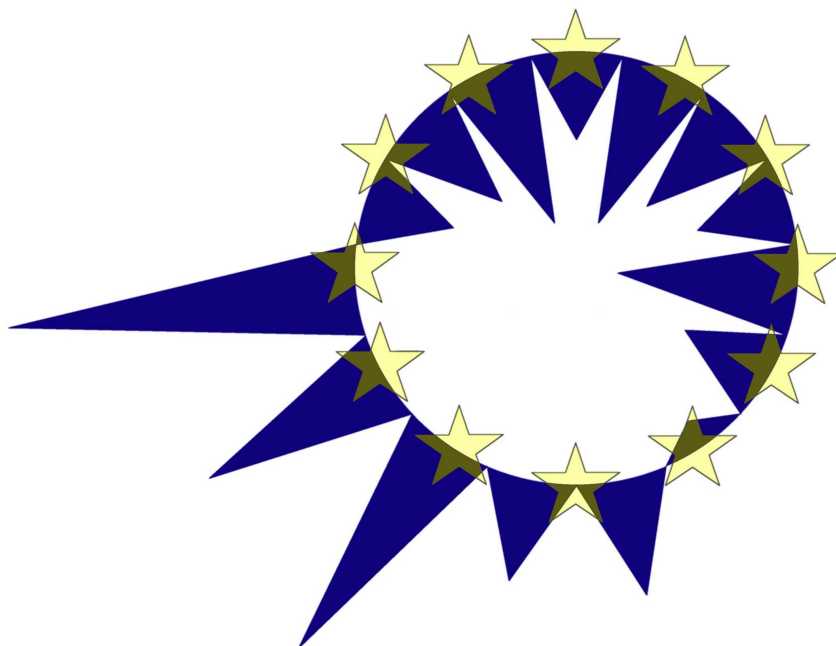


# **EUROMOD**

## **COUNTRY REPORT**



# **ESTONIA (EE)**

## **2005-2008**

**Andres Võrk, Alari Paulus, Silja Lüpsik**

**21/12/2010**

**EUROMOD version F3.0**



EUROMOD is a tax-benefit microsimulation model for the European Union (EU) that enables researchers and policy analysts to calculate, in a comparable manner, the effects of taxes and benefits on household incomes and work incentives for the population of each country and for the EU as a whole.

A major EUROMOD development project (*EUROMODUpdate*) is being supported by DG-EMPL with the key objective to improve and extend EUROMOD's usefulness.

This will involve enlarging and updating EUROMOD from 19 countries to cover all 27 Member States and recent policy systems, using EU-SILC (European Union Statistics on Income and Living Conditions) data as the input database.

*EUROMODUpdate* project began in February 2009 and will last 3 years.

The work is being carried out by the EUROMOD core developer team, based mainly in ISER University of Essex, in collaboration with a group of national teams.

A project Steering Group has been established, under the chairmanship of Sir Tony Atkinson.

Preparatory work in some of the New Member States is being conducted by the European Centre, Vienna, under the leadership of Orsolya Lelkes.

EUROMOD coordinator: Holly Sutherland

EUROMOD coordinator assistant: Lucy Brown

EUROMOD developer responsible for Estonia: Alari Paulus

National team for Estonia: Andres Võrk, Silja Lüpsik

The results presented in this report are derived using EUROMOD F3.0. EUROMOD is continually being improved and updated and the results presented here represent the best available at the time of writing.

For more information, see: <http://www.iser.essex.ac.uk/research/euromod>

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## INTRODUCTION

This country report gives an overview of the Estonian country model of EUROMOD. The report presents the basic information on the Estonian tax-benefit system valid in 2005-08 (as of 30 June in corresponding year), it explains which and how different taxes and benefits are simulated in the EUROMOD and how well the model represents actual income distribution and monetary aggregates.

Estonian country model uses three alternative data sources:

- a) Estonian Household Budget Survey (*Eesti Leibkonna eelarve uuring*) 2005
- b) European Union Survey of Income and Living conditions (EU-SILC) 2006
- c) Estonian Social Survey (*Eesti Sotsiaaluuring*) 2006, which is a more detailed national version of the SILC survey and where the EU-SILC variables are derived from.

The report is an update of an earlier report Lüksik, Paulus, Võrk (2008), which covered only the first of the datasets. Compared to the earlier report only minor changes have been in the descriptive part of the system, except updates concerning years 2006-08.

## 1. BASIC INFORMATION

### 1.1 Basic figures

Table 1. Basic figures

	Pop. (m.)	Pop. < 18 (%)	Pop. ≥ 65 (%) <sup>[a]</sup>	Life expect. (years)	Fertility rate	Unemp. rate	GDP per head (PPP) <sup>[a]</sup>	Currency Name	Exch. rate
2003	1.356	21.3	15.9	71.59	1.37	10.0	54	Kroon	15.6466
2004	1.351	20.8	16.2	72.02	1.47	9.7	57	Kroon	15.6466
2005	1.348	20.3	16.5	72.82	1.50	7.9	62	Kroon	15.6466
2006	1.345	19.8	16.7	73.02	1.55	5.9	65	Kroon	15.6466
2007	1.342	19.3	17.1	73.01	1.64	4.7	69	Kroon	15.6466
2008	1.341	18.8	17.2	74.06	1.66	5.5	67	Kroon	15.6466
2009	1.340	18.6	17.1	N/A	1.63	13.8	62	Kroon	15.6466

Source: Statistics Estonia, on-line database, last accessed September 3, 2010;

[a]Eurostat, on-line database, last accessed May 24, 2009.

Notes: Population figures on 1<sup>st</sup> January; Unemployment rate for age group 15-74; GDP per head in Purchasing Power Standards (EU-27=100); Exchange rate between Euro and Estonian Kroon is fixed 1 EUR= 15.6466 EEK



## 1.2 The tax-benefit system

Table 2. Tax-benefit system and government budget

	<b>Total general government revenue<sup>[a]</sup></b> <b>% of GDP</b>	<b>Total tax receipts<sup>[a]</sup></b> <b>% of GDP</b>	<b>Total general government expenditure<sup>[a]</sup></b> <b>% of GDP</b>	<b>Social protection expenditure<sup>[a]</sup></b> <b>% of GDP</b>
2003	36.5	30.8	34.8	12.6
2004	35.6	30.6	34.0	
2005	35.2	30.7	33.6	12.7
2006	36.5	31.1	34.0	12.4
2007	37.4	32.4	34.8	12.7
2008	37.1	32.3	39.9	NA
2009	43.6	36.4	45.4	NA

Source: [a]Eurostat, on-line database, last accessed September 2, 2010.

Eurostat tables: Government revenue, expenditure and main aggregates - Total general government expenditure, Total general government revenue; Main national accounts tax aggregates - Total receipts from taxes and social contributions (including imputed social contributions) after deduction of amounts assessed but unlikely to be collected; Total expenditure on social protection, Current prices (% of GDP)

Table 3. Social protection expenditure by function (as % of total social protection expenditure)

	<b>Sickness/ health care</b>	<b>Disability</b>	<b>Old age</b>	<b>Survivors</b>	<b>Family/ Children</b>	<b>Unemployment</b>	<b>Housing</b>	<b>Social exclusion</b>
2003	31.8%	9.3%	44.0%	0.8%	10.0%	1.8%	0.6%	1.6%
2005	31.9%	9.4%	43.1%	0.9%	12.2%	1.3%	0.2%	1.0%
2006	31.2%	9.5%	44.4%	0.9%	12.1%	0.9%	0.3%	0.7%
2007	33.4%	9.3%	43.0%	0.8%	11.6%	1.2%	0.2%	0.6%

Source: Statistics Estonia, national data for ESSPROS system 2001-2007 (3 March 2009), the total expenditures do not include administration cost



Table 4. Taxation (as % of total tax receipts)

	Personal income tax	Corporate income tax	Social security contributions		Indirect taxes
			Employees	Employers	
2003	21.0	5.1	0.9	33.1	39.4
2004	20.5	5.4	0.9	32.5	40.1
2005	18.2	4.7	0.9	32.2	43.7
2006	18.2	4.9	0.5	32.0	44.0
2007	18.5	5.2	0.5	32.4	43.0
2008*	18.9	5.0	0.6	37.8	37.7
2009*	16.1	5.2	1.6	37.5	39.5

Source: Years 2003-2007 Eurostat. Taxation trends in the EU. 2009 edition, Annex A: Tables  
[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_structures/taxation\\_trends\\_2008\\_annex.xls](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/taxation_trends_2008_annex.xls);

\*Year 2008-2009 - Statistics Estonia, own computations

### 1.2.1 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 taxation 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 1 January - 31 December. The tax system generally changes in 1 January each year. Indirect taxes may change also within a year. Main benefit changes happen at the same time, but may also be implemented in April (indexation of state pensions takes place in 1 April each year), or other times in year, e.g. family benefits have been changed in July and September.
- State pension age is 63 for men. The pension age for women gradually increases also to 63 by 2016. Meanwhile it was 59,5 in 2005 and 2006, 60 in 2007, and 60,5 in 2006 and 2007. Both early retirement and postponement is possible, also various occupational pensions exist.
- Children are subject to the obligation to attend school from age 7 and until they acquire basic education or attain 17 years of age.
  - 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 case of subsistence benefit, dependent children are defined as aged under 18.
  - For taxation purposes, dependent children are aged up to 17. One of the parents may deduct additional basic 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 benefit purposes single parents are the parents of resident dependent children whose birth registration certificate does not have an entry concerning the father or an entry has been made on the basis of a statement by the mother or whose parent has been declared to be a fugitive.
- The income tax system is an individual system, but a married couple may also file a joint tax report if they wish (beneficial if one has unused tax allowances which the other one could claim for). There are some income sources on which income tax is immediately withheld when they are paid out; final tax liability is based on the tax report after the tax year has ended (taking into account tax already withheld).
- Liability of income tax 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 monthly to calculate withholding income tax. In order to make use of the other allowances and deductions these have to be declared in the following year (by 31<sup>st</sup> March) when filing the tax report. Overall, there are a few allowances and deductions in the system. Different income sources are taxed uniformly.
- The means-tested benefit system assesses entitlement according to household income. Household consists of persons living together and share their income and expenditures. Income is assessed on monthly basis. Total income, with a few exceptions, of the previous month is taken into account.
- Taxes and benefits are not indexed, with the exception of old-age pensions, which are indexed to weighted average of inflation and social tax revenues, but ad hoc changes are common. Usually taxes and benefits are changed in ad hoc manner. Some thresholds of benefits (i.e. minimum or maximum levels) are linked to past minimum wage or average contribution base.
- 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.

### 1.3 Social Benefits<sup>1</sup>

#### 1.3.1 Pensions

The Estonian pension system is based on three pillars:

- state pension insurance (the 1<sup>st</sup> pillar) – pay-as-you-go scheme;
- mandatory funded pension scheme (the 2<sup>nd</sup> pillar) – introduced in 2002;
- supplementary (voluntary) funded pension scheme (the 3<sup>rd</sup> pillar) – introduced in 1998.

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<sup>1</sup> The following description of social benefits cites and uses excerpts from the following sources.

- Ministry of Social Affairs. Social sector in figures 2005. Tallinn 2006.
- Ministry of Social Affairs. Social sector in figures 2006. Tallinn 2007.
- Lüksik, S., Paulus, A., Võrk, A. (2006) “I-CUE Feasibility Study. Estonia (2005 tax-benefit system)” EUROMOD Feasibility Study.
- Leetmaa, R., Võrk, A. (2006) “Social Insurance and Social Assistance in Estonia”, report to World Bank.
- Leppik, L. (2004) “The Estonian pension system: challenges of adequacy and sustainability”. PRAXIS Center for Policy Studies. Unpublished.





As the funded pension components were introduced recently, only pensions from the state pension insurance scheme were paid out in 2005-2008. In 2009 pensions from the mandatory funded pension scheme started, but their role is initially negligible.

The first pillar – the state pension insurance – provides protection against the risks of old age, disability and survivorship, and in fact comprises of two separate tiers:

- residence-based national pensions and
- employment-based old-age, work incapacity and survivors' pensions.

All economically active persons are compulsorily covered by the state pension insurance through the payment of an earmarked social tax (by employers). The state pays social tax on a fixed rate on behalf of some economically non-active persons, e.g. persons on parental leave, conscripts, carers of disabled persons etc.

Entitled to old age pension are residents of Estonia who have attained a pension age and have at least 15 years of pensionable service obtained in Estonia. In 2005, the statutory pension age was 63 years for men and 59.5 years for women. The pension age of women is being increased and gradually equalised with the pension age of men, reaching the target level of 63 by 2016. (See table 5). After that the pension age increases gradually to 65 for both sexes by 2026.

Table 5. Changes in the pension age in 2005-2027

Birth year	Women		Men
	State pension age	Year reached	State pension age
1946	59 and 6 months	2005, 2006	63
1947	60	2007	63
1948	60 and 6 months	2008, 2009	63
1949	61	2010	63
1950	61 and 6 months	2011, 2012	63
1951	62	2013	63
1952	62 and 6 months	2014, 2015	63
1953	63	2016	63
<b>Both women and men</b>			
1954	63 and 3 months	2017	
1955	63 and 6 months	2018	
1956	63 and 9 months	2019	
1957	64	2020	
1958	64 and 3 months	2021	
1959	64 and 6 months	2022	
1960	64 and 9 months	2023	
1961	65	2026	
1962	65	2027	



Since 1999 the acquisition of new pension rights is linked to the social tax paid on behalf of the person. That introduced an insurance element in the pension formula and counting of pension insurance periods on the basis of registered social tax payments.

**The old-age pension (*vanaduspension*)** from the state pension system (the 1st pillar) 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 31 December 1998);
- an insurance element applying to periods after 1 January 1999.

The pension components are indexed annually by an arithmetic weighted average of annual increases of consumer prices and social tax revenues. In 2005-2007 the weights were equal, they were changed in 2008, new weights are 20% for CPI increases and 80% for social tax revenue increases). However, additional ad hoc changes are common. A flat-rate guaranteed minimum pension – national pension – is granted to all residents at the age of 63 provided they have resided in Estonia at least 5 years prior to claiming a pension. Both early retirement and postponement of pensions are possible (see below). Working is allowed while receiving pensions. If the person acquires additional pension insurance coefficients, the pension is recalculated each year.

The 2nd pillar is based on defined-contribution principle, meaning that the benefit depends on the total contributions paid into individual pension account and investment returns of the pension fund. As a rule, benefits are paid in the form of life-long annuities, while unisex life tables are used for calculation of annuities. The pension age in the second pillar is the same as in the first pillar. The first benefits will be paid out only in 2009.

Supplementary funded pension scheme (the 3<sup>rd</sup> pillar) is a voluntary scheme.

**Early retirement pension (*ennetähtaegne vanaduspension*):** Available up to 3 years before the legal pension age. The amount of pension calculated on the basis of pension formula is permanently reduced by 0.4% for every month of earlier retirement. Pensions are suspended when the person returns to work before pension age. Working while receiving early retirement pensions is allowed after person has reached statutory pension age. Pension is recalculated when the person has acquired additional pension insurance periods (but still applying the reduction factor). Eligibility: 15 years of pension insurance period.

**Old age pension under favourable conditions (*soodustingimustel vanaduspension*):** There are two possibilities. Under the *State Pension Insurance Act (Riikliku pensionikindlustuse seadus)*, one of the parents who has raised 3 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 with hazardous or hard working conditions (defined categories of professions) for a certain period of time have the right to retire up to ten years before the legal pension age. Also the value of a year of pensionable service is increased, the size depending on the profession. There is accumulation with earnings if the person does not work at the same profession that gave eligibility to the pension before the statutory pension age.



Table 6. Early retirement and number of children

Children	How many years allowed to retire earlier?
Disabled child under 18	5 years
5 or more children	5 years
4 children	3 years
3 children	1 year

**Superannuated pension (*väljateenitud aastate pension*):** For narrowly defined categories of professions (e.g. policemen, 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 general old-age pension.

**Pension for incapacity to work (*töövõimetuspension*, or disability pension):** The percentage of the calculation basis corresponding to the loss of capacity for work. Calculation basis: represented by the higher of the 2 following amounts: old-age pension calculated on the basis of actual years of pensionable service and the pension insurance coefficient of the applicant, or old-age pension for a person with 30 years of pensionable service. There is no restriction on work, full accumulation with earnings is possible. Pension is granted from the age of 16 years for the period of work incapacity, which could be determined for 6 months, 1 year, 2 years, 5 years or until attaining the pensionable age depending upon claimant's condition. The pension is renewable. Upon attaining the pension age, the person is transferred to old-age pension. Qualification period depends on age at time of granting the pension, ranging from 1 year of insurance for persons from 21 to 23 years of age to 14 years of insurance for persons from 60 to 62 years of age. No qualification period for persons aged 16-20.

**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. They include: 1) a provider's child, brother, sister or grandchild who is under 18 years of age (or who is under 24 years of age and is a student enrolled in daytime or full-time study) or disabled. A brother, sister or grandchild has the right to receive a pension if he or she does not have parents with capacity for work. 2) a provider's parent who is of pensionable age or permanently incapacitated for work; 3) a provider's non-working widow who is pregnant (from the twelfth week of pregnancy) or who is permanently incapacitated for work or of pensionable age and whose marriage to the provider had a duration of at least one year; 4) a provider's divorced spouse who attained pensionable age or was declared permanently incapacitated for work before the divorce, or within three years after the divorce and whose marriage to the provider had a duration of at least twenty-five years, 5) a parent or guardian of a provider's child who is not employed and is raising the provider's child who is under 3 years of age in his or her family. Under certain additional conditions the above apply to stepchildren and foster-children, step-parents and foster-parents. If the provider had a necessary length of service to receive the old-age pension, then the greatest of the following old-age pensions shall be the basis for calculation of a survivor's pension: 1) the old-age pension earned by the provider until the date of his or her death; 2) the old-age pension if the person has completed thirty years of pensionable service. The amount of survivor's pension depends on the number of family members: 1) to one family member, 50 per cent of the basis; 2) to two family members, 80 per cent of the basis; 3) to three or more family members, 100 per cent of the basis.

**National pension (*Rahvapension*):** It is a minimum guaranteed pension for those persons who do not have necessary length of service to be eligible old-age pensions or pension for incapacity



for work, or in case of survivor's pension a provider did not have necessary length of service. The basis for national pension is the National Pension Rate (*rahvapensiononi määr*), which in 2005 was 1,156 EEK (see Table 7 for amounts in later years).

Table 7. Minimum amount of national pension by pension type

Pension type	Minimum amount	
Old-age pension	100% of the National Pension Rate (NPR, <i>rahvapensiononi määr</i> )	
Pension for incapacity for work	Percentage of loss of capacity applied to the National Pension Rate (in case of total incapacity 100% of NPR)	
Survivor's pension	1) to one family member, 50 per cent of the NPR; 2) to two family members, 80 per cent of the NPR in total; 3) to three or more family members, 100 per cent of the NPR in total.	
National pension rate (NPR)	Date	NPR
	1.4.2005	1,056.38
	1.7.2005	1,156.38
	1.4.2006	1,268.55
	1.4.2007	1,423.31
	1.7.2007	1,573.31
	1.4.2008	1,913.14
	1.4.2009	2,008.80
	1.4.2010	2,008.80

Source: Sotsiaalkindlustusamet [http://www.ensib.ee/public/statistika\\_ja\\_eelarve/penkoefitsendid2010.xls](http://www.ensib.ee/public/statistika_ja_eelarve/penkoefitsendid2010.xls)

Pensions are subject to income tax. Both basic income tax allowance (1,700 EEK per month in 2005; 2,000 EEK in 2006 and 2007; 2,250 EEK in 2008 and 2009) and a special tax allowance for pensions (3,000 EEK per month) can be applied. That is for non-working pensioner the pension is non-taxable in the amount of 4,700 EEK in 2005 and 5,250 EEK in 2008. Average old-age pension was 2,739 EEK in January 2006; 3,129 EEK in January 2007, and 3,763 EEK in 2008. It means that majority of the pensioners effectively do not pay income tax if they do not have income from other sources.

### 1.3.2 Benefits for families with children

There are various types of benefits for families with children.

- 1) State family benefits that mainly depend on the age and number of children.
- 2) 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*); additional childcare leave for fathers, etc.
- 3) Tax allowances and deductions depending on the number of children or expenditures on children. This is described in detail below where we discuss income taxation.



- 4) 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.
- 5) Benefits and services provided by local municipalities – additional birth grants, social assistance benefits, child's school allowance (at the beginning of the school year), etc.
- 6) Special benefits for disabled children.

