

EUROMOD

COUNTRY REPORT



ESTONIA (EE)

Andres Võrk, Alari Paulus

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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 has been enlarged to cover 27 Member States and is updated to recent policy systems using data from the European Union Statistics on Income and Living Conditions (EU-SILC) as the input database, supported by DG-EMPL of the European Commission.

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

EUROMOD coordinator: Holly Sutherland
EUROMOD coordination assistant: Cara McGenn
EUROMOD developer responsible for Estonia: Alari Paulus
National team for Estonia: Andres Võrk.

The results presented in this report are derived using EUROMOD version G2.0. 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:
<http://www.iser.essex.ac.uk/research/euromod>

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This programme is managed by the Directorate-General for Employment, social affairs and equal opportunities of the European Commission. It was established to finally support the implementation of the objectives of the European Union in the employment and social affairs area, as set out in the Social Agenda, and thereby contribute to the achievement of the Lisbon Strategy goals in these fields.

The seven-year Programme targets all stakeholders who can help shape the development of appropriate and effective employment and social legislation and policies, across the EU-27, EFTA-EEA and EU candidate and pre-candidate countries.

PROGRESS mission is to strengthen the EU contribution in support of Member States' commitment. PROGRESS is instrumental in providing analysis and policy advice on PROGRESS policy areas; monitoring and reporting on the implementation of EU legislation and policies in PROGRESS policy areas; promoting policy transfer, learning and support among Member States on EU objectives and priorities; and relaying the views of the stakeholders and society at large.

For more information see: <http://ec.europa.eu/progress>

The information contained in this publication does not necessarily reflect the position or opinion of the European Commission.

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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 2009-13 (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 2010 (EU-SILC), complemented with a few extra variables from the Estonian Social Survey (Eesti Sotsiaaluuring, EE-SILC) 2010, 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 the five earlier reports:

- i. Lüksik, Paulus and Võrk (2008), which covered the 2005 policies based on the Estonian Household Budget Survey 2005,
- ii. Võrk, Paulus and Lüksik (2010), which covered policy years 2005-2008 based on three datasets (besides HBS 2005 also EU-SILC 2006 and ESS 2006),
- iii. Võrk and Paulus (2011), which covered policy years 2006-2009 based on two datasets (EU-SILC 2007 and ESS 2007),
- iv. Võrk and Paulus (2012), which covered policy years 2007-2011 based on two datasets (EU-SILC 2008 and ESS 2008),
- v. Võrk and Paulus (2013), which covered policy years 2008-2012 based on two datasets (EU-SILC 2008 and ESS 2008).

The current report provides information on the new dataset, updates information on policy rules as well as validation results. Major changes have been also made in the structure of the report.

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. The tax system generally changes on 1st January each year. Changes in indirect taxes have taken place more frequently, often within a year. Apart from the indexation of state pensions which takes place on 1st April each year, benefit changes usually happen 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).
- In 2012, the statutory pension age was 63 for men and 62 for women. For women it was meant to increase to 63 by 2016. In 2010, this was further extended to raise the pension

age to 65 by 2026 for both sexes by 3-month steps. For those younger than 50 in 2010, the retirement age will be 65; those who are between 50 and 56 the retirement age will depend on birth year and month; the retirement age will remain 63 for those currently older than 57.

- Children are subject to the obligation to attend school from age 7 and until they acquire basic education or reach the age of 17.
 - 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.
 - In the case of subsistence benefit, dependent children are defined as aged under 18.
 - For taxation purposes, dependent children are aged under 18. One of the parents may deduct additional tax allowances from his or her income in the period of taxation depending on the number of children. The number of additional allowances has varied over the years.
- 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, though a married couple may also file a joint tax report if they wish (which is beneficial if one has unused tax allowances which the other one could claim for). 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 the monthly basis to calculate withholding income tax. In order to make use of the 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 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 means-tested family benefits). Total income, with a few exceptions, is taken into account.
- 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. Taxes and other benefits are changed only in ad hoc manner. Some thresholds of benefits (i.e. minimum or maximum levels) are linked to the minimum wage or average contribution base in the previous year.
- 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. There are a few additional social contributions paid by employees: unemployment insurance benefits 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, but an additional tax-free pension allowance applies.

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 pension age they can withdraw their accumulated assets. Currently, the accumulated assets are rather small 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 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.

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.

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) State universal family benefits that mainly depend on the age and number of children.
- 2) State means-tested family benefits (*vajaduspõhine peretoetus*) that depend 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 are regulated by the *State Family Benefits Act (Riiklike peretoetuste 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 benefits paid under the State Family Benefits Act are non-taxable with income tax and non means-tested.

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

Single parent child allowance (*iüksikvanema lapse toetus*): 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.

Childcare allowance (*lapsehooldustasu*): 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.

Allowance for a parent raising 7 or more children (*7 ja enamalapselise pere vanema toetus*): It is a special monthly allowance for the parent of seven or more 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.

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.

Start in independent life allowance (*elluastumistoetus*) is a 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.

Means-tested family benefit (*vajaduspõhine peretoetus*) is a monthly benefit that is paid to households with children whose average income during previous three months is below a certain threshold.

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.

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 (koondamishüvitised): According to the *Employment Contract Act (Töölepingu seadus)* the employees are entitled to severance payments if the reason for dismissal was liquidation of enterprise, bankruptcy of the employer, lay-off or age. The entitlement depends on previous work record and ranges from 1-3 months' salary.

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). These are not strictly benefits and therefore not included in the EUROMOD.

Subsistence benefit (toimetulekutoetus) is a 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.

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*).

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 calculated on the basis of the social tax 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 *et al* (2004) 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.

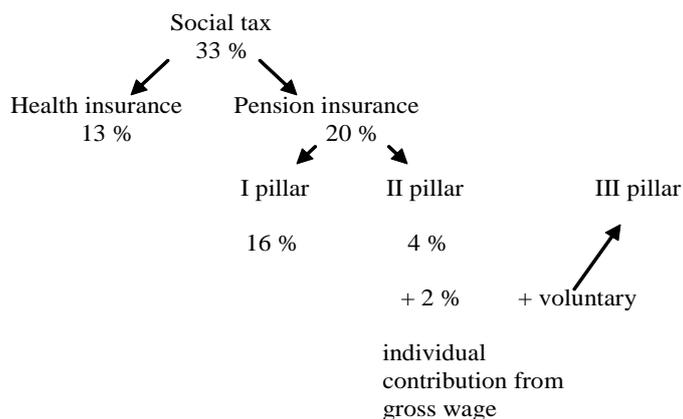
1.3 Social contributions

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-employed and funds state pension insurance and health insurance. Tax rate is 33% and the tax base is "gross wage". 13/33 of tax revenues are transferred into the Estonian Health Insurance Fund and 20/33 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), 4/33 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 self-employed. For certain inactive groups of people (e.g. parents on maternity leave, 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 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



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 (*töötuskindlustusmakse*) is a compulsory insurance 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. Self-employed and the members of the management or controlling bodies of legal persons are not applicable for insurance. 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 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, though married couples may also file a joint tax report if they wish (to share tax allowances). 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 must have to 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 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 other source of incomes. 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 0.1-2.5%. Land tax is paid by the owner of the land, in certain cases also by the user of the land. There are several allowances (e.g. homeowners, pensioners).

Value Added Tax (*käibemaks*): the standard rate in Estonia is 20% from the taxable value of a good or service, and reduced rates (9%, 5% and 0%) applied 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 meet the EU requirements.

There are a few other minor taxes (tax on gambling, tax on heavy vehicles, customs duties, local taxes), which provide 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. Tables 2.1 and 2.2 classify each of the main tax-benefit instruments (and some minor ones introduced above) into one of these three groups and provides 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 separate EU-SILC and SILC data sets and the household budget survey (HBS) can be found in the 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, subsistence benefit and means-tested family benefits, 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.

All labour taxes and social insurance contributions are simulated. As social contributions (social tax, unemployment insurance contributions) are proportional to gross labour earnings, except in few cases, they can be easily calculated.

Income tax is calculated as both withholding income tax and final income tax. The final income tax takes into account additional deductions that are used on annual basis and can be applied after submitting the income declaration.

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.

