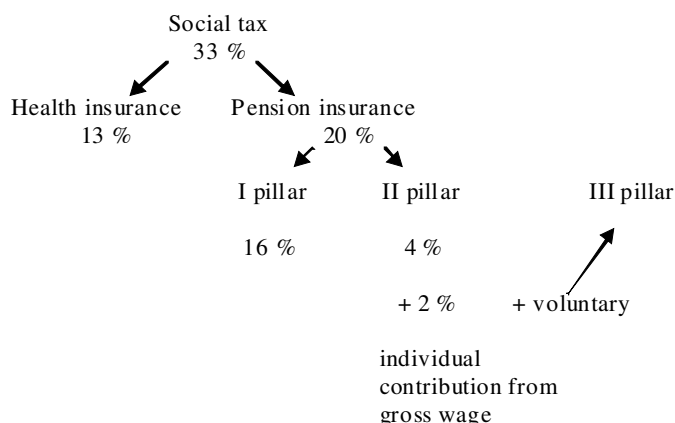
In case the person participates in the funded pension insurance scheme (the so-called 2nd pillar of the pension scheme), 4% of the social tax is shifted from the state pension insurance scheme to the private pension scheme and additional 2% contribution of gross wage will be paid by the employee into the pension scheme 2nd pillar (see Figure 1 below). Employee may also contribute to the voluntary pension schemes (3rd pillar) which can be deducted from the income tax base up to a certain limit. There were temporary changes in funded pension contributions in 2009-2010 and 2014-2017.

There is a minimum monthly base for social tax calculation, set by the *State Budget Act (Riigieelarve seadus)*. There is no upper ceiling of social contributions, except for the self-employed. For certain inactive groups of people (e.g. parents on maternity leave, registered unemployed, military service, etc.) the state pays the social tax, based on the minimum social tax base in most cases, i.e. credited contributions. In addition, the state pays additional contributions

¹ Throughout the report, we use the self-employed to refer to its legal concept, i.e. sole-proprietor (*füüsilisest isikust ettevõtja, FIE*), unless otherwise specified.

to the funded pension scheme (second pillar) on parental benefits. Some of the categories (recipients of unemployment benefits and family benefits) are also included in EUROMOD.

Figure 1. Social tax and contributions to pension schemes, 2016



Voluntary private pension contributions (3rd pillar) may be in two different forms: a) pension insurance policies offered by licensed private insurance companies; b) units of voluntary pension funds, which are managed by private fund managers. The third pillar pension market is dominated by insurance companies, partly due to more preferential tax treatment compared to voluntary pension funds.

Unemployment insurance contributions (*töötuskindlustusmaks*) form a compulsory insurance scheme that covers an employee in case of becoming unemployed, collective closing or insolvency of the employer, and an employer in case of collective redundancies. Unemployment insurance contributions are paid by employees and employers. The unemployment contribution payment base matches the social tax base. Generally, the employee’s share is withheld from the gross wage and the employer pays the contribution in addition to the social tax. The employers’ obligation to calculate and withhold the unemployment insurance premiums for an insured person shall terminate on the last day of the month when the insured person attains a pensionable age or is granted early-retirement pension, however employer is obliged to continue the unemployment insurance premiums payable by employers.

Self-employed are not subject to unemployment insurance contributions. Members of the management or controlling bodies of legal persons are making contributions and are covered. Also, persons who receive compensation when leaving their position (ministers, parliament members etc) do not hold the unemployment insurance contribution payment obligation. The unemployment insurance contribution rates are usually set annually.

1.4 Taxes

Personal income tax (*füüsilise isiku tulumaks*) is paid on personal income. The base of the income tax is relatively broad. The main exceptions are various child benefits and social assistance benefits. Different income sources are taxed uniformly (with a few exceptions). The personal income tax system is an individual system. Before 2017, married couples could also file a joint tax report if they wished (to share tax allowances). Since 2017, joint declarations were abolished though some tax allowances could still be shared between spouses. There are several allowances and deductions, which are discussed in detail in Section 2.7. The main tax allowances apply to the withholding tax as well, the rest can be claimed in the following year when filing the tax report. Therefore, there is often a difference between taxes withheld and taxes paid after filing a tax report. Taxable income from **self-employment** is equal to gross income from self-

employment less related costs minus special allowances for the agricultural income, and minus social insurance contributions, except contributions to the funded pension scheme. The latter can be deducted from total income a self-employed person has. Taxable business income is derived on individual basis.

Land tax (*maamaks*): a state tax received in full amount by local municipalities. The amount of land tax is calculated by multiplying the taxable price of the land by the land tax rate. The rate of land tax is established by the local government council annually in the range of 0.5-2.5% in 2017 and 0.8-2.5% in 2018. Land tax is paid by the owner of the land, in certain cases also by the user of the land. Land under residential buildings up to 0,15 ha per taxpayer in urban areas and 2 ha in rural regions is exempted, and there are further allowances for pensioners.

Value Added Tax (*käibemaks*): the standard rate in Estonia is 20% of the taxable value of a good or service, and reduced rates (9% and 0%) apply to specific services and goods.

Excise taxes (*aktsiisimaksud*): excise duties are set for alcohol, tobacco, electricity, fuel and non-alcoholic beverage packages. In recent years, several excise tax rates have been raised, both to raise tax revenues and to influence consumers' behaviour.

There are a few other minor taxes (tax on gambling, tax on heavy vehicles, customs duties, local taxes), which provide a relatively small share of revenue and do not affect household budgets considerably.

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 in EUROMOD. Some are beyond its scope entirely and are neither included in the EUROMOD database nor in its output income variables (e.g. indirect taxes). Others 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. Table 2.1 and Table 2.2 classify each of the main tax-benefit instruments (and some minor ones introduced above) into one of these three groups and provide a brief explanation as to why the instrument is not fully simulated if this is the case. In the following tables we present information on EUROMOD using the most recent dataset of combined EU-SILC and national SILC data. Information on earlier input datasets for the Estonian model can be found in earlier country reports.

Most of the benefits that are simulated in EUROMOD are universal family benefits that depend on the number of children and their age. Also, the needs-based family benefit and the subsistence benefit, as a support of last resort, are simulated, although using several simplifications. With the exception of unemployment benefits, other benefits that depend on contribution history, like various pensions and health insurance benefits, are not simulated, because the contribution history is not available in the dataset. Although the same is true for unemployment benefits, these are simulated using common assumptions across countries.

Table 2.1. Simulation of benefits in EUROMOD

Benefit	Variable	2015	2016	2017	2018	Comments
Unemployment insurance benefit (<i>töötuskindlustushüvitis</i>)	bunct_s	PS	PS	PS	PS	Eligibility from data
Unemployment allowance (<i>töötutoetus</i>)	bunnc_s	PS	PS	PS	PS	Eligibility from data
Severance payments (<i>koondamishüvitis</i>)	yunsv	I	I	I	I	No data on full contribution history
Paid sick leave	bhl	I	I	I	I	No data on contribution history and health
Disability pension (<i>töövõimetuspension</i>)	pdi	I	I	I	I	No data on contribution history, no exact data on health status
Social benefits paid to people with disabilities		IA	IA	IA	IA	No exact data on health status. Income is part of “other benefits” (bsals) or disability pension (pdi).
Old age pension (<i>vanaduspension</i>)	poa00	I	I	I	I	No data on contribution history
National pension (minimum old age pension, <i>rahvapension</i>)		IA	IA	IA	IA	No data, part of other pensions
Survivors' pension	psu	I	I	I	I	No data on contribution history
Maternity benefit (<i>sünnitushüvitis</i>)	bmapr	I	I	I	I	No data on contribution history
Parental benefit (<i>vanemahüvitis</i>)	bmact	I	I	I	I	No data on contribution history. No data which parent receives benefits
Childcare allowance (<i>lapsehooldustasu</i>)	bcc00_s	S	S	S	S	
Child allowance (<i>lapsetoetus</i>)	bch00_s	S	S	S	S	
Single parent child allowance (<i>üksikvanema lapsetoetus</i>)	bchlp	IA	IA	IA	IA	No data on the birth certificate of the child, or not included separately
Childbirth allowance (<i>sünnitoetus</i>)	bchba_s	S	S	S	S	
Parent's allowance for families with seven or more children (<i>seitsme- ja enamalapselise pere vanema toetus</i>)	bcclg_s	S	S	S	S	Allowance for families with many children (since 1 July 2017)
Needs-based family benefit (<i>vajaduspõhine peretoetus</i>)	bsach_s	S	S	S	-	
Subsistence benefit (<i>toimetulekutoetus</i>)	bsa00_s	S	S	S	S	
Pensioner's living alone allowance (<i>üksik elava pensionäri toetus</i>)	bsape_s	-	-	S	S	
Scholarships and grants (<i>õppetoetused ja stipendiumid</i>)	bed	I	I	I	I	No data on grades
Other benefits (not explicitly stated in the data set)	bsals	IA	IA	IA	IA	Only partially aggregated data

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 (in an *aggregate* income variable) but not simulated; “PS” *partially simulated* as some of its 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

Taxes and social contributions	Variable	2015	2016	2017	2018	Why not fully simulated?
Employer's social insurance contributions	ils_sicer					
Unemployment insurance contributions	tscerui_s	S	S	S	S	
Pension insurance contributions (1st pillar and the transfer to the 2nd)	tscerpi_s ttferpi_s	S	S	S	S	
Health insurance contributions	tscerhl_s	S	S	S	S	
Employee social insurance contributions	ils_sicee					
III pension pillar		I	I	I	I	Voluntary size of contributions
Unemployment insurance contributions	tsceeu_i_s	S	S	S	S	
Funded pension insurance contributions (2nd pillar)	tpceepi_s	S	S	S	S	
Self-employed social insurance contributions	ils_sicse					
Health insurance contributions	tscese_h_s	S	S	S	S	
Pension insurance contributions (1st pillar and the transfer to the 2nd)	tscese_pi_s ttfsepi_s	S	S	S	S	
Funded pension insurance contributions (2nd pillar)	tpcese_pi_s	S	S	S	S	
Contributions paid on social benefits by the central government	ils_sicct					
Health insurance contributions for those receiving unemployed benefits	tsccthl_s	S	S	S	S	
Health and pension insurance contributions (the 1st pillar) for those receiving parental benefit, childcare allowance or large family parental allowance	tscctpi_s tsccthl_s	S	S	S	S	
Pension insurance contributions (the 2nd pillar) for those receiving parental benefit	tpcctpi_s	S	S	S	S	
Income Tax (final)	tin_s	S	S	S	S	
Withholding income tax	tinwh_s	S	S	S	S	
Refund to low-paid employees	tinrf_s	-	S	-	-	
Land tax	tpr	I	I	I	I	No information on value of land or tax rates
Other local taxes		E	E	E	E	

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; “PS” *partially simulated* as some of its relevant rules are not simulated; “S” *simulated* although some minor or very specific rules may not be simulated

All labour taxes and social insurance contributions are simulated. As social contributions (social tax, unemployment insurance contributions) are largely proportional to gross labour earnings, they can be easily calculated. For the income tax, both final tax liabilities and withheld tax amounts are calculated. The final tax liability takes into account additional deductions that can only be applied in the annual tax declaration. Annual refund of income tax to low-paid employees (valid in 2016) is also simulated. This decreases total final tax burden and is not counted as a benefit. Other taxes, such as capital income tax, land tax, or indirect taxes, are not simulated in

the current version of the model as there are little or no data for that purpose or these instruments remain outside the scope of EUROMOD altogether.

The main structural changes in the period of 2015-2018 were as follows.

- A temporary increase in employee funded pension contribution rates in 2014-2017 to compensate for a temporary reduction in 2009-11 due to the economic crisis.
- Introduction of annual refund to low-paid employees in 2016. Pay-outs related to 2016 incomes are made in 2017 and hence considered as part of 2016 incomes in the model. The refund was valid for one year only.
- The detachment of the child tax allowance from the basic tax allowance (fixing its level independently) and the introduction of an additional category of deductible expenses (20% of rental income) in 2016, affecting the final liability of income tax.
- Introduction of pensioner's living alone allowance in 2017.
- Extending parent's allowance for families with 7+ children to families with 3-6 children (since 1 July 2017).
- Needs-based family benefit was abolished in 2018.
- Introduction of an income disregard for the subsistence benefit and the increase of implicit scale for children in 2018.
- Replacing optional joint income tax declarations with limited sharing of existing income tax allowances between spouses and a new spouse tax allowance in 2017.
- Introduction of a new upper limit on deductible mortgage interest payments (300 euro/year) in 2017.
- Replacing a flat rate basic tax allowance with an income-dependent tax allowance (max 500 euros per month) in 2018.

2.2 Order of simulation and interdependencies

Table 2.3 shows the order in which the main elements of the Estonian system in 2015-2017 are simulated. Policies, which are included into the model, but not used in the EUROMOD baseline simulations are marked as “*off*”. Policies, which are not applicable in a specific year are marked as “n/a”. The spine structure is largely the same for all six years.

The Estonian policy simulations start with the minimum wage (switched off in the baseline). Family benefits and unemployment benefits are simulated next, as credited social contributions depend on these and some benefits are taxable. After the benefits, we simulate employee and employer social insurance contributions. The contributions are deducted from the income tax base and therefore need to be simulated before the personal income tax.

More specifically, there are the following dependencies between the instruments:

- Minimum wage (if switched on) affects employment earnings which is the basis for employer and employee SIC, income tax, subsistence benefit, needs-based family benefit, and annual refund to low-paid employees.
- Unemployment insurance benefit is subject to income tax (unlike all other simulated benefits).
- The duration of unemployment allowance is dependent on the duration of unemployment insurance benefit.
- On behalf of the recipients of unemployment benefits and family benefits (child care benefits, parental benefits) social insurance contributions are paid by the government (either for health care or pensions or both).

- An income tax allowance for self-employment income from agriculture also applies to the tax base for self-employed social insurance contributions.
- Employee and self-employed social insurance contributions are deductible from the income tax base. Employee SIC both from the tax base for withholding and final income tax, self-employed SIC only from the latter.
- The subsistence benefit and the needs-based family benefit depend on income net of employee SIC and withholding income tax. Most of benefits are also included in the means-test.
- The upper limit of annual refund to low-paid employees is a final liability of income tax and although the benefit itself is not taxable, it is considered included in the means-test for the subsistence benefit and needs-based family benefit.