### **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)*. Family benefits are paid to permanent residents of Estonia and foreigners living in Estonia, who have a fixed-term residence permit or who are staying in Estonia on grounds set forth in the *Aliens Act (Välismaalaste seadus)*. Depending on the type of benefit, family benefits are paid either as a lump sum, once a month, once a quarter or once a year (see table 7) and they are financed from the state budget. If a person is entitled to several types of family benefits, these benefits are determined and disbursed simultaneously. Child benefits are calculated on the basis of the Child Allowance Rate (CAR, *lapsetoetuse määr*). Childcare allowances and allowances for families with seven or more children are calculated on the basis of Childcare Allowance Rate (CCR, *lapsehooldustasu määr*). Both rates are established with the state budget for every budget year and the new rate cannot be lower than the existing rate. The family benefits are coefficients of those rates. Since 1997, the child allowance rate has been 150, and since 2000, the childcare allowance rate 1,200 EEK. (Ministry of Social Affairs “Social sector in figures 2006”, p 86)

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.



Table 8. Overview of state family benefits, in 2005-2009

Benefit (legal term in English)	Frequency	Unit	Basic formula in 2005	Changes in 2006-2009
Childbirth allowance	Lump sum	Family	First child: 25 x CAR Subsequent child: 20 x CAR	Since 2006 : 5000 EEK for all
Adoption benefit	Lump sum	Family	20 x CAR	Since 2006: 5000 EEK
Child allowance	Monthly	Per child	2 x CAR	Since 1 July 2007: 1 <sup>st</sup> and 2 <sup>nd</sup> child 2 x CAR, 3 <sup>rd</sup> and more 6 x CAR
Childcare allowance	Monthly	Per child	Under 3 years old: 1/2 x CCR 3-8 years old: 1/4 x CCR  Additional 100 EEK for each child under 1 year old, if does not receive parental benefit	Since 2006 – extra 100 EEK effectively abolished as parental benefit extended  Since 2009 - none if a parent receives parental benefit for any child
Allowance for families with 3 or more children/ with triplets	Quarterly	Per child	3 children: 1 x CAR 4 or 5 children: 2 x CAR 6 or more: 2.5 x CAR	1/1/2006-31/6/2007 3 children: 2 x CAR 4 or more: 3 x CAR  Abolished since 1 July 2007
Allowance for families with triplets	Quarterly	Family	6 x CAR	Since 2006: 9 x CAR
Allowance for one parent of a family with 7 and more children	Monthly	Family	2 x CCR	2006: 2.1 x CCR Since 2007: 2.2 x CCR
Single parent child allowance	Monthly	Per child	2 x CAR	
Child's school allowance	Annual	Per child	3 x CAR	Abolished in 2009
Allowance for a child in guardianship or in foster care	Monthly	Per child	6 x CAR	Since 2007 - 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 2005-2009; CCR – Childcare allowance rate, 1,200 EEK in 2005-2009

**Child allowance (*lapsetoetus*):** 300 EEK (= 2 x CAR) per child per month. Non-taxable. Since 1 July 2007 quarterly allowances for families with 3 or more children (see below) were merged with monthly child allowances and the former were abolished. Since 1 July 2007 the third and



any consequent child receives 6 x CAR (900 EEK) per month. (See also **Allowance for families with 3 or more children** below).

**Single parent child allowance (*üksikvanema lapse toetus*):** 300 EEK (= 2 x CAR) per child per month, paid as a supplement to the child allowance. Non-taxable. Single parents are the parents of resident dependent children whose birth registration certificate does not have an entry concerning the father or an entry has been made on the basis of a statement by the mother or whose parent has been declared to be a fugitive.

**Allowance for families with 3 or more children / triplets (*kolme- ja enamalapselise perening kolmikuid kasvatava pere toetus*):** In 2005 for families with 3 children, 150 EEK (= CAR) per child is paid once a quarter as a supplement to other child benefits; for families with 4 or 5 children, 300 EEK (= 2 x CAR) per child, and for families with 6 or more children, 375 EEK (= 2.5 x CAR) per child. For families with triples it is 900 EEK (6 x CAR). A large family applicable to these benefits can only receive a benefit from one of these categories. It is non-taxable. In 2006 the benefits were increased (see Table 8) and then abolished since 1 July 2007. Monthly child benefits were increased for families with more than three children (see also **Child allowance** above).

**Childcare allowance (*lapsehooldustasu*):** 600 EEK (= 1/2 x CCR) per month for every child up to 3 years old, 300 EEK (= 1/4 x CCR) per month for each eligible child from 3 to 8 years of age. Additionally 100 EEK per month for every child up to one year old. 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. It is non taxable and there is full accumulation with labour earnings, and other benefits, except maternity benefit and parental benefit.

Since 2006 the duration of parental benefits has been increased, and therefore the additional element for children less than 1 year old is effectively redundant (about 20 families receive it in a year).

Since 1.1.2009 if a parent receives parental benefits then the parent cannot receive the child care allowance also for any other children.

**School Allowance (*koolitoetus*):** 450 EEK (= 3 x CAR) for each child receiving child allowance and enrolled in daytime studies, paid once a year at the beginning of the school year. It is also non-taxable. Note that in 2009, it was abolished.

**Allowance for a parent raising 7 or more children (*7 ja enamalapselise pere vanema toetus*):** Since 2005 the state offers a special allowance for the parent of seven or more children, 2,400 EEK (2 x CCR) per month. Non-taxable. In 2006 it was increased to 2520 EEK (2.1 x CCR) and in 2007 to 2640 EEK (2.2 x CCR).

**Conscript's child benefit (*ajateenija lapse toetus*)** is applicable to the child whose parent serves in the Estonian Defence Forces in case the child receives child support. 750 EEK (= 5 x CAR) per month. Non-taxable.

**Foster care allowance (*eestkostel või perekonnas hooldamisel oleva lapse toetus*)** is paid for a child who is deprived of parental care, if guardianship has been established for him or her or a foster care contract has been entered into with respect to him or her, and who receives child allowance payments. Upon termination of guardianship or foster care when a child attains 18 years of age, the payment of an allowance continues until the end of the school year when the child attains 19 years of age. Foster care allowance was 900 EEK (= 6 x CAR) in 2005 and it was increased to 1500 EEK (=10 x CAR) in 2007. Non-taxable.



**Childbirth allowance (*sünnitoetus*).** One of the parents has the right to receive childbirth allowance, which in 2005 was 3,750 EEK (= 25 x CAR) for a first child and 3,000 EEK (= 20 CAR) for each subsequent child. In the case of a multiple birth, childbirth allowance is also paid at twenty-five times the child allowance rate for each child. In 2006 it was increased to 5000 EEK for all children. 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. Non-taxable.

**Adoption allowance (*lapsendamistoetus*).** An adoptive parent residing in Estonia permanently or on the basis of a temporary residence permit from who an adopted child does not descend and who is not a step-parent of the child has the right to receive adoption allowance, if childbirth allowance has not been paid to the family for the same child earlier. The amount was 3,000 EEK (= 20 x CAR) in 2005. Non-taxable. In 2006 it was increased to 5,000 EEK.

**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. The amount is 6,000 EEK (= 40 x CAR) in 2005. If the person has spent in the aforementioned institution less than 3 years, the support is reduced by 2.5% for each month less than three years. Non-taxable.

### **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 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 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 as determined by a doctor. The size of the benefit is her average gross income taxed with social tax (i.e. earnings) per calendar day in the previous calendar year. It is taxable with income tax.

**Parental benefit (*vanemahüvitis*):** From 1 January 2004, the *Parental Benefit Act (Vanemahüvitise seadus)* entered into force, with the aim to compensate for income not received by stay-at-home parents in the first year of the child's life. The right to the parental benefit is granted to the parent, adoptive or foster parent, guardian or caregiver, who is a permanent resident in Estonia or a foreigner living in Estonia on terms of a temporary residence permit. In 2004 and 2005, parental benefit was paid until the end of a 365-day period from the beginning of the pregnancy and maternity leave, i.e. it includes the period of receiving maternity benefit. The duration was increased to 455 days in 2006 and to 575 days in 2008 (see Table 9).





Table 9. Overview of parental benefit, in 2005-2010

	2004	2005	2006	2007	2008	2009	2010
Maximum days (together with pregnancy and maternity leave benefits)	365	365	455	455	575	575	575
... for parent who did not receive maternity benefits (months)	11	11	14	14	18	18	18
... for parent who received maternity benefits (days)	225	225	315	315	435	435	435
Parental benefit rate (minimum rate) (EEK)	2,200	2,200	2,480	2,690	3,600	4,350	4,350
Parental benefit at the rate of minimum wage (EEK)	2,480	2,690	3,000	3,600	4,350	4,350	4,350
Maximum parental benefit	15,741	17,472	19,191	21,624	25,209	30,730	35,316

Source: Ministry of Social Affairs; Estonian National Social Insurance Board

The size of the benefit is calculated according to the applicant's average monthly gross income taxed with social tax (i.e. earnings) in the previous calendar year (generally 100%). Persons who did not receive any earnings (e.g. non-working students) are paid the parental benefit at the parental benefit rate (2,200 EEK in 2005; 3,600 EEK in 2008 and 4350 EEK in 2009 and 2010). Persons whose average monthly income in the previous year was less than or equal to the minimum wages are paid the parental benefit in the amount of the minimum monthly wages (2,690 EEK in 2005; 4,350 EEK in 2008-2010). The maximum amount of the monthly benefit is three times the average monthly income taxed with social tax in the calendar year before (17,472 EEK in 2005; 25,209 in 2008). The parental benefit is subject to income tax. (Ministry of Social Affairs "Social sector in figures 2006", pp 86-87).

**Additional childcare leave and breaks:** Under the Holidays Act and the Working and Rest Time Act the following are financed from the state budget: the additional childcare leave of a parent raising a disabled child, the additional childcare leave of one parent (3 or 6 days, depending on the number of children) and the additional childcare leave for fathers (10 workdays). The father is entitled to additional childcare leave either during the mother's pregnancy and maternal leave or within 2 months from the child's birth. The daily rate for the additional childcare leave was 66 EEK in 2005, and it is taxable with income tax. In 2008 the daily rate of additional childcare leave for fathers was made dependent on fathers' previous earnings, but in 2009 the compensation was abolished altogether.

A working person raising a child under 1.5 years of age is entitled to additional breaks for feeding the child – the minimum of 30 minutes after every three hours. The additional breaks may be added up and used to shorten the workday. The employees are paid average wages for the additional breaks from the state budget.

### Other family benefits

Families are also paid a lump sum **benefit for holding funerals** (*matusetoetus*) on the territory of Estonia under the *State Funeral Benefit Act* (*Riikliku matusetoetuse seadus*). Non-taxable.

**Compensation of study loans** (*õppelaenu kustutamine*). Pursuant to the *Study Allowances and Study Loans Act* (*Õppetoetuste ja õppelaenu seadus*), the state started partially writing off the



parents' study loans since 2004, writing off 50% of the study loan balance of a parent of one child, 75% of the study loan balance of a parent of twins and 100% of the study loan balance of a parent of triplets. 50% of the loan balance is written off upon the birth of every new child. (Ministry of Social Affairs "Social sector in figures 2006", pp 86-87). The compensation scheme was abolished since 1 July 2009 as a result of fiscal constraints of the central government.

### 1.3.3 Unemployment benefits and social assistance benefits

In 1991-2002 the unemployment compensation system consisted only of flat rate unemployment assistance benefits. In 2002 unemployment insurance system was introduced and the payment of unemployment insurance benefits started in 2003. The unemployment compensation in Estonia includes two tiers:

- a) unemployment insurance (UI) benefits, which depend on previous earnings and are financed from statutory unemployment insurance contributions. Unemployment insurance system is administered by the Estonian Unemployment Insurance Fund (*Eesti Töötukassa*);
- b) unemployment assistance (UA) benefits, which are flat rate and are financed from the state budget. National Labour Market Board (*Tööturuamet*) was responsible for administering the unemployment assistance system until 2009, when it was merged with the Unemployment Insurance Fund.

In addition to that there are severance payments.

**Unemployment insurance benefit (*töötuskindlustushüvitis*).** The unemployment insurance operates as a compulsory insurance and is financed by the contributions of employees and employers. In order to receive an unemployment insurance benefit, three main requirements have to be met. One must meet the eligibility requirements, be involuntarily unemployed, and be registered as unemployed. Unemployment insurance covers all employees (aged 16 to the legal pension age), except self-employed, members of management and controlling bodies of legal persons and some categories of civil servants. To be eligible for UI benefit a person should register as unemployed in the public employment service and needs to have worked and made contributions for at least 12 months during the previous 24 months. (Note: in 2007 the period was extended to 36 months.) Unemployment insurance benefits are not paid to those who leave their job or service voluntarily (to be changed in 2013) 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 still receive unemployment assistance benefits. The UI benefit may be stopped if the person refuses an offer of suitable work or does not show up at the public employment at a fixed date.

As persons receiving old-age pension or are older than legal pension age are not allowed to be registered as unemployed in PES, they are also not eligible for unemployment insurance benefits or unemployment assistance benefits.

The level of the UI benefit depends on the previous average gross earnings. During the first 100 calendar days of unemployment the replacement rate is 50% of the previous gross earnings and afterwards it falls to 40%. The gross earnings refer to the average daily gross earnings of the previous calendar year but no more than 3-times average taxable wages in the previous calendar year. Since 2007 last 9 months of earnings.

There was no lower limit for the benefit in 2005 (from 1 January 2007 to 31 June 2009 it was 1,000 EEK, since 1 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. During the first 5 years of the system (including 2005), the insurance benefits are paid up to 180 days since the contribution period cannot exceed necessary 5 years as it is counted only from January 2002. Since 2007 it can be 270 days and since 2011 it can be 360 days.

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

Table 10. Overview of unemployment benefits, in 2005-2010

	2005	2006	2007	2008	2009	2010
<b>Unemployment insurance benefits</b>						
Maximum duration (days)	180	180	270	270	270	270
Minimum contribution period for eligibility	12 months during last 24 months		12 months during last 36 months			
Required contribution period for benefits						
180 days	5 years	- 55 months				
270 days (since 2007)	5-10 years		56-110 month			
360 days (since 2011)	10 or more years		110 or more months			
Base income for benefit	Last 12 months' average wage		Average wage of the last 9 months earlier than 3 months before the unemployment			
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 previous year), EEK	562	630	748	885	1,015	894
Maximum monthly benefit (replacement rate (here using 50%) times maximum daily basis during 31 days), EEK	8,704	9,764	11,598	13,718	15,725	13,857
Minimum benefit	None	None	UA benefit	UA benefit	UA benefit	50% MW of previous year
<b>Unemployment assistance benefits (unemployment allowance since 2007)</b>						
Maximum duration (days)	270	270	270	270	270	270
Amount (EEK)	400	400	1,000	1,000	1,000	1,000
Required contribution period (days)	180	180	180	180	180	180
Eligible period for contribution (months)	12	12	12	12	12	12

Source: Unemployment Insurance Fund



**Unemployment assistance benefit (*töötu riiklik abiraha*)**, since 2006 unemployment allowance (*töötutoetus*). Eligible for the unemployment assistance benefit are persons, aged 16 to the legal pension age, who do not fulfil the eligibility criteria (e.g. students, persons who terminated their previous employment voluntarily) for UI 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 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 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.

The level of UA benefit is fixed by the Government and was 400 EEK in 1999-2006. It was increased to 1,000 EEK in 2007. (Formally, there is a daily rate of 32.90 EEK per day.) 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. It is not known in practice if and how this income test is followed.

Duration is generally 270 days. If the reason for termination of the previous employment was violation of the duties of employment, loss of confidence or indecent act, the UA is paid up to 210 days. If a person has less than 180 days until the retirement age after the receipt of 270 days of UA, the payment of UA will be extended until the person reaches the retirement age. The unemployed people who have received UI benefits for a shorter period than 270 days receive UA benefits until the end of the period of 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 amount of the severance payments depends on previous work record and ranges from 2-4 months' salary. If the contract was terminated because the employee was not suitable due to professional skills or health, the severance payment is 1 month's salary. In public sector the amounts of the severance payments can be much higher as compared to the private sector. The amount of the severance payment in public sector depends also on the length of previous employment and ranges from 2 month's salary up to 12 month's salary. In 2009 changes took place reducing severance payments.

Table 11. Severance benefits

	Job tenure	Extent of benefit (months of previous average salary)	Financier of the benefit
Before 1 July 2009	Up to 5 years	2 months	Employer
	5-10 years	3 months	Employer
	10 and more years	4 months	Employer
Since 1 July 2009	Up to 5 years	1 month	Employer
	5-10 years	2 months	Employer (1 month) + UIF (1 month)
	10 and more years*	3 months	Employer (1 month) + UIF (2 months)



\* Note: In case of people who have employment tenure more than 20 years, a five-year transition time is implemented, during which they will retain the existing level of redundancy benefits – that is, four months' earnings. After that, their benefit will be lowered to 3 months salary. Before 1 July 2009, the redundancy benefits were complemented by additional benefits by the UIF in case of collective redundancies.

Source: *Employment Contracts Act, Unemployment Insurance Act*

There are also **training allowances** (*stipendium*) **and transport and accommodation allowances** (*sõidu- ja majutustoetus*) for the unemployed which are meant to cover actual costs of participation in active labour market measures (training, work practice). Until 2006 the maximum amount was 1,200 EEK per month. The duration of the allowances depends on the duration of the respective active labour market measure. The amount of training allowance was 1.5 times the unemployment assistance benefit until 2005. Since 2006 the training allowance and transport allowance are fixed every year with the state budget. For example, in 2010 the training allowance was 60 EEK per day and the amount of transport allowance is 1.50 EEK per km. The allowances are non-taxable.

**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. The details are given in section 2.3.9.

In 2005, subsistence level was 750 EEK for the first member and 80% (500 EEK in 2005) for the each subsequent member of the household. The level is changed in an ad hoc manner as cost of living increases. In 2007 the level was 900 EEK for the first member and in 2008 it was increased to 1,000 EEK. 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. Means-test is based on current disposable income (i.e. net of withholding income tax). Certain types of income are not counted as an household income, for example, family allowance for families with 3 or more children, social benefits for disabled persons, one-off benefits (e.g. birth grant, funeral grant), training stipends. The benefit is non-taxable. Local authorities may pay additional social assistance benefits.

#### 1.3.4 Social benefits for the disabled

**Social benefits for the disabled** (*puuetega inimeste sotsiaaltoetused*) are regulated by the *Social Benefits for Disabled Persons Act (Puuetege inimeste sotsiaaltoetuste seadus)*. Disabled people are paid special benefits to support the independent coping and social integration and equal opportunities of disabled people. Social benefits for disabled persons are granted and paid to permanent residents in Estonia or persons living in Estonia on the basis of a temporary residence permit in case of moderate, severe or profound disabilities for compensating additional expenses arising out of the disability and for activities established in the rehabilitation plan.

The types of social benefits to disabled persons are the disabled child allowance, disabled adult allowance, care-giver's allowance, disabled parent's allowance, education allowance, rehabilitation allowance and in-service training allowance. The benefits are calculated on the basis of the rate of social benefits for disabled persons, which is established by the Parliament for every year in the state budget.



Disability is determined regardless of a person's age and the main criteria in determining the degree of severity are the extent of outside assistance and the amount of additional expenses arising out of the disability.

The benefits are monthly benefits and the size of the benefit depends on the degree of disability.

Table 12. Amounts of social benefits for disabled persons

Type of benefit	Severity of disability	Amount (EEK per month) 2005	Changes in 2006-2009	
<b>Disabled child allowance</b>	Moderate	860	Since 2006: 1,080	
	Severe and profound	1,020	Since 2006: 1,260	
<b>Disabled adult allowance</b>	Moderate	200		
	Severe	420		
	Profound	640		
<b>Caregiver's allowance</b>	to a non-working parent of a disabled child aged 3-16	300		
	to a non-working parent of a disabled child aged 16-18			
		Severe disability	240	
		Profound disability	400	
to a non-working caregiver or guardian of a disabled person aged 18 and older	Severe disability	240	since 01.04.2005 obligation given to local municipalities	
	Profound disability	400		
<b>Disabled parent's allowance</b> (per child)		300		

Benefits are non-taxable. Benefit is granted from the age of 16 years for the period of disability (which for persons under 65 years of age could be from 6 months to 3 years). The period is renewable. It often accumulates with pension for incapacity to work (*töövõimetuspension*) and old-age pension (*vanaduspension*).