Table 2.1 Simulation of benefits in EUROMOD

Benefit	Model variable	2009	2010	2011	2012	2013	Comments
Unemployment insurance benefit (<i>töötuskindlustushüvitis</i>)	bunct_s	PS	PS	PS	PS	PS	Eligibility from data
Unemployment allowance (<i>töötutoetus</i>)	bunnc_s	PS	PS	PS	PS	PS	Eligibility from data
Severance payments (<i>koondamishüvitis</i>)	yunsv	I	I	I	I	I	No data on full contribution history
Paid sick leave	bhl	I	I	I	I	I	No data on contribution history and health
Disability pension (<i>töövõimetuspension</i>)	pdi	I	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	IA	No exact data on health status. Income is part of the “other benefits” (bsals) or disability pension (pdi).
Old age pension (<i>vanaduspension</i>)	poa00	I	I	I	I	I	No data on contribution history
National pension (minimum old age pension, <i>rahvapension</i>)		IA	IA	IA	IA	IA	No data, part of other pensions
Old age pension from abroad	poaab	IA	IA	IA	IA	IA	No data on contribution history. Separately available only in HBS 2005 dataset.
Survivors' pension	psu	I	I	I	I	I	No data on contribution history
Maternity benefit (<i>sünnitushüvitis</i>)	bmapr	I	I	I	I	I	No data on contribution history
Parental benefit (<i>vanemahüvitis</i>)	bmact	I	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	S	
Child allowance (<i>lapsetoetus</i>)	bch00_s	S	S	S	S	S	
Single parent child allowance (<i>üksikvanema lapsetoetus</i>)	bchlp	IA	IA	IA	IA	IA	No data on father in the birth certificate of the child, or not included separately
Childbirth allowance (<i>sünnitoetus</i>)	bchba_s	S	S	S	S	S	
Large family parent allowance (<i>seitsme- ja enamalapselise pere vanema toetus</i>)	bchlg_s	S	S	S	S	S	
Means-tested family benefits	bsach_s	-	-	-	-	S	Since 2013
Subsistence benefit (<i>toimetulekutoetus</i>)	bsa00_s	S	S	S	S	S	

Benefit	Model variable	2009	2010	2011	2012	2013	Comments
Scholarships and grants (<i>õppetoetused ja stipendiumid</i>)	bed	I	I	I	I	I	No data on grades
Other benefits (not explicitly stated in the data set)	bsals	IA	IA	IA	IA	IA	Various small benefits are not directly simulated, as there is no information in the data; they are aggregated under “other social assistance”

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	Treatment in EUROMOD					Why not fully simulated?
	2009	2010	2011	2012	2013	
Employer's social insurance contributions						
Unemployment insurance contributions	S	S	S	S	S	
III pension pillar	I	I	I	I	I	Voluntary size of contributions
Pension insurance contributions (1st pillar and the transfer to the 2nd)	S	S	S	S	S	
Health insurance contributions	S	S	S	S	S	
Employee social insurance contributions						
Unemployment insurance contributions	S	S	S	S	S	
Funded pension insurance contributions (2nd pillar)	S	S	S	S	S	
Self-employed social insurance contributions						
Health insurance contributions	S	S	S	S	S	
Pension insurance contributions (1st pillar and the transfer to the 2nd)	S	S	S	S	S	
Funded pension insurance contributions (2nd pillar)	S	S	S	S	S	
Contributions paid on social benefits by the central government						
Health insurance contributions for those receiving unemployed benefits	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	S	S	S	S	S	
Pension insurance contributions (the 2nd pillar) for those receiving parental benefit	S	S	S	S	S	
Income Tax (final)						
Withholding income tax	S	S	S	S	S	
Land tax	I	I	I	I	I	No information on value of land or tax rates
Other local taxes	E	E	E	E	E	
Indirect taxes	E	E	E	E	E	No information on consumption expenditures

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

The only structural changes in the period 2009-2013 were the introduction of means-tested family benefits in 2013 and temporary reduction of employee funded pension contribution rates in 2009-11.

2.2 Order of simulation and interdependencies

Table 2.3 shows the order in which the main elements of the Estonian system in 2009-2013 are simulated. Policies, which are included into the model, but not used in the EUROMOD baseline simulations are marked as “*off*”. Policies, which have been not applicable in a specific year are marked as “n/a”. In general, the spine structure is identical for all five years.

The defined order shows the start of Estonian policy simulations with the minimum wage, but this is switched off in the baseline. Then family benefits and unemployment benefits are simulated, because credited social contributions depend on these. After the benefits, we simulate employee and employer social insurance contributions. These parameters are on the list of deductibles for the personal income taxation, and therefore need to be simulated before the personal income tax.

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 and subsistence benefit.
- 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 insurance and assistance 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.
- Subsistence benefits and means-tested family benefits depend on the income net of employee SIC and withholding income tax. Most of benefits are also included in the means-test.

Table 2.3 EUROMOD Spine: order of simulation

Policy	2009	2010	2011	2012	2013	Description
SetDefault_ee	on	on	on	on	on	DEF: default values for variables
Uprate_ee	on	on	on	on	on	DEF: uprating factors
ConstDef_ee	on	on	on	on	on	DEF: constants
ILDef_ee	on	on	on	on	on	DEF: income concepts
TUDef_ee	on	on	on	on	on	DEF: assessment units
BTA_ee	switch	switch	switch	switch	switch	SWITCH: Benefit Take-up Adjustments (ON=non take-up; OFF=full take up)
FYA_ee	switch	n/a	n/a	n/a	switch	SWITCH: Full Year Adjustments, i.e. model annual policies instead of 30th June (switch on/off to apply)
yem_ee*	off	off	off	off	off	DEF: minimum wage
neg_ee	on	on	on	on	on	DEF: recode negative incomes (e.g. self-employment income) to zero
bch00_ee	on	on	on	on	on	BEN: child allowance (lapsetoetus)
bchlg_ee**	n/a	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	n/a	BEN: school allowance (koolitoetus)
bchba_ee	on	on	on	on	on	BEN: childbirth allowance (sünnitoetus)
bcc00_ee	on	on	on	on	on	BEN: childcare allowance (lapsehooldustasu)
bcclg_ee	on	on	on	on	on	BEN: parental allowance for families with 7+ children (seitsme- ja enamalapselise pere vanema toetus)
bunct_ee	on	on	on	on	on	BEN: unemployment insurance benefit (töötuskindlustushüvitis)
bunnc_ee	on	on	on	on	on	BEN: unemployment assistance benefit (töötu abiraha)
tscer_ee	on	on	on	on	on	SIC: employer social insurance contributions
tsct_ee	on	on	on	on	on	SIC: credited social insurance contributions
tscee_ee	on	on	on	on	on	SIC: employee social insurance contributions
tintaag_ee	on	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	on	SIC: self-employed social insurance contributions
tinwh_ee	on	on	on	on	on	TAX: withholding income tax (jooksvalt kinnipeetud tulumaks, current liability)
tin_ee	on	on	on	on	on	TAX: income tax (deklaratsioonijärgne ehk lõplik maksukohustus, final liability)
bsa00_ee	on	on	on	on	on	BEN: subsistence benefit (incl. housing component) (toimetulekutoetus)
bsach_ee	n/a	n/a	n/a	n/a	on	BEN: subsistence benefit for families with children (vajaduspõhine lapsetoetus)

* 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 given on monthly and some on yearly basis, exactly as defined in legislation. In addition, there are changes in the currency of monetary values as Estonia changed from kroon to euro on 1 January 2011.

Table 2.4 Simulation of taxes and social contributions in EUROMOD

Name	Period	Abbreviation	Policies where used
Policy year	-	\$PolicyYear	unemployment insurance benefit
Minimum wage	m	\$MinWage	minimum wage, social insurance contributions by self-employed, unemployment allowance
Lagged minimum wage	m	\$MinWage_lag1	unemployment insurance benefit
Average gross wage	m	\$AvWage	
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
Childcare Allowance Rate (CCR) - base amount for childcare benefits	m	\$CC_Base	childcare benefits
Multiplier for parental allowance for large families	-	\$BCCLG_Mult	parental allowance for families with 7+ children
Amount of birth allowance	y	\$BA_amount	birth allowance
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 taxable wage in the previous calendar year	d	\$UI_AvEarn	unemployment insurance benefit
Minimum level of UI benefit		\$UI_LowLim	unemployment insurance benefit
Main amount of subsistence benefit	m	\$SA_AmountMain	subsistence benefit
Additional amount of subsistence benefit	m	\$SA_AmountExtra	subsistence benefit
Average housing costs	m	\$SA_AvHhCost	subsistence benefit
Take-up threshold for subsistence benefit	m	\$SA_TakeUpLim	subsistence benefit
Means-test threshold of subsistence benefit for families with children	m	\$SACH_threshold	subsistence benefit for families with children
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_RatePension1	social insurance contributions by employer, self-employed and state
SIC rate for the pension contributions (the 2nd pillar)	-	\$SIC_RatePension2	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_RatePension1to2	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 (the 2nd pillar) for those on maternity leave	-	\$SICCT_RateMatLeave	social insurance contributions by state (credited contributions)
employer SIC rate for the unemployment insurance	-	\$SICER_RateUI	social insurance contributions by employer

Name	Period	Abbreviation	Policies where used
contributions			
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 for income tax	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 pension allowance for income tax	y	\$IT_PensionAlw	withholding income tax and final income tax
upper limit on voluntary pension contributions for income tax, amount	y	\$IT_PensUpLimAmount	final income tax
upper limit for voluntary pension contributions for income tax, rate	-	\$IT_PensUpLimRate	final income tax
upper limit on deductible expenditure for income tax, amount	y	\$IT_ExpUpLimAmount	final income tax
upper limit on deductible expenditure for income tax, rate	-	\$IT_ExpUpLimRate	final income tax
agriculture allowance for income tax	y	\$IT_AgriAlw	self-employed tax allowance, final income tax

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

2.4 Policy switches

There are two switches used in the Estonian model.¹ First, a switch 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 to choose between modelling policies as of 30th June (switched set to *off*, the default) and modelling annual policies (switched set to *on*), which takes into account within-year policy changes.