Table 2.3. EUROMOD spine: order of simulation

Policy	2015	2016	2017	2018	Description
SetDefault_ee	on	on	on	on	DEF: default values for variables
UAA_ee	switch	switch	switch	switch	SWITCH: Uprating by Average Adjustment: ON=uprating by averages; OFF=uprating by statutory indexation (default)
Uprate_ee	on	on	on	on	DEF: uprating factors
ConstDef_ee	on	on	on	on	DEF: constants
ILSDef_ee	on	on	on	on	DEF: standard income concepts
ILSudbdef_ee	on	on	on	on	DEF: standard income concepts (UDB related)
ILDef_ee	on	on	on	on	DEF: specific income concepts
TUDef_ee	on	on	on	on	DEF: assessment units
allocate_ee	on	on	on	on	DEF: reallocate benefits within households
BTA_ee	switch	switch	switch	switch	SWITCH: Benefit Take-up Adjustments: ON=non take-up (default); OFF=full take up
FYA_ee	n/a	n/a	n/a	n/a	SWITCH: Full Year Adjustments: ON=model within-year policy changes; OFF=model policies as of 30 th June (default)
yem_ee*	off	off	off	off	DEF: minimum wage
neg_ee	on	on	on	on	DEF: recode negative incomes (e.g. self-employment income) to zero
bch00_ee	on	on	on	on	BEN: child allowance (lapsetoetus)
bchlg_ee**	n/a	n/a	n/a	n/a	BEN: allowance for families with 3+ children (kolme- ja enamalapselise pere toetus)
bched_ee***	n/a	n/a	n/a	n/a	BEN: school allowance (koolitoetus)
bchba_ee	on	on	on	on	BEN: childbirth allowance (sunnitoetus)
bcc00_ee	on	on	on	on	BEN: childcare allowance (lapsehooldustasu)
bcclg_ee	on	on	on	on	BEN: parental allowance for families with 7+ children (seitsme- ja enamalapselise pere vanema toetus)
bunct_ee	on	on	on	on	BEN: unemployment insurance benefit (töötuskindlustushüvitis)
bunnc_ee	on	on	on	on	BEN: unemployment assistance benefit (töötuaabiraha)
tscer_ee	on	on	on	on	SIC: employer social insurance contributions
tsct_ee	on	on	on	on	SIC: credited social insurance contributions

Policy	2015	2016	2017	2018	Description
tscee_ee	on	on	on	on	SIC: employee social insurance contributions
tintaag_ee	on	on	on	on	TAX: allowance for self-employment income from agriculture (applicable to income tax and self-employed SIC)
tscse_ee	on	on	on	on	SIC: self-employed social insurance contributions
tinwh_ee	on	on	on	on	TAX: withholding income tax (jooksvalt kinnipeetud tulumaks, current liability)
tin_ee	on	on	on	on	TAX: income tax (deklaratsioonijärgne ehk lõplik maksukohustus, final liability)
tinrf_ee	n/a	on	on	on	TAX: refund to low-paid employees (madalalpalgalistele suunatud tagasimakse)
bsa00_ee	on	on	on	on	BEN: subsistence benefit (incl. housing component) (toimetulekutoetus)
bsach_ee	on	on	on	n/a	BEN: needs-based family benefit (vajaduspõhine peretoetus)
bsape_ee	n/a	n/a	on	on	BEN: pensioner's living alone allowance (üksi elava pensionäri toetus)

* Simulated but switched off in the baseline.

** Simulated for 2005-2007 in the model (was abolished from 1st July 2007).

*** Simulated for 2005-2008 in the model (was abolished from 2009).

2.3 Policy constants

Main policy parameters are defined as constants in a separate module. These include benefit amounts, tax and contribution rates, tax allowances, various upper and lower thresholds, and pension age. Their values usually vary over time. Some of them are specified on a monthly and some on a yearly basis, corresponding to how they are defined in legislation. In addition, there are changes in the currency of monetary values as Estonia changed from kroon to euro on 1st January 2011.

Table 2.4. Policy parameters defined as constants in EUROMOD

Parameter	Period	Reference name	Policies where used
Qualifying period for UA: min number of months in work	-	\$UAB_QperMin	unemployment assistance benefit
Qualifying period for UA: over last ... months	-	\$UAB_QperTot	unemployment assistance benefit
Qualifying period for UI: min number of months in work	-	\$UI_QperMin	unemployment insurance benefit
Qualifying period for UI: over last ... months	-	\$UI_QperTot	unemployment insurance benefit
Average wage	m	\$AvWage	average wage
Minimum wage	m	\$Minwage	minimum wage, social insurance contributions by self-employed, unemployment allowance
Lagged minimum wage	m	\$MinWage_lag1	unemployment insurance benefit
Amount of unemployment allowance (UA)	m/d	\$UAB_amount	unemployment insurance benefits and unemployment allowance
Official pension age (males)	-	\$PensionAgeMale	unemployment benefits and employee unemployment insurance contributions
Official pension age (females)	-	\$PensionAgeFemale	unemployment benefits and employee unemployment insurance contributions
Child Allowance Rate (CAR) – base amount for child benefits	m	\$CB_Base	child allowances

Parameter	Period	Reference name	Policies where used
Childcare Allowance Rate (CCR) - base amount for childcare benefits	m	\$CC_Base	childcare benefits
Amount for first child	m	\$CB_Ch1	child allowance
Amount for second child	m	\$CB_Ch2	child allowance
Amount third+ child	m	\$CB_Ch3plus	child allowance
Amount per child with 3 children	(q)	\$CB_Fam3	child allowance for large family
Amount per child with 4-5 children	(q)	\$CB_Fam4_5	child allowance for large family
Amount per child with 6+ children	(q)	\$CB_Fam6plus	child allowance for large family
Amount for child aged under 1	m	\$CC_Age0_1	childcare allowance
Amount for child aged under 3	m	\$CC_Age0_3	childcare allowance
Amount for child aged 3-8	m	\$CC_Age3_8	childcare allowance
Amount with 3-6 children	m	\$CC_Fam3_6	parental allowance for large families
Amount with 7+ children	m	\$CC_Fam7plus	parental allowance for large families
Amount per child	(y)	\$BE_Amount	school allowance
Main rate	y	\$BA_Ch1	birth allowance
Secondary rate	y	\$BA_Ch2plus	birth allowance
Income limit	m	\$SACH_IncLim	needs-based family benefit
Amount for families with 1 child	m	\$SACH_Fam1	needs-based family benefit
Amount for families with 2+ children	m	\$SACH_Fam2plus	needs-based family benefit
Part of child allowance (for 3rd+ child) disregarded for means-test	m	\$SACH_Ch3plus	needs-based family benefit
Income limit	m	\$SAPE_IncLim	pensioner's living alone allowance
Benefit amount	y	\$SAPE_Amount	pensioner's living alone allowance
Maximum amount / income limit	m	\$SA_AmountMain	subsistence benefit
Subsistence addition	m	\$SA_AmountExtra	subsistence benefit
Average housing costs	m	\$SA_AvHhCost	subsistence benefit
Take-up threshold	m	\$SA_TakeUpLim	subsistence benefit
Average taxable wage in the previous calendar year	d	\$UI_AvEarn	unemployment insurance benefit
Minimum level of UI benefit	(m)	\$UI_LowLim	unemployment insurance benefit
Benefit amount	(m)	\$TINRF_Amount	Refund to low-paid employees
Withdrawal rate	-	\$TINRF_WdrRate	Refund to low-paid employees
SIC minimum base	m	\$SIC_MinBase	social insurance contributions by employer, self-employed and state
SIC rate for the pension contributions (the 1st pillar)	-	\$SIC_RatePens1	social insurance contributions by employer, self-employed and state
SIC rate for the health contributions	-	\$SIC_RateHealth	social insurance contributions by employer, self-employed and state
SIC rate for the pension contributions (transferable from the 1st to the 2 nd pillar)	-	\$SIC_RatePens1to2	social insurance contributions by employer, self-employed and state
Temporary SIC rate for the pension contributions (transferable from the 1st to the 2 nd pillar)	-	\$SIC_RatePens1to2Temp	social insurance contributions by employer, self-employed and state

Parameter	Period	Reference name	Policies where used
SIC rate for the pension contributions (the 2nd pillar)	-	\$SIC_RatePens2	social insurance contributions by employer, self-employed and state
Temporary SIC rate for the pension contributions (the 2nd pillar)	-	\$SIC_RatePens2Temp	social insurance contributions by employer, self-employed and state
SIC rate for the pension contributions (the 2nd pillar) for those on maternity leave	-	\$SICCT_RateMatLeave	social insurance contributions by state (credited contributions)
Employer SIC rate for the unemployment insurance contributions	-	\$SICER_RateUI	social insurance contributions by employer
Employee SIC rate for the unemployment insurance contributions	-	\$SICEE_RateUI	social insurance contributions by employee
Income tax rate	-	\$IT_StdRate	withholding income tax and final income tax
Reduced income tax rate for private pensions	-	\$IT_LowRate	withholding income tax and final income tax
Amount of basic allowance	y	\$IT_BasicAlw	withholding income tax and final income tax
Child allowance for income tax, for each child from Nth	-	\$IT_ChildAlwMult	final income tax
Amount of child allowance	y	\$IT_ChildAlw	final income tax
Amount of pension allowance	y	\$IT_PensionAlw	withholding income tax and final income tax
Upper limit on voluntary pension contributions, amount	y	\$IT_PensUpLimAmount	final income tax
Upper limit for voluntary pension contributions, rate	-	\$IT_PensUpLimRate	final income tax
Upper limit on deductible mortgage interest payments	y	\$IT_ExpUpLimMI	final income tax
Upper limit on deductible expenditure, amount	y	\$IT_ExpUpLimAmount	final income tax
Upper limit on deductible expenditure, rate	-	\$IT_ExpUpLimRate	final income tax
Agriculture allowance for income tax	y	\$IT_AgriAlw	self-employed tax allowance, final income tax
Maternity pay: average taxable earnings (t-2)	m	\$MP_AvEarn	extra pension insurance contributions (2nd pillar) for those receiving parental benefit

Notes: “d”: daily; “m”: monthly; “y”: yearly; “-”: non applicable.

2.4 Policy switches

There are three switches used in the Estonian model.² First, a switch for choosing between uprating (non-simulated) public pensions (UAA_ee) according to changes in average amounts (switch set to *on*) or statutory indexation (switch set to *off*, the default). Second, a switch for controlling benefit take-up modelling (BTA_ee). If the switch is set to *on* then partial take-up is applied (the default), otherwise full take-up is assumed. Another switch (FYA_ee) allows one to choose between modelling policies as of 30th June (switch set to *off*, the default) and modelling annual policies (switch set to *on*), which takes into account within-year policy changes.

² Policy switches are denoted with ‘switch’ in the policy spine (for a given policy year), while their default values (*on* or *off*) are set in a separate dialogue box in the model.

2.5 Social benefits

2.5.1 Unemployment insurance benefit (bunct_ee)

- *Brief description*

Unemployment insurance (UI) benefit (*töötuskindlustushüvitis*) is a benefit for the unemployed and it depends on previous earnings and contributions to the insurance scheme.

- *Definitions and eligibility conditions*

The unit of analysis is an individual person. To be considered eligible, a person must be involuntarily unemployed, aged from 16 to the retirement age and not receiving old age pension (which is possible in the case of early retirement), have worked (including being member of a management board again since 2018) and made contributions for at least 12 months during the previous 36 months (prior to registering as unemployed), registered as unemployed and looking actively for a job. UI benefit is not paid to those who leave their job or service voluntarily or who lose their job because they do not perform as agreed, lost confidence of their employer or behaved in an indecent manner. These persons may still receive unemployment allowances. The UI benefit may be stopped if the person refuses an offer of suitable work or does not show up at the Public Employment Service (PES) at a fixed date. As persons registered as self-employed, aged under 16 or receiving old-age pension or those older than the legal pension age are not allowed to be registered as unemployed in PES, they are also not eligible for unemployment insurance benefits or unemployment allowances.

- *Benefit amount*

During the first 100 calendar days of unemployment the replacement rate is 50% of the previous gross earnings and 40% afterwards. The gross earnings refer to the average daily gross earnings of the person in the previous calendar year, subject to an upper limit of three times average taxable wages in the previous calendar year. The daily amount received is calculated on the bases of the wages the person has received during the last twelve months of the insurance period. Of those twelve months, only the first nine are taken into account, while the last three months are disregarded. Since 1st July 2009, there is a lower limit on the benefit amount, equal to 50% of the minimum wage of the previous year. UI benefits are subject to income tax and this is withheld when the benefits are paid out by the UI fund.

To discourage entry into unemployment, UI system involves a waiting period of 7 days before the benefit payment starts. The duration of the unemployment insurance benefit ranges from 180 days up to 360 days depending on the length of contribution payments.

After expiry of the insurance benefit, the unemployed can apply for unemployment allowances for the remaining days and for social assistance thereafter.

- *EUROMOD notes*

Effectively, this benefit is only partly simulated using the information about actual receipt. But rather than simply using the observed receipt as part of the eligibility criteria, all eligibility rules in full detail are covered. However, as not all required information (e.g. work history) is available several assumptions are made and some rules are considered automatically fulfilled for those in receipt. This approach is chosen so that the benefit can be also modelled for those currently

employed if needed (e.g. to simulate their entitlement if they become unemployed, e.g for replacement rates calculations).³

Simulated unemployment duration (*lunmy_s*) is set equal to the maximum of observed unemployment duration (*lunmy*) and observed benefit receipt (*bunctmy*). It is effectively assumed that unemployment spells start in the reference year. Simulated unemployment duration is also used for unemployment allowance calculations. With regards to the minimum qualifying contribution period, those currently unemployed and in receipt are assumed to satisfy it, while those currently unemployed and not in receipt are assumed to have not passed it.

At this point, working age people who are unemployed (*lunmy_s* > 0), have sufficient contribution history, do not receive old age pension and are not self-employed (i.e. have employment earnings or no self-employment status) are considered eligible. It is assumed that all of them are involuntary unemployed and capable and available for work (there is a variable in the SILC data identifying the latter but only filled in for those currently unemployed).

Benefit duration (*bunctmy_s*) is determined according to the rules above, using modelled contribution history, while also controlling for the unemployment duration (*lunmy_s*).

Benefit entitlement is calculated based on previous earnings (or alternatively on imputed wage) and benefit duration, subject to the lower and upper thresholds. For those currently unemployed and in receipt, previous earnings are used which have been imputed by reversing unemployment insurance benefit rules. For those currently unemployed and not in receipt, the entitlement is set to zero. Finally, benefit amount is adjusted with the number of months in receipt (*bunctmy_s*).

³ Employment changes are modelled in combination with a specific add-on tool and are not part of the baseline simulations.

Table 2.5. Characteristics of the unemployment benefit, 2005-2018

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Eligibility	Contribution period (min)	12 months during last 24 months			12 months during last 36 months											
	Other conditions	Involuntarily unemployed, registered as unemployed (excludes self-employed, aged under 16 or in the retirement age, those receiving old-age pension), looking actively for a job, willing to accept job suitable work offers														
	Eligibility of self-employed	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Payment	Contribution base	Person's average earnings in the last 12 months			Person's average earnings in the first 9 months over the preceding 12 months											
	Basic amount	50% of the base amount during first 100 days, 40% during the remaining period														
	Additional amount	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Floor	-			UA benefit			50% MW of previous year								
	Ceiling ^(a)	562 EEK	630 EEK	748 EEK	885 EEK	1,015 EEK	894 EEK	60.46 EUR	63.99 EUR	68.07 EUR	75.87 EUR	77.34 EUR	84.12 EUR	86.94 EUR	93.30 EUR	
Duration		<u>Required contribution period:</u>														
	180 days	Less than 5 years			Less than 55 months						Less than 60 months					
	270 days	5-10 years			56-110 month						60-120 months					
	360 days	10 or more years			110 or more months						120 or more months					
	Max (days)	180	180	270	270	270	360	360	360	360	360	360	360	360	360	360
Subject to	Taxes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	SIC ^(b)	No	No	No	No	No	No	No	No	No	No	No	No	No	No	

Notes: ^(a) daily rate, 3 times the average of the taxable earnings in previous year; ^(b) only credited (health) contributions applied. Source: Unemployment Insurance Fund, various legal acts.

2.5.2 Unemployment allowance (bunnc_ee)

- *Brief description*

Unemployment allowance (*töötutoetus*) is paid to those people who do not qualify for unemployment insurance benefit or the period of UI benefit has ended. Since 2010, UI benefit could be received for 360 days. UA benefits can be received until the end of the remaining period of 270 days.

- *Definitions and eligibility conditions*

The unit of analysis is an individual person. To be considered eligible, a person must be unemployed, aged from 16 to the retirement age and not receiving old age pension, must have been employed or engaged in activity equivalent to working for at least 180 days during the 12 months prior to filing an application with an employment office. Benefit is suspended for 10 days if the person refuses an offer of suitable work or does not show up at the Public Employment Service (PES) at a fixed date for the first time. Benefit is stopped if the person refuses an offer of suitable work or does not show up at the PES at a fixed date for the second time. Unemployment allowance is formally income tested: only the unemployed whose income is below the unemployment allowance are entitled to the benefit.

- *Benefit amount*

Flat rate of 4.01 EUR in 2015, 4.41 EUR per day in 2016, 4.81 EUR per day in 2017 and 5.31 EUR per day in 2018. It is non-taxable.

- *EUROMOD notes*

Similar to unemployment insurance benefit, unemployment allowance is effectively only partly simulated using the information about actual receipt but this is done indirectly by assuming those in receipt fulfil certain eligibility criteria.