There are also allowances for education, rehabilitation, in-service training. The state also compensates 50-90% of the cost of the device to disabled people, the elderly and children, who need prostheses, orthopaedic and other aids.

### 1.3.5 Health insurance benefits

*Health insurance benefits (ravikindlustushüvitis)* are regulated by the *Health Insurance Act (Ravikindlustuse seadus)*.

In Estonia, health care is financed from funds designated for health insurance in the state budget via the Health Insurance Fund (*Eesti Haigekassa*), as well as with direct allocations from the state budget, municipal and city budgets, by patients and from other sources (e.g. foreign aid, enterprises). The health insurance system is designed for compensating the insured persons for the cost of disease prevention and treatment, the cost of medicines and medical appliances and for paying benefits for temporary incapacity for work and other benefits.

The compulsory health insurance applies in Estonia since 1 January 1992. Employers are obligated to pay social tax for employees, which includes 13% of gross wages for health insurance. People in business for themselves (sole proprietors) are obligated to pay the social tax on their business income themselves.



Insured persons are permanent residents of Estonia or persons living in Estonia under a temporary residence permit, the social tax for whom is paid by the employer or the state or by themselves (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: 1) pregnant women starting from the 12th week of pregnancy; 2) children up to 19 years of age; 3) recipients of state pension in Estonia; 4) an insured person's dependent spouse with less than five years until retirement age; 5) students of up to 21 years of age acquiring basic education, students of up to 24 years of age acquiring general secondary education or vocational secondary education after basic education, students acquiring vocational secondary education after secondary education and permanent residents of Estonia acquiring university education in Estonian educational institutions established and operating under legal acts or in equivalent educational institutions abroad. (Ministry of Social Affairs "Social sector in figures 2006", pp 67-68).

Health insurance benefit is either in kind (health service, necessary medicinal products or medical device), or in cash (a sum of money which the health insurance fund is required to pay to an insured person under for the health care expenses incurred by the person or upon his or her temporary incapacity for work). The Health Insurance Fund finances outpatient and inpatient services provided to insured persons, and in certain cases also rehabilitation and nursing care and dental care services. Uninsured persons have the right to emergency care.

Health insurance benefits in cash are the following:

- 1) benefit for temporary incapacity for work;
- 2) adult dental care benefit;
- 3) supplementary benefit for medicinal products.

**1. Benefits for temporary incapacity for work (*ajutise töövõimetuse hüvitis*)** provide an earnings-related benefit for periods of absence from work for illness or for caring for another person. The types of benefit for temporary incapacity for work are:

- 1) sickness benefit;
- 2) maternity benefit;
- 3) adoption benefit;
- 4) 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. There is no upper ceiling. The percentage of the benefit paid of the average income per calendar day is:

- 80% in the event of receiving in-patient health services or nursing a child under 12 years of age in a hospital;
- 80% in the event of caring for a child under 3 years of age or for a disabled child under 16 years of age when the person caring for the child is himself or herself ill or is receiving obstetrical care;
- 80% in the event of receiving out-patient health services, nursing a family member who is ill at home, temporary release from the performance of his or her duties, or quarantine;
- 100% in the event of nursing a child under 12 years of age at home;
- 100% in the event of pregnancy and maternity leave; or in the event of adoptive parents leave;
- 100% in the event of an illness or injury caused as a result of an occupational disease or an accident at work;
- 100% in the event of preventing a criminal offence, protecting national or public interests or saving a human life.



Benefits are paid for various periods – for up to 7 successive days in case of caring for a sick family member and quarantine, for up to 14 days in case of caring for a sick child, and generally for up to 182 days in case of illness and occupational accident (in case of tuberculosis 240 days). In case of certificates for sick leave, benefits are paid starting from the second day of the leave and in case of certificates for maternity leave and care leave, starting from the first day. In total the sick may be 250 calendar days per calendar year. Insured persons receiving a pension for incapacity for work or insured persons who are at least 65 years of age have the right to receive sickness benefit up to 60 consecutive calendar days for one illness but not for more than a total of 90 calendar days per calendar year.

Note that since July 2009 there are considerable changes concerning the employee's and employer's responsibility. In case of sickness benefit, employee's responsibility is first three days, employers have to pay benefits from the fourth until eighth day of the leave, and Estonian Health Insurance Fund starts paying from the ninth day. Also since July 2009 some of the replacement rates changed. The 80 percent cases were reduced to 70%.

## **2. Adult dental care benefit (*täiskasvanute hambaraviteenuse hüvitis*)**

The adults pay for their dental treatment and dentures themselves and the Health Insurance Fund compensates for these payments up to the rate fixed by the Minister of Social Affairs. In 2005 and 2006 it was 150 EEK per year (in 2007 and 2008 300 EEK per year). Since 1 January 2009 it was abolished for those aged 19-62. Higher compensation rates are established for pregnant women (in 2005 450 EEK per year), mothers of children up to 1 year of age and those having greater need for dental treatment because of sickness (in 2005 both 300 EEK per one year, in 2007 450 EEK per year). In case of dentures the Fund compensates once every three years for the amount paid for dentures by insured persons, who are at least 63 years old. In 2006 the amount is 2,000 EEK per 3 years. (Source: <http://www.haigekassa.ee/kindlustatule/hambaravi>)

## **3. Supplementary benefit for medicinal products (*täiendav ravimihüvitis*)**

The Health Insurance Fund additionally compensates for amounts paid by the insured for medicinal products during the calendar year, where such amounts fall between 6,000 and 20,000 EEK. If the insured person has made an own contribution between 6,000 and 10,000 EEK during a calendar year, the Health Insurance Fund compensates 50% of the amount exceeding 6,000 EEK. If this own contribution is between 10,000 and 20,000 EEK, the Health Insurance Fund additionally compensates 75% of the amount exceeding 10,000 EEK. The fund does not compensate amounts beyond 20,000 EEK. Total benefit cannot exceed 9,500 EEK annually.

### **1.3.6 Local benefits**

According to the *Local Government Organisation Act (Kohaliku omavalitsuse korralduse seadus)* the Council of any city or rural municipality is empowered to provide local benefits to people who are living and are registered in the Population Registry for the respective region. The variation of local benefits given in municipalities is large. Benefits differ on type, amounts, application conditions etc.

A study conducted by Ainsaar *et al* (2004) showed that the majority of the municipalities give family and child support related local benefits. The most common is benefit for birth support, however also such benefits as benefit for crisis, large family benefits etc are present in many regions. For more details of this study see Table 10.

As to the importance of such benefits, from the table it can be also seen that the family and child related local benefits in 2003 accounted approximately 77 million EEK in 2003, which is approximately 0.5% of the total social expenditures according to ESSPROS statistics (Table





13). During the economic boom years 2006-2008 municipalities increased the benefits (see Ainsaar, Soo 2009)

Table 13. Local benefits for families in 2003

Benefit	Share of municipalities giving the benefit, %	Average amount of benefit per recipient per year, EEK	Total expenditures in all municipalities, EEK	Number of recipients
Birth benefit	94	1,710	33,201,279	13,350
School food	84	181	7,693,081	36,347
Support for buying spectacles	78	517	883,526	1,813
Crisis support	72	685	6,642,147	11,957
Christmas support	60	172	3,249,816	42,406
Medicine support	59	491	655,877	1,975
Schooling equipment benefit	56	378	2,707,234	8,727
Primary school graduate benefit	51	412	1,085,199	2,562
Disabled child benefit	49	3,790	1,679,651	799
Transport cost reimbursement	47	1,169	1,453,238	3,807
Secondary school graduate benefit	46	543	951,751	1,782
Large family support	42	936	3,228,356	4,869
Start school support	42	456	1,985,022	3,783
Reimbursement of social service	37	947	1,183,619	1,985
Reimbursement of clothing/ footwear	37	518	273,436	2,654
Support for excellent pupils	32	677	808,998	1,980
Beginning of school benefit	23	482	1,458,378	3,568
Baby-package	21	429	2,900,968	4,404
Student housing benefit	18	4,155	1,971,204	1,278
Additional school food support	7	1,049	1,789,423	2,427
Baby support	4	962	1,104,601	1,038

Source: Aidarov, A. Kohalikud laste- ja peretoetused Eestis 2003. aastal. Sotsiaaltöö nr 5/2005, pp 39-44, quoted from Ainsaar, M. Soo, K. Aidarov, A. Omavalitsuste toetus lastega peredele 2003-2004, TÜ sotsioloogia ja sotsiaalpoliitika osakond

### 1.3.7 Scope and scale of social benefits

The following tables provide an indication of the relative scale and coverage of each benefit by showing the number of recipients and the expenditure on each benefit. Table 14 presents the share of recipients as percentage of population. Note that for some benefits only total annual number of new cases is available and not the number of different recipients (see notes below the table). This means we may overestimate the actual share of recipients as some people may receive benefits several times a year. Still it gives an overview which benefits are most frequent.

The largest share of people receive health insurance benefits (about 1/3) and pensions (about 20%). About one fifth of the population receives universal child allowances. About 8-9% of the population receives allowances for disabled persons. The share of people receiving unemployment benefits is relatively low due to low unemployment benefits and relatively strict eligibility criteria. Subsistence benefits are received by 4% of the households.



Table 14. Social benefits: recipients (as % of population)

	2005	2006	2007	2008	2009
<b>Health insurance benefits</b> (paid sick leave, except maternity benefit)	38.7%	42.5%	46.2%	43.9%	30.9%
<b>Pensioners</b>					
Old age pension (vanaduspension)	22.1%	22.0%	21.9%	21.9%	21.9%
Survivor's pension (toitjakaotuspension)	1.0%	1.0%	1.0%	0.9%	0.9%
National pension (rahvapension)	0.8%	0.7%	0.6%	0.6%	0.5%
Disability pension (töövõimetuspension)	4.4%	4.6%	4.9%	5.0%	5.2%
<b>Allowance for disabled people</b> (disabled child allowance, disabled adult allowance, caregiver's allowance, disabled parent's allowance)	8.2%	8.6%	8.8%	8.9%	9.3%
<b>Family and children</b>					
Maternity benefit (sünnitushüvitis)	0.8%	0.9%	1.0%	1.0%	0.9%
Parental benefit (vanemahüvitis)	0.7%	1.0%	1.0%	1.4%	1.5%
Childcare allowance (lapsehooldustasu)	3.7%	3.6%	3.7%	3.5%	3.1%
Child allowance (lapsetoetus)	21.3%	20.4%	20.1%	19.8%	19.5%
Single parent child allowance (üksikvanema lapsetoetus)	1.8%	2.0%	2.0%	1.9%	1.8%
Large family allowance (3+/triplets) (3 ja enamalapselise pere toetus)	5.2%	5.2%	4.6%		
Childbirth allowance (sünnitoetus)	1.1%	1.1%	1.2%	1.2%	1.2%
School allowance (lapse koolitoetus)	14.1%	13.4%	12.9%	12.3%	0.0%
Conscript's child benefit (ajateenija lapse toetus)	0.0%	0.0%	0.0%	0.0%	0.0%
Foster care allowance (ajateenija lapse toetus)	0.2%	0.2%	0.2%	0.2%	0.2%
Adoption allowance (lapsendamistoetus)	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Unemployment</b>					
Unemployment insurance benefit	0.9%	0.7%	0.6%	1.1%	4.3%
Unemployment assistance benefit	2.3%	1.5%	1.3%	1.8%	3.5%
<b>Housing</b>					
Subsistence benefit (toimetulekutoetus), households	5.2%	3.5%	2.4%	2.1%	3.6%

Notes: Population figures – beginning of the year; pensioners – beginning of the year; family benefit recipients – end of the year; health care benefits – total number of cases within the year; subsistence benefits – total number of households receiving the benefit within the year; unemployment insurance benefits - total persons receiving the benefit within the year; old-age pensions include anticipated old age pensions.

Source: Statistics Estonia, on-line database, last accessed 3 September 2010; own calculations

According to ESSPROS statistics, which includes both in kind and cash social expenditures, majority of expenditures goes to categories of health care (about 32%) and old-age (43%). Expenditures on families and children 12%, disability takes 9.4%. The share of unemployment, housing and social exclusion is 2.5% in total. Benefits in kind are relatively important in health care (health services) and unemployment (active labour market policy measures). In all other categories their share within the category is small.



Table 15. Social benefit: annual expenditures according to ESSPROS

	Expenditures (mln EEK)			Structure (%)		
	2005	2006	2007	2005	2006	2007
<b>Health/sickness</b>	<b>6,913.82</b>	<b>7,831.3</b>	<b>10,045.7</b>	<b>31.9%</b>	<b>31.2%</b>	<b>33.4%</b>
Cash benefits	1,083.44	1,259.8	1,694.2	5.0%	5.0%	5.6%
Paid sick leave	876.57	1,020.1	1,297.1	4.0%	4.1%	4.3%
Benefits in kind	5,830.38	6,571.6	8,351.5	26.9%	26.2%	27.8%
<b>Disability</b>	<b>2,031.46</b>	<b>2,378.2</b>	<b>2,805.9</b>	<b>9.4%</b>	<b>9.5%</b>	<b>9.3%</b>
Cash benefits	1,773.97	2,075.3	2,412.0	<b>8.2%</b>	<b>8.3%</b>	<b>8.0%</b>
Disability pension	1,127.02	1,400.6	1,720.5	5.2%	5.6%	5.7%
Care allowance	527.22	566.5	585.5	2.4%	2.3%	1.9%
Other cash benefits	119.73	108.3	106.0	0.6%	0.4%	0.4%
Benefits in kind	257.49	302.9	394.0	1.2%	1.2%	1.3%
<b>Old age</b>	<b>9,337.45</b>	<b>11,118.5</b>	<b>12,925.0</b>	<b>43.1%</b>	<b>44.4%</b>	<b>43.0%</b>
Cash benefits	9,142.23	10,908.5	12,704.6	42.2%	43.5%	42.2%
Old age pension	7,232.75	8,629.4	9,960.9	33.4%	34.4%	33.1%
Anticipated old age pension ( <i>ennetähtaegne vanaduspension,</i> <i>väljateenitud aastate pension,</i> <i>soodustingimustel vanaduspension)</i>	1,799.27	2,175.1	2,633.9	8.3%	8.7%	8.8%
National pension	110.21	104.1	109.8	0.5%	0.4%	0.4%
Benefits in kind	195.22	210.0	220.4	0.9%	0.8%	0.7%
<b>Survivors</b>	<b>185.24</b>	<b>214.3</b>	<b>240.1</b>	<b>0.9%</b>	<b>0.9%</b>	<b>0.8%</b>
Survivors' pension	147.56	173.3	195.7	<b>0.7%</b>	<b>0.7%</b>	<b>0.7%</b>
Death grant	37.68	41.0	44.5	0.2%	0.2%	0.1%
<b>Family and children</b>	<b>2,630.10</b>	<b>3,044.4</b>	<b>3,479.3</b>	<b>12.2%</b>	<b>12.1%</b>	<b>11.6%</b>
Cash benefits	2,507.19	2,914.2	3,318.7	11.6%	11.6%	11.0%
Maternity benefit ( <i>sünnitushüvitis</i> )	297.41	358.8	459.5	1.4%	1.4%	1.5%
Parental benefit ( <i>vanemahüvitis</i> )	552.56	898.0	1,113.1	2.6%	3.6%	3.7%
Childcare allowance ( <i>lapsehooldustasu</i> )	286.67	268.9	278.4	1.3%	1.1%	0.9%
Child allowance ( <i>lapsetoetus</i> )	1,034.88	1,006.7	1,059.8	4.8%	4.0%	3.5%
Single parent child allowance ( <i>üksikvanema lapsetoetus</i> )	102.59	100.2	96.6	0.5%	0.4%	0.3%
Large family allowance (3+/triplets)	54.66	86.9	46.5	0.3%	0.3%	0.2%
Childbirth allowance	48.30	72.6	78.1	0.2%	0.3%	0.3%
School allowance ( <i>lapse koolitoetus</i> )	85.82	81.3	77.7	0.4%	0.3%	0.3%
Other cash lump sum benefits ( <i>elluastumistoetus lastekodu</i> <i>kasvandikule, alaealiste, vaegurite ja</i> <i>täiendava lapsepuhkuspäevade tasu,</i> <i>lapsendamistoetus</i> )	14.14	15.0	18.5	0.1%	0.1%	0.1%
Other cash periodic benefits ( <i>eestkostetava või perekonnas</i> <i>hooldamisel oleva lapse toetus,</i> <i>tasuline lapsetoitmise vaheaeg,</i> <i>lastetoetus kutsekoolis õppivale</i> <i>lastekodulapsele</i> )	30.17	26.6	39.9	0.1%	0.1%	0.1%
Benefits in kind	122.91	130.2	160.6	0.6%	0.5%	0.5%
<b>Unemployment</b>	<b>286.10</b>	<b>226.1</b>	<b>347.6</b>	<b>1.3%</b>	<b>0.9%</b>	<b>1.2%</b>
Cash benefits	200.22	144.5	237.6	0.9%	0.6%	0.8%
Unemployment insurance benefit	99.69	81.6	122.9	0.5%	0.3%	0.4%
Unemployment assistance benefit	42.52	24.4	52.3	0.2%	0.1%	0.2%
Vocational training allowance	10.24	9.3	7.4	0.0%	0.0%	0.0%
	20.83	14.2	31.0	0.1%	0.1%	0.1%

Continued...



Redundancy compensation (koondamishüvitised)						
Other	26.94	15.1	24.0	0.1%	0.1%	0.1%
Benefits in kind	85.88	81.6	110.0	0.4%	0.3%	0.4%
<b>Housing</b>	<b>50.33</b>	<b>83.0</b>	<b>53.3</b>	<b>0.2%</b>	<b>0.3%</b>	<b>0.2%</b>
Social housing	13.80	18.1	35.9	0.1%	0.1%	0.1%
Part of subsistence benefit, to cover housing costs (imputed)	36.53	64.9	17.4	0.2%	0.3%	0.1%
<b>Social exclusion</b>	<b>211.15</b>	<b>166.2</b>	<b>183.2</b>	<b>1.0%</b>	<b>0.7%</b>	<b>0.6%</b>
Subsistence benefit (toimetulekutoetus)	171.30	121.9	119.6	0.8%	0.5%	0.4%
Accommodation (in kind)	27.90	29.6	43.1	0.1%	0.1%	0.1%
Other	11.95	14.7	20.5	0.1%	0.1%	0.1%
<b>Total</b>	<b>21,645.65</b>	<b>25,062.0</b>	<b>30,080.1</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Notes: Annual expenditures exclude administration costs.

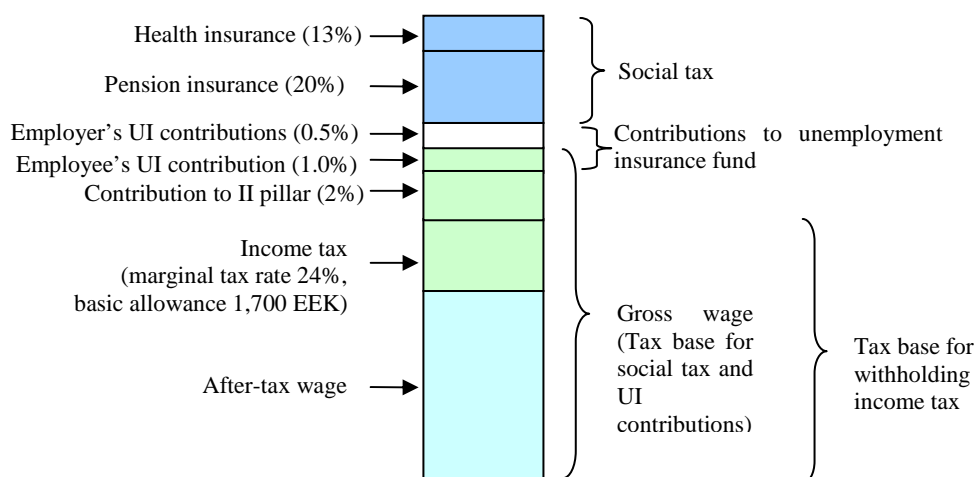
Source: Statistics Estonia, Social protection expenditure and receipts, for ESSPROS.

#### 1.4 Social contributions

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

Contributions are either in the form of social tax or unemployment insurance (UI) contributions, all specified as percentage of the gross wage (see Figure 1 below for a schematic definition of the gross wage and other direct taxes on wages). The calculation of social contributions for self-employed are discussed in detail in the Section 2.4.3.