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 old-age pension age and not receiving old age pension (which is possible in the case of early retirement), have worked and made contributions

¹ 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.

for at least 12 months during the previous 36 months, 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 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. There was no lower limit for the benefit in 2005 and 2006; from 1st January 2007 to 31st June 2009 it was 1,000 EEK; since 1st July 2009 it is 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. Until 2006, the insurance benefits were paid up to 180 days since the contribution period could not exceed five years as the accumulation only started from January 2002. Since 2007 it can be up to 270 days and since 2010 up to 360 days.

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

Table 2.5 Overview of unemployment benefits; in 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Unemployment insurance benefits									
Maximum duration (days)	180	180	270	270	270	360	360	360	360
Minimum contribution period for eligibility	12 months during last 24 months		12 months during last 36 months						
Required contribution period for benefits									
180 days	Less than 5 years		Less than 55 months						
270 days	5-10 years		56-110 month						
360 days	10 or more years		110 or more months						
Basis for benefit entitlement	Person's average earnings in the last 12 months		Person's average earnings in the first 9 months over the preceding 12 months						
Amount of the benefit	50% of the base amount during first 100 days, 40% during the remaining period								
Maximum daily benefit basis (3 times the average of the taxable earnings previous year)	562 EEK	630 EEK	748 EEK	885 EEK	1,015 EEK	894 EEK	60.46 EUR	63.99 EUR	68.07 EUR
Minimum benefit	None		UA benefit			50% MW of previous year			
Unemployment allowance									
Maximum duration (days)	270	270	270	270	270	270	270	270	270
Amount daily benefit (EUR)	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
Required contribution period (days)	180	180	180	180	180	180	180	180	180
Eligible period for contribution (months)	12	12	12	12	12	12	12	12	12

Source: Unemployment Insurance Fund; various legal acts

- **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).²

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

² Employment changes are modelled in combination with a specific add-on tool and are not part of the baseline simulations.

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 calculated according to the rules above, using modelled contribution history, while also controlling for the unemployment duration (lunmy_s). (For currently employed, a further cap is imposed corresponding roughly to the average duration observed in administrative sources and national SILC data.)

Benefit entitlement is calculated based on previous earnings and benefit duration, subject to the lower and upper thresholds. (For those currently employed, current earnings are used.) 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, imputed wage is used. Finally, benefit amount is adjusted with the number of months in receipt (bunctmy_s).

2.5.2 Unemployment allowance (bunnc_ee)

- ***Brief description***

Unemployment allowance (*töötutu toetus*) is paid to those people who do not qualify for unemployment insurance benefit or the period of UI benefit has ended. In 2009, UI benefit could be received for 270 days and since 2010 for 360 days. UA benefits can be received until the end of the 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 old-age pension 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 benefits.

- ***Benefit amount***

Flat rate of 32.90 EEK per day in 2009-2010, 2.11 EUR per day in 2011-2012, 3.27 EUR per day in 2013. 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. (For currently employed, a further cap is imposed corresponding roughly to the average duration observed in administrative sources and national SILC data.) Finally, benefit amount is adjusted with the number of months in receipt (bunncmy_s).

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.

- *Benefit amount*

The benefit is paid monthly to one of the parents, based on the number of eligible children. The amount per child is linked on the Child Allowance Rate (CAR), which was equal to 150 EEK until 2010 and 9.59 EUR since 2011. The benefit is two times CAR for the first and second child and 6 x CAR for the third and any consequent child in 2009-2013. Since 1 July 2013 the benefit is 8 x CAR for the third and any consequent. Note that this additional increase of 2 x CAR is not included in the means test of subsistence benefits or means tested family benefits.

Table 2.6 Overview of state family benefits, in 2009-2013

Benefit (legal term in English)	Frequency	Unit	Basic formula in 30 th of June 2009 (and changes in 2009-2013)
Childbirth allowance	Lump sum	Family	5,000 EEK (320 EUR since 2011)
Adoption benefit	Lump sum	Family	5,000 EEK (320 EUR since 2011)
Child allowance	Monthly	Per child	1 st and 2 nd child 2 x CAR; 3 rd and more 6 x CAR (8 x CAR since 1 July 2013)
Childcare allowance	Monthly	Per child	Under 3 years old: 1/2 x CCR 3-8 years old: 1/4 x CCR. Additional 100 EEK (6.40 EUR since 2011) for each child under 1 year old, if the parent receives childcare allowance
Allowance for one parent of a family with 7 and more children	Monthly	Family	2.2 x CCR
Single parent child allowance	Monthly	Per child	2 x CAR
Allowance for a child in guardianship or in foster care	Monthly	Per child	10 x CAR
Conscript's child allowance	Monthly	Per child	5 x CAR
Start in independent life allowance	Lump sum	Per child	40 x CAR

Note: CAR – Child allowance rate, 150 EEK in 2009-2010 and 9.59 EUR since 2011; CCR – Childcare allowance rate, 1,200 EEK in 2009-2010 and 76.7 EUR since 2011.

- **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.

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 are 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 (*siinnitoetus*). 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 2006 the benefit is 5,000 EEK for all children, since 2011 320 EUR.

- **EUROMOD notes**

There is no information about the status of being an adoptive parent, guardian or caregiver in the underlying datasets.

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 [2.3.3](#)). 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 (before 2009 the child related to the maternity or parental benefit were excluded). There is an additional element for every child up to one year of age.

- **Benefit amount**

The benefit is paid monthly to one of the parents. The amount is 1/2 of the Childcare Allowance Rate (CCR, equal to 1,200 EEK in 2009-2010 and 76.7 EUR since 2011) for every child up to 3 years old, 1/4 of the CCR for each eligible child from 3 to 8 years of age. Additionally, 100 EEK (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 is effectively non-existent as parental benefit was extended to 14 months and, therefore, not simulated from 2006 onwards in EUROMOD.

- **EUROMOD notes**

The benefit is allocated to the same person in the household who is receiving 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 Parental allowance for families with 7 or more children (bcclg_ee)

- **Brief description**

This allowance (*7 ja enamalapselise pere vanema toetus*) is targeted to families with very large number of children. It is a monthly universal non-means-tested non-taxable benefit.

- **Definitions and eligibility conditions**

The unit of analysis is the same as for child allowance (see above [2.3.3](#)). There must be at least seven eligible children in the family.

- **Benefit amount**

In 2005 the benefit is the two times CCR, in 2006 2.1 times CCR, since 2007 2.2 times CCR.

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 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. 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, family allowance for families with three or more children, 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. The subsistence rate was 750 EEK in 2005-2006, 900 EEK in 2007, 1,000 EEK in 2008-2010, 76.70 EUR in 2011-2013.

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 a few irregular benefits, such as childbirth allowance, other social assistance or benefits for the disabled, school allowance and large family allowance (both abolished by 2009). Since 2013 means-tested family benefits and the amount of child benefits for the third and subsequent children that increased on 1st of July 2013 (2 x CAR) are also excluded from the income list. Income concept refers effectively to income net of withholding income tax. Only positive income from self-employment is included.

- **Benefit amount**

The general rule for subsistence benefit is the following:

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

B = subsistence benefit;

L = subsistence level (see above);

C = actual costs related to the dwelling (excluding mortgage interests) that do not exceed 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 200 EEK (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.

- **EUROMOD notes**

Imputation of housing costs

In practice, housing 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 1,205 EEK per month in 2009 and has increased thereafter (1,241 in 2010, 84 EUR on 2011, 91 EUR in 2012, 99 EUR in 2013).

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 recalling 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.

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 200 EEK per month since 2009 (and 12 EUR since 2011).

2.5.10 Means-tested family benefit (bsach_ee)

- ***Brief description***

Means-tested family benefit (*vajaduspõhine peretoetus*) is a monthly benefit that is paid to households with children whose average income in the previous three months is below a certain threshold.