Work history for simulating the eligibility of unemployment allowance is modelled in complete analogy to the unemployment insurance benefit. The eligibility rule differs as self-employed are not excluded from the UA benefit. Additionally, there is also an income condition – income from other sources (market income, maternity benefit, parental allowance for families with 7+ children) must be below the UA benefit amount. As it is not known if and how this income test is followed in practice, it is not applied to those observed in receipt in the baseline simulations.

Benefit amount is simply based on a daily flat rate. However, the number of months in receipt is calculated as the difference between maximum duration (i.e. nine months) less simulated unemployment insurance benefit duration, taking overall unemployment duration also into account. Finally, benefit amount is adjusted with the number of months in receipt (bunncmy_s).

Table 2.6. Characteristics of the unemployment assistance, 2005-2018

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Eligibility	Contribution period (min)	180 days during last 12 months													
	Other conditions	Registered as unemployed (excludes self-employed, aged under 16 or in the retirement age, those receiving old-age pension), looking actively for a job, willing to accept job suitable work offers, satisfies an income means-test													
	Eligibility of self-employed	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Payment	Contribution base	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Basic amount	14.3 EEK	14.3 EEK	32.9 EEK	32.9 EEK	32.9 EEK	32.9 EEK	2.11 EUR	2.11 EUR	3.27 EUR	3.62 EUR	4.01 EUR	4.41 EUR	4.86 EUR	5.31 EUR
	Additional amount	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Floor	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Ceiling	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Duration	Standard (days)	270	270	270	270	270	270	270	270	270	270	270	270	270	270
	Special cases														
Subject to	Taxes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	SIC ^(a)	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Notes: ^(a) only credited (health) contributions applied. Source: Unemployment Insurance Fund, various legal acts.

2.5.3 Child allowance (bch00_ee)

- *Brief description*

Child allowance is a monthly universal non-means-tested non-taxable benefit paid to families with children below an age limit.

- *Definitions, eligibility conditions and income test*

The unit of analysis for all child and childcare benefits is the family consisting of the head, spouse or cohabitant partner and children under 16 years or under 19 years if studying at basic, upper secondary or vocational school. There is no income test. Eligible children living in the household, but without parents (i.e. so-called “loose children”), are also counted as dependent children.

Table 2.7. Overview of state family benefits, 2015-2018

Benefit	Frequency	Unit	Basic formula in 30 th of June 2015 (and changes in 2016-2018)
Child allowance	Monthly	Per child	A flat rate benefit since 2015. In 2015, 45 EUR for the first and second child and 100 EUR for the third and any consequent child. In 2016 the amount for the first two children was raised to 50 EUR per month and remained 100 EUR for the third and any consequent child. In 2018 the amount for the first two children was raised to 55 EUR per month and remained 100 EUR per month for the third and any consequent child.
Allowance for multiple birth of three or more children	Monthly	Family	1,000 EUR paid to one parent until the children reach 18 months of age. Effective from March 1, 2018.
Childcare allowance	Monthly	Per child	Under 3 years old: 1/2 x CCR; 38.36 EUR since 2017 3-8 years old: 1/4 x CCR; 19.18 EUR since 2017. Before 2017, additional 6.40 EUR for each child under 1 year old, if the parent receives childcare allowance
Parent's allowance for families with seven or more children (until 30 June 2017) / Allowance for families with many children (since 1 July 2017)	Monthly	Family	Until June 2017: 2.2 x CCR From July 2017: a flat rate benefit of 300 EUR monthly for families with 3-6 children and 400 EUR for families with 7 or more children for whom one parent receives child allowance.
Single parent's child allowance	Monthly	Per child	2 x CAR
Foster care allowance	Monthly	Per child	240 EUR. Since January 1, 2018 the allowance is only paid for child in legal guardianship, children in foster families do not receive the benefit since.
Conscript's child allowance	Monthly	Per child	5 x CAR; 50 EUR since January 7, 2017
Childbirth allowance	Lump sum	Family	320 EUR. In case of the birth of triplets or higher order multiples, the allowance is 1,000 EUR per child.
Adoption allowance	Lump sum	Family	320 EUR
Start in independent life allowance	Lump sum	Per child	40 x CAR

Note: CAR – Child allowance rate (9.59 EUR in 2015-2016); CCR – Childcare allowance rate (76.7 EUR in 2015-2016).

- **Benefit amount**

The benefit is paid monthly to one of the parents, based on the number of eligible children. In 2015 the child allowance was unlinked from the Child Allowance Rate and the benefit was set to 45 EUR for the first and second child and 100 EUR for the third and any consequent child per month. In 2016 the amount for the first two children was raised to 50 EUR per month, the amount for third and any subsequent child remained unchanged, i.e. 100 EUR, and it remained the same for 2017. From the beginning of 2018, the child allowance for the first and second child was raised to 55 EUR per month, the amount for third and any subsequent child remained unchanged, i.e. 100 EUR.

- **EUROMOD notes**

Note that we have monthly family benefits, while the age variable is recorded as of at the end of income year, therefore, we do not know how many months exactly children are eligible for. We have chosen to oversimulate the benefit by assuming eligibility for the whole year when reaching the age limit, i.e. also including the age limits like 16 and 19 in the case of child allowance, instead of undersimulating (assuming no eligibility for the year when reaching the age limit) as this results in a better match with corresponding age profiles and the aggregate results from the register data.

Due to rare occurrence in the survey data and very low statistical reliability, specific provisions for triplets and multiple births of higher orders – allowance for multiple birth of three or more children and the top-up of childbirth allowance – are not simulated.

2.5.4 Allowance for families with 3 or more children (bchlg_ee)

- **Brief description**

Allowance for families with 3 or more children (*kolme- ja enamalapselise pere toetus*) was a quarterly universal non-means-tested non-taxable benefit paid to families where there were three or more children below an age limit. This was abolished as a separate instrument on 1st July 2007, when it was effectively incorporated in the main child allowance. Further details can be found in earlier country reports.

2.5.5 School allowance (bched_ee)

- **Brief description**

School allowance (*koolitoetus*) was an annual universal non-means-tested non-taxable benefit paid to families with children in the compulsory schooling age to help them with the start of the school year. It was paid out in August, in general. It was abolished from 1st January 2009. Further details can be found in earlier country reports.

2.5.6 Childbirth allowance (bchba_ee)

- **Brief description**

One of the parents has the right to receive childbirth allowance (*sünnitoetus*). An adoptive parent, guardian or caregiver has the right to receive childbirth allowance, if childbirth allowance has not been paid for the same child earlier.

- **Benefit amount**

The benefit is paid in the case of childbirth. Since 2011 the benefit rate is 320 EUR. In case of the birth of triplets or higher order multiples, the childbirth allowance is 1,000 EUR per child.

- **EUROMOD notes**

There is no information about the status of being an adoptive parent, guardian or caregiver in the underlying datasets. The top-up for families of triplets and higher order multiples is not simulated.

2.5.7 Childcare allowance (bcc00_ee)

- **Brief description**

Childcare allowance (*lapsehooldustasu*) is a monthly universal non-means-tested non-taxable benefit paid to families with young children.

- **Definitions and eligibility conditions**

The unit of analysis is the same as for child allowance (see above [2.5.3](#)). The benefit is paid to one of the parents based on the number of children up to 3 years old and aged 3-8 years. A parent is not eligible if she (or he) is receiving the parental benefit for any of the eligible children. There was an additional element for every child up to one year of age before 2017.

- **Benefit amount**

The benefit is paid monthly to one of the parents. Before 2017, the amount was 1/2 of the Childcare Allowance Rate (CCR, equal to 76.7 EUR in 2011-2016) for every child up to 3 years old, 1/4 of the CCR for each eligible child from 3 to 8 years of age. Since 2017, the benefit rate was unlinked from the CCR and explicitly set at 38.36 EUR and 19.18 EUR per child in the two cases, respectively. Additionally, 6.43 EUR for every child up to one year of age if the parent is not eligible for parental benefits. Since 2006 the additional benefit became effectively non-existent as parental benefit was extended to 14 months and, therefore, is not simulated from 2006 onwards in EUROMOD. The supplement was officially abolished in 2017.

- **EUROMOD notes**

The benefit is allocated to the same person in the household who is receiving the maternity benefit to avoid that social tax paid by the state on behalf of the person in the maternity leave is counted twice. If there is no one receiving maternity benefit it is assigned to the head of unit.

2.5.8 Parent's allowance for families with 7 or more children (bcclg_ee)

- **Brief description**

The allowance (*seitsme- ja enamalapselise pere vanema toetus*) is targeted to families with a very large number of children. It is a monthly universal non-means-tested and non-taxable benefit. From July 2017 this became allowance for families with many children (*lasterikka pere toetus*) with two tiers: 300 EUR per month for families with three to six children and 400 EUR per month for families with at least seven children.

- **Definitions and eligibility conditions**

The unit of analysis is the same as for child allowance (see above [2.5.3](#)). There must be at least seven eligible children in the family and at least 3 children since July 2017.

- **Benefit amount**

In 2007-2017, the benefit is 2.2 times CCR. Since July 2017, it is 300 EUR per month for families with 3-6 children and 400 EUR per month for families with at least seven children.

2.5.9 Subsistence benefit (bsa00_ee)

- **Brief description**

Subsistence benefit (*toimetulekutoetus*) is a means-tested social assistance benefit that should guarantee a minimum income to all residents after paying for minimum housing costs.

- **Definitions**

The unit of analysis is a household. Households whose income after payment for housing expenses, calculated according to certain general criteria and specific rules set by municipalities, is below the subsistence level are entitled to these benefits.

Duration is unlimited, but granted and renewed on a monthly basis. Municipalities have the right to refuse the payment of benefits to people in working age and capable for work, but who do not study or work, and who have repeatedly refused to accept suitable work. Also a local authority has the right to refuse to grant a subsistence benefit if the local authority finds that the property used or owned by the subsistence benefit applicant or his or her family or the lease, rental or sale thereof ensures sufficient funds for coping for the person or his or her family.

The means-testing is based on household net income in the previous month (or average in the last 6 months if not receiving income on regular basis). Certain types of income are disregarded, for example, social benefits for disabled persons, one-off benefits (e.g. birth grant, funeral grant), training stipends.

Household subsistence level is calculated as follows. It is summed over the household members, assigning 100% of the subsistence rate for the head of household and 80% for any other household member. Since 2015 the weights are as follows: first adult and children 100% and additional adults 80%. Since 2018 the weights are as follows: first adult 100%, additional adults 80% and children 120%. The subsistence rate was 90 EUR in 2014-2015, 130 EUR in 2016 and 140 EUR since 2018.

The “norm-space” of the household is derived as follows. First, the norm-space is 18m² per person in the household plus additionally 15m² per household (i.e. 15 + 18 x number of persons in unit). In case the number of rooms used equals the number of persons living in this dwelling permanently, and the actual living space exceeds the norm area then the actual living space is used instead. If the area of the apartment is smaller than the norm-space, then the actual area is also taken as a basis for calculations. For a single pensioner applying for subsistence benefit, the norm-space can be up to 51m².

Income list

Income for the subsistence benefit is calculated using all current income except lump-sum benefits (e.g. childbirth allowance), benefits for the disabled, school allowance (abolished in 2009) and large family allowance (abolished in 2009), needs-based family benefit (2013-2017) and other social assistance. Since July 2013, part of child allowance for the third and each subsequent child is also excluded from the means-test: between July 2013-Dec 2014 in the amount of 19.18 euros (=2xCAR) for each child receiving child allowance and 45 euros since January 2015. Formula until 2017:

$$Y_{bca} = \sum_1^n bca - \sum_3^n ch * 45$$

Y_{bca} - household child allowance income

bca – child allowance per every child

ch – number of children

Formula since 2018:

$$Y_{bca} = \sum_1^n bca$$

Income concept refers effectively to income net of withholding income tax. Only positive income from self-employment is included.

To motivate working, part of the family’s income is excluded when calculating the benefit since 2018. This includes remuneration for work in case of children, and 100% of wage during the first two months and 50% of wage the following four months of employment of the adult who has received the benefit for at least two preceding months in a row without receiving income from employment.

- ***Benefit amount***

The general rule for subsistence benefit is the following:

$$B = \max(L + C - Y; 0)$$

B = subsistence benefit;

L = subsistence level (see above);

C = actual costs related to the dwelling (excluding mortgage interests) up to maximum limits set by the local government and which are calculated for “norm-space”;

Y = household income according to the income definition for the subsistence benefit purpose.

There is an additional supplement 15 EUR (since 2011) if the household is entitled to subsistence benefit and there is only one adult in the household and all other household members are younger than 18.

Since 2018 children’s weight in the formula is equal to the 120% (previously 100%), i.e. weights are: first adult=1; children=1.2 and additional adults = 0.8.

- ***EUROMOD notes***

Imputation of housing costs

In practice, housings costs for “norm-space” depend further on the detailed rules by municipalities. In our case we approximate these with actual costs related to dwelling in proportion to housing size and applying an upper limit to avoid unreasonably large housing costs. We currently use the average actual (or predicted) housing cost from registry data as a ceiling, which was 115 EUR in 2015 and 116 EUR in 2016).

Total housing cost variable includes also mortgage interest payments which hence must be deducted here. Note that while housing costs in EU-SILC refer to the average monthly costs of the interview year then mortgage interest payments refer to annual figures of the income year. Either because of this or recall errors total monthly housing costs are sometimes smaller than

monthly mortgage interest payments and in these cases we have scaled up the housing costs to the level of mortgage interest payments.

Means-testing

EUROMOD underlying datasets lack information on income specifically in the previous calendar month (or average in last 6 months). Instead, the model operates with average monthly incomes derived from annual figures. For this reason, it is also not possible to simulate the time-dependent earnings disregard introduced in 2018 (see above).

Non take-up

Benefit non take-up is modelled by assuming that very small sums are not claimed. Based on actual receipt data, we have set the threshold at 12 EUR since 2011.

2.5.10 Needs-based family benefit (*bsach_ee*)

- *Brief description*

Needs-based family benefit (*vajaduspõhine peretoetus*) was a monthly benefit that was paid to households with children whose average income in the previous three months is below a certain threshold between July 2013 till the end of 2017 (The payments of the means-tested family benefit, for which the recipients applied before January 1, 2018, will continue until March 2018. However, new applications are not accepted from January 1, 2018 and the payments will cease for the old applications after March 2018).

- *Definitions*

The unit of analysis is a household. Households whose income is below the income level of the needs-based family benefits and who have children eligible to child benefits are entitled to needs-based benefits. Means-testing is based on current disposable income (i.e. net of withholding income tax). Income is calculated using the same income components as for the subsistence benefit (see 2.5.9).

The income level of the needs-based family benefit is established in the annual state budget and is linked to the relative poverty level two years earlier (e.g. in 2013 the relative poverty level of 2011 is used). Incomes are equivalised with the modified OECD scale, which is also used for relative poverty calculations. (The weights are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.)

In 2013 the income level of the needs-based family benefit was 280 EUR per month for the first household member and, respectively, 140 EUR for any additional adult (older than 13) and 84 EUR for every child under 14. In 2014 the threshold for the first household member was 299 EUR, 329 EUR in 2015, 358 EUR in 2016 and 394 EUR in 2017. Since 2014 all households with children that receive the subsistence benefit are eligible for needs-based family benefit.

- *Benefit amount and duration*

Benefit amount depends on the number of eligible children in the family. In 2013-2014, the benefit was equal to 1 x Child Allowance Rate (CAR), 9.59 EUR, if there was one child in the household, and 2 x CAR (19.18 EUR) if there were two or more children in the household. Since 2015 the needs-based family benefit for a household with one child is 45 EUR and 90 EUR for households with at least two children. Also, the if the local authority finds that the property used or owned by the subsistence benefit applicant or his or her family or the lease, rental or sale

thereof ensures sufficient funds for coping for the person or his or her family, a local authority has the right to refuse to grant a subsistence benefit:

Duration is unlimited, but granted and renewed every three months.