Figure 1. Schematic composition of labour cost, in 2005

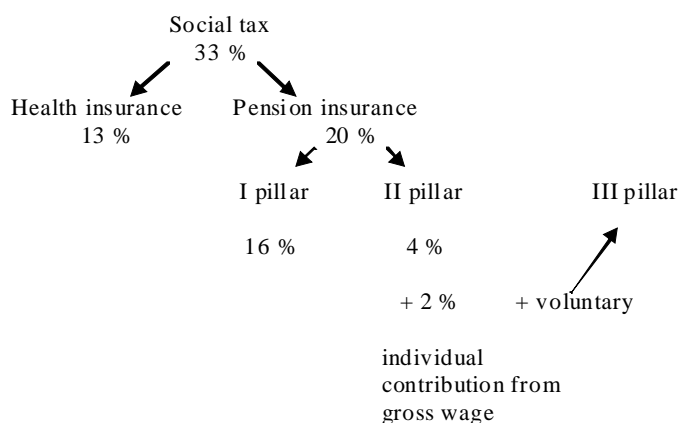


**Social tax** (*sotsiaalmaks*) is a financial obligation imposed on employers and self-employed to obtain revenue required for supplying state pension insurance and health insurance in the country. Tax rate is 33% and the tax base is “gross wage”. The 13% of social tax base is transferred into the Estonian Health Insurance Fund and 20% is transferred into pension insurance schemes. In case the person participates in the funded pension insurance scheme (the so-called 2<sup>nd</sup> pillar of the pension scheme), 4% of the social tax is shifted from the state pension



insurance scheme to the private pension scheme and additional 2% contribution of gross wage will be paid by the employee into the pension scheme 2<sup>nd</sup> pillar (see Figure 2 below). Additionally employee may always contribute to the voluntary pension schemes (3<sup>rd</sup> pillar) which are up to certain limit deducted from the income tax base. Note that both the individual contribution of 2% and the 4% share transferred from social tax were temporarily suspended from 1 June 2009 until 31 December 2010 due to the economic crisis. Persons with ten years from retirement (born 1954 or later) could, upon submitting a relevant application, resume individual contributions (2%) from 1 January 2010, in which case also state contributions on account of social tax (4%) are transferred. Other age groups may also continue to pay individual contributions (2%) from 1 January 2010, but no contributions from social tax are 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 are gradually resumed from 2011, when a 1+2% scheme is applied, and from 2012 in full amount of 2+4%.

Figure 2. Social tax and contributions to pension schemes



The minimum monthly base for social tax calculation set by the *State Budget Act (Riigieelarve seadus)* was 700 EEK in 2005, which made the minimum social tax obligation 231 EEK (= 700 x 33%) per month. The minimum base was increased gradually, it was 1,400 EEK in 2006, 2,000 EEK in 2007 and 2,700 EEK in 2008. Since 2009 the minimum base cannot be smaller than the minimum wage.

There is no upper ceiling, except for self-employed. After certain deductions relating to enterprise, self-employed are not obliged to pay social tax annually on an amount not more than fifteen times the sum of the legal minimum monthly wages for the taxable period, i.e. 446,400 EEK in 2005 (= 15 x 12 x 2,480), therefore limiting their maximum contributions to 147,312 EEK (= 446,400 x 33%) per year in 2005. In the following years the ceiling increased accordingly.

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 (see Table 16), 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.



Table 16. Social tax paid by the state (credited contributions)

Group	Basis	Rate	Who pays
Recipients of unemployment insurance benefit	Gross UI benefit	13% (health)	Unemployment Insurance Fund
Recipients of unemployment assistance benefit	Monthly minimum	13% (health)	State budget
Recipient of parental benefit ( <i>vanemahüvitis</i> )	Monthly minimum	33%	State budget
Recipients of childcare allowance ( <i>lapsehooldustasu</i> )	Monthly minimum	33%	State budget
Recipients of benefit for parents of families with seven and more children ( <i>seitsme- ja enamalapselise pere vanema toetus</i> )	Monthly minimum	33%	State budget
Dependent spouses of persons in certain public occupations	Monthly minimum	13% (health)	State budget
Persons who are paid caregiver's allowance pursuant to the <i>Social Benefits for Disabled Persons Act</i> until the persons attain pensionable age	Monthly minimum	33%	State budget
Conscripts in compulsory military service in the Defence Forces	Monthly minimum	33%	State budget
Estonian citizens or persons of Estonian nationality who have settled in Estonia from a foreign country and receive social benefits under the <i>Social Welfare Act (Sotsiaalhoolekande seadus)</i> , and their spouses, children and parents	Monthly minimum	13% (health)	State budget
Employees with loss of capacity for work of 40% or more in certain cases	Monthly minimum	33%	State budget
Non-working accompanying spouses of diplomats and public servants serving in foreign missions of Estonia, until attaining pensionable age	Monthly minimum	33%	State budget
Non-working persons who have participated in the elimination of the effects of a nuclear disaster, nuclear test, or an accident at a nuclear power station, until attaining pensionable age;	Monthly minimum	33%	State budget
<i>To funded pension scheme (II pillar):</i>	Gross benefit	1% for each related child	State budget
Parental Benefit ( <i>vanemahüvitis</i> )			

**Voluntary private pension contributions** (3<sup>rd</sup> 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. An unemployment insurance contribution is 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 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 rate of the unemployment insurance contribution for employees is set annually between 0.5 and 2 per cent, and for employers between 0.25 and 1 per cent. The rates in 2005 were 1% for employees and 0.5% for employers as they have been since the introduction in 2002. In 2006 they were lowered to 0.6% and 0.3%, respectively. In 1 June 2009 they increased to 2% and 1% and in 1 August 2009 to 2.8% and 1.4%.

As persons receiving old-age pension or older than legal pension age are not allowed to be registered as unemployed in Public Employment Service, they are also not eligible for unemployment insurance benefits or unemployment assistance benefits. Therefore they do not have to pay employee's part of the unemployment insurance contribution.

- *Scope and scale*

The following tables show the number of contributors and the composition of social contributions, as a percentage of overall revenue.

Table 17. Social contributions: contributors (as % of population)

	2003	2004	2005	2006	2007	2008	2009
Unemployment Insurance (employees*)	43.7%	44.6%	45.9%	47.8%	49.4%	48.7%	44.1%
Social tax (employees*, self-employed, or covered by state)	54.3%	55.4%	56.7%	57.9%	59.4%	58.9%	56.9%
Participants in the funded pension scheme (II pillar), end of the year	26.0%	31.6%	35.7%	38.7%	41.3%	43.3%	44.3%
Active contributors to the funded pension scheme (II pillar), end of year	n/a	n/a	n/a	n/a	n/a	27.3%	26.1%
Contributors to the voluntary pension scheme (III pillar)**	4.30%	n/a	5.60%	7.4%	10.4%	n/a	10.1%

*Notes:* Unemployment Insurance contributors, voluntary pension scheme contributors – whole cumulative; Social tax and contributors to the funded system –whole year cumulative; population – beginning of the year; Social tax figures include only those contributing pension part of the social tax, i.e. excluding the social tax paid on unemployment benefits for health insurance.

\* - paid by them or for them (e.g. employers)

\*\* - as people may have joined several voluntary pension funds, double counting is possible. Includes also life insurance plans.

*Sources:* Unemployment insurance contributors – Unemployment Insurance Fund, annual report 2009; Social tax – Estonian National Social Insurance Board, data on pension insurance, various press releases; Voluntary pension scheme – [www.pensionikeskus.ee](http://www.pensionikeskus.ee), various press releases

The share of contributors to unemployment insurance funds as a percentage of population reflects the overall share of workers in the population, which was about 46% in 2005. The share of contributors of social tax is larger, because social tax is also paid for some inactive persons by the state. The share of participants to the compulsory funded scheme (II pillar) was about 36% of the population, but almost 78% of the employment in 2005. The share of active contributors is smaller, because of temporary inactivity or unemployment of participants. The share of participants continues to increase as the participation becomes compulsory for a larger share of the population. The share of contributors to the voluntary funded scheme (III pillar) was about 5.6% of the population in 2005, but almost 12.3% of the employment. It has increased steadily to 10% by 2009. About two thirds of the contributors participate via life insurance funds and the rest invest directly into voluntary pension funds.



The largest contributions come from social tax (93% in 2005), of which most goes to pension (56% of total social contributions). The share of unemployment insurance contributions is 3.7% of total social contributions. Additional contributions to the compulsory funded pension scheme were 3.1% of total contributions.

Table 18. Social contributions: revenue

	2005	2006	2007	2008	2005	2006	2007	2008
<b>Social contributions (mln EEK)</b>	<b>19,572</b>	<b>23,281</b>	<b>29,184</b>	<b>33,416</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Social Tax (employers + state; includes state contributions to the funded pension scheme)	18,252	21,973	27,500	31,425	93.2%	94.4%	94.2%	94.0%
Of which health care	7,278	8,809	11,000	12,502	36.8%	37.8%	37.7%	37.4%
Of which pension	10,975	13,165	16,500	18,923	56.4%	56.5%	56.5%	56.6%
Of which part of the social tax transferred to the funded pension scheme	1,167	1,550	2,036	2,481	6.0%	6.7%	7.0%	7.4%
Employees additional contribution to the funded scheme	584	775	1,018	1,241	3.1%	3.3%	3.5%	3.7%
Funded pillar pension contributions total (state transfers+employees' contributions)	1,751	2,325	3,054	3,722	9.1%	10.0%	10.5%	11.1%
Unemployment insurance contributions (employees and employers part)	736	533	666	750	3.7%	2.3%	2.3%	2.2%

Source: Social Tax – Statistics Estonia, online-database; Contributions to the pension scheme – Estonian National Social Insurance Board, annual revenue data, and Estonian Tax and Customs Board, annual tax revenue data; Unemployment Insurance Contributions - Unemployment Insurance Fund

## 1.5 Taxes

### 1.5.1 Personal Income Tax (tulumaks)

Estonia applies a flat rate system to the personal income tax. Different income sources are taxed uniformly. The single tax rate is applied on all labour and personal capital income (capital gains, royalties etc).

The personal income tax (PIT) system is an individual system, but a married couple may also file a joint tax report if they wish (beneficial if one has unused tax allowances which the other one could claim for).

In 2005, the tax rate was 24% and the annual basic allowance 20,400 EEK or 1,700 EEK per month. See Table 19 for rates and amounts in later years.

In addition to basic allowance, there are additional allowances:

- 1) **Increased basic allowance in case of children** is applicable in case of three or more children in family in 2005. One resident parent (or guardian of a child or other person) who maintains three or more underage children may deduct additional basic allowance from his or her income in the period of taxation for each child of up to 17 years of age. The





allowance is applicable for the third and each subsequent child in the amount exceeding the taxable income of the child. The allowance can be used from the year in which the child is born, a guardian is appointed for him/her or the maintenance obligation arises until the year in which the child attains 17 years of age (inclusive). This means that in the tax period, where the child gets 18, the additional allowance is not applicable. The eligibility condition does not set that the parent has to be married, however only one parent can make use of such allowance. Note that the allowance has been extended to the second child in 2006, to the first child in 2008 and back to the second child in 2009.

- 2) **Pension allowance.** If a resident person receives a pension paid by the Estonian state or a mandatory funded pension, an additional allowance can be deducted from the income of the person in the amount of those pensions but not more than 36,000 EEK during a year or 3,000 EEK per month. This is usually applied monthly.
- 3) **Sickness allowance.** In cases where a resident person receives a compensation for an accident at work or an occupational disease, an additional allowance can be deducted from the income of the person in the amount of that compensation but not more than 12,000 EEK during a period of taxation. However, if compensation for an accident at work or an occupational disease is paid as insurance indemnity, increased basic allowance does not apply.

In order to make use of the additional child allowances and deductions these have to be declared in the following year when filing the tax report. Therefore, there is difference between taxes withheld and taxes paid after filing tax report. There are some income sources on which income tax is immediately withheld when they are paid out (wages and salaries, unemployment insurance benefits, parental benefits, etc). Final tax liability is based on the tax report after the tax year has ended (taking into account tax already withheld). Usually, most people get refund due to additional tax deductions and allowances.

Liability of income tax is based on annual income and allowances are referred to in annual terms, although 1/12 of the annual basic allowance is usually applied monthly to calculate withholding income tax. Also usually additional allowance for pensions is applied monthly.

The tax rate and the amount of basic allowance have changed during recent years (see the table below).

Table 19. Income tax parameters 2003-10

	2003	2004	2005	2006	2007	2008	2009	2010
Income tax rate	26%	26%	24%	23%	22%	21%	21%	21%
Basic allowance per month (EEK)	1,000	1,400	1,700	2,000	2,000	2,250	2,250	2,250
Additional allowances per month per child starting from ... child	3rd	3rd	3rd	2nd	2nd	1st	2nd	2nd
Pension allowance per month (EEK)	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000

In addition to allowances, a person's taxable income can be reduced with several tax deductions:

- Compulsory unemployment insurance contribution payments
- Contributions to compulsory funded pension scheme
- Contributions to voluntary pension system to certain extent



- Housing loan interest payments
- Training expenses (from 1.1.2010 interest payments of study loans are excluded)
- Alimony or maintenance support
- Certain donations and trade union entrance and membership fees (abolished since 1.1.2010)

The concise overview of exemptions for the personal income tax is presented in 34Table 20.

Table 20. Allowances and deductions from personal income tax

Allowance/deduction	%, sum or limit in a year	Description
Basic allowance	20,400 EEK in 2005 (see Table above for changes)	
Allowance in case of children	In amount by which taxable income of the child is lower than the basic allowance	If 3 or more children, for 3 <sup>rd</sup> and each subsequent child under the age of 17. Applicable for one parent (see Table above for changes)
Pension allowance	Pension amount, but max 36,000EEK	Pensions (state or mandatory funded) not taxable up to this level.
Sickness allowance	Compensation amount, but max 12,000 EEK	Compensation for an accident at work or an occupational disease (not insurance) deducted from the taxable income
Alimony or maintenance support paid	100%	Only if income tax paid by the recipient.
Housing loan or lease interest payments*	100%	Only interest payments for the main house or apartment
Training expenses *	100%	One under 26 years old person's schooling/training expenses in registered educational establishment
Gifts, donations and trade union entrance and membership fees*	100%; entrance & membership fees max 2% of taxable income less economic activity related costs in case of self-employed, maintenance, housing loan interest and training expenditure deductions and basic allowances; general limit for gifts, donations and fees is 5% of the aforementioned sum	Payments etc to certain private and all public institutions. Entrance and membership fees.
Insurance premiums and acquisition of pension fund units	100%, max 15% of taxable sum, less economic activity related costs in case of self-employed	Payments to voluntary pension scheme
Unemployment insurance contribution	100%	All payments to unemployment insurance fund
Contributions to mandatory funded pension	100%	The compulsory payments to pension fund
Additional child birth allowance by employer	Max 5/12 of the basic allowance rate (e.g. 8,500 EEK in 2005)	Birth allowance is paid voluntarily by employer

\*Note: from 2005 the maximum annual limit for these deductions summed up is 50,000EEK per taxpayer and not more than 50% of taxable income (less economic activity related costs in case of self-employed).



Other deductions:

- 1) **Compulsory unemployment insurance contribution payments** (1% of the gross wage in 2005, 0.6% in 2006-2008) and **contributions to compulsory funded pension scheme** (2% of the gross wage) are fully deductible (see also Figure 1 in section 1.4).
- 2) **Insurance contributions and acquisition of pension fund units.** The part of the insurance contributions paid during the period of taxation under an insurance contract for a supplementary funded pension (*täiendav kogumispension*), the purpose of which is to ensure the payment of the insured sum as a pension, can be deducted from taxable income to a certain extent. This also applies to amounts paid to acquire units of a voluntary pension fund except when fund units are changed or recalled and for the acquiring costs of these units. A negative change which occurs in a technical provision established on the basis of an insurance contract with a view to securing a supplementary funded pension and which is due to deduction of the amounts charged for a certain insurance cover are added to the taxable income of a private person.

The deductions related to insurance contributions and supplementary pension fund unit payments during one period of taxation are limited to 15% of the taxpayer's income of the same period of taxation, after all certified expenses incurred by a taxpayer in relation to business are deducted. If spouses present one declaration, the allowance cannot exceed 15% of the sum of spouse's income.

- 3) **Housing loan (or lease) interest payments** for the period of taxation if they are paid to the financial institution in order to acquire a house or apartment or a plot of land for building a house for personal use or for his/her spouse, parents or children. The same conditions apply in case of reconstruction, expansion and building works. The deduction is available for only one loan object per person. A parent who is raising a child alone and who has taken parental leave during a period of taxation can deduct the exemption during more than one taxation period.
- 4) **Training expenses** are deductible for the person him/herself or a person of less than 26 years of age or if no such training expenses are incurred, the training expenses of one permanent resident of Estonia of less than 26 years of age. Parents can also deduct the interest expenses of the student loan. In case the educational expenditures are made using scholarship that is exempt from income tax, the deduction could not be used. The legal condition for applying the deduction requires that the training expense have to be certified expenses incurred for studying at a state or local government educational establishment, a university in public law, a private school which holds a training licence or has been positively accredited with regard to the given study programme, or a foreign educational establishment of equal status with the aforementioned, or for studying on fee-charging courses organised by such educational establishments.
- 5) **Alimony or maintenance support** a person has paid from his/her income to another person. This kind of payment is set by the court order or agreement with respect to the *Family Act (Perekonnaseadus)*.
- 6) **Gifts, donations and trade union entrance and membership fees** which have been given or paid to persons included in the special list specified in the *Income Tax Act (Tulumaksuseadus)* – non-governmental organisations (NGOs) and foundations, church institutions or to a state or local government scientific, cultural, sports, educational or social welfare institution, a manager of a protected area, a university in public law or a political party. Gifts and donations may be given in monetary or non-monetary form, however, the cost of a non-monetary gift or donation is the market price of the property, and in the case of sale of the property at a preferential price, the cost of the gift or donation is the difference between the market price and selling price of the property.



The amount of the trade union entrance and membership fees deductions cannot exceed 2% of the taxpayer's income after deductions of all aforementioned exemptions. The maximum deduction of gifts and donations and the trade union entrance and membership fees can be 5% of the taxpayer's income after deductions of all in previous points mentioned exemptions.

- 7) Income tax is not charged on **childbirth benefit** (*sünnitustoetus*) paid voluntarily by the employer to the employee or public servant, in an amount not exceeding 5/12 of the basic exemption.

The income tax deductions provided for housing loan interests, gifts-donations and training costs are altogether limited to 50,000 EEK per taxpayer during a period of taxation, and not more than 50% of the taxpayer's income of the same period of taxation, less economic activity related costs in case of self-employed.

If a resident taxpayer has received income from abroad during a period of taxation, all income derived from abroad is included in the taxable income of the person and income tax paid or withheld on such income abroad is deducted from the income tax to be paid. Income tax is calculated separately for income derived in Estonia and for income derived in each foreign country. Income tax paid in a foreign country on income which is not subject to tax in Estonia is not taken into account.

### **Taxation of self-employed**

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.

### **1.5.2 Land tax (maamaks)**

**Land taxes** (*maamaks*): there is a number of personal property taxes applied, however, these are in most cases local taxes, providing relatively small revenue and not affecting private budgets considerably. The highest share of total property tax revenue is collected by land tax, which is essentially a state tax based on the assessed value of land and paid by the land owner. The rate of land tax is established by the local government council annually in the range of 0.1-2.5% of the assessed value of land. The collected tax revenue is directed into the respective local government budget.

### **1.5.3 Value added tax (käibemaks) and excise taxes (aktsiisimaksud)**

**Value Added Tax** (*käibemaks*): The standard rate of VAT was stable between 1992-2007 at 18%. There are a few goods and services that have a reduced rate 0% (for exports mainly) or 5% or are exempt from VAT.

In 2005 a 5 % reduced rate applies, for example, to books (excluding books for education); medicines and medical equipment; funeral requisites and services; organisation of performances and concerts by a state, municipal or private performing arts; heat, peat, fuel briquettes, coal or firewood sold to private persons for personal use.

From the 1<sup>st</sup> of July 2007 the reduced VAT rate for the following items was abolished and replaced with the basic rate of 18%: heat, peat, fuel briquettes, coal or firewood sold to private persons for personal use.



Since 1 January 2009 reduced rate was increased to 9% and reduced rate for organisation of performances and concerts by a state, municipal or private performing arts was abolished. Since 1 June 2010 the normal VAT rate was increased to 20%.