- ***Definitions***

The unit of analysis is a household. Households whose income is below the income level of the means-tested family benefits and who have children who are eligible to child benefits are entitled to means-tested family benefits. Means-test 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 benefits (see 2.5.9).

The income level of the means-tested family benefits 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 means-tested family benefits was 280 EUR per month for the first household member, 140 EUR for any additional adult (older than 13) and 84 EUR for every child under 14.

- ***Benefit amount and duration***

Benefit amount depends on the number of children eligible for the child benefits. The benefit is equal to 1 x Child Allowance Rate (CAR), which is 9.59 EUR in 2013, if there is one child in the household, and 2 x CAR (19.18 EUR) if there is two or more children in the household.

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. As the benefit was introduced only in the second half of 2013, no appropriate information about its take-up is yet available.

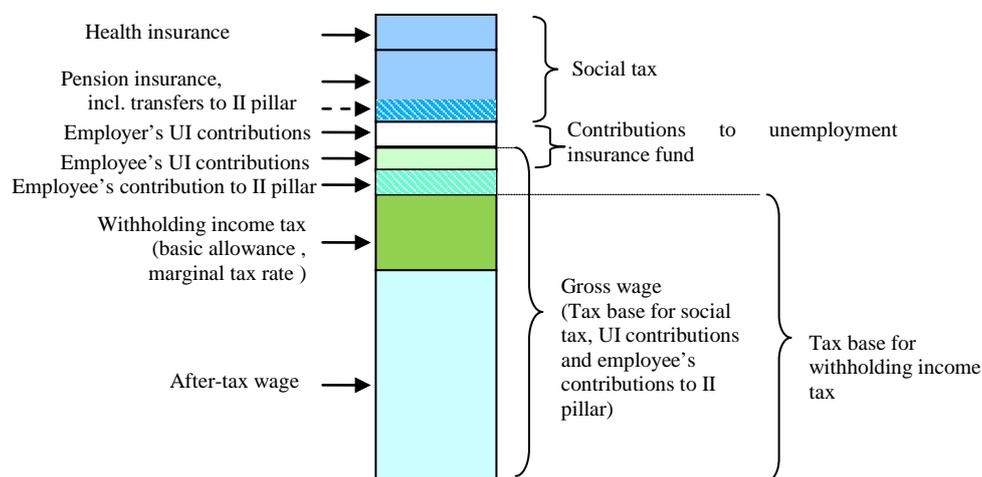
2.6 Social contributions

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 the 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. These are calculated as a fixed percentage of the gross employment income. The contribution rates have changed over the years (see the following table).

Table 2.6 Unemployment insurance contribution rates

	2005	2006	2007	2008	1 June 2009	1 August 2009	2013
Employers	0.5%	0.3%	0.3%	0.3%	1%	1.4%	1%
Employees	1%	0.6%	0.6%	0.6%	2%	2.8%	2%

Note: there were no changes in 2010-12.

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 is applied, and from 2012 in full amount of 2+4%.

- **EUROMOD notes**

In the national SILC dataset the information on making contributions to the funded pension scheme in 2010 is directly available (variable *lpm*) and hence we know who participates in the scheme 1st July 2009 – 31st December 2010. We have merged this information directly to the EU-SILC dataset. The following table shows the simulation of contributions based on the actual indicator of participation (*lpm*), birth year (*dag*), employment income (*yem*) and relevant contribution rates.

Table 2.7 Contributions to the funded pension scheme in 2009-2013, % of employment income

Person's decision on individual contributions 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			

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), but take them from the data.

2.6.2 Employer social contributions (tscer_ee)

Employers pay social tax, which is divided into health insurance part and pension insurance part. The latter 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 social tax, either total or health insurance part, on certain social benefits (see section 2.6.4 for more details).

Pension contributions

Pension contributions to the first pillar (the PAYG scheme) are 20% of the employment income, minus transfers to the funded pension scheme (variable *tferpi_s* in the EURMOD). The latter is 4 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.

Unemployment insurance contributions

Unemployment insurance contributions amount to a fixed percentage (0.3-1.4% in 2009 and 1% in 2013, 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 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 minimum contribution base, 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. Finally, there is an upper annual limit to the social contributions base, which is 15 times the annual legal minimum wage (783,000 EEK in 2009, see the following table for later years).

Table 2.7 Upper and lower limit of social tax base for self-employed 2009-2013

	2009	2010	2011	2012	2013
Minimum monthly social tax base	2,700 EEK	4,350 EEK	278.02 EUR	278.02 EUR	290 EUR
Minimum monthly wage	4,350 EEK	4,350 EEK	278.02 EUR	290 EUR	320 EUR
Upper annual limit of social tax base (15 times minimum wage)	783,000 EEK	783,000 EEK	50,043.6 EUR	52,200 EUR	57,600 EUR

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% to himself. The contribution to the state pension scheme amount to 20% of the contribution base less 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 (ttfsepi_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. Gross values are directly taken from the data, relying on Statistics Estonia calculations to be correct.

2.6.4 Credited contributions (tscct_ee)

Government pays social contributions on certain minimum base (see table 2.7 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 health care insurance (tsccthl_s) and pension insurance part (tscctpi_s) on the minimum base for those receiving childcare allowance, large family parent allowance, or parental benefit and only 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 receiving parental benefit. 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 (744.73 EUR in 2013) for each child under three years old and born after 1st January 2013.

2.7 Personal income tax

Here we distinguish between withholding income tax and income tax liability based on the final tax report. Withholding income tax is required for simulating subsistence benefit and means-tested 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 are allowed to submit a joint declaration. 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, scholarships and grants, voluntary maintenance payments and investment income. The latter includes interests, which are non-taxed if received from an EU financial institution, and dividends, on which firms pay only corporate income tax in Estonia.

2.7.3 Tax allowances

Firstly, basic allowance, which equals 2,250 EEK in 2009 and rounded to 144 EUR (per month) since 2011. See also the following table.

Table 2.8. Income tax parameters 2007-13

	2007	2008	2009	2010	2011	2012	2013
Income tax rate	22%	21%	21%	21%	21%	21%	21%
Basic allowance per month	2,000 EEK	2,250 EEK	2,250 EEK	2,250 EEK	144 EUR	144 EUR	144 EUR
Additional allowances per month per child starting from ... child	2 nd	1 st	2 nd				
Pension allowance per month	3,000 EEK	3,000 EEK	3,000 EEK	3,000 EEK	192 EUR	192 EUR	192 EUR

Secondly, pension allowance, which equals 36,000 EEK per year (3,000 EEK per month) in 2009 and later years (192 EUR per month since 2011). Pension allowance is applicable only to state pensions (i.e. old-age, disability and survivors' pensions) and can be claimed jointly only if both spouses receive state pensions.

Thirdly, an additional allowance for families depending on the number of children aged up to 17, equal to the basic allowance (i.e. 27,000 EEK per year in 2009, see table above) less the taxable income of the children. Since 2009 it is applicable for the second child onwards.

There is also a sickness allowance for compensation for an accident at work or an occupational disease and allowance for tax-free childbirth benefit paid by employer, but these are of little importance and not simulated in the EUROMOD.

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

All allowances are non-refundable, i.e. their value cannot be larger than income tax base.

2.7.4 Tax deductions

First, contributions to the unemployment insurance fund and to the funded pension scheme as well as alimony or maintenance payments are fully deductible from taxable income.

Second, the following expenses can be deducted from taxable income, but no more than 50% of taxable income or 50,000 EEK per year (3,196 EUR in 2011 and 1,920 EUR since 2012): housing loan interest payments, education expenses, donations and trade unions membership fees. The latter two are also subject to separate upper limits (as a percentage of taxable income).

Note that deductions of interest payments of study loans, which are part of the training expenses, and donations and trade union membership fees were abolished from 1st January 2010.

Third, pension contributions to the 3rd pillar (i.e. voluntary funded scheme) can be deducted from taxable income but no more than 15% of taxable income. In 2012 an additional annual ceiling of 6,000 EUR was introduced.

- *EUROMOD notes*

We do not have data on donations and trade unions membership fees 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 and simulated social security contributions by employees.

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

There is a single income tax rate (24% in 2005, 23% in 2006, 22% 2007, 21% since 2008), with the exception of 10% tax rate on private pensions.

Withholding income tax is a sum of three components:

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

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 only from other source of incomes. 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.

We also consider benefits received from abroad untaxed (where available), assuming they have been taxed in the foreign country already.

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.

2.8 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. Several 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. 4,350 EEK in 2009-2010, 278.02 EUR in 2011, 290 EUR in 2012, 320 EUR in 2013.

- ***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 three types of Estonian datasets available as input data for EUROMOD:

- 1) 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;
- 2) European Union Survey of Living Conditions (EU-SILC) 2006, 2007, 2008 and 2010 data for Estonia;
- 3) Household Budget Survey 2005 (*Eesti leibkonna eelarve uuring - HBS*).