- **EUROMOD notes**

Means-testing

EUROMOD underlying datasets lack information on income specifically in the previous 3 months. Instead, the model operates with average monthly incomes derived from annual figures.

Non take-up

We do not model benefit non take-up. The benefit was introduced in the second half of 2013 and there is no appropriate information about its take-up yet available.

2.5.11 Pensioner's living alone allowance (bsape_ee)

- **Brief description**

Pensioner's living alone allowance (*üksi elava pensionäri toetus*) was introduced in 2017 and is a yearly allowance that is paid to a person who has attained pensionable age and who is living alone in Estonia and whose average monthly income is below a certain threshold.

- **Definitions**

The unit of analysis is a person. The person must be living alone according to the population register and should be at retirement age or older. The living alone clause does not apply to a person (i) who lives together with a minor child or a child who is acquiring education and under 21 years of age, (ii) receives 24-hour care service or shares the residence with such a person, or (iii) is a guardian or is under guardianship.

There is also a means-test: monthly net state pension must be below the rate of pensioner's allowance. Net state pension refers to old-age pension, net of withheld income tax where basic tax allowance and pensioners tax allowance are applied. The amount and the rate of pensioner's allowance are established in the annual state budget.

All criteria must be fulfilled throughout a period from April to September in a given calendar year.

- **Allowance and rate amount and duration**

The amount of allowance is 115 EUR per year since 2017. Duration is unlimited, but granted and renewed every year. The rate of pensioner's allowance (i.e. income limit) was 470 EUR per month in 2017 and 492 EUR per month in 2018.

- **EUROMOD notes**

Not applying living alone clause: EUROMOD underlying datasets lack information on guardianship and 24-hour care service but has information about dependent children.

Non take-up: We do not model benefit non take-up. As the payments will start in the second half of 2017, no information about its actual take-up is yet available.

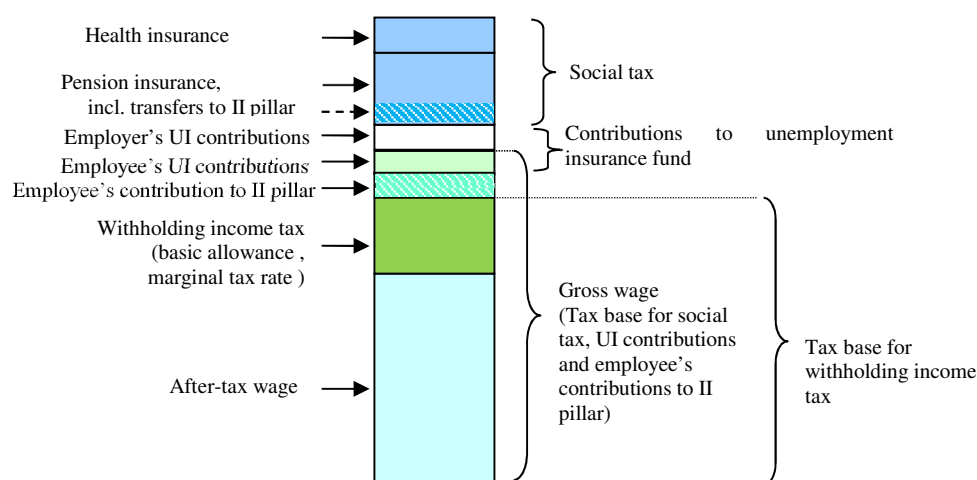
2.6 Social contributions

Social contributions are paid by employees, employers and self-employed. Social insurance is highly centralised, and the main contributions are formally named as a tax (*social tax*).

2.6.1 Employee social contributions (tscee_ee)

Employees and employers pay social contributions as a fixed percentage of gross wages (see Figure 2 for a schematic definition of the gross wage and other direct taxes on wages). The calculation of social contributions for self-employed is discussed in detail in Section 2.6.3.

Figure 2. Schematic composition of tax base of social contributions



Employees pay from their gross wage their part of the unemployment insurance contributions (unless they are of the pensionable age or receiving old-age pension) and a contribution to the funded pension scheme, which is optional for certain (older) age groups.

Unemployment insurance contributions (tsceui_s)

Only employees who have not reached the legal pension age (different for males and females) and not receiving old age pension are obliged to pay unemployment insurance contributions. (There is no such exception for employer unemployment insurance contributions.) UI contributions are calculated as a fixed percentage of the gross employment income. The contribution rates have changed over the years (see the following table).

Table 2.8. Unemployment insurance contribution rates, 2005-2020

	2005	2006-2009 (May)	2009 (June-July)	2009 (Aug)-2012	2013-2014	2015-2016	2017-2020
Employers	0.5%	0.3%	1%	1.4%	1%	0.8%	0.8%
Employees	1%	0.6%	2%	2.8%	2%	1.6%	1.6%

Pension contributions to the funded scheme (tpceepi_s)

Contributions are calculated as 2% of the gross employment income for those who participate in the scheme. Note that between 1st July 2009 – 31st December 2010 the contributions to the funded scheme were suspended. Persons with ten years from retirement (born 1954 or later) could, upon submitting a relevant application, resume individual contributions (2%) from 1st January 2010, in which case also state contributions from the social tax (4%) were transferred. Other age groups could also continue to pay individual contributions (2%) from 1st January 2010, but no contributions from social tax were transferred (i.e. the scheme applied is 2+0%). For any other participant of the funded scheme (i.e. persons not opting for voluntary continuation of individual contributions), contributions to the funded scheme were gradually resumed from 2011, when a 1+2% scheme was applied, and from 2012 in full amount of 2+4%.

For 2014–2017, there is a compensation mechanism that will transfer additional social tax revenues to the funded scheme. By 15 September 2013, people who had joined the second pillar had an option to increase their contributions. About 106,000 people (approx. 16%) increased their contributions to 3% of gross wage (from usual 2%) and the share of social tax transferred to the funded scheme will increase from 4% to 6% of gross wage. The transfers to the funded scheme increased to 6% also for those 180,000 people who continued their contributions in 2010-2011, but did not choose to raise their contributions in 2014-2017.

- ***EUROMOD notes***

In the national SILC 2015 dataset the information on making contributions to the funded pension scheme in 2014 is available for those only who are employed (variable *lpm*). We have merged this information directly to the EU-SILC dataset. For those who were not employed and whose participation information was missing we randomly simulated age-gender averages in the input data. In addition, the continuation of contributions in 2010-2011 and an increase of contributions in 2014-2017 was randomly assigned based on the register data of the Estonian National Social Insurance Board when preparing input data.

The following table shows the simulation of contributions based on the actual indicator of participation (*lpm*), the continuation of payments in 2010 (*lpm01*), an increase of contributions in 2014 (*lpm02*), birth year (*dag*) and relevant contribution rates.

Table 2.9. Contributions to the funded pension scheme in 2009-2017, % of employment income

Person's decision on individual contributions (variable <i>lpm01</i>) Year	Born 1942-1954		Born 1955 or later	
	Continues	Suspends	Continues	Suspends
2009 1 st January - 31 st May	2+4			
2009 1 st June - 31 st December	0+0			
2010	2+4	0+0	2+0	0+0
2011	2+4	1+2	2+2	1+2
2012-2013	2+4			
2014-2017	2+4	2+4	2+6	2+4
2014-2017* (option to increase contributions – variable <i>lpm02</i>)	-	3+6		

Note: the first number shows employee's contribution rate and the second number shows employer's contribution rate.

We do not simulate voluntary contributions to the private pension funds (i.e. payments into the 3rd pillar), using observed values from the data instead.

2.6.2 Employer social contributions (tscer_ee)

Employers pay the social tax, which is divided into a health insurance part and a pension insurance part. The social tax is applied to gross employment income, subject to the minimum level (see rates in Table 2.10) which is independent of work intensity (i.e. whether working part-time or full-time). The pension insurance component is further allocated between the state pension scheme and compulsory funded pension scheme for those employees who have joined the funded pension scheme. Employers also pay their part of the unemployment insurance contributions. Central government pays the social tax, either total or health insurance part, on certain social benefits (see section 2.6.4 for more details).

The minimum liability does not apply to minors, recipients of public pensions and, since 2007, students in certain age groups (studying at primary or lower secondary level and aged under 21, studying at upper secondary level and aged under 24 or studying at post-secondary or tertiary level) as well as parents raising young children (a child under 3 years old or at least three children under 19 years old).

Pension contributions

Pension contributions to the first pillar (the PAYG scheme) are 20% of the employment income (subject to the minimum level), minus transfers to the funded pension scheme (variable *ttferpi_s* in the EURMOD). The latter is 4-6 percentage points (out of 20%) for those participating in the funded scheme. (See section 2.6.1 above.)

Health insurance contributions

The total health insurance contributions are calculated as 13% of gross employment earnings (subject to the minimum level).

Unemployment insurance contributions

Unemployment insurance contributions amount to a fixed percentage (0.3-1.4% in 2009 and 1% in 2013-2014 and 0.8% in 2015-2017, see the table in section 2.6.1 above) of employment income.

Total contributions

Total employer contributions equal contributions to the pension insurance/1st pillar (*tscerpi_s*) + transfers to the funded scheme/2nd pillar (*ttferpi_s*) + contributions to the health insurance (*tscerhl_s*) + contributions to the unemployment insurance (*tscerui_s*).

Note that the first three are included in 'social tax' in the national statistics.

2.6.3 Self-employed social contributions (tscse_ee)

Self-employed pay the social tax (pension and health insurance contributions) and contributions to the funded pension scheme. They do not pay unemployment insurance contributions.

Until 2006, advance payments of self-employed contributions were deductible from the contribution base. Since 2007, instead the contribution base is calculated as gross income from self-employment divided by 1.33 (contributions to the pension insurance and health insurance). Effectively, the liability remains the same, but the system is somewhat simpler without having to pay all contributions in advance. Gross income from self-employment is income after deducting related expenses less the tax allowance on income from agriculture.

Self-employed are subject to a minimum contribution base (similar to employers), unless they are receiving state pensions or the central government is already paying minimum contributions due to certain benefits. Also, this can be offset against social insurance contributions paid by employers for self-employed also undertaking paid employment. Those who work on the basis of more than one contracts under the law of obligations, the prerequisite for obtaining insurance is that the minimum amount of the social tax (155.10 EUR in 2018) taken together from all the contracts per month has been met. Previously, there was no possibility of aggregation and the employed persons working under a number of contracts that in aggregation guarantee the minimum obligation, did not get insurance. Finally, there is an upper annual limit to the social contributions base, which is 10 times the annual legal minimum wage in 2018 (i.e. 60,000 EUR) and 15 times in previous years (see the following table). The maximum tax liability was hence 27,918 EUR in 2017 and 19,800 EUR in 2018.

Table 2.10. Upper and lower limit of social tax base for self-employed (EUR), 2015-2018

	2015	2016	2017	2018
Minimum monthly social tax base	355	390	430	470
Minimum monthly wage	390	430	470	500
Upper annual limit of social tax base (15 times minimum wage up to 2017; 10 times minimum wage since 2018)	70,200	77,400	84,600	60,000

Pension insurance contributions

Participation in the funded pension scheme and calculation of the contributions to the state pension scheme and funded pension scheme are the same as for employees. Contributions to the funded pension scheme have two parts: one is 4% of the contribution base transferred from the social tax and additional 2% funded pension insurance contributions if the person participates in the funded pension scheme. Altogether, a self-employed person therefore directly contributes 6% for himself. The contribution to the state pension scheme amounts to 20% of the contribution base less a transfer to the funded pension scheme:

Health insurance contributions amount to 13% of the contribution base

Total contributions

Total self-employed contributions equal to contributions to the pension insurance/1st pillar (tscsepi_s) + contributions to the health insurance (tscsehl_s) + “transfers” to the funded scheme/2nd pillar (tffsepi_s) + contributions to the funded scheme/2nd pillar (tpcsepi_s).

Note again that the first three are included in 'social tax' in the national statistics, and two latter are included in funded pension contributions in the national statistics.

- ***EUROMOD notes***

Depending on the dataset the definition of self-employed is slightly different. In the EU-SILC data the self-employed are those either with employees, without employees or family worker. In HBS data the self-employed are those who had stated in the survey data that their status in employment belongs to the category “Self-employed, farmer without hired workers, freelancer”.

Also, only HBS database has enough information to simulate tax allowance on income from agriculture. As with general income tax base, income from non-registered self-employment activity (available in EU-SILC and EE-SILC) is assumed to be not reported and, hence, not included in the contribution base.

2.6.4 Credited contributions (tscct_ee)

Government pays social contributions on a certain minimum base (see Table 2.10 in previous section), determined each year with the government budget, for those receiving either childcare allowance (*lapsehooldustasu*), large family parent allowance (*seitsme- ja enamalapselise pere vanema toetus*), parental benefit (*vanemahüvitis*) or unemployment allowance. There are some other minor categories which are not included in the model.

Government pays both the health care insurance (tsccthl_s) and the pension insurance part (tscctpi_s) on the minimum base for those receiving childcare allowance, large family parent allowance, or parental benefit and only the health care insurance part for those receiving unemployment allowances. Unemployment insurance fund pays health care insurance contributions for those receiving unemployment insurance benefits and the base is equal to the benefits (hence can be smaller or larger than the minimum base).

There are extra pension insurance contributions (tpcctpi_s), paid by the central government, to the 2nd pillar for those raising young children. These are calculated as 1% of the maternity benefit for each related child until 2012. Since 1st January 2013, the government pays 4% of the average taxable wage two years ago (€849.65 in 2015, €908.12 in 2016 and €969.05 in 2017 and €1,029.85) for each child under three years old and born after 1st January 2013.

2.7 Personal income tax

Here we distinguish between (monthly) withholding income tax and (annual) income tax liability based on the final tax report. Withholding income tax is required for simulating subsistence benefit and needs-based family benefits which are based on current net income. Tax base for withholding tax is narrower than for the final tax liability, e.g. it does not include income from self-employment, rent, royalties, and only the main tax allowances are taken into account.

2.7.1 Tax unit

Withholding income tax is applied at the individual level, however, for the final tax liability married couples were allowed to submit a joint declaration before 2017. Since 2017, joint declarations were abolished though a few tax allowances could still be shared between spouses and a new tax allowance for spouse was introduced. A dependent child for the tax allowance purposes is defined as aged up to 17.

2.7.2 Exemptions

The following income sources are non-taxable: all family benefits (except parental benefit), unemployment allowance, unemployment retraining benefit, subsistence benefit, annual refund for low-paid employees (in 2016), scholarships and grants, voluntary maintenance payments and dividends, on which firms pay only corporate income tax in Estonia. Before 2011, compulsory maintenance payments (alimony) were considered part of taxable income of the recipient and tax deductible for the payer, since 2011 they are exempted of taxable income of the recipient and no longer tax deductible for the payer. Interest income was non-taxed if received from an EU financial institution before 2018 and taxable since 2018.

2.7.3 Tax allowances

Firstly, basic tax allowance, which equalled €154 in 2015, €170 in 2016 and €180 EUR in 2017. In 2018, basic income tax allowance per month was raised to €500 per month (€6,000 euros per

year), while additional tax allowance on pensions and compensation for accident at work were abolished. Basic tax allowance also became income dependent in 2018:

- annual basic allowance is 6,000 euros for annual incomes up to 14,400 euros;
- in case of annual incomes in the range of 14,400 to 25,200 euros, basic allowance is calculated according to the following formula: $6,000 - 6,000 \div 10,800 \times (\text{income amount} - 14,400)$;
- basic tax allowance is 0 for annual incomes above 25,200 euros.

Secondly, tax allowance for pensions, which equalled €220 in 2015, €225 in 2016 and €236 in 2017 (per month). Pension allowance was applicable only to state pensions (i.e. old-age, disability and survivors' pensions) and could be claimed jointly if both spouses received state pensions. The pension allowance was abolished in 2018.