The VAT is not imposed on, for example: postal services; health services; pre-school, basic, secondary and higher education; certain financial and insurance services

**Excise taxes** (*aktsiisimaksud*): excise duties are set for alcohol, tobacco, fuel and packages. The excises on cigarettes and unleaded petrol and diesel are being increased step by step to reach the EU level in 2010. According to the government plan nearly all excise duties, as well as other environmental taxes, should be increased in the coming years as a part of the package to finance reductions in personal income tax rates.

For more information on indirect taxes and excise taxes see the Estonian Feasibility Study (Lüpsik, S., Paulus, A., Võrk, A. (2006) I-CUE Feasibility Study. Estonia. 2005 tax-benefit system. EUROMOD Feasibility Study.)

#### 1.5.4 Scope and scale of taxes

Table 21 shows the share of tax-payers in the population. Table 22 shows the structure of the tax revenues. We have included also social tax in the tables as it is usually considered together with other direct taxes in government statistics.

In 2006 about 52.1% of the population earned wages on which income tax was withheld. About 45.4% of the population submitted income declaration in 2006. And about 57.9% of the population paid social tax (or employers or state paid by them).

The revenue from social tax is the largest, about one third. This is followed by VAT, about 28% of the revenue. Personal income tax was 18.4% in 2005 and corporate income tax was 4.7% of the tax revenues. The share of other taxes is negligible. The share of income taxes has declined, compared to 2003, because marginal tax rate has declined.

Table 21. Taxes: taxpayers (as % of population)

	2003	2004	2005	2006	2007	2008	2009
Social tax (employees, self-employed, or covered by state)	54.3%	55.4%	56.7%	57.9%	59.4%	58.9%	56.9%
Income tax total	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Income tax on wages	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	52.1%	53.4%	52.4%	47.4%
Income tax (people who submitted declarations)	37.7%	40.5%	43.0%	45.4%	47.6%	50.0%	48.4%
Land Tax	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Notes: Submitting tax declarations is not always obligatory.

*na* – not available

Source: Estonian Tax and Customs Board, various press releases; Estonian National Social Insurance Board, various press releases.



Table 22. Taxes: revenue

	2005	2006	2007	2008	2009
<b>Annual revenue (mln EEK)</b>	<b>52,885</b>	<b>63,691</b>	<b>78,295</b>	<b>82,796</b>	<b>74,602</b>
<b>Direct taxes</b>					
Personal Income tax (budget revenue)	9,736	11,680	14,640	15,816	12,336
PIT (withheld)	10,454	11,972	15,457	16,834	14,400
PIT (final for this year)	10,162	11,155	14,439	14,771	12,899
Corporate Income tax	2,496	3,123	4,084	4,166	4,010
Land tax	506	517	552	755	755
Social tax*	18,133	21,746	27,268	31,299	28,084
<b>Indirect taxes</b>					
Value added tax	14,677	18,645	22,304	20,548	18,809
Excises	6,524	7,030	8,195	8,971	9,818
Other central government taxes (gambling tax, heavy vehicle tax, customs duty,	<b>694</b>	<b>818</b>	<b>1,082</b>	<b>1,056</b>	<b>641</b>
Other local taxes (sales tax, advertising tax, etc)	<b>118</b>	<b>132</b>	<b>170</b>	<b>185</b>	<b>148</b>
<b>Structure (%)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Direct taxes</b>					
Personal Income tax (budget revenue)	18.4%	18.3%	18.7%	19.1%	16.5%
PIT (withheld)	19.8%	18.8%	19.7%	20.3%	19.3%
PIT (final for this year)	19.2%	17.5%	18.4%	17.8%	17.3%
Corporate Income tax	4.7%	4.9%	5.2%	5.0%	5.4%
Land tax	1.0%	0.8%	0.7%	0.9%	1.0%
Social tax	34.3%	34.1%	34.8%	37.8%	37.6%
<b>Indirect taxes</b>					
Value added tax	27.8%	29.3%	28.5%	24.8%	25.2%
Excises	12.3%	11.0%	10.5%	10.8%	13.2%
Other central government taxes (gambling tax, heavy vehicle tax, customs duty,	1.3%	1.3%	1.4%	1.3%	0.9%
Other local taxes (sales tax, advertising tax, etc)	0.2%	0.2%	0.2%	0.2%	0.2%

*Notes:* Tax revenues both for central government and local government. Final income tax includes net payments after declaration is submitted. Withheld income tax is calculated based on current revenues and adjusted with additional net payments. Social tax is also included in this table as it is usually considered as a tax in Estonia.

Source: Statistics Estonia, online-database; withheld income tax – reports of the Estonian Tax and Customs Board, own calculations.

## 1.6 Minimum wage

The national minimum wage was first agreed in 1992 in a tripartite agreement. Since 2002, the minimum wage has been set in annual bipartite agreements between the Estonian Trade Union Confederation (Eesti Ametiühingute Keskliit) and the Estonian Employers' Confederation (Eesti Tööandjate Keskliit), and then brought into effect by a government decree. Its value is set on an hourly and a monthly basis, assuming a full time job.

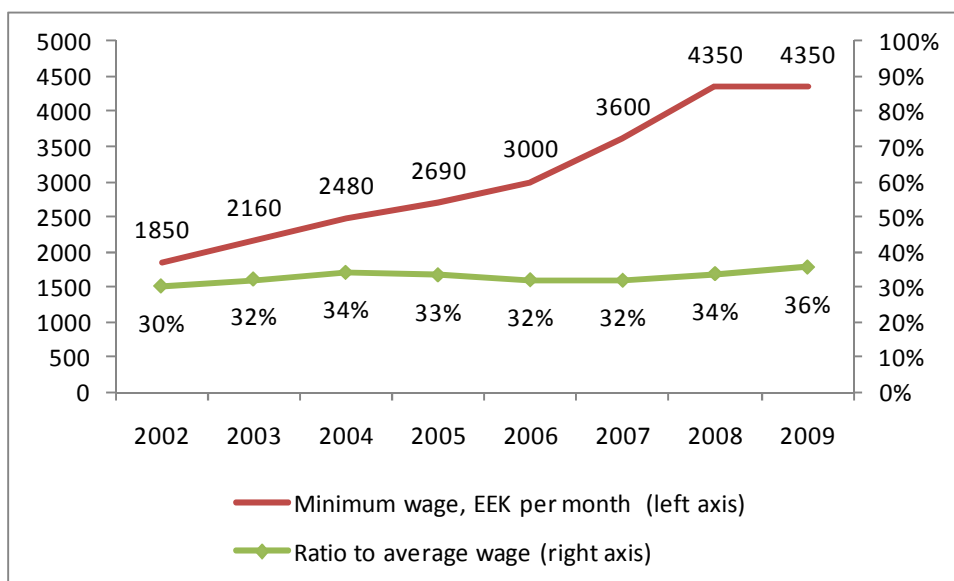


In 2001, the Estonian Trade Union Confederation and the Estonian Employers’ Confederation concluded an agreement on the long-term principles establishing the increase in the minimum wage rate up to 2008. According to this agreement, the minimum wage should represent 41% of the national full-time average wage by 2008. In reality it has remained around 30-33%. Only when the average wage declined due to the current economic crisis, the share of minimum wage has increased reaching 36% of average wage in 2009 (see Figure below).

Minimum wage applies nationwide to all employees, but several sectors may have additional negotiations between representatives of employees and employers to agree on a more favourable wage policy affecting particular occupations.

For example, in the transport sector the Estonian Transport and Road Workers’ Trade Union negotiates minimum wages. The Estonian Employees’ Unions’ Confederation and the government negotiate the minimum wages of highly educated workers in third-level education, science and culture. A minimum wage for police, border guard and rescue service officials is negotiated between the Confederation of Trade Unions of State and the Local Government Employees and the Estonian Ministry of the Interior. In health care, minimum wages for nurses and doctors are negotiated between their trade unions, hospital organizations and the government.

Figure 3. Minimum wage in Estonia 2002-2009



Source: Estonian Trade Union Confederation, Estonian Employers’ Confederation, Statistics Estonia, own calculations.

Estimations on how many workers receive an income at the level of the minimum wage vary significantly. For 2007 the Estonian Trade Union Confederation has proposed about 70,000 workers, the Estonian Employers’ Confederation estimates 15,000 workers, Statistics Estonia calculates about 40,000 workers.<sup>2</sup>

<sup>2</sup>Karu, M. Nurmela, K. (2008) “Social partners reach agreement on minimum wage for 2008.” European Industrial Relations Observatory on-line <http://www.eurofound.europa.eu/eiro/2007/12/articles/ee0712019i.htm>



The level on minimum wage influences also various benefits and social security contributions. For example minimum level on parental benefits for previously employed parents cannot be smaller than the minimum wage. The minimum social tax base for self-employed or for the state contributions on behalf of various social groups (see Table 16 above) cannot be smaller than the minimum wage since 2009. Minimum wage influences also upper ceiling of the social tax of the self-employed.

If needed, to predict the long-run level of the minimum wage, we propose to keep its value 33% of predicted average wage.

## 2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

### 2.1 Scope of simulation

Not all the taxes and benefits mentioned in the previous section are simulated by EUROMOD. Some are beyond its scope entirely and are neither included in the EUROMOD database nor in its output income variables. 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 20 and 21 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 for all three data sets: household budget survey (HBS), EU SILC data and national version of SILC (EESILC). In most cases the information is identical, but differences result where differences in available variables cause different approach to calculate or impute key variables.

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, as a support of a last resort, is 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 several assumptions, for example the information on eligibility for particular benefit is drawn from the fact that they receive the benefit.

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 are easily simulated. Income tax is calculated as both withholding income tax and final income tax. The final income tax takes into account possible 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 is little or no data for that purpose or outside EUROMOD scope.



Table 23. Simulation of benefits in EUROMOD

Benefit	HBS	EUSILC	EESILC	Comments
Unemployment insurance benefit ( <i>töötuskindlustushüvitis</i> )	PS	PS	PS	Contribution history is assumed
Unemployment assistance benefit ( <i>töötu abiraha</i> )	PS	PS	PS	Eligibility (partly) taken from data, size of the unemployment benefit
Unemployment retraining allowance	I	E	E	
Redundancy compensation ( <i>koondamishüvitis</i> )	IA	IS	I	
Paid sick leave	I	I	I	No data on contribution history and health
Disability pension ( <i>töövõimetuspension</i> )	I	I	I	No data on contribution history, no exact data on health status
Disability care allowance	IA	IA	IA	No exact data on health status, Income is part of the “other benefits” or disability pension.
Old age pension ( <i>vanaduspension</i> )	I	I	I	No data on contribution history
National pension (minimum old age pension, <i>rahvapension</i> )	I	IA	IA	No data on contribution history, or not included No data, part of other pensions
Old age pension from abroad	I	IA	IA	No data on contribution history, or not included
Survivors' pension	I	I	I	No data on contribution history
Maternity benefit ( <i>sünnitushüvitis</i> )	I	IS	I	No data on contribution history
Parental benefit ( <i>vanemahüvitis</i> )	I	IS	I	No data on contribution history
Childcare allowance ( <i>lapsehooldustasu</i> )	S	S	S	
Child allowance ( <i>lapsetoetus</i> )	S	S	S	
Single parent child allowance ( <i>üksikvanema lapsetoetus</i> )	I	IA	IA	No data on father in the birth certificate of the child, or not included separately
Large family allowance (3+/triplets) ( <i>3 ja enama lapse/kolmikute toetus</i> )	S	S	S	Abolished since 1 July 2007
Childbirth allowance ( <i>sünnitoetus</i> )	S	S	S	
School allowance ( <i>koolitoetus</i> )	S	S	S	Abolished since 2009
Large family parent allowance ( <i>seitsme- ja enamalapselise pere vanema toetus</i> )	S	S	S	
Child allowance from abroad	I	IA	IA	No separate data in SILC
Subsistence benefit ( <i>toimetulekutoetus</i> )	S	S	S	
Scholarships and grants ( <i>õppetoetused ja stipendiumid</i> )	I	I	I	No data on grades
Other benefits (not explicitly stated in the data set)	I	I	I	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; “IS”: *included* in the micro-data (*split* from 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 24. Simulation of taxes and social contributions in EUROMOD

	HBS	EUSILC	EESILC	Comments
<b>Taxes and social contributions</b>				
<b>Employer's total social insurance contributions</b>	S	S	S	
Unemployment insurance contributions	S	S	S	
III pillar	I	I	I	
Pension insurance contributions (1st pillar), part of the social tax	S	S	S	
Pension insurance contributions (2nd pillar) - transferred from the 1st pillar	S	S	S	
Health insurance contributions	S	S	S	
<b>Employee total social insurance contributions</b>	S	S	S	
Unemployment insurance contributions	S	S	S	
Funded pension insurance contributions (2nd pillar)	S	S	S	Participation information also simulated for HBS and EUSILC
<b>Self-employed social insurance contributions</b>	S	S	S	
Health insurance contributions	S	S	S	
Pension insurance contributions (1st pillar)	S	S	S	
Funded pension insurance contributions (2nd pillar) - transferred from the 1st pillar	S	S	S	
Funded pension insurance contributions (2nd pillar)	S	S	S	
<b>Contributions paid on social benefits by the central government</b>				
Health insurance contributions for those receiving unemployed benefits	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	
Pension insurance contributions (the 2nd pillar) for those receiving parental benefit	S	S	S	
<b>Income Tax (final)</b>	S	S	S	Differences between data sets which deductibles and allowances can be applied
Withholding income tax	S	S	S	
Land tax	E	I	I	Available in the data but very unreliable
Other local taxes	E	E	E	No information available

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.



## 2.2 Simulated policies and order of simulation

### 2.2.1 Simulated policies

The model allows simulating changes in the tax rates and contribution rates, changes in tax deductions and allowances, family benefits, and major rules for subsistence benefit. 2005 is the first simulated year of the Estonian policies in the EUROMOD, see the order of simulation below.

### 2.2.2 Order of simulation and interdependencies

The following table shows the order in which the main elements of the Estonian system are simulated.

Table 25. EUROMOD Spine: order of simulation, 2005-2008

Description	
1.	Definition of uprating factors
2.	Definition of constants
3.	Minimum wage ( <i>alampalk</i> )*
4.	Child allowance ( <i>lapsetoetus</i> )
5.	Large family allowance ( <i>kolme- ja enamalapselise pere toetus</i> )**
6.	School allowance ( <i>koolitoetus</i> )
7.	Childbirth allowance ( <i>sinnitoetus</i> )
8.	Childcare allowance ( <i>lapsehooldustasu</i> )
9.	Large family parent allowance ( <i>seitsme- ja enamalapselise pere vanema toetus</i> )
10.	Unemployment insurance benefit ( <i>töötuskindlustushüvitis</i> )
11.	Unemployment assistance benefit ( <i>töötu abiraha</i> )
12.	Employer social insurance contributions
13.	Employee social insurance contributions
14.	Self-employed social insurance contributions
15.	Income tax allowance for self-employment income from agriculture
16.	Withholding income tax ( <i>jooksvalt kinnipeetud tulumaks</i> )
17.	Final personal income tax ( <i>tulumaks</i> )
18.	Subsistence benefit ( <i>toimetulekutoetus</i> )
19.	Output policies

\* Simulated but switched off in the baseline.

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

There are the following dependencies between the instruments:

- Minimum wage (if switched on) affects employment earnings which is 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 assistance benefit 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 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 are both from the tax base for withholding and final income tax, self-employed SIC only from the latter.
- Subsistence benefit is means-tested and depends on the income net of employee SIC and withholding income tax. Most of benefits are also included in the means-test.

### **2.2.3 Policy constants**

Policy parameters used in more than one policy are defined as constants. They are tax rates, tax allowances, social insurance contribution rates, upper and lower ceilings for social insurance contributions, minimum tax base, and pension age. Their values may vary over the period 2005-2008. Some of them are given as monthly, some quarterly and some yearly basis, exactly as defined in legislation.



Table 26. Policy constants

Name	Period	Abbreviation	Policies where used
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
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 <sup>nd</sup> 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
Amount of basic allowance for income tax	y	\$IT_BasicAlw	withholding income tax and final income tax
Amount of pension allowance for income tax	y	\$IT_PensionAlw	withholding income tax and final income tax
Income tax rate	-	\$IT_Rate	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 unemployment assistance benefit	m	\$UAB_amount	unemployment benefits

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

## 2.3 Social benefits

### 2.3.1 Unemployment insurance benefits (töötuskindlustushüvitis)

- *Brief description*

Unemployment insurance (UI) benefits depend on previous earnings and are financed from statutory unemployment insurance contributions (see section 1.3.3 for details). In 2005, UI benefit could be received for 180 days, since 2007 for 270 days and since 2011 for 360 days (given that duration depends on accrued years of employment years since 2002).



- ***Definitions and eligibility conditions***

The unit of analysis is an individual person. Eligible are persons aged from 16 to old-age pension age and not receiving old age pension. To be eligible for UI benefit a person should register as unemployed in the public employment service and needs to have worked and made contributions for at least 12 months during the previous 24 months (36 months since 1 January 2007).

- ***Benefit amount***

During the first 100 calendar days of unemployment the replacement rate is 50% of the previous gross earnings and afterwards it falls to 40%. The gross earnings refer to the average daily gross earnings of the previous calendar year, subject to an upper limit of 3-times average taxable wages in the previous calendar year. In 2005, this meant that the benefit could not exceed 8,704 EEK per month in the case of 50% replacement rate. The limit has been higher in subsequent years - see Table 10 in section 1.3.3. There was no lower limit for the benefit in 2005, but it was introduced in later years.

- ***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, among else considering some rules 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, for replacement rates calculations).

Unemployment duration (*lunmy\_s*) is set equal to the maximum of observed unemployment duration (*lunmy*) and observed benefit receipt (*bunctmy*). If modelling unemployment benefit for those currently employed, unemployment duration is set equal to the reported number of months in employment in the current year (*liwmy*), once contribution history (see the next step) is modelled. Simulated unemployment duration is also used for unemployment assistance benefit calculations.

Modelled contribution history is based on the reported number of months in employment (*liwmy*), controlling for the total number of months in work (*liwwh*).

- For those currently employed ( $ils\_earns \neq 0$  &  $lunmy\_s = 0$  &  $bunct = 0$ ), this is used.
- For those currently unemployed ( $lunmy\_s > 0$ ) and in receipt ( $bunct > 0$ ), this is set at least equal to the minimum qualifying period.
- For those currently unemployed ( $lunmy\_s > 0$ ) and not in receipt ( $bunct = 0$ ), this is set to zero.

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

Benefit duration (*bunctmy\_s*) is calculated according to the rules above, using modelled contribution history, while also controlling for the unemployment duration (*lunmy\_s*).



Benefit entitlement is calculated based on previous earnings 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). (When applying upper daily threshold to previous gross earnings, we assume that there is 30.38 days per month, i.e. 4.34 weeks per month).

### 2.3.2 Unemployment assistance benefits (töötü abiraha, töötutoetus)

- *Brief description*

Unemployment assistance benefit is paid to those people who do not qualify for unemployment insurance benefit or the period of UI benefit has ended. In 2005, UI benefit could be received for 180 days, since 2007 for 270 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. Eligible are persons aged from 16 to old-age pension age and not receiving old age pension. The person must have been employed or engaged in activity equal to work 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.

- *Benefit amount*

Flat rate of 400 EEK per month in 2005-2006, 1,000 EEK since 2007 (32.90 EEK per day). It is non-taxable.

- *EUROMOD notes*

Similar to unemployment insurance benefit, unemployment assistance benefit 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 assistance benefit is modelled in complete analogy to unemployment insurance benefit. The eligibility rule differs as self-employed are not excluded from this benefit, while students are, and 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 benefit amount.

Benefit amount is simply flat rate (we do not use daily rates and assume uniformly 1,000 EEK per month). However, the number of months in receipt is calculated as the difference between maximum duration (i.e. 9 months) less simulated unemployment insurance benefit duration, also subject to unemployment duration.



### 2.3.3 Child allowance

- *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 two times the Child Allowance Rate (CAR, equal to 150 EEK since 2005), resulting in 300 EEK per month. Since 1 July 2007 quarterly allowances for families with 3 or more children were merged with monthly child allowances and the former were abolished. Since 1 July 2007 the third and any consequent child receives 6 x CAR (900 EEK) per month.

- *EUROMOD notes*

Note that we have monthly and quarterly family benefits, but the age variable is recorded as of at the end of income year in all three datasets (HBS data, the EUSILC and EESILC datasets), 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 case of child allowance, instead of undersimulating (assuming no eligibility for the year when reaching the age limit) as this seems to better match corresponding age profiles and the aggregate results are more similar to register data.