The Household Budget Survey 2005 was discussed in detail in previous country reports, see Lüksik, Paulus and Võrk (2008) and Võrk, Paulus and Lüksik (2010), and we do not cover it in this report. The report Võrk, Paulus and Lüksik (2010) included an overview of the EE-SILC 2006 and EU-SILC 2006 datasets, Võrk and Paulus (2011) included an overview of the EE-SILC 2007 and EU-SILC 2007 datasets and Võrk and Paulus (2012) included an overview of the EE-SILC 2008 and EU-SILC 2008 datasets.

In this report we give an overview of the EU-SILC 2010 dataset which has been supplemented with a few detailed income variables and labour market information from the EE-SILC database (with the permission of Eurostat and Statistics Estonia).

Table 3.1 EUROMOD database description

EUROMOD database	EE_2010_c1
Original name	EU-SILC (UDB_c08d_v10-1)
Provider	Eurostat (and Statistics Estonia)
Year of collection	2010
Period of collection	February-May
Income reference period	2009
Sample size	13,474 individuals 4,972 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 (2012).³

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

³ Statistics Estonia (2012) “EU-SILC 2010 in Estonia: Final Quality Report”
https://circabc.europa.eu/sd/d/b5ee00c0-7d4a-4ad8-bd89-b5f88b256207/SILC_QRFIN_A_EE_2010_0000_V0001_N.PDF

additional variables were merged from the national version. (An almost exact match of individuals was achieved using household income, birth year, gender, number of people in household, order of persons in the household, personal gross earnings, and health status.)

The variables merged from the national dataset are the following:

- a) whether a person has joined the compulsory funded pension scheme II pillar and whether any payments were made in 2009;
- b) family benefits separately (maternity benefits, parental benefits, child allowances, child care allowances, single parent child allowance, foster parent benefit, other family benefits paid by municipalities, maintenance allowance)
- c) subsistence benefits and other social assistance benefits separately
- d) separately unemployment insurance benefits, unemployment allowances, severance payments, other unemployment benefits, as well as the number of months received unemployment insurance benefits and unemployment allowances
- e) an indicator for persons registered as self-employed.

Adjustments to variables are kept to a minimum. In order 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 2010 there were 20 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 refers 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 2010 quality report Section 2.5 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 EURMOD 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 EU 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.

Social assistance benefits consist of two categories: subsistence benefits and other social assistance benefits. Although subsistence benefits are considered as housing benefits in the EU-SILC data, as they include a component related to housing costs, in EUROMOD these are reclassified as social assistance benefits. They are all non-taxable, therefore no net-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.

Financial capital asset variable was imputed based on the UDB variable on investment income and the average yield (1.62% in 2009), which was estimated drawing on the structure of investment income in the national SILC and assumptions on their average yields.

Size of flat/house in square meters, which is needed for simulation of subsistence benefits, were predicted using a regression model estimated on the data from the national SILC.

3.4 Updating

To account for any time inconsistencies between the input dataset 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 year of the data and the year of the simulated tax-benefit system. Updating factors are generally based on changes in the average value of an income component between the year of the data and the policy year. In case no data were available, official forecasts of prices or average wages is used. 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 actual 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 2. Both market incomes and non-simulated taxes and benefits in the input dataset as well as simulated taxes and benefits are validated against external official data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1 Components of disposable income

The 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 2009	EU-SILC 2009
	ils_dispy	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	+	0
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 2. Simulations are done using policy rules valid as of 30 June (i.e. FYA_ee is not switched on).

In the base year, 2009, the number of employed in the SILC data matches closely the number of employed from the Labour Force Survey (98%) (see Table 4.2 in the Annex), for the number of unemployed the ratio is 95%. As the labour market situation worsened in 2010 and has continuously improved since then, while EUROMOD baseline scenarios do not adjust for employment changes, the employment number is overestimated for 2010 (ratio 1.03) and underestimated for 2011-2013. The opposite is true for the number of unemployed, which is underestimated for 2010 and overestimated for the following years.

The number of individuals with employment income is overestimated (1.09 times higher in 2009) in the data compared to the LFS data, but this is mainly due to the differences of measurement (see Table 4.3 in the Annex). While SILC data measures it cumulatively, the external source (the LFS) uses annual average. The number of people with income from registered self-employment is severely underestimated (about 50% in 2009), compared to data from tax returns.

Survey data overestimates the number of individuals receiving private pension (about 1.8 times in 2009), but this might be due to sampling variation as the actual number is relatively small (about 2,000 people in 2009 according to the annual tax return summaries). The number of households with rent income in SILC is 5.2 times higher than the number of people declaring rent income in 2009, which can be an indication of underdeclaring of rent income. There are many 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 is 92% of the average wage of a full-time worker in 2009 as published by Statistics Estonia and slightly higher (94-95%) in the following years (see Table 4.4). At the aggregate level, the SILC data cover 97% of employment income in 2009, about 80% of registered self-employment income, and about one quarter of private pensions. Total rent income is about three times higher than in the tax reports.

Among non-simulated benefits, universal benefits (old-age pensions, disability pensions, survivors pensions) are well covered in the dataset. However, as the number of old age pensioners and especially disability pensioners has increased steadily in 2009-2013, we underpredict the number of those pensioners in later years. On the other hand, the number of survivor pensioners, which slightly decreased in 2009-2013, is initially underestimated but the coverage of the data improves for later years.

Means tested benefits (subsistence benefit) and replacement incomes (unemployment income, sickness benefits) are underrepresented in the data. The number of receivers of maternity benefits is initially overestimated by 8% and the total amount underestimated by 10%. (Table 4.5 and 4.6 in Annex 2.) As the number of recipients of maternity benefits has decreased due to declining number of births and lower density of previous employment of mothers in 2009-2013, the model overpredicts the number of recipients and amounts in later years.

The number of recipients of parental benefits is 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. The total revenue from parental benefits is well covered in the base year, at 99%.

Sickness benefits are underrepresented in the SILC data in 2009. These are usually small amounts and people may leave them unreported or they mix them up with employment income. Note that there was a change in the legislation in June 2009, resulting in the contraction of benefits in 2009. Therefore the data seem to cover sickness benefits better in 2010-2013, though this is artificial and not because we simulate the reform. Note also that external data measure the total number of sickness cases, which is larger than 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). For a relatively small-scale benefit, single parent child allowance is reasonably captured in SILC (two thirds of recipients and 80% of expenditure). There are no external statistics available for other minor benefits (maintenance allowance, foster care allowance etc).

4.1.3 Validation of outputted (simulated) incomes

The total amount of child allowances, childcare allowances and childbirth allowances are simulated very well (see Table 4.7 and 4.8), which is expected as these depend only on the age and number of children. Large family parent allowances are oversimulated, but this is clearly due to the sampling variation, as there are very few households, who are eligible for the benefit.

Unemployment insurance benefits and unemployment allowances are undersimulated in 2009, as the number of recipients of unemployment benefits is smaller in the SILC data, the total simulated amount is 83% and 90% of the registry data, respectively. Total income from subsistence benefits is oversimulated in 2009 1.27 times. In later years it is undersimulated due to the changing labour market structure. The oversimulation of the subsistence benefits is partly due to annual incomes which do not allow capturing the seasonal nature of subsistence benefits.

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 1.4%), neither the inequality measures, but it reduces the number of households receiving subsistence benefits by 13.3%.

Aggregate amounts of withheld personal income tax and both components of social tax are simulated very accurately (ratio=101%). UI contributions are oversimulated, especially in 2009 (ratio = 130%). In 2009, it is partly due to rapidly declining employment in the second half of the year, while contribution rates increased. Full-year simulations which capture changes in the policy rules within a year (i.e. FYA_ee switched on), result in much smaller oversimulation (ratio = 113%).

4.2 Income distribution

All income distribution results presented here are computed for individuals according to their household disposable income (HDI) equivalised by the modified OECD equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The 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. In 2009, the simulated income is 9% higher than in the

original dataset. The other deciles are less affected (within 1% difference). Therefore, the resulting Gini index and ratio of quintiles (S80/S20) are lower than in the original dataset. (See Table 4.9 in Annex 2.)

The median income itself is almost identical in simulated data and original dataset in 2009.

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 2009 are close to those calculated with the original dataset. The largest discrepancy (ratio of poverty rates = 1.03) arises when the total poverty rate is evaluated at the 40% of median household disposable income. In all other cases the discrepancy is less. (See Table 4.10 in Annex 2.)

Regarding age, the poverty rate is slightly underestimated for age group 50-64 years (simulated 17.8% vs 18.5% in the EU-SILC data). Differences are smaller for other age groups.