Till 2018, there was also a tax allowance for compensation for an accident at work or an occupational disease and an allowance for tax-free childbirth benefit paid by employer, but these are of little importance and not simulated in EUROMOD. Basic tax allowance and tax allowances for pensions and compensation for an accident at work or an occupational disease could be claimed on a monthly basis, while other tax allowance can be claimed when filing a tax report in the following year.

Thirdly, a tax allowance for families, which amount per child (from the 2nd onwards – since 2009) before 2016 was equal to the basic allowance less the taxable income of the children. From 2016 onwards, the amount of the additional child allowance was detached from the basic allowance and fixed at the level of basic allowance in 2015, i.e. the child allowance per each child from the 2nd onwards is 1,848 EUR per year in 2016-2018.

Fourthly, a tax allowance for spouse was introduced in 2017, equal to 2,160 EUR per year less taxable income of the spouse. To be eligible, combined taxable income of the married couple must not exceed 50,400 EUR per year and the allowance cannot exceed the difference between 50,400 EUR and combined annual taxable income of the married couple.

Finally, there is a tax allowance for self-employment income from agriculture (which reduces liability both for income tax and self-employed SIC).

All allowances are non-refundable, i.e. their value cannot be larger than the income tax base. See also the following table.

Table 2.11. Income tax parameters, 2015-2018

	2015	2016	2017	2018
Income tax rate	20%	20%	20%	20%
Basic tax allowance, EUR per month	154	170	180	500
Tax allowance for pensions, EUR per month	220	225	236	-
Additional tax allowance for each child starting from ... child	2 nd	2 nd	2 nd	2 nd
Tax allowance for children, EUR per year	1,848	1,848	1,848	1,848
Tax allowance for spouse, EUR per year	-	-	2,160	2,160

2.7.4 Tax deductions

First, contributions to the unemployment insurance fund and to the funded pension scheme are fully deductible from taxable income. Before 2011, compulsory maintenance payments (alimony) were also fully deductible.

Second, the following expenses can be deducted from taxable income, but no more than 50% of taxable income in total or 1,920 EUR (per year) in 2012-2015 and 1,200 EUR in 2016-2018: housing loan interest payments, education expenses and donations. Since 2017, housing loan interest payments are further capped at 300 EUR per year.

Third, pension contributions to the 3rd pillar (i.e. voluntary funded scheme) can be deducted from taxable income, up to 15% of taxable income or 6,000 EUR (per year).

Fourth, 20% of rental income of one residential property can be deducted from taxable income since 2016 as it is considered to reflect owner's costs related to renting.

- ***EUROMOD notes***

We do not have data on donations and these are excluded.

2.7.5 Tax base

Income tax base is calculated as taxable incomes (see section 2.7.2 for exemptions) less allowances and deductions.

Withholding income tax

Incomes subject to withholding income tax can be grouped into two:

- 1) incomes for which the basic allowance is not taken into account: sickness benefit and maternity benefit paid (by the Estonian Health Insurance Fund), and royalties.
- 2) incomes for which the basic allowance is usually taken into account: disability pension, old-age pension, survivors' pension, parental benefit, unemployment insurance benefit, employment income, severance payments, taxable maintenance payments received (i.e. alimony), less alimony payments made (before 2011) and social security contributions by employees.

In the case of pensions, the pension allowance is also taken into account.

There is a single income tax rate (21% in 2008-2014 and 20% in 2015-2018), with the exception of 10% tax rate on private pensions.

Withholding income tax is a sum of three components:

- a) income tax on items that take into account the basic allowance and the pension allowance,
- b) income tax on items that do not take into account tax allowances,
- c) income tax on private pensions.

Final income tax

Compared to the withhold income tax, final income tax takes into account several additional aspects:

- 1) tax base includes income from self-employment,
- 2) married couples may submit a joint declaration (before 2017) or transfer some tax allowances if unused (since 2017),
- 3) there is an additional allowance for families with children,
- 4) there are deductible expenditures (education expenses, mortgage interest payments, contributions to the voluntary pension funds, part of rental income).

Income from self-employment

Taxable income from self-employment is equal to income from self-employment less related expenses (directly available in EU-SILC and EE-SILC), and minus social insurance contributions, except contributions to the funded pension scheme. The latter can be deducted from total income. Taxable business income is derived on individual basis.

- **EUROMOD notes**

Due to data limitations we cannot simulate sickness allowance, child birth allowance and deductions related to donations and trade union membership fees. In EU-SILC and EE-SILC data we cannot separate agricultural income and hence cannot simulate the tax allowance for self-employment income from agriculture.

Simulation of large family tax allowance is partly optimised by assigning it to the spouse with highest taxable income (before applying the allowance itself), in the case of a cohabiting couple.

2.7.6 Annual refund to low-paid employees (tinrf_ee)

- **Brief description**

Annual refund to low-paid employees (*madala sissetulekuga töötava isiku iga-aastane tagasimakse*) is a non-taxable benefit paid once a year to people with low pay. It was valid only in 2016 and people could apply for it when submitting a tax report in 2017 for the previous calendar year.

- **Definitions and eligibility conditions**

The unit of analysis is an individual person and to be considered eligible for the refund he/she must be at least 18 years old resident of Estonia. The person must have been a full-time employee for at least six months in the previous calendar year with an annual taxable income smaller than the ratio of annual refund rate divided by the benefit withdrawal rate (0.35 in 2016).

People who have been occupied with several non-full-time jobs are also considered to be eligible if their workload in aggregate term meets the full-time condition (with exceptions for people with reduced work ability, who can work part-time and still be eligible for the refund).

- **Amount of the refund**

The sum of the refund depends on the annual taxable income, final income tax liability (limits the maximum amount of benefit), months in work, a refund rate and a withdrawal rate. The benefit rate is established in the State Budget Act and for 2016 it is stipulated at 228 EUR per month. The refund rate must not be lower than the latest absolute poverty line calculated by the Statistics Estonia. The withdrawal rate is set at 0.35. The formula used for calculating the sum of tax refund for a single full-time worker can be written as follows:

$$\text{Tax refund} = \max\{\min[(\text{refund rate} * 12 - \text{annual taxable income} * \text{withdrawal rate}) / 12 * \text{number of months in work}; \text{annual paid income tax}]; 0\}$$

The upper limit of the refund is person's final income tax liability. As income increases then the refund increases too. After certain point, a further increase in income results in the decreasing sum of refund until to the income level equals the refund rate divided by the withdrawal rate (0.35). The sum of refund is adjusted to the number of months the person was in full-time employment in the previous year.

In the case of joint declarations, individual upper limits applicable to each spouse are determined on the basis of final joint tax liability which is allocated in proportion to person’s taxable income to the total joint taxable income (taking into account certain allowances).

- ***EUROMOD notes***

The formula above is re-arranged as follows for implementation

$$\text{Tax refund per month} = \max\{\min[(\text{refund rate} - \text{taxable income per month} * \text{withdrawal rate}) / 12 * \text{number of months in work}; \text{paid income tax per month}]; 0\}$$

Due to the accrual accounting method in the national accounting, the refund is already included in the 2016 policy year in EUROMOD (the first pay-outs will be in spring 2017).

Eligibility conditions applied in EUROMOD do not cover specific conditions for people with reduced ability to work (in terms of full-time employment requirement), and it is also not possible to check whether people have been employed/worked at least under one employment contract per month (and at least for six months in the previous year).

In the case of joint declarations, the individual upper limit of the refund is calculated as a proportion of final tax liability where the proportion is defined as his/her positive taxable income to the total positive taxable income (without applying any allowances).

Although the refund is not taxable, it is included in the means tests for the subsistence benefit and needs-based family benefit.

2.8 Minimum wage

- ***Brief description***

Monthly and hourly minimum wage is set by annual bipartite agreements between the Estonian Trade Union Confederation and the Estonian Employers’ Confederation, and then brought into effect by a government decree. Minimum wage applies nationwide to all employees. Some sectors may have additional negotiations between representatives of employees and employers to agree on a more favourable wage policy affecting particular occupations, but these are not simulated.

- ***Definitions and eligibility conditions***

The unit of analysis is individual. If the actual wage is less than minimum wage then wage is replaced with minimum hourly wage times actual working hours.

- ***Amount***

Amount is a flat-rate sum per month.

Table 2.12. Minimum wage, EUR

	2015	2016	2017	2018
Per month	390	430	470	500
Per hour	2.34	2.54	2.78	2.97

- ***EUROMOD notes***

Monthly income from employment (taking into account the number of months in work) is set equal to minimum wage (proportional to hours worked) if the income from employment is less than minimum wage, but positive, and if working hours are less than or equal to 40 hours per

week. We do not apply the minimum wage correction when a person earns more than a monthly minimum wage, but its hourly wage is still less than a minimum wage.

Minimum wage adjustments are not applied in the baseline simulations.

3. DATA

3.1 General description

There are currently four types of Estonian datasets available as input data for EUROMOD:

- 1) European Union Survey of Living Conditions (EU-SILC) 2006, 2007, and 2008 data for Estonia;
- 2) Estonia Social Survey 2006, 2007 and 2008 (*Eesti Sotsiaaluuring 2006, 2007, 2008 – EE-SILC*), which is a national version of EU-SILC data and which was used by the Statistics Estonia to construct the EU-SILC database;
- 3) EU-SILC 2010, 2012, 2015 and 2016 datasets that have been supplemented with a few detailed income variables and labour market information from the EE-SILC 2010, 2012, 2015 and 2016 database (with the permission of Eurostat and Statistics Estonia).
- 4) Household Budget Survey 2005 (*Eesti leibkonna eelarve uuring - HBS*).

The Household Budget Survey 2005 was discussed in detail in previous country reports, see Lüksik et al. (2008) and Võrk et al. (2010), and we do not cover it in this report. Võrk et al. (2010) included an overview of the EE-SILC 2006 and EU-SILC 2006 datasets; Võrk and Paulus (2011, 2012, 2014) included an overview of the EE-SILC and EU-SILC datasets for 2007, 2008 and 2010 waves, respectively. Võrk et al. (2015, 2016) covered a combined EU-SILC and EE-SILC 2012 dataset.

This section describes a combined EU-SILC and EE-SILC 2016 dataset. Note that since the 2013 wave, Estonian SILC draws information on main pensions and benefits from the official registers of Estonian Social Insurance Board, Health Insurance Fund and Unemployment Insurance Fund. Since the 2014 wave, most market income components are register-based too (provided by the Estonian Tax and Customs Board). Only a few income components remain question-based (e.g. private transfers, subsistence benefit).

Table 3.1. EUROMOD database description

EUROMOD database	EE_2016_c2
Original name	EU-SILC (UDB 2016-1)
Provider	Eurostat (and Statistics Estonia)
Year of collection	2016
Period of collection	February-May
Income reference period	2015
Original sample size	15,193 individuals 6,026 households

For an overview of sampling methods, response rate and other quality indicators of the data and imputations carried out by Statistics Estonia see the quality report by Statistics Estonia (2016).

3.2 Data adjustment

The EU-SILC database has the same number of individuals and households as the national version, but includes less detailed information on income components. Therefore some additional variables were merged from the national version (exact match of individuals was achieved by using an ID map).

The variables merged from the national dataset are the following:

- a) whether a person has joined the compulsory funded pension scheme (II pillar);
- b) each family benefit separately: maternity benefit, pregnancy benefit, child allowance, child care allowance, large family parent allowance, single parent child allowance, childbirth allowance, maintenance allowance and other family benefits (contains foster care allowance, start in independent life allowance, benefits paid by municipalities and foreign allowances related to children/family);
- c) subsistence benefit, separately from other (minor) social assistance benefits;
- d) separately unemployment insurance benefit, unemployment allowance, severance payments (consists of redundancy benefit, benefits paid in case of insolvency of employers and redundancy related income (by Estonian Tax and Customs Board)), other unemployment benefits (start-up subsidy), as well as the duration of registered unemployment (in days);
- e) an indicator for persons registered as self-employed;
- f) financial capital/assets (imputed);
- g) self-employment income from non-registered activities;
- h) the number of rooms and the size of the residence area in square meters.

Adjustments to variables are kept to a minimum. In a few cases implausibly high (observed) values of unemployment allowance benefits were assigned to unemployment insurance benefits.

To guarantee consistency between demographic variables and income variables which refer to the previous year (and on which EUROMOD simulation are based), all children born between the end of the income reference period and the date of interview have been dropped from the sample. In EU-SILC 2016 there were 33 such children. No adjustments to the weights have been done.

3.3 Imputations and assumptions

3.3.1 Time period

Income and expenditure information in SILC refer to the previous calendar year, with the exception of housing costs which refer to the current monthly average as estimated by the household. As EUROMOD uses (average) monthly data as an input, all annual incomes and expenditure are divided by twelve. Simulations of short term benefits (e.g. unemployment benefits) also take into account how many months particular income source was received (if available). Note that some socio-economic variables (e.g. education, marital status) refer to the survey week.

3.3.2 Gross incomes

In the SILC data missing values have been imputed, if necessary. Most of the imputations have been done by Statistics Estonia. See the EU-SILC 2016 quality report Section 6.3.3 for the imputation procedure. A few remaining imputations were done jointly by the authors and they are described in detail in the Data Requirement Document (DRD), following the templates prepared by the EUROMOD core team as closely as possible.

In the national SILC questionnaire, most income components are collected in net terms by default. Regarding wages and salaries, income from rental, income earned by children and income from self-employment, the respondent may choose if he/she wants to report net or gross amounts. All reported incomes are converted into both net and gross incomes by using algorithms deduced from tax laws by Statistics Estonia.

By default the Eurostat version of the SILC (EU-SILC) has all values in gross terms (though at more aggregated level), while the national version has (additional) detailed benefit information but mostly with net values. The income variables that were merged from the EE-SILC database were converted to gross values by inverting the tax rules (backward calculations).

3.3.3 Disaggregation of harmonized variables

We have merged disaggregated benefits from the national SILC data; hence, no further disaggregation was needed.

The housing benefit variable in the EU-SILC includes the subsistence benefit (as it has a component related to housing costs) and other social assistance benefits. In EUROMOD these are reclassified as social assistance benefits. They are all non-taxable, therefore no net-to-gross imputations is needed. Subsistence benefits may include additional subsistence benefits (*täiendav toimetulekutoetus*) that are not related to formal rules but based on ad hoc decisions by local municipalities.

3.3.4 Additional imputations and net-to-gross conversions by country team

The derivation of other variables needed for EUROMOD is described in the DRDs. Generally the standard approach provided by the EUROMOD core team was applied. Imputations specific to the Estonian SILC were as follows.

Financial capital asset variable was imputed based on national SILC (detailed information regarding received deposit interest, dividends and interest on bonds) and external data on interest rates (in 2015 the deposit interest rate was 0.54% and the nominal yield of bonds 1.08%). The nominal yield of stocks paying out dividends was assumed to be 4.2% based on Tallinn Stock market dividends and stock values in 2015.

Parental allowance for large families (*bcclg*) was imputed and separate from a partially aggregated variable in the national SILC. Imputation was based on number of eligible children in the household and fixed amount of benefit per month (€168.74 in 2015).

National SILC 2016 provides the duration of registered unemployment, which was used to proxy the combined receipt of unemployment benefits (*bunmy*), while the number of months in receipt of unemployment insurance benefit and unemployment allowance had to be imputed. In the case of unemployment allowance, the length of receipt (*bunnmy*) was assigned according to the daily rate and annual amount of allowance and the number of months in receipt of unemployment insurance benefit (*bunctmy*) was derived as the difference between the period of registered unemployment and the length of receipt of unemployment allowance.

The number of rooms and the size of flat/house in square meters, which are needed for simulation of the subsistence benefit, were merged from the national SILC. Note that the distribution of number of rooms in EU-SILC differs considerably from the national variable.

Participation in the funded pension scheme

Participation in a compulsory funded pension scheme (the second pillar) is compulsory for new entrants to the labour market (born 1983 or later), but voluntary for employees who were in the

labour market in 2002 when the scheme was introduced. Cohorts born in 1941 or before (i.e. those beyond the pension age at the time of the reform) were not allowed to join the scheme. Participation in the funded pension scheme is compulsory from the age of 18.