### 2.3.4 Allowance for families with 3 or more children (kolme- ja enamalapselise pere toetus)

- *Brief description*

Allowance for families with 3 or more children was a quarterly universal non-means-tested non-taxable benefit paid to families where there are three or more children below an age limit, valid until 1 July 2007.

- *Definitions*

The unit of analysis is the same as for child allowance (see above 2.3.3).

- *Eligibility conditions*

At least three children must be below an age limit.





- **Benefit amount**

The benefit is paid quarterly to one of the parents, based on the number of eligible children in the household. The amount per child is a multiple of CAR, depending on the number of children in the family and year.

Table 27. Benefit amount

Period	2005	1/1/2006-31/6/2007	Since 1/7/2007
Formula	3 children: 1 x CAR (150 EEK) 4 or 5 children: 2 x CAR (300 EEK) 6 or more: 2.5 x CAR (375 EEK)	3 children: 2 x CAR 4 or more: 3 x CAR	Abolished

### 2.3.5 School allowance (koolitoetus)

- **Brief description**

School allowance is an annual universal non-means-tested non-taxable benefit paid to families where there are school-age children to help them with the start of the school year. It was paid out in August, in general. It was abolished from 1 January 2009.

- **Definitions and eligibility conditions**

The unit of analysis is the same as for child allowance (see above 2.3.3), except that the child must be enrolled at school.

- **Benefit amount**

The benefit is paid once in a year to one of the parents, based on the number of eligible children in the household. The amount is three times child allowance rate.

### 2.3.6 Childbirth allowance (sünnitoetus)

- **Brief description**

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, but we do not have that information.

- **Benefit amount**

The benefit is paid in case of childbirth. The amount was 25 times CAR for the first birth and 20 times CAR in case of the second and later births in 2005. In case of a multiple birth, childbirth allowance is also paid at 25 times CAR for each born child (this is modelled, although there are no multiple births in 2005 dataset). Since 2006 the benefit is 5000 EEK for all children.

- **EUROMOD notes**

Also, 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, but this information is not available from the underlying datasets.



### 2.3.7 Childcare allowance (*lapsehooldustasu*)

- *Brief description*

Childcare allowance is an additional benefit targeted for young children. It is a monthly universal non-means-tested non-taxable benefit paid to families where there are 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. It is not paid for a child due to whom a parent receives maternity benefit or parental benefit (we assume that these payments are related to children up to 1 year old). There is an additional element for every child up to one year of age.

Since 2009 the childcare allowance is not paid for the parent who receives parental benefit for any of the eligible children.

- *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 since 2005) 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 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 month and only about 20 families receive a year.

- *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.

### 2.3.8 Parental allowance for families with 7 or more children (*7 ja enamalapselise pere vanema toetus*)

- *Brief description*

This allowance 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.



### 2.3.9 Subsistence benefit (toimetulekutoetus)

- **Brief description**

Subsistence benefit 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 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. Means-test is based on current disposable income (i.e. net of withholding income tax). Certain types of income are not counted as an household income, for example, family allowance for families with 3 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, with 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 and 1000 EEK since 2008.

The “norm-space” of the household is derived as following. First, the norm-space is 18m<sup>2</sup> per person in the household plus additionally 15m<sup>2</sup> per household (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 this actual living space is taken as a norm-space. If the area of the apartment is smaller than the norm-space, then the actual area is taken as a basis for calculations. For a single pensioner applying for subsistence benefit, the norm-space can be up to 51m<sup>2</sup>.

#### **Income list**

Income for the subsistence benefit is calculated using all current income except a few irregular benefits, such as childbirth allowance (*sünnitoetus*), school allowance (*koolitoetus*), other social assistance, large family allowance (*kolme- ja enamalapselise pere toetus*) and subsistence benefit itself. It is based on 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, which is 100% of the subsistence rate, which is set annually by the government, for the head of household and 80% of the subsistence rate for each subsequent person in the household;

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 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 reality all housing costs for “norm-space” depend on the detailed rules by municipalities. In our case we approximate the actual costs related to dwelling with actual costs proportional to housing size, applying an upper limit to avoid unreasonably large housing costs. We currently use three times the average actual housing cost from registry data, which was 725 EEK per month in 2005 and has increased thereafter (822 in 2006, 910 in 2007, 1,053 in 2008, 1,147 in 2009).

Total housing cost variable includes also mortgage interest payments which hence must be deducted here. Note that while housing costs in EUSILC and EESILC data refer to 2006 average monthly costs then mortgage interest payments refer to annual figures of 2005. 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.

#### *Non take-up*

Finally we model benefit non take-up by assuming that very small sums are not claimed. Based on actual receipt data, we have set the threshold at 150 EEK for 2005 (200 EEK for 2006-08) and 10% of the current income. By current income we consider all income components (except the benefit itself) net of the withholding income tax. It also excludes self-employed social insurance contributions.

## **2.4 Social contributions**

Social contributions are paid by employees, employers and self-employed. Social insurance is highly centralised, contributions are formally either taxes (*social tax*) or otherwise rates set by laws.

### **2.4.1 Employee social contributions**

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

#### *Unemployment insurance contributions*

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.

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



Table 28. Unemployment insurance contribution rates

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

### *Pension contributions to the funded scheme*

Contributions are calculated as 2% of the gross employment income for those who participate in the scheme. Note that in 1 July 2009 - 31 December 2010 the contributions to the funded scheme are suspended.

- ***EUROMOD notes***

In the EESILC data the information on the contributions to the funded pension scheme is directly available and hence we know who participates in the scheme. In the HBS data and EUSILC data we do not have information on the participation in the funded pension scheme.

Therefore the participation is simulated in the raw dataset using gender-age specific participation rates. For HBS data they were derived from pension register and population data. For EUSILC data they were drawn from EESILC dataset. The participation rate is then randomly simulated in the gender-age group for HBS data and in the gender-age-income group for EUSILC data.

We do not simulate voluntary contributions to the private pension funds (i.e. payments into the 3<sup>rd</sup> pillar), but take them from the data. They are available in all three datasets. The HBS data give about 40% coverage both in terms of contributions and contributors in 2005. The EUSILC and EESILC data give about 90% coverage.

Alternative approach would be to predict participants and amounts based on demographic and labour market variables and income.

## **2.4.2 Employer social contributions**

Employers pay social tax, which is divided into health insurance part and pension insurance part. The latter is further divided into 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 2.4.4 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. The latter is 4 percentage points (out of 20%) for those participating in the funded scheme.

### ***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 (0.5% in 2005, see the table in section 2.4.1 above) of employment income.

### *Total contributions*

Total employer contributions equal:

- contributions to the pension insurance (1<sup>st</sup> pillar) +
- transfers to the funded scheme (2<sup>nd</sup> pillar) +
- contributions to the health insurance +
- contributions to the unemployment insurance

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

### **2.4.3 Self-employed social contributions**

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, social insurance contributions paid by employers for self-employed receive earnings can be offset against the minimum obligation. Finally, there is also an upper annual limit to social contributions base, which is 15 times the annual legal minimum wage (484,200 EEK in 2005, larger in later years, see the following table).

Table 29. Upper and lower limit of social tax base for self-employed

	2005	2006	2007	2008	2009	2010
Minimum monthly social tax base	700	1400	2000	2700	2700	4350
Minimum monthly wage (EEK)	2,690	3,000	3,600	4,350	4,350	4,350
Upper annual limit of social tax base (EEK) (15 times minimum wage)	484,200	540,000	648,000	783,000	783,000	783,000



### ***Pension insurance contributions***

Participation in the funded pension scheme and calculation of the contributions to the state pension scheme and funded pension scheme are the same as for employees.

Contributions to the funded pension scheme have two parts: one is 4% of the contribution base transferred from the social tax and additional 2% funded pension insurance contributions if the person participates in the funded pension scheme. Altogether, a self-employed person therefore directly contributes 6% to himself.

Therefore 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 self-employed social insurance contributions***

contributions to the pension insurance (1<sup>st</sup> pillar) +  
 contributions to the health insurance +  
 “transfers” to the funded scheme (2<sup>nd</sup> pillar) +  
 contributions to the funded scheme (2<sup>nd</sup> pillar)

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 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”. In the EUSILC data the self-employed are those either with employees, without employees or family worker.

Also, only HBS database has enough information to simulate tax allowance on income from agriculture. Additionally, in the EUSILC and EESILC dataset the non-registered activity was considered as part of general income tax base but not part of self-employed income. Gross values are directly taken from the data, relying on Statistics Estonia calculations to be correct.

#### **2.4.4 Government social contributions**

Government pays social contributions on certain minimum base (700 EEK per month in 2005, larger in later years, see table 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 (*vanemahiivitis*) or unemployment assistance benefit. There are some other minor categories which are not included in the model (see section 1.4. above).

Government pays both health care insurance and pension insurance part 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 assistance benefits. 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, paid by the central government, to the 2nd pillar for those receiving parental benefit. They are calculated as 1% of the maternity benefit for each related child.

## **2.5 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 which is means-tested 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, etc.

### **2.5.1 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. Large family additional tax allowance is for families with children aged up to 17.

### **2.5.2 Exemptions**

The following income sources are non taxable: all family benefits (except parental benefit), unemployment assistance benefit, 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.

### **2.5.3 Tax allowances**

Firstly, basic allowance, which equals 20,400 EEK per year (1,700 EEK per month) in 2005 was increased in later years (2,000 EEK in 2006, 2,250 EEK in 2008).

Secondly, pension allowance, which equals 36,000 EEK per year (3,000 EEK per month) in 2005 and later years. 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. 20,400 EEK per year in 2005, see Table 19 in section 1.5.1 for other years) less the taxable income of the children. In 2005 it was applicable for the third and each subsequent child less the taxable income of that child. In 2006 it was extended to the second child and in 2008 to the first child. In 2009 it was reversed and applied again only from the second child.

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 (see section 1.5.1 for details), but they are of little importance.

Finally, there is 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.

#### **2.5.4 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: 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 since 1 January 2010, affecting 2010 final income tax.

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.

#### **2.5.5 Tax base**

Income tax base is calculated as taxable incomes (see section 2.5.2 for exemptions) less allowances and deductions.

##### ***Withholding income tax***

Incomes subject to withholding income tax are 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 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 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 (derived in HBS data, directly available in EUSILC and EESILC) minus special allowances for the agricultural income where available (HBS data), calculated above, 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. Tax allowance for self-employment income from agriculture is applied only in case of HBS data for self-employed with positive income from agriculture. In EUSILC and EESILC data we cannot separate agricultural income and hence cannot simulate this tax allowance.

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).

## 2.6 Minimum wage

- *Brief description*

Monthly and hourly minimum wage is set in 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 the latter is 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. 2,690 EEK in 2005, 3,000 EEK in 2006, 3,600 EEK in 2007, 4,350 EEK in 2008-2010.

- *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 condition affects 2,7% of people with positive labour earnings in 2005. On average it increases the monthly wage of those affected by 344 EEK.

By default the simulation of minimum wage is set off, i.e. not part of the baseline.

### 3. DATA

#### 3.1 General description<sup>3</sup>

There are currently three different Estonian datasets available as input data for EUROMOD:

- 1) Household Budget Survey 2005 (*Eesti leibkonna eelarve uuring* - HBS);
- 2) Estonia Social Survey 2006 (*Eesti Sotsiaaluuring 2006* - EESILC), which is a national version of EU SILC data and which was used by the Statistics Estonia to construct the EUSILC database;
- 3) European Union Survey of Living Conditions (EU-SILC) 2006 data for Estonia, released on 1 March 2008.

The Household Budget Survey was discussed in detail in the previous country report (Lüpsik, Paulus, Võrk 2008). Therefore we concentrate mainly on the latter two and differences between them and from the HBS.

The Estonia Social Survey (EESILC) in Estonia started in 2004 by Statistics Estonia with the goal of measuring the income and living conditions of Estonians, and through them the problematic areas of the society — poverty, inequality and social exclusion.<sup>4</sup> Before EESILC was launched in 2004, incomes, and poverty and inequality indicators on the basis thereof, had been calculated by using the data from the Household Budget Survey.

The EESILC survey offers a possibility to measure such complex social processes as persistent poverty and the various levels of deprivation. In Estonia, the survey is the official source of income statistics and social exclusion indicators. The survey is the Estonian branch of a pan-European survey of income and living conditions called the EU-SILC (European Union (EU) Statistics on Income and Living Conditions) coordinated by the Statistical Office of the European Communities Eurostat. Statistics Estonia collects data within the framework of EU-SILC, domestically called the Estonian Social Survey. In addition to the input for Eurostat's variables, many questions from Estonian domestic consumers are included in the survey. Estonian domestic databases are also compiled based on the results of this survey and are every year delivered to domestic contractual users. The EESILC data are used by Estonian educational institutions (universities, institutes) and ministries (mainly the Ministry of Social Affairs). (Statistics Estonia 2010)

Only private Estonian households are included in EESILC, similar to the HBS survey. Household is the group of persons living in the common main dwelling (at the same address) and share joint financial and/or food resources and whose members consider themselves to be

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<sup>3</sup> This section includes word to word extracts from the following publications by Statistics Estonia: "EU-SILC 2006 in Estonia: Final Quality Report".

Statistics Estonia, Tallinn 2008. "Eesti Sotsiaaluuring. Estonian Social Survey. Metoodikakogumik. Methodological Report". Tallinn 2010.

<sup>4</sup> In the following text we use abbreviation EESILC, although the more common abbreviation of the survey is "ESS" in Estonia.



members of one household. Household can also consist of one member only. Members of the household are not necessarily related by blood or marriage. A household consists of one or more benefit units (or "families"), e.g. a couple together with any dependent children.

People living permanently (over six months) in collective households and in institutions, amounting to about 1% of the population of Estonia, are excluded from the survey. Institutions are for instance orphanages, nursing homes, retirement homes, prisons, convents, barracks and so on.

The survey is cross-sectional with rotating panels, i.e. at the same time four panels have been included in the survey. In EESILC each year, around 5,500 households and 13,500 persons are interviewed, and they are divided between four panels. Three panels are in the survey from the previous years and one is a first-timer. The rotation principle could not be fully implemented at the beginning of the survey and panels had to be modified. Therefore in 2006 the sample consists of six rotational groups (four started in 2004, one started in 2005 and one started in 2006). In the Euromod we use the cross-sectional information of the survey. The sample size is identical for the national version and EU version of the survey.

Table 30. EUROMOD database descriptions

	National EU-SILC	Eurostat EU-SILC	Household budget survey
Abbreviation	EESILC	EUSILC	HBS
Original name	Eesti Sotsiaaluuring (Estonian Social Survey)	European Union Survey of Income and Living Conditions	Leibkonna eelarve uuring 2005 (Household budget survey 2005)
Provider	Eesti Statistikaamet (Statistics Estonia)	Eurostat	Eesti Statistikaamet (Statistics Estonia)
Year of collection		2006	2005
Period of collection		March - June 2006	December 2004 – Jan 2006
Income reference period		Jan 2005 - Dec 2005, annual income, housing expenditures on 2006, monthly	Jan 2005- Dec 2005, monthly income and expenditures
Sampling		Stratified systematic sampling	Stratified systematic sampling
Unit of assessment		Spending unit	Spending unit
Coverage		Households living permanently in Estonia. Persons living in collective households are excluded	Households living permanently in Estonia. Persons living in institutional households are excluded
Sample size		6,993 households	7,161 households
Response rate for household questionnaire		(80.5%) 5,631 households	69.2% (4,953 households)
Response rate for household income and expenditures			50.1% (3,593 households)
No of households with non-response inflation factor missing.		8	
Final sample used in EUROMOD		5,623 households	3,432 households



Both in the HBS and in the SILC stratified unequal probability sampling of households was used. See Lüksik, Paulus, Võrk (2008) for the HBS methodology for details and Statistics Estonia (2010) for the EESILC /EUSILC methodology.

Technically the original data sets include several files (see the tables below). HBS data consist more than 10 files, national version of the SILC consists of three files, EU-SILC consists of four files (see Annex 1). For EUROMOD purposes the net-to-gross transformation of income variables is carried out, if necessary, and then data files are merged into single file keeping only variables necessary in EUROMOD. We end up with 5,623 households when using EESILC/EUSILC data and 3,432 households with HBS data.

The SILC survey is comprised of the household and personal interviews, conducted by using two different questionnaires: the household questionnaire and the personal questionnaire. The household interview is carried out with a grown-up household member who knows the household the best. Personal questionnaires are filled out for all household members aged 15 or more.

### 3.2 Sample quality and weights

#### 3.2.1 Sample size and non-response

The minimum effective sample size to be interviewed for cross-section analysis was set 3,500 households and 7,750 persons aged 16 or over in EESILC. The actual planned sample size was greater in order to take into account the impact of various factors that may reduce the precision of evaluation.

In 2006 6,993 households were drawn into the sample. 6,328 households were contacted and 5,631 valid household responses were received. The response rate of the EESILC is considerably higher than the response rate of the HBS. The high non-response rate of the latter was caused by the diary-type questionnaire of income and expenditure.

Table 31. Sample size, frame error and non-response

	EESILC	HBS
Initial sample	6,993	7,803
Frame error	-82	- 616
Split-offs	165	
Household was contacted	6,328	7,161
Response rate	82.7%*	50.2%**
Households responding	5,631	3,593**

\* - average of all waves answering in 2006, later waves had higher response rates than earlier waves

\*\* Those answering to the HBS Diary Book for Income, Taxes and Expenditures

With-in household response rate of the EESILC was 98.6% for 2006 (see Statistics Estonia 2010, tables 8 and 9).



### 3.2.2 Weights and item non-response

All data sets include weights to take into account sampling probabilities and also to compensate frame errors and the non-response. For EESILC data weights are calculated both for cross-sectional and longitudinal data. The sub-samples or panels are weighted independently and combined thereafter. The weighting scheme for EESILC is governed by the procedures worked out for EU-SILC. (For weights of HBS data see the previous report Lüpsik, Paulus, Võrk 2008).

The weights for EESILC data are calculated on the basis of design weights derived from inclusion probabilities. The weights, which are first adjusted to compensate for the bias caused by non-response, and then calibrated to the population data, are used in calculating the final data. In the first years of the survey, post-stratification was used to compensate for nonresponse. Since 2006, a logistic regression model, which describes non-response, has been used.

The final estimations are calculated by using the weights calibrated on the basis of demographic data in order to diminish the bias caused by non-response and frame errors. In the calibration process, the weights are corrected to make the population distributions calculated with the help of weights as close as possible to the demographic data known from other sources. Inasmuch the activeness in answering the questionnaires depends on the gender- and age-specific distributions and place of residence, the integrated gender and age groups as well as distribution of households by county and degree of urbanisation are used in calibration for the purpose of correcting the bias. Technically, the calibration is done with the program Bascula. For details of the weighting procedure see also Statistics Estonia (2010).

Table 32. Descriptive Statistics of the Grossing-up weight

	<b>EESILC /EUSILC</b>	<b>HBS</b>
Weight variable in the original dataset	<i>lk_kaal/ db090</i>	<i>Tulukaal</i>
Number of households with positive values	5,623	3,432
Mean	100.58	162.34
Median	78.97	130.51
Maximum	969.45	748.66
Minimum	1.43	11.40
Max/Min	677.93	65.67
Decile 1 (10% cut point)	26.26	45.41
Decile 9 (90% cut point)	197.58	335.11
Dec 9 / Dec1	7.52	7.38

### 3.3 Imputations, data adjustments and assumptions

#### 3.3.1 Time period

The largest difference between HBS and EESILC/EUSILC data is in the time period that the income and expenditure refer to. In the HBS data the reference period of socio-demographic, labour, economic characteristics is the month of the survey and the information on earnings and expenditure refers to the following month. All monetary amounts in the HBS are expressed in monthly terms. It is collected using the diary method.

In the EESILC/EUSILC income and expenditure refer to the previous calendar year, with the exception of housing costs which refer to a current monthly average.



When using the HBS data it is implicitly assumed that income is received at the same rate throughout the year. However it should be remembered that this may not be the case and in particular that simulated income tax (based on annual income) does not take account of changes that may happen during the year. On the other hand, it is generally the case that personal and household characteristics are consistent with the current incomes that are observed, since they apply to the same or very similar reference periods. There is no information about how many times (e.g., number of months) a particular income was paid over the year.

On the contrary, when using EESILC data the annual income and expenditure are available, and also information on how many months it was received (especially when using national version of the EESILC), but some of the other socio-economic variables (e.g. education, marital status) refer to the survey week. As EUROMOD uses monthly data as an input the annual income and expenditure are divided simply by twelve.