4.3 Validation of minimum wage

Minimum wage adjustments (which are not part of the baseline simulations) would influence the results very little. Although it increases labour earnings and reduces subsistence benefits, the effect is no more than 1%. (See Table 4.11 in Annex 2.)

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 and pension and health contributions are well simulated, but unemployment insurance contributions are oversimulated.
- Universal family benefits are simulated relatively well and pensions are recorded in the datasets reasonably well.
- The oversimulation of the subsistence benefits is partly due to annual incomes which do not allow capturing the seasonal nature of subsistence benefits. Assuming full take-up of subsistence assistance benefit in the simulations would result in even higher income at the bottom of the income distribution compared to the original dataset. Hence, we suggest that subsistence benefits are simulated in combination with partial take-up modelling to reduce the extent of oversimulation. Imputed value of financial assets is rather unreliable, as the imputation is based on very low average returns of 2009.
- As the Estonian economy was affected by severe crisis in 2009-2013, using constant labour market structure of 2009 will cause substantial discrepancy between simulated and actual figures. Therefore, modelling of employment changes would improve the simulation results of social contributions, tax revenues, and unemployment benefits.

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ANNEX 1 UPRATE FACTORS

Table 1. Uprate factors

Variable	Variable label	Update factor	Factor reference name
default		Growth of CPI	\$f_cpi
afc	Assets: financial capital	Growth of CPI	\$f_cpi
bch	Benefit/pension: child:	Aggregate	
bcc00	Benefit/pension: child care: basic	Simulated, otherwise using change in monthly amounts	\$f_bcc00
bcclg	Benefit/pension: child care: large family	Simulated, otherwise using change in monthly amounts	\$f_bcclg
bch00	Benefit/pension: child: basic	Simulated, otherwise using change in monthly amounts	\$f_bch00
bchab	Benefit/pension: child: abroad	No change in benefits	\$f_UNIT
bcham	Benefit/pension: child: unpaid alimony	No change in benefits	\$f_UNIT
bchba	Benefit/pension: child: birth/adoption	Simulated, otherwise from data	\$f_bchba
bchlp	Benefit/pension: child: lone parent	No change in benefits	\$f_UNIT
bchot	Benefit/pension: child: other	No change in benefits	\$f_UNIT
bed	Benefit/pension : education	Growth of CPI	\$f_cpi
bfa	Benefit/pension : family	Aggregate	
bfafp	Benefit/pension : family: foster parent	No change in benefits	\$f_UNIT
bhl	Benefit/pension : health	Growth of average wage last year	\$f_yemlag1
bmaab	Benefit/pension: maternity: abroad	No change in benefits	
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	Simulated, otherwise using change in monthly amounts	\$f_bunnc
bunot	Benefit: unemployment : other	No change in benefits	\$f_bunot
buntr	Benefit: unemployment : training	Change in monthly amounts	\$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	Growth of average disability pension	\$f_pdi
poa00	Benefit/pension : old age: basic	Growth of average old-age pension	\$f_poa00
poaab	Pension : old age: abroad	No change in benefits	\$f_UNIT
psu	Benefit/pension : survivors	Growth of average survivor's pension	\$f_psu
tad	Tax: repayments	Growth of average wage	\$f_yem
tin	Tax: income tax	Growth of average wage	\$f_yem
tis	Tax: income tax and social insurance contributions		
tpr	Tax : property tax	Growth of land tax revenues	\$f_tpr
xed	Expenditure: education	Simulated, otherwise growth of CPI	\$f_cpi
xhc	Expenditure : housing cost	Aggregate	
xhcmomi	Expenditure : housing cost : mortgage payment : mortgage	Estonian Tax and Customs Board: Average declared	\$f_xhcmomi

Variable	Variable label	Update factor	Factor reference name
	interest	mortgage interests amount	
xhcot	Expenditure : housing cost : other	Growth of housing costs in CPI (excl. mortgage interests)	\$f_cpixhc
xhcrt	Expenditure : housing cost : rent	Growth of average rent in Tallinn	\$f_xhcrt
xmp	Expenditure : maintenance payment	Growth of average wage	\$f_yem
xpp	Expenditure: private pensions	Growth of average wage	\$f_yem
yds	Income: disposable	Simulated, otherwise growth of CPI	\$f_cpi
ydses_o	Income: disposable: equivalised: original SILC	Simulated, otherwise growth of CPI	\$f_cpi
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
yyit	Income : investment: interests	Average declared income from other sources; predicted growth of average wage for 2013	\$f_yiyit
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	
yprro	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_yprrt
ypt	Income : private transfers	Growth of average wage	\$f_yem
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
ysena	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

Table 2. Sources of update factors

Factor name	ref.	Name	Source
\$f_cpi		Growth of CPI	Statistics Estonia, online database, table IA001 2000-2012; 2013 forecast by Ministry of Finance, Spring 2013
\$f_cpixhc		Growth of housing costs in CPI (excl. mortgage interests)	Statistics Estonia, online database, table IA001 2000-2012; 2013 forecast by Ministry of Finance, Spring 2013
\$f_pdi		Growth of average disability pension	Statistics Estonia, online database, tabel SK110: Riiklik pensionikindlustus; 2013 "Riikliku pensioni 2013. aasta indeksi väärtuse kinnitamine" (1,050) https://www.riigiteataja.ee/akt/120032013005
\$f_poa00		Growth of average old-age pension	see \$f_pdi
\$f_psu		Growth of average survivor's pension	see \$f_pdi
\$f_tpr		Growth of land tax revenues	Statistics Estonia, online database, table RR02, land tax revenues
\$f_xhcmomi		Estonian Tax and Customs Board: Average declared mortgage interests amount	ETCB, average declared mortgage interests per declaration. 2013 kept constant
\$f_xhcert		Growth of average rent in Tallinn in a two-living-room apartment until 2009; growth of average rent in Tallinn	Statistics Estonia, online database, table KV131, average rent in Tallinn in a two-living-room apartment (2003-2009); Extrapolated by the average rent of m2 in Tallinn according to average rent in Tallinn in June every year by database www.kv.ee (2010-2013)
\$f_yem		Growth of average wage; predicted growth of average wage for 2013	Statistics Estonia, online database, table PA5211 (2008-), 2013 forecast by Ministry of Finance, Spring 2013
\$f_yemlag1		Growth of average wage last year	see \$f_yem
\$f_yiydv		Average declared income from selling assets; predicted growth of average wage for 2013	Estonian Tax and Customs Board, 2006-2012 average declared income from selling assets ("Kasu väärtpaberite võõrandamisest (Rida 6.1)"-"Kahju väärtpaberite võõrandamisest (Rida 6.1)"); 2013 predicted wage growth
\$f_yiyit		Average declared income from other sources	Estonian Tax and Customs Board, 2006-2012 average declared income from other sources assets ("Muu maksustatav tulu (palk,litsents,intress,elatis jm.) (Rida 7.1)"); 2013 wage growth
\$f_yiyot		Average declared income from selling other assets	Estonian Tax and Customs Board, 2006-2012 average declared income from selling other assets ("Kasu muu vara võõrandamisest (Rida 6.3)"); 2013 wage growth
\$f_yprtt		Growth of average rent in Tallinn in a two-living-room apartment	see \$f_xhcert

ANNEX 2 VALIDATION STATISTICS

ANNEX 2 VALIDATION STATISTICS

Table 4.2-Number of employed and unemployed

	EUROMOD	External					Ratio				
	2009	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Number of employed	585,947	595,800	570,900	609,100	624,400	632,500	0.98	1.03	0.96	0.94	0.93
Number of unemployed	90,104	95,100	115,900	86,800	70,500	64,854	0.95	0.78	1.04	1.28	1.39

Sources of external statistics:

2009 - 2012: Statistics Estonia, on-line database, table ML330 "Labour status of population aged 15-74 by sex and age group"

2013: Ministry of Finance summer 2013 forecast <http://www.fin.ee/doc.php?109949>

Table 4.3-Market income in EUROMOD -Number of recipients

	EUROMOD						External					Ratio				
	2009	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Employment income	651,463	595,800	570,900	609,100	624,400	632,500	1.09	1.14	1.07	1.04	1.03					
Self-employment income from registered activity	19,068	37,884	30,583	29,396	28,106	N/A	0.50	0.62	0.65	0.68	N/A					
Private pensions	3,599	2,040	1,972	2,333	2,717	N/A	1.76	1.83	1.54	1.32	N/A					
Rent income	13,204	2,557	2,941	3,202	3,673	N/A	5.16	4.49	4.12	3.59	N/A					
Investment income	283,952	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Income received by people aged under 16	5,795	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Regular inter-household cash transfers received	31,350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Regular inter-household cash transfers paid	32,572	N/A	N/A	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, income received by people aged under 16, regular inter-household cash transfers received and paid - number of households with positive income