We do not have information on the participation in the funded pension scheme in the EU version of the SILC, but we have the information on participation of those employed in the national version of the SILC, which was merged with the EU-SILC data set (*lpm*). The participation decision was simulated for unemployed and inactive people, applying the same proportions by age and gender groups. More specifically, a uniformly distributed random number from the 0-1 interval was drawn (in Stata with a fixed seed number): if the resulting number was lower than the corresponding share of contributors the person was assigned a value 1, otherwise value 0.

The continuation of contributions to the funded pension scheme in 2010-11 (variable *lpm01*), and an increase in contributions in 2014-17 (variable *lpm02*) were simulated by randomly assigning people into these groups. The proportions by age, gender and labour earnings decile were derived from the microdata of the Estonian National Social Insurance Board.

Table 3.2. Distribution of people according to their decision to increase contributions to the second pillar and the contribution rates (in parentheses)

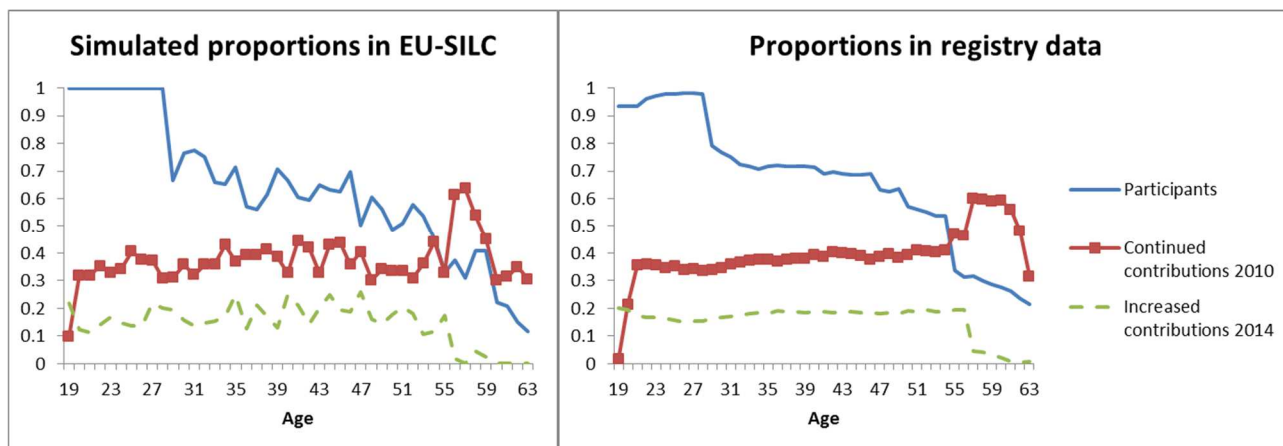
Did the person increase contributions in 2014-2017? (<i>lpm02</i>)	Yes	No	Total
Did the person continue paying own contributions in 2010-2011? (<i>lpm01</i>)			
Yes	40,410 (3+6)	179,943 (2+6)	220,353
No	65,730 (3+6)	359,929 (2+4)	425,659
Total	106,140	539,872	646,012

Source: Ministry of Finance.

Based on the Estonian Pension Register anonymous individual level data that cover all people in Estonia that have any social tax record since 1999, we calculated the proportion of people who continued their contributions in each group of age, gender and labour earnings decile in 2011.

The resulting proportions are described in Figure 3. The proportion of those who continued contributions in 2010 and increased in 2014-2015 is underestimated with SILC data. It means that for employed people net disposable income is slightly oversimulated.

Figure 3. Simulated and actual proportions of population in EU-SILC data and registry data



Source: Estonian National Social Insurance Board microdata, own simulations.

3.4 Updating

To account for any mismatch between the income reference period and the policy year, updating factors are used. Each monetary variable (i.e. each income component) is updated so as to account for changes in the non-simulated variables that have taken place between the income reference year of the data and the year of the simulated tax-benefit system. Updating factors for market incomes are generally based on changes in the average value of an income component between the income reference year of the data and the policy year. In case no data were available, official forecasts of prices or average wages is used. Benefit and tax variables (public pensions, in particular) are updated on the basis of statutory indexation to capture policy effects and changes in average values (or movements in prices) are used as alternatives when such information is not available. For detailed information about the construction of each updating factor as well as the sources that have been used, see Annex 1.

As a rule, updating factors are provided for all income components present in the input dataset. Note however that in the case of income components also simulated in the model, the simulated amounts are used in the baseline rather than updated original variables in the dataset. This facilitates the use of the model in cases when the user wishes to disregard a particular simulated variable.

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 annual 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. In addition, Annex 2 presents and discusses the estimates of policy effects in 2017-2018.

4.1.1 Components of disposable income

The definition of disposable income in EUROMOD follows closely EU-SILC definition. The minor differences are outlined in the following table. Note that disposable income in EUROMOD is constructed using simulated components whenever possible and, hence, the values of two disposable income concepts are not identical.

Table 4.1. Components of disposable income

	EUROMOD 2015 ils_dispy	EU-SILC 2016 HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
Company car	0	+
Contributions to individual private pension plans	0	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	+	+

Note: repayments/receipts for tax adjustment in EU-SILC can also relate to income received before the income reference period, while the simulated variable in EUROMOD refers strictly to the income reference period.

4.1.2 Validation of incomes inputted into the simulation

Macrovalidation tables are included in Annex 3. Simulations are done using policy rules valid as of 30th June – to simulate instead (major) policy changes throughout the year of interest, FYA policy switch would need to be activated.

In the base year, 2015, the number of employed in the SILC data matches closely the number of employed from the Labour Force Survey (97%) (see Table 4.2 in the Annex), for the number of unemployed the ratio is very close, 101%. As the labour market situation has continuously improved since 2015 and EUROMOD baseline scenarios do not make adjustments for employment changes, the employment number is further underestimated for 2016-2018. The actual number of unemployed fluctuates and is overestimated in 2017-2018 but underestimated in 2016.

The number of individuals with employment income is well estimated (ratio 1.00 in 2015) in the data compared to those who pay income tax on labour earnings (see Table 4.3 in the Annex 3). This is expected given that employment income information in SILC is also register-based. However, the number of people with income from registered self-employment (questionnaire-based) is severely underestimated (about 67% coverage in 2015), compared to data from income tax returns.

Survey data also overestimate the number of individuals receiving private pension (about 121% in 2015), which might be due to sampling variation. The number of households with rent income in SILC is about 6 times higher than the number of people declaring rent income in 2015, which can be an indication of underdeclaring of rent income. Indeed, the number of people declaring rent income has increased from 2,500 in 2009 to 8,500 in 2017.

There are quite a few people receiving investment income in the dataset, but the majority receives only interest on bank deposits. Unfortunately, there is no good external information available. There are also no external statistics available for income received by people aged under 16 and regular inter-household cash transfers (both received and paid).

Average employment income corresponds to 100% of the average wage of a full-time worker in 2015 as published by Statistics Estonia and similar in the following years (see Table 4.4). At the aggregate level, the SILC data appear to overestimate work-related income (compared to national accounts): 108% of employment income and about 118% of registered self-employment income in 2015. Total private pensions are underestimated (about 33% coverage in 2015). Rent income are 5 times higher than in tax reports in 2015, in line with a much larger number of income recipients in SILC.

Among non-simulated benefits, public pensions (old-age pensions, disability pensions, survivors pensions) are well covered in the dataset (see Table 4.5 and 4.6 in Annex 3). The coverage is lowest for the number of survivor pensioners, but improving for later years as the actual number of survivor pensioners decreased in 2015-2018. The aggregate amount of old-age pensions in the SILC data is 99% of the register data. The aggregate disability pensions (together with work ability allowance) and survivor pensions have a coverage of 102% and 64% in 2015.

The number of recipients and total amount of means-tested benefits (subsistence benefit) and some replacement incomes (sickness benefits) are underrepresented in the data. The number of recipients of maternity benefits is overestimated by 22%, but there is also a measurement problem. The total amount of maternity benefits is overestimated by 26%. The number of recipients of parental benefits is much larger in the SILC data than in the external data, because external data measure recipients at the end of year, while EUROMOD data provide cumulative estimates. Yet, the total amount of parental benefits is higher in the base year by 13%.

Sickness benefits are strongly underrepresented in the SILC data in 2015. These are usually small amounts and people may leave them unreported or mix them up with employment income. Note also that external data measure the total number of sickness cases, which is larger than the number of people on sick leave, as captured in the SILC data.

Severance pay is overestimated though this is at least partly due to external statistics including additional related payments (e.g. collective redundancy payments). Similarly, the number of recipients of maintenance allowance is greatly underrepresented in SILC (about 48% of recipients) though the aggregate amount is much better captured (91% of expenditure). Single parent child allowance is also somewhat underrepresented in SILC (86% of recipients and 88% of expenditure). For other benefits (local child benefits, scholarships and grants etc), there is no external information available.

The aggregate amount of the land tax is underrepresented, adding up to only 22% of the revenues, but there is a comparability issue, as registry data include also land tax revenues from enterprise sector.

4.1.3 Validation of outputted (simulated) incomes

The total amount of child allowances is simulated very well (see Table 4.7 and 4.8), which is expected as these depend only on the age and number of children. The precision is lower for childcare allowance and childbirth allowances, which are much more smaller schemes. Large family parent allowance was a very marginal scheme until July 2017 when it was expanded to families with 3-6 children. Following the EUROMOD modelling convention, these are included from the 2018 baseline onwards, explaining the very low ratio of simulated expenditures with external statistics in 2017. However, when the FYA switch is set to on, the ratio for 2017 reaches 0.85.

Unemployment insurance benefit and unemployment allowance are somewhat oversimulated in 2015, 105% and 123% of the register data in both cases, even though the number of recipients of unemployment benefits is 5-25% smaller. Total amount of the subsistence benefit is oversimulated by almost twice in 2015. In later years it is oversimulated even more, because of improving labour market conditions.

In the baseline, the non take-up of subsistence benefits is modelled by assuming that very small entitlements are not claimed. It does not affect much the total expenditure on subsistence benefits (it reduces the expenditures by 0.2-0.3%), neither the inequality measures, but it does reduce the simulated number of households receiving subsistence benefits by 5-8% in different years.

Aggregate amounts of withheld personal income tax and both components of social tax are oversimulated about 11-16% in 2015, resulting from higher aggregate employment income (tax base) than external estimates. UI contributions are oversimulated by 18% in 2015.

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 is calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The OECD equivalence scales are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

4.2.1 Income inequality

The main discrepancy between the income distribution indicators in EUROMOD and external statistics (i.e. Eurostat calculations using original EUSILC data) lies in the oversimulation of the share of income of the first decile (see Table 4.9 in Annex 3). In 2015, the simulated share of income is 17% higher than in the original dataset in the first decile. The other deciles are less affected (within 1-2% difference). The resulting Gini index and ratio of quintiles (S80/S20) are 3% and 10% lower than in the original dataset.

The median and mean income are about 2% lower in the simulated data than in the original dataset in 2015.

As subsistence benefits, which influence the income of the first decile, are underrepresented in the original EU-SILC dataset, but oversimulated in EUROMOD then the “true” income inequality can be expected to lie between the two estimates.

4.2.2 Poverty rates

The simulated relative poverty rates in 2015 are close to those calculated with the original dataset (see Table 4.10 in Annex 3). The largest discrepancy (ratio of poverty rates = 0.88) arises when the total poverty rate is evaluated at the 40-50% of median household disposable income. In all other cases the discrepancies are smaller.

The poverty rates by age group have mixed patterns, some underestimated (the most for the youngest age group, 0-15 years with a ratio of 0.90) and some overestimated (the most for the 16-24 age group, 1.06).

4.3 Validation of minimum wage

Minimum wage adjustments (which are not part of the baseline simulations) would influence the results generally very little (less than 1%). The effects are only notable for subsistence benefits, which would be reduced by 9-10% due to higher employment incomes (see Table 4.11 in Annex 3).

4.4 Summary of “health warnings”

This final section summarises the main findings in terms of particular aspects of the Estonian part of EUROMOD that should be borne in mind when planning appropriate uses of the model and in interpreting results.

- The sample is relatively small. Care should be taken in interpreting results for small sub-groups.
- Estonian model assumes full tax compliance.
- Direct taxes, pension and health contributions, and unemployment insurance contributions are oversimulated by 10-15%.
- Universal family benefits are simulated relatively well and pensions are recorded in the datasets reasonably well.
- The oversimulation of the subsistence benefit is partly due to annual incomes which do not allow capturing the seasonal nature of subsistence benefits. Assuming full take-up of the subsistence benefit in simulations would result in even higher income at the bottom of the income distribution compared to the original dataset. Hence, we suggest that the subsistence benefit is simulated in combination with partial take-up modelling to reduce the extent of oversimulation.
- Imputed value of financial assets is very crude.

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ANNEX 1: UPRATING FACTORS

Table 1. Uprating factors

Variable	Variable label	Update factor	Factor reference name
afc	Assets: financial capital	Growth of CPI	\$f_cpi
bch	Benefit/pension: child:	Aggregate	
bcc00	Benefit/pension: child care: basic	Statutory indexation	\$f_bcc00
bcclg	Benefit/pension: child care: large family	Statutory indexation	\$f_bcclg
bch00	Benefit/pension: child: basic	Statutory indexation	\$f_bch00
bchab	Benefit/pension: child: abroad	No uprating	1
bcham	Benefit/pension: child: unpaid alimony	No change in benefits	1
bchba	Benefit/pension: child: birth/adoption	Statutory indexation	\$f_bchba
bchlp	Benefit/pension: child: lone parent	Statutory indexation	\$f_bchlp
bchot	Benefit/pension: child: other	No change in benefits	1
bed	Benefit/pension : education	Growth of CPI	\$f_cpi
bfa	Benefit/pension : family	Aggregate	
bfafp	Benefit/pension : family: foster parent	No change in benefits	1
bhl	Benefit/pension : health	Growth of average wage last year	\$f_yemlag1
bmaab	Benefit/pension: maternity: abroad	No uprating	1
bmact	Benefit/pension : maternity: contributory	Growth of average wage last year	\$f_yemlag1
bmapr	Benefit/pension : maternity: pregnancy	Growth of average wage last year	\$f_yemlag1
bsa	Benefit/pension : social assistance	Aggregate	
bsa00	Benefit/pension : social assistance: basic	Simulated, otherwise Growth of CPI	\$f_cpi
bsals	Benefit/pension : social assistance	Growth of CPI	\$f_cpi
bun	Benefit/pension : unemployment	Aggregate	
bunct	Benefit/pension : unemployment: contributory	Growth of average wage last year	\$f_yemlag1
bunnc	Benefit: unemployment : non-contributory	Statutory indexation	\$f_bunnc
bunot	Benefit: unemployment : other	No change in benefits	1
buntr	Benefit: unemployment : training	Statutory indexation	\$f_buntr
kfb	In kind: fringe benefits	Growth of average wage	\$f_yem
kfbcc	In kind: fringe benefits: company car	Growth of average wage	\$f_yem
kivho	In kind: imputed value: housing	Growth of CPI	\$f_cpi
pdi	Benefit/pension : disability	Statutory indexation (alternatively: growth of average pension)	\$f_ipens (or \$f_pdi)
poa00	Benefit/pension : old age: basic	Statutory indexation (alternatively: growth of average pension)	\$f_ipens (or \$f_poa00)
poaab	Pension : old age: abroad	No change in benefits	1
psu	Benefit/pension : survivors	Statutory indexation (alternatively: growth of average pension)	\$f_ipens (or \$f_psu)
tad	Tax: repayments	No uprating	1
tin	Tax: income tax	No uprating	1
tis	Tax: income tax and social insurance contributions	No uprating	1
tpr	Tax : property tax	Growth of land tax revenues	\$f_tpr
tpceepi	Tax : comp prvt ctrb : employee : pension insurance	Growth of average wage	\$f_yem
xed	Expenditure: education	Simulated, otherwise growth of CPI	\$f_cpi
xhc	Expenditure : housing cost	Aggregate	