### 3.3.2 Data adjustment

In the HBS survey data only on households who had provided information on incomes and expenditures were included in EUROMOD's database. All other households were dropped and no imputation of missing variables was implemented.

In the EESILC data, however, all households remained in the sample and missing values have been imputed, if necessary. Most of the imputations has been done by Statistics Estonia; a few remaining imputations were done by us and they are described in the DRD in detail. We had to drop 8 households that had missing values for the inflation factor reflecting non-response within household

In HBS all income components were collected as net in the questionnaire and we used backward imputations to get gross values. Technically, the EUROMOD input data file is derived from the original HBS data using the Estonian tax-benefit microsimulation model ALAN (authors Alari Paulus and Andres Võrk) with some minor modifications. See earlier report Lüksik, Paulus, Võrk (2008) for details.

In the EESILC questionnaire all income components are again collected as net by default, but with questions concerning wages and salaries, income from rental, income earned by children or 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 (EUSILC) has all values in gross (but less detailed), while the national version has (additional) detailed benefit information but with net values. Both net and gross incomes of household members are aggregated to household level by using formulas provided by Eurostat. The national version of the SILC survey includes much more detailed information than EU version as many income variables are merged already.

During the process we had access to both national and EU version of SILC data and comparing net and gross values, discovered a few mistakes and inconsistencies in the gross-net conversions of the Statistics Estonia. Their possible effect is discussed in the next section.

### 3.3.3 Calculation of income and under-reporting

One main topic of both EESILC and HBS surveys is the income of the residents of Estonia. Before EESILC was launched in 2004, incomes, and poverty and inequality indicators on the basis thereof, had been calculated by using the data from the Household Budget Survey. In HBS, respondents were asked about the income they received in the previous month, which was



then multiplied by twelve to obtain yearly income. EESILC use the previous year's income for calculating indicators of living standards and welfare.

In SILC Estonia follows the income definition of the Canberra working group for calculating household members' incomes. Disposable (net) income is defined as the sum of incomes from wage labour, self-employment, property income, social transfers, regular inter-household cash transfers received, production for own consumption, and receipts for tax adjustment from which regular inter-household cash transfers paid, taxes on wealth and repayments for tax adjustment have been subtracted.

The EESILC household questionnaire provides information on the following components of household's total disposable income: the subsistence benefit and child benefits, incomes earned by younger than 15 year-olds, monetary and non-monetary support received from other households, alimony, monetary and non-monetary support from non-state organisations, income from rental of property or land, income from sale of real estate or stocks, income from production for own consumption. The personal questionnaire provides information on the following: monetary and non-monetary income from wage labour, income from registered and unregistered entrepreneurship, property income from bonds, shares and savings, social benefits received and payments from insurance schemes. Until 2007 income from production for own consumption and savings from imputed rent (i.e. the money a household saves on rent by living in a dwelling that they own) were not included in the total income definition. From 2007 onwards, these types of income have been added to the total household income. Also from 2007, interests on mortgage are subtracted from the household total income. These were not considered in the rules for household income calculations in previous years.

For our purposes we have split some of the EUSILC variables into components to allow their simulation or apply different tax-benefit rules to them.

#### **3.3.4 Imputations and net-to-gross conversions by Statistics Estonia**

While HBS data did not use any imputations and different diaries were allowed to have different response rates, then for SILC data Statistics Estonia has imputed missing values for several variables. We focus here on income variables and the SILC data. The following uses word-to-work extracts from the quality report of 2006 SILC data by Statistics Estonia (Statistics Estonia 2006a).

According to the quality report of 2006 SILC data, several options were used to impute missing values. For some households and persons the values of previous year were used to impute missing values. Data of 2005 was used only if household or person received particular kind of income in 2005 and analysis showed that these two incomes are sufficiently closely related. If analysis indicated no correlation between the incomes of 2005 and 2006, values were not used in imputation. For some variables, values of previous year were corrected to take into account trends present in the data. If missing value could not be imputed with data from previous year, the following methods were used:

- Logical deduction of value, based on other data in questionnaire;
- Imputation with median or average, when only single values were missing;
- Hot-deck imputation (random donor), when proportion of missing values was very small;





- When exact value was missing but respondent provided an interval, the values was imputed with hot-deck method within this interval;
- Random regression with IVEware.

For some income variables having highly skewed distribution, imputation was conducted on the log-scale. In general, empirical bounds of values present in the dataset were used in IVEware to bound imputed values. For some income components, amount per month was imputed and then converted into amount per year.

### Net to gross conversions

If an income component was collected only net (SILC variables PY020, PY080, PY090, PY100, PY110, PY120, HY050, HY140, HY145), then missing net values were imputed and then converted to gross using net/gross conversion algorithm, where necessary. Respectively, if an income component was collected only gross (SILC variables PY035, PY130, PY140, HY060, HY070, HY080, HY090, HY120, HY130), then a missing gross value was imputed and then converted to net. For income components, which were collected both net and gross (SILC variables PY010, PY050, HY040, HY110), the procedure was as follows. If only gross value was obtained, it was first converted to net using gross/net conversion algorithm. If both net and gross value were obtained, the net value was used, since it is believed that people know this value better. Missing net values were imputed using IVEware. Gross components of EU-SILC variables were obtained with net/gross conversion algorithm. In this way, when only gross value was obtained, a value recorded in gross component was equal to the collected gross value, since net/gross and gross/net algorithm are in accordance with each other. Also, it allows basing both net and gross recorded values on the same collected value. Net/gross and gross/net conversion algorithms were based on local tax system. See the section 3.3.5 for additional details.

### Imputed rent

Imputed rent must be computed for those households that are either the owners of their living space or use it without a rental fee. The calculation of imputed rent was done in three steps by Statistics Estonia.

1) Finding the best model of square-meter price of the accommodations. Square-meter price model was found separately for detached houses (including semidetached and terraced houses) and apartments. Model was fitted on the database of real estate sell-transactions in Estonia in 2006, containing 4682 transaction records. Square-meter price of a detached house was modelled, using the following explanatory variables: county group (4 groups), level of urbanisation (capital city, big towns, small towns, rural areas), quality of accommodations (poor, satisfactory, good), area, interaction of county group and urbanisation level, interaction of quality and urbanisation level. Square-meter price of an apartment was modelled, using the following explanatory variables: county group, level of urbanisation, quality of accommodations, number of rooms (1,2,3,4+), area, interaction of county group and urbanisation level.

2) Applying the model to SILC data. The square-meter price models were applied to all households.

3) Computation of imputed rent, based on the total price of accommodations. The calculation formula for imputed rent is the following:

$$(\text{annual rent}) = (\text{price of the accommodations}) \times (\text{smoothed Euribor})$$



Price of the accommodations is multiplied by the mean value of Euribor from 1 January 1999 – 31 December 2006, which is equal to 3.239%.

### **Company cars**

In the personal questionnaire, each employee was requested to report whether he or she had an option to use a company car for private ends during the previous calendar year or not. Those reporting the use were further asked to indicate the number of months the car was used, as well as the make, model and year of issue of the car. Since there is no reliable information on used car prices in Estonia, the construction of depreciation model was not possible and the conversion using tax rules was used instead. For each person reporting a benefit from the company car, the special benefit tax paid by the employer on the use of the car is recorded.

### **Within-household non-response inflation factor**

Ca 1.4% of households, whose data was accepted for the database, are affected by within household non-response. Ignoring this fact may cause substantial bias in main indicators. To correct the effect of non-responding individuals within a household, the inflation factor (variable HY025) is calculated by which it is necessary to multiply total household gross income, total household disposable income and the total household disposable income before social transfers. Calculation procedure was as follows.

- Missing total individual gross income was imputed with the unweighted median of imputation class. Imputation classes were cross-sections of 9 age groups (16-17, 18-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75+), sex, employment status (employed/other), and quintile of equivalised total household gross income. Where possible, total individual income of previous wave was used for imputation (if it was greater than zero).
- Quintile of equivalized total household gross income was recalculated using imputed values of previous step.
- Steps 1 and 2 were repeated until there were no more shifts in the income quintile (5 repetitions were sufficient in 2006).
- Within-household non-response inflation factor was calculated as the ratio of total household gross income including imputed individual income to initial household gross income. For households with negative or zero household gross income, inflation factor was set to 1 (i.e. no inflation was done). If resulting value was greater than 5, inflation factor was set to missing. In 2006 it happened in 8 households.

### **3.3.5 Additional imputations and net-to-gross conversions by country team**

Additional imputations were required in order to apply similar tax benefits rules to all three datasets. First, the amount of non-responded income, calculated using the non-response inflation factors, was split among non-respondent individuals according to the main source of income by age. The default approach by the EUROMOD core team was used. After that additional net-to-gross imputations were implemented if necessary.



### *Participation in the funded pension scheme*

Participation in compulsory funded pension scheme (the second pillar) is compulsory for new entrants to the labour market (born 1983 or later), but voluntary for employees who were in the labour market in 2002 when the scheme was introduced. Cohorts born in 1941 or before (i.e. those beyond pension age at the time of the reform) were not allowed to join the scheme.

We do not have information on the participation in the funded pension scheme in the HBS data or the EU version of the SILC, but we have the information in the national version of the SILC and we know the age-gender distribution of the participants from the register data.

Based on the register and population data the age-gender participation rate was calculated for the HBS data.

$$\text{Prob(Participates)}_{\text{age, gender}} = \frac{\text{Participants at the beginning of 2005}_{\text{age, gender}}}{\text{Population at the beginning of 2005}_{\text{age, gender}}}$$

Number of participants who have joined the funded pension scheme by the beginning of 2005 are derived from data received from the Estonian Central Securities Depository. Population data are from Eurostat on-line database.

For the EUSILC data we calculated similar participation rates from the SILCEE data by adding the decile of the gross earnings (PY010G) where the person belongs to:

$$\text{Prob(Participates)}_{\text{age, gender, decile}} = \frac{\text{Participants at the beginning of 2005}_{\text{age, gender, decile}}}{\text{Population at the beginning of 2005}_{\text{age, gender, decile}}}$$

We simulated participation status based on these group-specific participation rates by drawing a uniformly distributed random number from the 0-1 interval (this is done Stata and can be reproduced as the seed number is fixed). If the resulting number is lower than the corresponding participation rate the person is assigned a value 1, otherwise value 0.

As the participation decision depends on the employment status and level of earnings we would expect that adding of income decile into the group information yields better coverage of contributions to the funded scheme.

### *Family benefits*

A detailed classification of benefits was available in the HBS data, and taxable and non-taxable benefits were separately available in the EESILC data.

For family benefits the major task was the separation of parental benefit and maternity benefit, which both are taxable, and universal family benefits, which are non-taxable, in the EUSILC.

We simulated major universal family benefits in the EUSILC and subtracted them from the total sum of family benefits. The rest was divided into two: 27% went to maternity benefits (temporary sickness benefit in case of pregnancy) and 73% went to parental benefits. If there were no children younger than two then all family benefits were assigned to universal family benefits. We also used information on children born in 2006 as that indicated possible maternity benefits in 2005. Note that those benefits which cannot be simulated (for example, single parent benefits) are implicitly included in maternity and parental benefits.

The family benefits were assigned to the mother (or father if mother missing) of the child or the child herself if no parent was in the household.



Table 33. Comparison of assumptions for family benefits

Variable	EESILC	EUSILC	HBS
General remark	Four different family benefit categories available	One merged family benefit available	Detailed family benefits available
Other family benefits (universal family benefits and local benefits), non-taxable	Total sum available.	Simulated the sum of the major universal benefits (child allowance, child care allowance, school allowance, large family allowances)	Separately available: child allowance, child care allowance, child allowance from abroad, single parent allowance
Parental benefit, taxable	Available in net. Gross amount imputed by backward calculation	Not separately available. Imputed: 73% of gap between the total family benefits and simulated universal family benefits was assigned to parental benefits if there was a child younger than 2	Available in net. Gross amount imputed by backward calculation
Maternity benefit, taxable	Available in net. Gross amount imputed by backward calculation	Not separately available. Imputed: 27% of gap between the total family benefits and simulated universal family benefits was assigned to parental benefits if there was a child younger than 2	Available in net. Gross amount imputed by backward calculation
Adoption benefit, taxable	Available in net. Gross amount imputed by backward calculation. None in 2005		

### *Unemployment benefits*

The national SILC version distinguishes between redundancy benefits, unemployment insurance benefits and other unemployment benefits (including unemployment assistance benefits). In the EUSILC data (and HBS data) they are all merged together as unemployment benefits. We decided to exclude redundancy benefits from the unemployment benefit and consider them similarly with labour market earnings. Note also that in the original data only that part of the redundancy benefits is included in disposable income that was spent in 2005, while we include the whole income received.

We also needed to separate unemployment assistance benefit and unemployment insurance benefit, because they are treated differently for the purpose of income tax. The unemployment assistance benefit is a flat-rate benefit equal to 400 EEK in 2005.



We assigned all values less than 400 EEK to unemployment assistance benefits in the HBS data and less than 9,000 EEK annually (or 750 EEK per calendar months) in EUSILC data. The latter is larger because the EESILC data also includes training allowances in the variable.

In the EUSILC data we set all observations with unemployment benefits larger than 2,632 EEK per month as redundancy benefits. The cut-off point is taken from the national version of the SILC where all such larger benefits were redundancy benefits.

Table 34. Comparison of assumptions for unemployment benefits

Variable	EESILC	EUSILC	HBS
Redundancy benefit, taxable	Available in net. Gross amount imputed by backward calculation.	Not separately available. All observations with unemployment benefits larger than 2,632 EEK per month were set as redundancy benefits	Not available
Unemployment assistance benefit / unemployment allowance, non-taxable	Available in net. Include retraining or transport allowance	Not separately available. All observations with unemployment benefits smaller than 9,000 EEK per annum were set as unemployment assistance benefits	Unemployment benefit (in case the amount is $\leq 400$ EEK per month)
Unemployment retraining allowance, non-taxable	Not available (included in previous)	Not available (included in previous)	Available
Unemployment insurance benefit, taxable	Available in net. Gross amount imputed by backward calculation	Not separately available. Calculated as total unemployment benefits less redundancy benefits and unemployment assistance benefits	In case the unemployment benefit amount is $> 400$ EEK per month (net of withholding income tax with basic allowance, gross amount imputed)
Start-up benefit, non-taxable	Available, but not considered as a part of unemployment benefits	Not available. Not considered as a part of unemployment benefits	Not available

### *Pension benefits*

Pensions are well covered and with sufficient detail in all three data sets.

Statistics Estonia includes under old-age pension also disability pensions when the person is older than the formal retirement age, because according to the Estonian pension legislation disability pensions are converted to old-age pensions after statutory pension age.

Statistics Estonia also adds one-time benefit paid by employer when retired under old-age pensions, but this is very uncommon in Estonia. The EESILC database includes only 6 observations with non-missing values.



Table 35. Comparison of assumptions for pension benefits

Variable	EESILC	EUSILC	HBS
Old-age pensions	Available in gross. Includes one-time benefit paid by employer when retired	Available in gross. Includes one-time benefit paid by employer when retired	Available in net. Gross amount imputed by backward calculation.
Disability pensions	Available in gross	Available in gross	Available in net. Gross amount imputed by backward calculation.
Survivor's pensions	Available in net. Gross amount imputed by backward calculation.	Available in gross	Available in net. Gross amount imputed by backward calculation.
Old-age pensions from abroad			Available in net

### *Social assistance benefits*

Social assistance benefits consist of two categories: subsistence benefits and other social assistance benefits. Although subsistence benefits are considered as housing benefits in the EUSILC data, because they include a component related to housing costs, we regroup them back under 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.

Table 36. Comparison of assumptions for social assistance benefits

Variable	EESILC	EUSILC	HBS
Subsistence benefits, non-taxable	Available in net. Gross equals net.	Available in gross. Gross equals net.	Available in net. Gross equals net.
Other social benefits, assume non-taxable	Available in net, available at personal level	Available in gross, available at household level	Available in net, at personal level

### *Temporary sickness benefits*

Temporary health insurance benefits are similarly recorded in all three datasets, except that they are net in EESILC and HBS and gross in EUSILC. Note that in administrative data maternity benefits are also part of temporary sickness benefits, but in our data they are kept separately.



Table 37. Comparison of assumptions for sickness benefits

Variable	EESILC	EUSILC	HBS
Sickness benefits, taxable	Available in net. Gross amount imputed by backward calculation.	Available in gross. Includes one-time benefit paid by employer when retired	Available in net. Gross amount imputed by backward calculation.

### *Education benefits*

Education benefits are recorded in different detail in different datasets, but as they are all non-taxable and they cannot be simulated, they are all merged into one variable.

Table 38. Comparison of assumptions for education benefits

Variable	EESILC	EUSILC	HBS
Study grant, non-taxable	Available in net. Separate variables are summed into one variable	Available in net as one variable	Available in net. Distinguishes between: 1) stipend paid by the state; 2) stipend or grant of a foundation or organisation based in Estonia; 3) stipend or grant of a foreign country; 4) other grant for self-education, development of production activity
State study stipend			

In the HBS data we have also imputed values for childbirth allowance and interest payments on mortgage and study loans. See the earlier report Lüksik, Paulus, Võrk 2008 for details.

The derivation of other variables needed for the EUROMOD is described in the DRDs. Generally the standard approach provided by the Essex team was applied.

### **3.3.6 Imputations of gross incomes**

In all datasets gross incomes are imputed using the inversion of rules. Estonia has a constant marginal tax rate, which makes inversion straightforward. The gross values of EUSILC are imputed by Statistics Estonia. The gross values of HBS data are imputed by the national team (see earlier report Lüksik, Paulus, Võrk 2008) for details. The gross values for EESILC data are imputed by the national team using similar rules that Statistics Estonia had used for EUSILC data. Statistics Estonia had a few minor mistakes in the imputations rules and in some cases Statistics Estonia and the national team had different assumptions, therefore gross values do not always match in EUSILC and EESILC data.



All income sources can be grouped according to their income tax treatment:

- 1) Pensions on which income tax is withheld subject to the pension and basic income tax allowance.
- 2) Incomes on which income tax is withheld subject to the basic allowance: employment income, unemployment insurance benefit, parental income (*vanemahüvitis*) and alimonies received.
- 3) Incomes on which income tax is withheld without any allowance applied: royalties, sick pay and maternity benefit (*sünnitushüvitis*)
- 4) Income on which income tax is paid by the employer: in-kind benefits.

Regarding self-employment income, tax allowances cannot be taken into account within a year, and therefore only final tax obligations can be calculated.

Based on the information above, income before income tax can be calculated. If only income tax has been withheld, with no allowances, income before income tax is simply scaled up. Basic allowance and pension allowance are taken into account similarly, only before scaling up the tax allowance must be subtracted.

The order of the income variables matters when applying tax allowances. For HBS data we have assumed that pension and basic allowance are both applied to pension income at first. Then the remaining part of the basic allowance is applied to wages and then unemployment insurance benefits and so on. For SILC data Statistics Estonia has not been always consistent to similar items, they sometimes apply the allowances, sometimes not.

After income tax has been calculated, gross earnings are calculated by adding employee's contributions to unemployment insurance fund and funded pension scheme, if eligible, on the income from employment by simply scaling up the variables. This is possible because neither minimum nor upper ceiling is present for these contributions.

The number of months how long any particular income type is received is available in the national data, but not in the EUSILC. Therefore with the latter all gross-net calculations cannot be replicated.





Table 39. Order of income types in net-to-gross conversion process and application of allowances.

	<b>EUSILC</b> <b>No strict ordering</b>	<b>EESILC</b> <b>No strict ordering</b>	<b>HBS</b> <b>(own calculations)</b> <b>Strict ordering</b>
Disability pension	Statistics Estonia calculations: gross = net *	Use Statistics Estonia calculations	Pension allowance, Basic allowance
Old age pension	Statistics Estonia calculations: Pension allowance Basic allowance  Allows simultaneous working. Minor mistake in one formula**	Use Statistics Estonia calculations	Pension allowance, Basic allowance
Survivors pension	Statistics Estonia calculations: Pension allowance, Basic allowance  Do not take into account simultaneous working (about quarter works), but with no bias, as pensions smaller than pension allowance	Use Statistics Estonia calculations	Pension allowance, Basic allowance
Wages and salaries	Statistics Estonia calculations: Basic allowance ***	Use Statistics Estonia calculations	Basic allowance
Unemployment insurance benefit	Own imputations of the values No allowance Statistics Estonia had a mistake in income tax formula****	Use Statistics Estonia approach with no basic allowance, but with correct tax rates	Basic allowance
Parental benefit	Own imputations of the values No allowance Own calculations	Use Statistics Estonia approach with no basic allowance	Basic allowance
Alimony for spouse/child	NA	NA	Basic allowance
Fringe benefits	Statistics Estonia calculations: No allowance	Use Statistics Estonia calculations No allowance	Not included
Sickness benefits	Statistics Estonia calculations: Basic allowance*****	Use Statistics Estonia calculations No allowance	No allowance
Maternity benefits	Own imputations of the values No allowance Own calculations	Use Statistics Estonia calculations No allowance	No allowance
Self-employment income	Use Statistics Estonia calculations Basic allowance***** Possible mistakes in formulae	Use Statistics Estonia calculations	No allowance



\* Formally one should compare with pension and tax allowances. There were nine observations with disability pension larger than pension allowance.