Sources of external statistics:
 Employment income - average number of employed from Estonian labour force survey
 2009 - 2012: Statistics Estonia, on-line database
 2013: Ministry of Finance summer 2013 forecast <http://www.fin.ee/doc.php?109949>
 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 mln EUR)

	EUROMOD					External					Ratio				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Average employment income (EUR)	7,957	8,038	8,516	9,003	9,510	8,628	8,573	8,937	9,513	N/A	0.92	0.94	0.95	0.95	N/A
Employment income	5,184	5,237	5,548	5,865	6,196	5,332	5,186	5,590	6,040	N/A	0.97	1.01	0.99	0.97	N/A
Self-employment income from registered activity	54	54	58	61	64	67	69	67	87	N/A	0.80	0.79	0.86	0.70	N/A
Private pensions	2	2	2	2	2	8	6	7	10	N/A	0.25	0.31	0.28	0.21	N/A
Rent income	15	14	17	20	23	5	5	6	8	N/A	3.04	2.76	2.75	2.62	N/A
Investment income	56	18	21	20	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Income received by people aged under 16	1	1	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Regular inter-household cash transfers received	46	47	50	53	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Regular inter-household cash transfers paid	41	42	44	47	50	N/A	N/A	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, Statistics Estonia, online database

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				
	2009	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Benefits																
Sickness and injury benefits	127,791	413,550	354,811	382,638	309,827	N/A	0.31	0.36	0.33	0.41	N/A					
Maternity benefits	13,507	12,456	11,007	10,012	9,770	N/A	1.08	1.23	1.35	1.38	N/A					
Parental benefit	35,510	19,668	19,768	19,004	17,706	N/A	1.81	1.80	1.87	2.01	N/A					
Old-age pensions	285,281	293,650	294,975	298,767	300,540	301,434	0.97	0.97	0.95	0.95	0.95					
Disability pensions	74,504	70,024	76,662	82,590	90,093	94,418	1.06	0.97	0.90	0.83	0.79					
Survivor pensions	10,025	11,554	11,309	10,828	9,953	9,060	0.87	0.89	0.93	1.01	1.11					
Single parent child allowance	16,239	24,310	23,260	22,223	21,106	N/A	0.67	0.70	0.73	0.77	N/A					
Maintenance allowance	174	486	N/A	N/A	508	N/A	0.36	N/A	N/A	0.34	N/A					
Foster care allowance	919	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Local child benefits	13,838	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Scholarships and grants	45,441	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Severance pay	38,692	20,721	16,955	8,640	8,458	8,035	1.87	2.28	4.48	4.57	4.82					
Other (minor) social benefits	8,880	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Taxes and Social Insurance contributions																
Property tax	400,789	N/A	N/A	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 pensions; Statistics Estonia, online database

Disability pensions - beginning of year; Statistics Estonia, online database

Survivor pensions - beginning of year; Statistics Estonia, online database

Maintenance allowance - Estonian National Social Insurance Board

Severance pay - Estonian Unemployment Insurance Fund

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

	EUROMOD					External					Ratio				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Benefits															
Sickness and injury benefits	46.2	43.9	44.3	47.0	49.7	98.6	45.3	49.6	52.1	N/A	0.47	0.97	0.89	0.90	N/A
Maternity benefits	38.0	36.1	36.5	38.7	40.9	42.3	36.1	31.1	32.2	N/A	0.90	1.00	1.17	1.20	N/A
Parental benefit	151.2	143.6	145.1	153.7	162.5	152.7	174.0	173.3	159.5	N/A	0.99	0.83	0.84	0.96	N/A
Old-age pensions	1,036.7	1,037.5	1,033.8	1,071.6	1,125.2	1,066.7	1,094.0	1,097.3	1,144.0	N/A	0.97	0.95	0.94	0.94	N/A
Disability pensions	140.8	139.9	137.5	141.8	148.9	162.9	176.3	189.2	204.3	N/A	0.86	0.79	0.73	0.69	N/A
Survivor pensions	12.8	13.1	12.8	13.2	13.9	14.7	14.9	13.4	12.6	N/A	0.87	0.88	0.96	1.05	N/A
Single parent child allowance	4.5	4.5	4.5	4.5	4.5	5.7	5.5	5.3	5.0	N/A	0.79	0.82	0.85	0.90	N/A
Maintenance allowance	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	N/A	0.50	0.45	0.72	0.48	N/A
Foster care allowance	1.8	1.8	1.8	1.8	1.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Local child benefits	3.3	3.3	3.3	3.3	3.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scholarships and grants	28.0	28.9	30.3	31.5	32.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Severance pay	86.5	87.3	92.5	97.8	103.3	27.5	22.9	11.6	11.9	12.9	3.15	3.82	7.99	8.20	8.03
Other (minor) social benefits	5.4	5.5	5.8	6.0	6.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and Social Insurance contributions															
Property tax	17.1	18.2	18.3	20.8	19.5	48.2	51.3	51.5	58.6	N/A	0.35	0.35	0.35	0.35	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 pensions; ENSIB (Sotsiaalkindlustusamet), annual statistical reports, own calculations

Disability pensions - ENSIB (Sotsiaalkindlustusamet), annual statistical reports, own calculations

Survivor pensions - ENSIB (Sotsiaalkindlustusamet), 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				
	2009	2010	2011	2012	2013	2009	2009	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Benefits																	
Child allowance	264,426	264,426	264,426	264,426	264,426	175,291	1.51	261,443	258,695	255,522	252,255	N/A	1.01	1.02	1.03	1.05	N/A
Childcare allowance	41,044	41,044	41,044	41,044	41,044	45,167	0.91	40,928	40,629	41,034	41,581	N/A	1.00	1.01	1.00	0.99	N/A
Large family parent allowance	3,586	3,586	3,586	3,586	3,586	461	7.77	1,346	1,227	1,205	1,161	N/A	2.66	2.92	2.98	3.09	N/A
Childbirth allowance	16,668	16,668	16,668	16,668	16,668	16,715	1.00	15,930	15,724	15,361	13,724	N/A	1.05	1.06	1.09	1.21	N/A
Unemployment insurance benefit	38,416	38,416	38,416	38,416	38,416	39,430	0.97	57,617	61,012	32,127	26,189	N/A	0.67	0.63	1.20	1.47	N/A
Unemployment allowance	26,505	26,505	26,505	26,505	26,505	31,935	0.83	46,376	46,361	30,622	27,308	N/A	0.57	0.57	0.87	0.97	N/A
Subsistence benefits	13,201	14,219	17,438	16,831	15,079	14,991	0.88	20,149	N/A	24,332	21,585	N/A	0.66	N/A	0.72	0.78	N/A
Taxes and Social Insurance contributions																	
Personal Income tax (withheld)	663,748	666,039	665,983	684,543	724,080	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Personal Income tax (final declarations)	693,742	696,221	697,002	715,180	753,240	N/A	N/A	649,289	627,659	643,545	647,729	N/A	1.07	1.11	1.08	1.10	N/A
Total pension part of the social tax	670,406	670,406	670,406	670,406	670,406	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total health part of the social tax	686,504	686,504	686,504	686,504	686,504	N/A	N/A	587,254	565,933	568,434	575,277	N/A	1.17	1.21	1.21	1.19	N/A
Total unemployment insurance contributions	651,463	651,463	651,463	651,463	651,463	N/A	N/A	591,500	567,500	581,600	589,900	N/A	1.10	1.15	1.12	1.10	N/A
Total pension contributions to the 2nd pillar	0	150,508	275,109	275,109	282,466	N/A	N/A	351,175	170,808	379,861	381,536	N/A	0.00	0.88	0.72	0.72	N/A

Notes: N/A - not available
 In SILC: child allowance, childcare allowance, large family parent allowance - number of households

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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 (in mln EUR)