Variable	Variable label	Update factor	Factor reference name
xhcmomi	Expenditure : housing cost : mortgage payment : mortgage interest	Estonian Tax and Customs Board: Average declared mortgage interests amount	\$f_xhcmomi
xhcot	Expenditure : housing cost : other	Growth of housing costs in CPI (excl. mortgage interests)	\$f_xhcot
xhcert	Expenditure : housing cost : rent	Growth of average rent in Tallinn	\$f_xhcert
xmp	Expenditure : maintenance payment	Growth of average wage	\$f_yem
xpp	Expenditure: private pensions	Growth of average wage	\$f_yem
yds	Income: disposable	No uprating	1
ydses_o	Income: disposable: equivalised: original SILC	No uprating	1
yem	Income : employment	Growth of average wage	\$f_yem
yem00	Income : employment: main	Growth of average wage	\$f_yem
yempv	Income : employment: previous	Growth of average wage last year	\$f_yemlag1
yivwg	Income : imputed value: wage	Growth of average wage	\$f_yem
yyi	Income : investment	Aggregate	
yyidv	Income : investment: dividends	Average declared income from selling assets; predicted growth of average wage for 2013	\$f_yiidv
yyiit	Income : investment: interests	Average declared income from other sources; predicted growth of average wage for 2013	\$f_yiit
yyiot	Income : investment: other	Average declared income from selling other assets; predicted growth of average wage for 2013	\$f_yiyot
yot	Income : other	Growth of average wage	\$f_yem
ypp	Income : private pension	Growth of CPI	\$f_cpi
ypr	Income : property	Aggregate	
ypro	Income : property: royalties	Growth of CPI	\$f_cpi
yprrt	Income : property: rent	Growth of average rent in Tallinn in a two-living-room apartment	\$f_xhcert
ypt	Income : private transfers	Growth of average wage	\$f_yem
yptmp	Income : private transfers : maintenance payment :	Aggregate	
yptmpnt	Income : private transfers : maintenance payment : non-taxable	Growth of average wage	\$f_yem
yptmptx	Income : private transfers : maintenance payment : taxable	Growth of average wage	\$f_yem
yse	Income : self employment	Growth of average wage	\$f_yem
yseag	Income : self employment : agriculture	Growth of average wage	\$f_yem
ysebs	Income : self employment : business	Growth of average wage	\$f_yem
yseba	Income : self employment : non-registered activity	Growth of average wage	\$f_yem
ysera	Income : self employment : registered activity	Growth of average wage	\$f_yem
yunsv	Income: unemployment: severance pay	Growth of average wage	\$f_yem

Note: non-simulated variables only used for validation are (generally) not uprated.

Table 2. Sources of update factors

Factor name	ref.	Name	Source
\$f_cpi		Consumer price index	Statistics Estonia, online database, table IA001; 2018 forecast by Ministry of Finance, Spring 2018
\$f_xhcot		CPI housing expenditure index	Statistics Estonia, online database, table IA001; 2018 CPI forecast by Ministry of Finance, Spring 2018
\$f_gdp		Nominal GDP, mln EUR	Statistics Estonia, online database, table RAA0012; 2018 forecast by Ministry of Finance, Spring 2018
\$f_yem		Average monthly salary, EUR	Statistics Estonia, online database, table PA5331, 2018 forecast by Ministry of Finance, Spring 2018
\$f_yemlag1		Average monthly salary last year	see \$f_yem
\$f_yiydv		Average annual declared income from selling assets	Estonian Tax and Customs Board, 2006-2016 average declared income from selling assets ("Kasu väärtpaberite vöörandamisest (Rida 6.1)"-"Kahju väärtpaberite vöörandamisest (Rida 6.1)"); 2017-2018 predicted wage growth
\$f_yiyit		Average declared income from other sources	Estonian Tax and Customs Board, 2006-2016 average declared income from other sources assets ("Muu maksustatav tulu (palk,litsents,intress,elatis jm.) (Rida 7.1)"); 2017-2018 wage growth
\$f_yiyot		Average declared income from selling other assets	Estonian Tax and Customs Board, 2006-2016 average declared income from selling other assets ("Kasu muu vara vöörandamisest (Rida 6.3)"); 2017-2018 wage growth
\$f_xhcert		Average monthly rent payment in Tallinn, EUR per m2	2006-2009: Statistics Estonia, online database, table KV131, average rent in Tallinn in a two-living-room apartment; 2010 onwards average rent per m2 in Tallinn according to kv.ee as of June
\$f_xhcmomi		Average annual mortgage interest payment, EUR	Estonian Tax and Customs Board, average declared mortgage interests per declaration. 2017-2018 kept constant at the 2016 level
\$f_tpr		Total annual land tax revenues, thous. EUR	Statistics Estonia, online database, table RR02, land tax revenues; 2018 kept constant
\$f_poa00, \$f_pdi, \$f_psu		Average monthly pension (end year), EUR	Statistics Estonia, online database, table SK110: Riiklik pensionikindlustus; 2018 statutory indexation
\$f_ipens		Statutory indexation of public pensions	Government decrees
\$f_bchba, \$f_bch00, \$f_bcc00, \$f_bcclg, \$f_bchlp, \$f_bunnc, \$f_buntr		Statutory indexation	Government degrees

ANNEX 2: POLICY EFFECTS IN 2017-18*Preliminary: Indexation based on projected HICP for 2018⁴*

Table 1 and Figure 1 show the effect of 2018 policies on mean equivalised household disposable income by income component and income decile group. The effect is estimated as a difference between simulated household net income under the 2018 tax-benefit policies (deflating monetary parameters by projected Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2017 policies, as a percentage of mean equivalised household disposable income in 2017.

In comparison to 2017 policies, (deflated) 2018 policies increased mean household income by 3.58%. All decile groups gained on average, apart from the top decile group (with an average loss of 0.27%), and relative gains were larger for middle-income groups (5-9%). Income gains are mainly related to changes in income tax policies – the basic tax allowance was increased very substantially (from €180 to €500 per month) and made income-dependent with the withdrawal starting at the level of €1,200 per month (around the 7th decile). Altogether this accounted for about half of the total income gain (1.89%).

Notable income gains also rose from changes in non means-tested benefits (1.03%) and public pensions (0.69%). Among non means-tested benefits, income gains were mainly due to reforming the parental allowance for large families, making it more generous and extending it from families with 7+ children to families with 3+ children. (Note that these changes took effect from 1 July 2017 and following the EUROMOD modelling conventions are included only from the 2018 baseline onwards.) Along with the increase in child allowance (from €50 to €55 per month), these policy changes benefitted lower income decile groups more in relative terms. The real value of public pensions increased as these were indexed by 7.6% in 2018⁵ compared to the inflation of 3.3%. Given where the pensioners are located and the targeting of middle-income groups with the income tax reform, it was the second, third and fourth decile which gained the most in relative terms from these policies (ca 8%).

On the other hand, changes in means-tested benefits resulted in income losses as the needs-based family benefit was abolished, even though subsistence benefit's implicit scale benefit for children was increased. These changes combined lowered incomes on average by 3% for the bottom decile group and by nearly 2% for the 2nd decile group. Overall, the two lowest decile groups still experienced income gains on average though less than middle income groups.

⁴ Results based on the final HICP will appear in the annual EUROMOD report Effects of tax-benefit policy changes across the income distributions of the EU-28 countries: 2017-18 (updated).

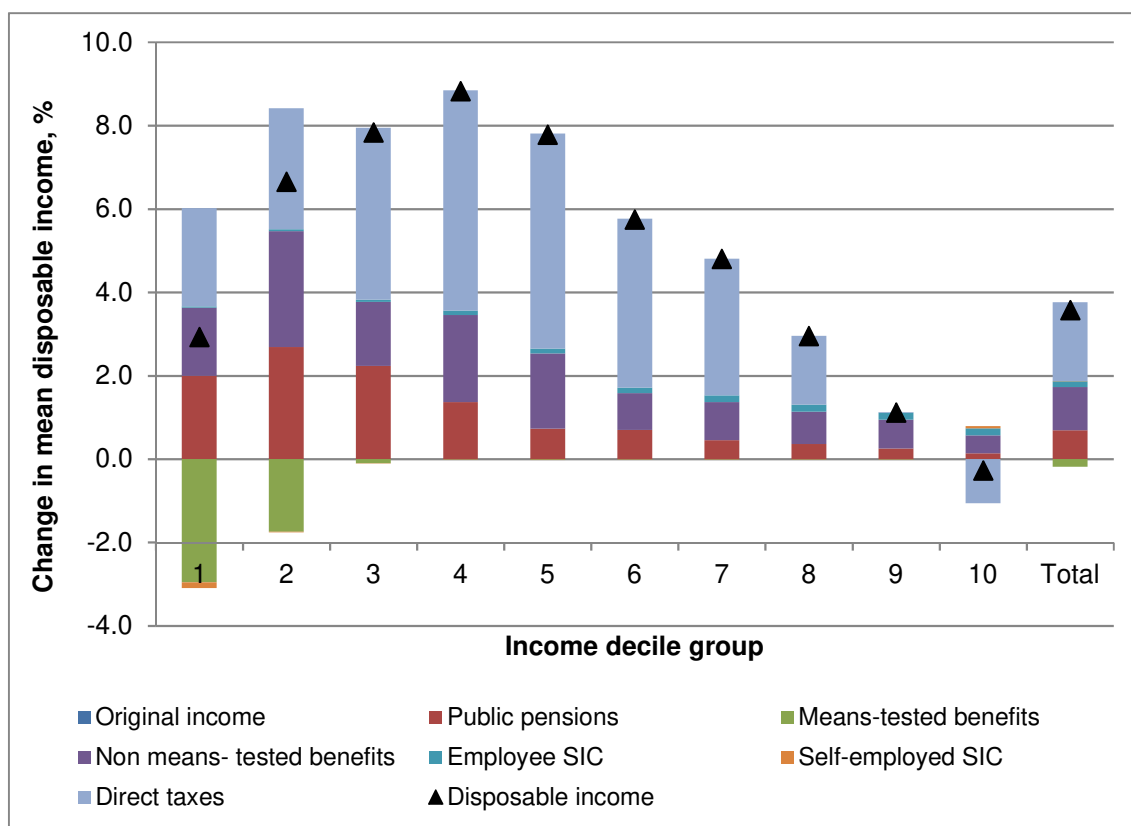
⁵ The indexation of public pensions is largely based on the change in total pension social insurance contributions paid in the previous calendar year.

Table 1: 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	0.00	2.00	-2.95	1.63	0.03	-0.14	2.36	2.93
2	0.00	2.69	-1.75	2.78	0.04	-0.01	2.90	6.66
3	0.00	2.23	-0.10	1.53	0.06	-0.01	4.12	7.84
4	0.00	1.37	-0.01	2.08	0.11	-0.01	5.28	8.83
5	0.00	0.73	-0.01	1.80	0.12	-0.01	5.16	7.79
6	0.00	0.70	0.00	0.89	0.13	-0.01	4.06	5.76
7	0.00	0.45	0.00	0.92	0.17	0.00	3.28	4.81
8	0.00	0.36	0.00	0.78	0.17	0.00	1.65	2.95
9	0.00	0.25	0.00	0.70	0.17	0.00	0.01	1.12
10	0.00	0.14	0.00	0.43	0.17	0.05	-1.06	-0.27
Total	0.00	0.69	-0.18	1.03	0.14	0.00	1.89	3.58

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 projected Harmonized Index of Consumer Prices (HICP), i.e. 1.033.

Figure 1: Policy effects in 2017-2018, using the CPI-indexation, %



ANNEX 3 VALIDATION STATISTICS

Table 4.2-Number of employed and unemployed

	EUROMOD					External				Ratio			
	2015	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Number of employed	619,407	640,900	644,600	658,600	666,800	0.97	0.96	0.94	0.93				
Number of unemployed	42,672	42,300	46,700	40,300	39,600	1.01	0.91	1.06	1.08				

Sources of external statistics:

2015-2017: Statistics Estonia, on-line database, table ML330 "Labour status of population aged 15-74 by sex and age group"

2018: Ministry of Finance 2018 summer forecast, own calculations

Table 4.3-Market income in EUROMOD -Number of recipients

	EUROMOD					External				Ratio			
	2015	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Employment income (those paying income tax, combined EMTA monthly data)	676,193	674,383	673,868	683,433	N/A	1.00	1.00	0.99	N/A				
Self-employment income from registered activity	17,734	26,532	25,757	24,544	N/A	0.67	0.69	0.72	N/A				
Private pensions	3,395	2,815	3,623	4,633	N/A	1.21	0.94	0.73	N/A				
Rent income	36,005	5,691	7,443	8,517	N/A	6.33	4.84	4.23	N/A				
Investment income	29,880	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Income received by people aged under 16	7,726	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Regular inter-household cash transfers received	20,379	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Regular inter-household cash transfers paid	34,953	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Notes:

N/A - not available

EUROMOD: Rent income, investment income - number of households with positive income
cash transfers received and paid - number of households with positive income

Sources of external statistics:

Employment income - total number of payers of income tax on earnings
Ministry of Finance

Self-employment income - total number of self-employed with non-zero revenues
Estonian Tax and Customs Board, annual tax return summaries

Rent income
Estonian Tax and Customs Board, annual tax return summaries

Private pensions
Estonian Tax and Customs Board, annual tax return summaries

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

	EUROMOD				External				Ratio			
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Average employment income (EUR)	11,577	12,457	13,273	14,207	11,629	12,358	13,279	N/A	1.00	1.01	1.00	N/A
Employment income	7,828	8,424	8,975	9,607	7,221	7,653	8,321	N/A	1.08	1.10	1.08	N/A
Self-employment income from registered activity	115	123	132	141	98	93	96	N/A	1.18	1.32	1.37	N/A
Private pensions	4	4	4	4	12	17	25	N/A	0.33	0.24	0.17	N/A
Rent income	76	78	84	88	15	18	22	N/A	4.94	4.37	3.91	N/A
Investment income	60	64	60	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

N/A - not available

Sources of external statistics:

Average employment income - average monthly full-time wage times 12,
Estonian National Social Insurance Board (Sotsiaalkindlustusamet)

Employment income - total wage bill in SNA accounts, Statistics Estonia, online database

Self-employment income - total revenue of self-employed of those with positive revenues
Estonian Tax and Customs Board, annual tax return summaries

Private pensions - Estonian Tax and Customs Board, annual tax return summaries

Rent income - Estonian Tax and Customs Board, annual tax return summaries

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

	EUROMOD	External				Ratio			
	2015	2015	2016	2017	2018	2015	2016	2017	2018
Benefits									
Sickness and injury benefits	154,050	348,322	381,147	398,840	N/A	0.44	0.40	0.39	N/A
Maternity benefits	12,665	10,383	10,602	10,530	N/A	1.22	1.19	1.20	N/A
Parental benefit	35,095	17,066	17,251	16,729	N/A	2.06	2.03	2.10	N/A
Old-age pensions (incl. superannuated & minimum)	295,819	312,136	317,215	314,270	N/A	0.95	0.93	0.94	N/A
Disability pensions & work ability allowance	97,637	97,459	97,633	94,036	N/A	1.00	1.00	1.04	N/A
Survivor pensions	5,648	7,094	6,899	6,507	N/A	0.80	0.82	0.87	N/A
Single parent child allowance	15,274	17,848	16,512	15,258	N/A	0.86	0.93	1.00	N/A
Maintenance allowance	198	416	398	3,075	N/A	0.48	0.50	0.06	N/A
Local child benefits	32,748	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scholarships and grants	25,259	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Severance pay	14,994	8,662	9,466	6,926	N/A	1.73	1.58	2.16	N/A
Other (minor) social benefits	10,841	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and Social Insurance contributions									
Property tax	186,593	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: N/A - not available