	EUROMOD					SILC					Ratio					External					Ratio				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Benefits																									
Child allowance	71.6	71.6	71.6	71.6	71.6	68.8	68.8	68.8	68.8	68.8	1.04	1.04	1.04	1.04	1.04	70.8	70.0	68.9	68.5	N/A	1.01	1.02	1.04	1.04	N/A
Childcare allowance	14.5	14.5	14.5	14.5	14.5	15.7	15.7	15.7	15.7	15.7	0.93	0.93	0.93	0.93	0.93	14.6	14.8	14.8	14.7	N/A	0.99	0.98	0.98	0.98	N/A
Large family parent allowance	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.95	0.95	0.95	0.95	0.95	0.4	0.3	0.3	0.3	N/A	2.40	2.49	2.78	2.83	N/A
Childbirth allowance	5.3	5.3	5.3	5.3	5.3	5.8	5.8	5.8	5.8	5.8	0.91	0.91	0.91	0.91	0.91	5.1	5.0	4.9	4.5	N/A	1.05	1.06	1.09	1.19	N/A
Unemployment insurance benefit	69.9	68.8	70.3	78.3	82.7	71.6	68.0	68.7	72.8	77.0	0.98	1.01	1.02	1.08	1.07	84.2	79.5	36.8	33.7	N/A	0.83	0.87	1.91	2.33	N/A
Unemployment allowance	10.7	10.7	10.7	10.7	16.6	9.1	9.1	9.1	9.1	14.2	1.17	1.17	1.17	1.17	1.17	11.8	10.2	6.5	5.7	N/A	0.90	1.05	1.65	1.86	N/A
Subsistence benefits	14.459	14.83	20.0	20.1	19.2	6.8	7.0	7.4	7.7	7.9	2.12	2.11	2.71	2.62	2.42	11.4	20.4	23.8	20.7	N/A	1.27	0.73	0.84	0.97	N/A
Taxes and Social Insurance contributions																									
Personal Income tax (withheld)	931.3	925.7	987.1	1,057.0	1,143.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	920.3	872.3	913.3	1,005.5	N/A	1.01	1.06	1.08	1.05	N/A
Personal Income tax (final declarations)	878.9	879.5	940.1	1,013.5	1,101.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	824.4	793.6	839.1	928.9	N/A	1.07	1.11	1.12	1.09	N/A
Total pension part of the social tax	1,088.0	1,098.6	1,161.0	1,224.7	1,293.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,073.0	1,007.7	1,076.1	1,160.3	N/A	1.01	1.09	1.08	1.06	N/A
Total health part of the social tax	726.7	733.5	774.2	816.6	862.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	722.0	689.9	725.4	772.4	N/A	1.01	1.06	1.07	1.06	N/A
Total unemployment insurance contributions	149.8	211.8	224.4	237.2	179.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	115.5	179.2	194.4	211.0	N/A	1.30	1.18	1.15	1.12	N/A
Total pension contributions to the 2nd pillar	0.0	33.1	90.3	153.3	171.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	114.1	36.7	122.4	232.0	N/A	0.00	0.90	0.74	0.66	N/A

Notes: N/A - not available

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 - 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, own calculations

Table 4.9-Distribution of equivalised disposable income

	EUROMOD					External					Ratio				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
D1, %	3.2	3.2	3.2	3.2	3.2	2.9	2.6	2.6	N/A	N/A	1.09	1.23	1.24	N/A	N/A
D2, %	5.0	5.0	4.9	4.9	4.8	4.9	4.8	4.7	N/A	N/A	1.01	1.04	1.04	N/A	N/A
D3, %	6.0	6.0	5.9	5.9	5.9	5.9	5.9	5.7	N/A	N/A	1.01	1.02	1.04	N/A	N/A
D4, %	7.0	7.0	6.9	6.8	6.8	6.9	6.9	6.8	N/A	N/A	1.01	1.01	1.01	N/A	N/A
D5, %	7.9	8.0	7.9	7.9	7.9	7.9	7.9	7.8	N/A	N/A	1.00	1.01	1.01	N/A	N/A
D6, %	9.1	9.2	9.2	9.1	9.2	9.1	9.2	9.1	N/A	N/A	1.01	1.00	1.01	N/A	N/A
D7, %	10.6	10.6	10.6	10.6	10.6	10.6	10.7	10.8	N/A	N/A	1.00	0.99	0.98	N/A	N/A
D8, %	12.5	12.5	12.6	12.6	12.6	12.6	12.5	12.8	N/A	N/A	0.99	1.00	0.98	N/A	N/A
D9, %	15.4	15.3	15.4	15.5	15.5	15.5	15.6	15.5	N/A	N/A	0.99	0.98	0.99	N/A	N/A
D10, %	23.4	23.2	23.4	23.4	23.6	23.6	23.9	24.2	N/A	N/A	0.99	0.97	0.97	N/A	N/A
Median (EUR)	5,728	5,708	5,917	6,200	6,549	5,727	5,598	5,987	N/A	N/A	1.00	1.02	0.99	N/A	N/A
Mean (EUR)	6,749	6,674	6,959	7,292	7,714	6,782	6,570	7,130	N/A	N/A	1.00	1.02	0.98	N/A	N/A
Gini	30.6	30.2	30.7	30.9	31.0	31.3	31.9	32.6	N/A	N/A	0.98	0.95	0.94	N/A	N/A
S80/S20	4.8	4.7	4.8	4.8	4.9	5.0	5.3	5.4	N/A	N/A	0.95	0.88	0.88	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				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
40% median HDI															
Total	5.5	5.5	5.8	5.9	5.8	5.4	6.9	6.7	N/A	N/A	1.02	0.80	0.86	N/A	N/A
Males	6.2	6.1	6.4	6.4	6.3	6.1	7.5	7.2	N/A	N/A	1.01	0.82	0.88	N/A	N/A
Females	5.0	5.0	5.3	5.4	5.4	4.8	6.4	6.2	N/A	N/A	1.03	0.77	0.86	N/A	N/A
50% median HDI															
Total	9.3	9.5	9.7	9.7	9.9	9.4	10.9	10.9	N/A	N/A	0.99	0.87	0.89	N/A	N/A
Males	10.0	10.2	10.4	10.4	10.5	10.1	11.5	11.3	N/A	N/A	0.99	0.89	0.92	N/A	N/A
Females	8.8	8.8	9.1	9.1	9.3	8.8	10.4	10.4	N/A	N/A	1.00	0.85	0.88	N/A	N/A
60% median HDI															
Total	15.7	15.9	16.7	17.0	17.1	15.8	17.5	17.5	N/A	N/A	0.99	0.91	0.96	N/A	N/A
Males	15.3	15.4	15.8	15.8	15.8	15.4	17.6	16.8	N/A	N/A	0.99	0.88	0.94	N/A	N/A
Females	16.0	16.2	17.6	17.9	18.2	16.2	17.4	18.1	N/A	N/A	0.99	0.93	0.97	N/A	N/A
70% median HDI															
Total	24.5	24.4	25.0	25.3	25.7	25.0	26.3	26.7	N/A	N/A	0.98	0.93	0.94	N/A	N/A
Males	22.1	22.0	22.4	22.6	22.9	22.4	24.2	24.0	N/A	N/A	0.99	0.91	0.93	N/A	N/A
Females	26.6	26.4	27.2	27.7	28.0	27.2	28.0	29.0	N/A	N/A	0.98	0.94	0.94	N/A	N/A
60% median HDI															
0-15 years	16.3	16.7	16.6	16.6	16.6	16.3	19.4	16.2	N/A	N/A	1.00	0.86	1.03	N/A	N/A
16-24 years	19.8	20.0	19.6	19.5	19.5	19.8	22.1	21.4	N/A	N/A	1.00	0.90	0.92	N/A	N/A
25-49 years	13.0	13.5	13.1	13.1	13.1	13.1	15.9	14.4	N/A	N/A	0.99	0.85	0.91	N/A	N/A
50-64 years	17.8	17.8	18.6	18.7	18.8	18.5	19.5	22.1	N/A	N/A	0.96	0.91	0.84	N/A	N/A
65+ years	14.9	14.7	20.0	21.4	22.1	15.1	13.1	17.2	N/A	N/A	0.99	1.13	1.17	N/A	N/A

Notes:

N/A - not available

Sources of external statistics:

Statistics Estonia, online database

Table 4.11-Minimum wage validation (in mln EUR)

	Baseline					Min Wage Incl.					Ratio				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Equivalised disposable income	6,095	6,031	6,283	6,582	6,963	6,098	6,034	6,285	6,584	6,966	1.00	1.00	1.00	1.00	1.00
Employment income	5,184	5,237	5,548	5,865	6,196	5,188	5,240	5,550	5,868	6,199	1.00	1.00	1.00	1.00	1.00
Total income tax	879	879	940	1,014	1,101	880	880	941	1,014	1,102	1.00	1.00	1.00	1.00	1.00
Total pension part of the social tax	1,088	1,099	1,161	1,225	1,293	1,089	1,099	1,162	1,225	1,294	1.00	1.00	1.00	1.00	1.00
Total health part of the social tax	727	733	774	817	862	727	734	775	817	863	1.00	1.00	1.00	1.00	1.00
Subsistence benefits	14	15	20	20	19	14	15	20	20	19	1.00	1.01	1.01	1.01	1.01
Gini coefficient	30.6	30.2	30.7	30.9	31.0	30.6	30.2	30.6	30.8	31.0	1.00	1.00	1.00	1.00	1.00
Poverty rate (60% median HDI)	15.7	15.9	16.7	17.0	17.1	15.6	15.9	16.9	17.0	17.1	1.00	1.00	0.99	1.00	1.00