Sources of external statistics: Sickness and injury benefits, maternity benefits, single parent child allowance - total number of different cases
Statistics Estonia, online database
Parental benefit - end of year; Statistics Estonia, online database
Old-age pensions - beginning of year, includes superannuated and minimum pensions; Statistics Estonia
Disability pensions & work ability allowance - beginning of year; Statistics Estonia, online database
Survivor pensions - beginning of year; Statistics Estonia, online database
Parental benefits - end of the year; Estonian Social Insurance Board

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	2018	2015	2016	2017	2018
Benefits												
Sickness and injury benefits	73.7	78.1	84.1	89.6	74.7	83.6	92.1	N/A	0.99	0.93	0.91	N/A
Maternity benefits	53.2	56.4	60.7	64.6	42.3	46.7	49.2	N/A	1.26	1.21	1.23	N/A
Parental benefit	202.2	214.3	230.6	245.7	179.0	199.4	218.0	N/A	1.13	1.07	1.06	N/A
Old-age pensions (incl. superannuated & minimum)	1,340.1	1,416.5	1,488.7	1,601.9	1,354.6	1,441.5	1,514.4	N/A	0.99	0.98	0.98	N/A
Disability pensions & work ability allowance	249.4	263.7	277.1	298.2	245.1	261.4	277.1	N/A	1.02	1.01	1.00	N/A
Survivor pensions	7.8	8.2	8.7	9.3	12.2	12.3	12.4	N/A	0.64	0.67	0.70	N/A
Single parent child allowance	3.8	3.8	3.8	3.8	4.3	4.0	3.7	N/A	0.88	0.95	1.03	N/A
Maintenance allowance	0.1	0.1	0.1	0.1	0.1	0.1	2.6	N/A	0.91	0.96	0.04	N/A
Local child benefits	48.3	48.3	48.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scholarships and grants	26.0	26.0	26.9	27.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Severance pay	45.8	49.3	52.5	56.2	14.5	17.0	13.2	N/A	3.15	2.89	3.98	N/A
Other (minor) social benefits	7.6	7.6	7.9	8.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and Social Insurance contributions												
Property tax	12.7	12.9	12.7	12.7	58.0	58.5	57.7	N/A	0.22	0.22	0.22	N/A

Notes: N/A - not available

Sources of external statistics:

Sickness and injury benefits, maternity benefits - Statistics Estonia, online database

Parental benefit, single parent child allowances - Estonian National Social Insurance Board (Sotsiaalkindlustusamet), annual statistical reports "Sotsiaalkindlustus"

Old-age pensions - includes superannuated and minimum pensions; ENSIB, annual statistical reports, own calculations

Disability pensions & work ability allowance - ENSIB, annual statistical reports, own calculations

Survivor pensions - ENSIB, annual statistical reports, own calculations

Property tax - land tax, includes tax paid by legal entities; Statistics Estonia, on-line database

Maintenance allowance - Estonian National Social Insurance Board

Severance pay - Estonian Unemployment Insurance Fund

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

	EUROMOD				SILC	Ratio	External				Ratio			
	2015	2016	2017	2018	2015	2015	2015	2016	2017	2018	2015	2016	2017	2018
Benefits														
Child allowance	255,295	255,295	255,295	255,295	163,340	1.56	252,439	254,696	257,404	N/A	1.01	1.00	0.99	N/A
Childcare allowance	32,704	32,704	32,704	32,704	48,642	0.67	39,680	39,829	40,834	N/A	0.82	0.82	0.80	N/A
Large family parent allowance	864	864	864	52,451	864	1.00	1,050	1,036	62,494	N/A	0.82	0.83	0.01	N/A
Childbirth allowance	16,515	16,515	16,515	16,515	16,669	0.99	13,809	13,776	13,169	N/A	1.20	1.20	1.25	N/A
Unemployment insurance benefit	25,535	25,535	25,535	25,535	27,048	0.94	26,533	29,434	27,424	N/A	0.96	0.87	0.93	N/A
Unemployment allowance	18,889	18,889	18,889	18,889	22,802	0.83	24,791	24,755	23,948	N/A	0.76	0.76	0.79	N/A
Subsistence benefit	17,212	24,267	22,136	20,680	9,420	1.83	14,605	15,300	14,056	N/A	1.18	1.59	1.57	N/A
Needs-based family benefit	15,681	15,461	17,791	0	0	N/A	5,952	6,184	5,624	N/A	2.63	2.50	3.16	N/A
Pensioner's living alone allowance	0	0	97,630	82,661	0	N/A	N/A	N/A	85,267	N/A	N/A	N/A	1.14	N/A
Taxes and Social Insurance contributions														
Personal Income tax (withheld)	772,623	771,854	770,639	639,142	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Personal Income tax (final declarations)	802,710	801,905	771,979	610,801	0	N/A	667,138	687,819	665,768	N/A	1.20	1.17	1.16	N/A
Total pension part of the social tax	707,181	707,181	707,181	707,275	707,181	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total health part of the social tax	713,962	713,962	713,962	714,055	713,962	1	615,333	604,781	618,289	N/A	1.16	1.18	1.15	N/A
Total unemployment insurance contributions	676,193	676,193	676,193	676,193	676,193	1	607,000	608,088	617,297	N/A	1.11	1.11	1.10	N/A
Total pension contributions to the 2nd pillar	496,021	497,976	497,976	497,976	496,021	1	413,169	414,622	441,069	N/A	1.20	1.20	1.13	N/A
Annual refund for low-paid employees	0	97,583	0	0	0	N/A	N/A	79,647	N/A	N/A	N/A	1.23	N/A	N/A

Notes:

N/A - not available

In SILC: child allowance, childcare allowance, large family parent allowance - number of households

Sources of external statistics:

Child allowance, childcare allowance, large family parent allowance, childbirth allowance - number of children; Statistics Estonia, online database

Unemployment insurance benefit, unemployment allowance - Statistics Estonia, online database

Subsistence benefits - number of different households, Statistics Estonia, online database

Personal Income tax - number of people in tax declarations; Estonian Tax and Customs Board, annual tax return summaries

Total health part of the social tax - number of insured people; Estonian Health Insurance Fund

Total unemployment insurance contributions - number of contributors; Estonian Unemployment Insurance Fund

Total pension contributions to the 2nd pillar - Ministry of Finance, own calculations

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

	EUROMOD				SILC				Ratio				External				Ratio			
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Benefits																				
Child allowance	151.6	165.7	165.7	179.7	150.2	166.9	166.9	183.6	1.01	0.99	0.99	0.98	151.2	166.6	168.3	N/A	1.00	0.99	0.98	N/A
Childcare allowance	11.4	11.4	11.4	11.4	14.7	14.7	14.7	14.7	0.77	0.77	0.77	0.77	13.8	13.8	14.0	N/A	0.83	0.83	0.82	N/A
Large family parent allowance	0.2	0.2	0.2	57.3	0.2	0.2	0.2	0.5	1.00	1.00	1.00	124.5	0.3	0.3	33.8	N/A	0.58	0.71	0.01	N/A
Childbirth allowance	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	0.99	0.99	0.99	0.99	4.5	4.5	4.3	N/A	1.18	1.18	1.23	N/A
Unemployment insurance benefit	41.6	44.6	48.5	52.1	36.8	39.0	41.9	44.7	1.13	1.14	1.16	1.17	39.7	48.5	45.6	N/A	1.05	0.92	1.06	N/A
Unemployment allowance	11.3	12.4	13.7	14.9	8.7	9.6	10.5	11.5	1.30	1.30	1.30	1.30	9.2	9.9	10.1	N/A	1.23	1.26	1.35	N/A
Subsistence benefit	28.6	45.8	44.6	45.8	6.2	6.2	6.4	6.6	4.61	7.35	6.93	6.91	15.0	21.1	18.3	N/A	1.91	2.17	2.44	N/A
Needs-based family benefit	12.4	12.4	14.2	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	3.4	3.7	3.5	N/A	3.61	3.32	4.00	N/A
Pensioner's living alone allowance	0.0	0.0	11.2	9.5	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	9.8	N/A	N/A	N/A	1.14	N/A
Taxes and Social Insurance contributions																				
Personal Income tax (withheld)	1,392	1,491	1,590	1,519	0	0	0	0	N/A	N/A	N/A	N/A	1,250.8	1,324.8	1,409.5	N/A	1.11	1.13	1.13	N/A
Personal Income tax (final declarations)	1,371	1,467	1,579	1,520	0	0	0	0	N/A	N/A	N/A	N/A	1,182.5	1,258.7	1,344.4	N/A	1.16	1.17	1.17	N/A
Total pension part of the social tax	1,647	1,774	1,893	2,030	1,647	1,774	1,893	2,030	1.00	1.00	1.00	1.00	1,441.5	1,534.0	1,661.5	N/A	1.14	1.16	1.14	N/A
Total health part of the social tax	1,080	1,163	1,242	1,332	1,080	1,163	1,242	1,332	1.00	1.00	1.00	1.00	951.3	1,013.8	1,098.4	N/A	1.14	1.15	1.13	N/A
Total unemployment insurance contributions	179.1	192.7	205.4	219.9	179	193	205	220	1.00	1.00	1.00	1.00	152.1	158.1	171.6	N/A	1.18	1.22	1.20	N/A
Total pension contributions to the 2nd pillar	436.4	475.8	507.1	452.4	436	476	507	452	1.00	1.00	1.00	1.00	384.6	416.4	454.3	N/A	1.13	1.14	1.12	N/A
Annual refund for low-paid employees	0.0	35.9	0.0	0.0	0	0	0	0	N/A	N/A	N/A	N/A	N/A	29.0	N/A	N/A	N/A	1.24	N/A	N/A

Notes: N/A - not available

Source:

Child allowance, childcare allowance, large family parent allowance, childbirth allowance - number of children; Statistics Estonia, online database

Unemployment insurance benefit, unemployment allowance - Estonian Unemployment Insurance Fund, online statistics

Subsistence benefits - Statistics Estonia, online database

Personal Income tax (final declarations) - Statistics Estonia, online database, Estonian Tax and Customs Board, on calculations

Personal Income tax (withheld) - Statistics Estonia, online database, on calculations

Total health part of the social tax, total pension part of the social tax - Statistics Estonia, online database

Total unemployment insurance contributions - number of contributors; Estonian Unemployment Insurance Fund

Total pension contributions to the 2nd pillar - Ministry of Finance, Statistics Estonia, own calculations

Table 4.9-Distribution of equivalised disposable income

	EUROMOD				External				Ratio			
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
D1	3.1	3.3	3.2	3.1	2.7	2.5	N/A	N/A	1.17	1.31	N/A	N/A
D2	4.6	4.6	4.6	4.6	4.5	4.6	N/A	N/A	1.02	1.00	N/A	N/A
D3	5.6	5.6	5.6	5.7	5.5	5.7	N/A	N/A	1.02	0.99	N/A	N/A
D4	6.6	6.7	6.6	6.9	6.6	6.8	N/A	N/A	1.01	0.98	N/A	N/A
D5	7.9	7.9	7.8	8.2	7.9	8.1	N/A	N/A	1.00	0.97	N/A	N/A
D6	9.3	9.3	9.3	9.5	9.3	9.5	N/A	N/A	1.00	0.98	N/A	N/A
D7	10.8	10.8	10.9	11.0	10.9	11.1	N/A	N/A	0.99	0.97	N/A	N/A
D8	12.9	12.9	12.9	12.8	13.0	13.0	N/A	N/A	0.99	0.99	N/A	N/A
D9	15.8	15.7	15.8	15.6	16.0	15.9	N/A	N/A	0.99	0.99	N/A	N/A
D10	23.3	23.3	23.4	22.6	23.7	22.7	N/A	N/A	0.98	1.02	N/A	N/A
Median	8,506	9,166	9,660	10,886	8,645	9,367	N/A	N/A	0.98	0.98	N/A	N/A
Mean	9,950	10,724	11,321	12,397	10,102	10,941	N/A	N/A	0.98	0.98	N/A	N/A
Gini	31.6	31.4	31.6	30.7	32.7	33.3	N/A	N/A	0.97	0.94	N/A	N/A
S80/S20	5.1	5.0	5.0	4.9	5.6	5.8	N/A	N/A	0.90	0.85	N/A	N/A

Notes:

N/A - not available

Sources of external statistics:

Eurostat, Statistics Estonia, online database

Table 4.10-Poverty rates by gender and age

	EUROMOD				External				Ratio			
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
40% median HDI												
Total	5.4	4.9	5.3	6.3	6.2	6.6	N/A	N/A	0.88	0.74	N/A	N/A
Males	6.7	6.2	6.5	7.5	7.4	7.7	N/A	N/A	0.90	0.80	N/A	N/A
Females	4.3	3.8	4.1	5.2	5.1	5.6	N/A	N/A	0.85	0.68	N/A	N/A
50% median HDI												
Total	11.1	11.3	11.1	13.0	12.3	12.9	N/A	N/A	0.90	0.88	N/A	N/A
Males	11.6	11.3	11.7	12.4	12.5	12.5	N/A	N/A	0.93	0.91	N/A	N/A
Females	10.7	11.3	10.7	13.4	12.1	13.3	N/A	N/A	0.88	0.85	N/A	N/A
60% median HDI												
Total	20.8	20.6	21.1	20.8	21.3	21.1	N/A	N/A	0.97	0.97	N/A	N/A
Males	18.2	18.0	18.6	18.0	18.9	18.5	N/A	N/A	0.96	0.97	N/A	N/A
Females	23.0	22.8	23.4	23.2	23.3	23.5	N/A	N/A	0.99	0.97	N/A	N/A
70% median HDI												
Total	28.2	28.2	28.8	29.0	28.5	29.1	N/A	N/A	0.99	0.97	N/A	N/A
Males	25.7	25.6	26.3	26.3	26.3	26.1	N/A	N/A	0.98	0.98	N/A	N/A
Females	30.4	30.5	31.0	31.3	30.5	31.7	N/A	N/A	1.00	0.96	N/A	N/A
60% median HDI												
0-15 years	16.5	16.3	16.9	14.3	18.3	16.0	N/A	N/A	0.90	1.02	N/A	N/A
16-24 years	19.2	18.5	19.2	18.1	18.1	21.9	N/A	N/A	1.06	0.85	N/A	N/A
25-49 years	14.9	14.1	15.0	13.9	15.3	14.0	N/A	N/A	0.97	1.00	N/A	N/A
50-64 years	18.3	18.3	18.7	18.9	18.2	17.8	N/A	N/A	1.01	1.03	N/A	N/A
65+ years	38.9	40.0	40.1	42.8	40.2	41.8	N/A	N/A	0.97	0.96	N/A	N/A

Notes: N/A - not available

Sources of external statistics: Statistics Estonia, online database

Table 4.11-Minimum wage validation -Annual amounts (Mil.)

		Min Wage Incl.				Baseline				Ratio			
years		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
ils_dispy	Equivalised disposable income	8,822	9,514	10,049	10,993	8,777	9,457	9,988	10,918	1.005	0.994	0.994	0.993
	Employment income (those paying												
	income tax, combined EMTA monthly												
yem	data)	7,890	8,495	9,058	9,694	7,828	8,424	8,975	9,607	1.008	1.008	1.009	1.009
tin_s	Total income tax	1,381	1,479	1,593	1,524	1,371	1,467	1,579	1,520	1.007	1.008	1.009	1.003
il_soctaxpen	Total pension part of the social tax	1,653	1,781	1,901	2,038	1,647	1,774	1,893	2,030	1.003	1.004	1.004	1.004
il_soctaxhl	Total health part of the social tax	1,083	1,168	1,247	1,337	1,080	1,163	1,242	1,332	1.003	1.004	1.004	1.004
bsa00_s	Subsistence benefits	26	42	40	41	29	46	45	46	0.905	0.908	0.903	0.898
gini	Gini coefficient	31.3	31.1	31.3	30.3	31.6	31.4	31.6	30.7	0.992	0.991	0.990	0.989
poverty	Poverty rate (60% median HDI)	20.5	20.1	21.0	20.4	20.8	20.6	21.1	20.8	0.987	0.976	0.991	0.981