\*\* In a few instances Statistics Estonia instead of multiplying by a correct factor 0.24/0.76 they multiplied by 1.24. It influences only pensions larger than pension allowance.

\*\*\* Statistics Estonia had minor mistakes when applying basic allowance: they did not take into account unemployment insurance and II pillar pension contributions when comparing whether gross income was smaller than basic tax allowance. Also there was a minor mistake in UI contribution rates (0.003 instead of 0.005) in one place and formula to calculate social tax had a mistake. (The latter does not affect gross values.)

\*\*\*\* Statistics Estonia had a mistake when calculating the amount of income tax. Also, basic allowance is usually taken into account in practice.

\*\*\*\*\* Basic allowance is not taken into account in case of sickness benefits and self-employment income, but Statistics Estonia does.

We have discovered a few mistakes in the net-gross imputation formulae of Statistics Estonia. We have corrected the formulae only in few cases, when we needed to split some benefit groups into individual benefits. We did not correct the formulae in all cases, because Statistics Estonia has used similar procedures also for gross to net imputations, when responders preferred to answer gross amounts.

### 3.3.7 Updating factors

To use the model for years later than 2005 income year we have provided updating factors. In most cases the update factors are from regular statistics (such as growth of the average wage) or registry data (for example, growth of the average old-age pension).

For pensions we use actual increase of average pensions, for benefits that depend on earnings, we use growth rate of the average wage in previous year, for many other benefits and expenditures we used CPI.



Table 40. Updating factors

Variable	Variable label	Update factor	2006	2007	2008
default		Growth of CPI	1.044	1.1129	1.22865
bch	Benefit/pension: child:	Aggregate			
bch00	Benefit/pension: child: basic	Simulated, otherwise default	simulated	simulated	simulated
bchab	Benefit/pension: child: abroad	No change in benefits	1	1	1
bchba	Benefit/pension: child: birth/adoption	In 2006 the birth allowance increased to 5000 EEK from earlier 3750 or 3000	1.48148	1.48148	1.48148
bchlp	Benefit/pension: child: lone parent	No change in benefits	1	1	1
bed	Benefit/pension : education	Growth of CPI	1.044	1.1129	1.22865
bfa	Benefit/pension : family	Aggregate			
bhl	Benefit/pension : health	Growth of average wage last year	1.108	1.29109	1.55584
bmaab	Benefit/pension: maternity: abroad	No change in benefits	1	1	1
bmact	Benefit/pension : maternity: contributory	Growth of average wage last year	1.108	1.29109	1.55584
bmapr	Benefit/pension : maternity: pregnancy	Growth of average wage last year	1.108	1.29109	1.55584
bsa	Benefit/pension : social assistance	Aggregate			
bsa00	Benefit/pension : social assistance: basic	Simulated, otherwise default			
bsals	Benefit/pension : social assistance	Growth of CPI	1.044	1.1129	1.22865
bun	Benefit/pension : unemployment	Aggregate			
bunct	Benefit/pension : unemployment: contributory	Growth of average wage last year	1.108	1.29109	1.55584
bunnc	Benefit: unemployment : non-contributory	Unemployment assistance benefits increased from 1000 to 2500 in 2007	1	2.5	2.5
buntr	Benefit: unemployment : training	No change in benefits	1	1	1

Continued...



Variable	Variable label	Update factor	2006	2007	2008
pdi	Benefit/pension : disability	Growth of average disability pension, at the beginning of next year	1.17674	1.37911	1.70499
poa00	Benefit/pension : old age: basic	Growth of average pension	1.18335	1.38428	1.70289
poaab	Pension: old-age: abroad	No change	1	1	1
psu	Benefit/pension : survivors	Growth of average pension	1.17286	1.36995	1.69305
tpr	Tax : property tax	Growth of land tax revenues	1.02289	1.09215	1.49295
xhc	Expenditure : housing cost		aggregate	aggregate	aggregate
xhcmomi	Expenditure : housing cost : mortgage payment : mortgage interest	Household mortgage loan, issued in EEK, interest rate as of 30 June - growth rate of the loan rate	1.16216	1.43243	1.43243
xhcot	Expenditure : housing cost : other	Growth of housing costs in CPI (excl. mortgage interests)	1.10359	1.26461	1.46436
xhcert	Expenditure : housing cost : rent	Growth of average rent in Tallinn in a two-living-room apartment	1.14151	1.26415	1.08491
xmp	Expenditure : maintenance payment	Growth of average wage	1.16524	1.40419	1.59941
yem	Income : employment	Growth of average wage	1.16524	1.40419	1.59941
yfb	Income : fringe benefits	Growth of average wage	1.16524	1.40419	1.59941
yyi	Income : investment	Aggregate			
yyidv	Income : investment: dividends	SILC 2007 and 2008 data, average per recipient; 2008 set equal to 2007	0.9355	1.58332	1.58332
yyiit	Income : investment: interests	SILC 2007 and 2008 data, average per recipient; 2008 set equal to 2007	0.85715	0.65668	0.65668

Continued...



Variable	Variable label	Update factor	2006	2007	2008
yiyot	Income : investment: other	SILC 2007 and 2008 data, average per recipient; 2008 set equal to 2007	3.72652	1.73968	1.73968
yot	Income : other	Growth of average wage	1.16524	1.40419	1.59941
ypp	Income : private pension	Growth of CPI	1.044	1.1129	1.22865
ypr	Income : property	Aggregate			
yprro	Income : property: royalties	Growth of CPI	1.044	1.1129	1.22865
yprrt	Income : property: rent	Growth of average rent in Tallinn in a two-living-room apartment	1.14151	1.26415	1.08491
ypt	Income : private transfers	Growth of average wage	1.16524	1.40419	1.59941
ypt	Income : private transfers	Growth of average wage	1.16524	1.40419	1.59941
yptmpnt	Income : private transfers : maintenance payment : non-taxable	Growth of average wage	1.16524	1.40419	1.59941
yptmptx	Income : private transfers : maintenance payment : taxable	Growth of average wage	1.16524	1.40419	1.59941
yse	Income : self employment	Growth of average wage	1.16524	1.40419	1.59941
yseag	Income : self employment : agriculture	Growth of average wage	1.16524	1.40419	1.59941
ysena	Income : self employment : non-registered activity	Growth of average wage	1.16524	1.40419	1.59941
ysera	Income : self employment : registered activity	Growth of average wage	1.16524	1.40419	1.59941



## 4. VALIDATION

### 4.1 Aggregate Validation

In this section we present the validation results from our model. First we compare how well the three surveys represent actual aggregate data. This is followed by an analysis how 2005 income data can be updated to match 2006-2008 actual data. After that we present simulation validation results both for the income aggregates and the number of receivers or payers. In our default approach simulation of minimum wage is switched off and non-take up of subsistence benefits is switched on. We present also the results using other assumptions. Section 4.2 includes distributional statistics, such as income deciles and poverty measures within socio-economic groups.

#### 4.1.1 Non-simulated incomes

To check how well the Household Budget Survey (HBS) and the Estonian Social Survey (EESILC), which is the basis also for EUSILC, represent actual aggregate data, we compare income components (wages and various benefits) between the HBS and EESILC and administrative sources (see the table below). The EESILC has considerably better coverage of wages and salaries compared to the HBS survey (99% in the EESILC and 78% in the HBS when compared to National Accounts Statistics). This suggests that also labour taxes are better simulated using EESILC data.

When comparing all cash benefits from ESSPROS data and all aggregated cash benefits from EESILC and HBS data (the latter partly converted to gross values by ourselves), the overall ratio is 89% both for EESILC and HBS. This may seem rather high but is due to good coverage of pensions and child benefits, which constitute about 85% of the expenditures in the HBS data. Pensions and benefits for children are rather well represented, but income of low-income households are underrepresented (unemployment benefits 47% and 51%, subsistence benefit 37% and 65%, sickness benefits 34% and 42%). Expenditures on parental benefits are well covered in the EESILC data (99%) and overrepresented in the HBS data (134%).

A study by Statistics Estonia<sup>5</sup> on Household Budget Survey 2004 indicated that households with higher income have higher non-response rate for diaries. In 2004 in the lowest quintile (based on self-reported average monthly income) 25% of the households refused to fill in diaries, while in the highest quintile 31% refused. The study also showed that data from the Estonian Social Survey (Estonian EU-SILC) are more representative in terms of total wage cost, but there is little difference regarding social benefits, which is confirmed by our comparisons for 2005 income data.

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<sup>5</sup> Mari Toomse, Marin Randoja “Eesti sotsiaaluuringu ja leibkonna eelarve-uuringu sissetuleku ühilduvusanalüüs” (*Comparability analysis of income in Estonian Social Survey and Household Budget Survey*). Statistics Estonia 2007. Mimeo.



Table 41. Comparison of expenditures on wages and benefits in the SILC, HBS and administrative data 2005

Income type	Administrative statistics (mln EEK)	Estonian Social Survey (EESILC) (mln EEK)	Ratio (EESILC/ Register)	Household budget survey (mln EEK)	Ratio (HBS/ Register)
Wages and salaries	58,212**	57,713	0.99	45,593***	0.78
Pensions (old-age, survivor, disability)	10,516	10,676	1.02	10,351*	0.98
State family benefits total (peretoetused), incl	1,643	1,441	0.88	1,382	0.84
Child benefits	1,035			1,094	1.06
Childcare allowance	287			197	0.69
Single parent child allowance	103			87	0.85
Maternity benefits	297	248	0.84	22	0.07
Parental benefit (vanemahüvitis)	553	550	0.99	740***	1.34
Subsistence benefit (toimetulekutoetus toimetulekupiirini)	208	77	0.37	135	0.65
Unemployment benefits (töötushüvitised)	150 <sup>+</sup>	71	0.47	76***	0.51
Sickness benefits	968	333	0.34	344***	0.36
Other social assistance	Not applicable	5		259	
All cash benefits	15,076 (cash benefits in ESSPROS data)	13,401 (all benefits in EESILC data)	0.89	13,438 (all benefits in HBS data)	0.89

Notes: \* - pensions from abroad are excluded; pensions are converted to gross values in order to compare with register data; \*\* from National Accounts; \*\*\* converted to gross values in order to compare with register data; <sup>+</sup> - here unemployment benefits from administrative statistics do not include redundancy payments, and payments in case of employer's bankruptcy.

Sources: HBS data, own calculations; EESILC data, own calculations, Ministry of Social Affairs. Social Sector in Figures 2006; Statistics Estonia on-line database, Table "Gross domestic product by income approach at current prices".

We may conclude that there appears to be a problem of under-reporting of income in the HBS data, but this is not so much of a problem in the EESILC data. Universal family benefits are well covered in both datasets, but means tested benefits and replacement income (unemployment income, sickness benefits) are under covered.

Next we evaluate how well the 2005 income data can be updated to match 2008 actual data. As the period of 2005-2008 was characterised initially by economic boom and then a recession starting in 2008, the unchanged socio-economic structure creates considerable prediction errors.

The next table present the ratios of benefits in the survey data and registry data. Absolute numbers are presented in the appendix.

Comparison of three different data sources with registry data shows that old-age pensions are well covered in all datasets during the period 2005-2008, this is because number of old-age



pensioners simply does not change so quickly. On the other hand, as the number of disability pensioners has increased steadily in 2005-2008, we underpredict the number of disability pensioners and, hence, pensions. Survivors pensions and pensioners are already initially underpredicted and this characterises also the following years.

Unemployment benefits are all underrepresented in the data. However, as actual unemployment declined in 2006-2008 the uprating brings total expenditure closer to the actual levels.

The gap between parental and maternity benefits, on the one hand, and registry data on the other hand increases as in reality birth rates increased, but population remains unchanged in the model.

Table 42. EUROMOD validation: ratio of the expenditure on non-simulated benefits in survey data and registry data, 2005-2008

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Old-age pensions (excl. pensions from abroad)*	1.03	1.03	1.03	1.04	1.03	1.03	1.03	1.04	0.95	0.95	0.95	0.96
Disability pensions	0.98	0.93	0.89	0.85	0.98	0.93	0.89	0.85	1.22	1.15	1.1	1.05
Survivors pensions	0.63	0.63	0.65	0.68	0.63	0.63	0.65	0.68	1.55	1.55	1.6	1.68
Unemployment benefits, incl	0.64	0.91	1.19	0.63	0.47	0.68	0.82	0.44	0.50	0.72	0.97	0.51
unemployment insurance benefits	0.53	0.73	0.82	0.39	0.47	0.64	0.72	0.34	0.39	0.53	0.6	0.29
unemployment assistance benefits	0.90	1.55	1.83	1.45	0.48	0.83	0.98	0.77	0.8	1.38	1.63	1.29
Parental benefit	0.89	0.60	0.57	0.41	0.99	0.68	0.64	0.46	1.34	0.91	0.86	0.62
Maternity benefits	0.60	0.55	0.50	0.47	0.83	0.77	0.7	0.66	0.07	0.07	0.06	0.06
Sickness benefits (without maternity benefits)	0.34	0.32	0.29	0.29	0.34	0.32	0.29	0.29	0.36	0.33	0.30	0.30
Subsistence benefits	0.37	0.59	0.9	1.05	0.37	0.59	0.9	1.05	0.65	1.04	1.58	1.86
Total child benefits	1.04				0.95				0.80			

Notes: \* - in administrative statistics pensions include also national (minimum) pensions (*rahvapension*), which has been included under old-age pensions  
Cells in grey are the same for EUSILC and EESILC (differences due to imputing single benefits from aggregated variables in EUSILC).





Table 43. EUROMOD validation: recipients of non-simulated benefits in the survey data and registry data, 2005-2008, %

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Old-age pensions (excl. pensions from abroad)*	0.93	0.95	0.95	0.96	0.93	0.95	0.95	0.96	0.93	0.94	0.95	0.95
Disability pensions	1.08	1.03	0.97	0.94	1.08	1.03	0.97	0.94	1.68	1.60	1.52	1.47
Survivors pensions	0.60	0.58	0.60	0.64	0.60	0.58	0.60	0.64	0.99	0.96	1.00	1.06
Unemployment benefits, incl	0.34	0.50	0.57	0.37	0.31	0.47	0.53	0.35	0.24	0.36	0.40	0.27
unemployment insurance benefits	0.30	0.41	0.46	0.24	0.44	0.59	0.67	0.35	0.20	0.27	0.30	0.16
unemployment assistance benefits	0.35	0.55	0.62	0.46	0.27	0.42	0.47	0.35	0.25	0.40	0.45	0.34
Parental benefit**	2.81	2.07	2.02	1.46	2.19	1.61	1.56	1.13	1.25	0.92	0.89	0.65
Maternity benefits	1.96	1.89	1.73	1.70	0.80	0.77	0.70	0.69	0.03	0.02	0.02	0.02
Sickness benefits (without maternity benefits)***	0.15	0.14	0.13	0.13	0.15	0.14	0.13	0.13	0.03	0.02	0.02	0.02
Subsistence benefits****	0.50	0.69	1.03	1.17	0.50	0.69	1.03	1.17	0.39	0.54	0.81	0.92

Notes: Cells in grey are the same for EUSILC and EESILC

\* - includes also various occupational pensions and national pension.

\*\* - Here registry data is only new cases, but survey data includes all payments. When also all payments are considered in the registry data then the EUSILC and EESILC cover 94.2% of cases.

\*\*\*- annual number of compensations for illness or injury divided by 12

\*\*\*\* - households

#### 4.1.2 Simulated income tax

Income tax revenues are simulated at about 95-100% level using EUSILC or EESILC data (see Table 44) and registry data (Table 22 earlier). This coverage is considerable improvement compared to the HBS data. This is in accordance with the coverage of wage and salaries - about 99% in the EUSILC and EESILC and 80% in the HBS data.

Number of simulated taxpayers is slightly larger than in the registry, but this is to be expected as registry numbers include only those who had submitted the declaration.



Table 44. EUROMOD validation: income tax, 2005-2008

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
<b>Tax revenues (mln EEK)</b>												
Withheld PIT	10.7	12.0	14.5	16.0	10.7	12.0	14.6	16.0	8.3	9.3	11.4	12.6
Final PIT	10.3	11.2	13.8	14.4	10.3	11.2	13.8	14.5	8.1	8.8	11.0	11.4
<b>Comparison of revenues with register data: simulated values / actual values</b>												
Withheld PIT	1.02	1.00	0.94	0.95	1.02	1.00	0.94	0.95	0.80	0.78	0.74	0.75
Final PIT	1.01	1.00	0.95	0.98	1.01	1.01	0.96	0.98	0.80	0.79	0.76	0.77
<b>Taxpayers</b>												
Withheld PIT	624	627	644	675	620	622	640	671	539	541	556	579
Final PIT	646	642	672	690	647	642	672	689	565	557	584	596
<b>Comparison of taxpayers with register data: simulated values / actual values</b>												
Withheld PIT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Final PIT	1.12	1.05	1.05	1.03	1.12	1.05	1.05	1.03	0.98	0.91	0.91	0.89

Notes: in the HBS data have monthly averages, but in the register data we have cumulative number of taxpayers

\* - total number of persons with withheld income tax

\*\* - number of persons submitting declarations

#### 4.1.3 Simulated social contributions

Overall about 106% of social tax revenue, covering health insurance and pension insurance, and 114% of unemployment insurance contributions are simulated with EUSILC or EESILC data. HBS data are with lower coverage. EUSILC and EESILC data also cover contributions to the funded pension scheme closely in 2005 (102%). The following years the coverage is lower, because in reality participation in the funded scheme increased.

Also, as employment rates increased in 2005-2008, the predicted share of contributors declines in all schemes.



Table 45. EUROMOD validation: social contributions, 2005-2008, simulated values relative to actual data

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Social Tax (employers, self-employed, state)	1.06	1.03	1.00	1.00	1.06	1.03	1.00	1.00	0.84	0.82	0.79	0.79
Of which health care	1.05	1.02	0.98	0.99	1.05	1.02	0.99	0.99	0.83	0.81	0.78	0.79
Of which pension	1.07	1.04	1.01	1.00	1.07	1.05	1.01	1.00	0.85	0.83	0.80	0.80
to the funded pension scheme	1.02	0.90	0.82	0.77	1.01	0.89	0.81	0.76	0.72	0.64	0.58	0.54
Employees additional contribution to the funded scheme	1.02	0.90	0.82	0.77	1.01	0.89	0.81	0.76	0.72	0.64	0.58	0.54
Total contributions to the funded scheme	1.02	0.90	0.82	0.77	1.01	0.89	0.81	0.76	0.72	0.64	0.58	0.54
Unemployment insurance contributions	1.14	1.10	1.06	1.07	1.14	1.10	1.06	1.07	0.89	0.86	0.83	0.84
Employers' part	1.13	1.08	1.04	1.05	1.13	1.08	1.04	1.05	0.89	0.85	0.82	0.83
Employees' part	1.14	1.10	1.06	1.08	1.14	1.10	1.06	1.08	0.89	0.87	0.83	0.84
Total social contribution	1.06	1.03	0.99	0.99	1.06	1.03	0.99	0.99	0.84	0.82	0.79	0.78

Notes: Contributions to the funded pension scheme (both employer and employee) part are included in the funded pension contributions in the national statistics.

Table 46. EUROMOD validation: contributors of social contributions, 2005-2008, simulated values relative to actual data

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Social Tax (employers, self-employed, state)	0.98	0.96	0.94	0.95	0.98	0.96	0.94	0.95	0.82	0.80	0.79	0.79
Employees additional contribution to the funded scheme	1.09	0.95	0.86	0.82	1.05	0.92	0.83	0.79	0.93	0.80	0.73	0.69
Unemployment insurance contributions (employees' part)	0.97	0.94	0.91	0.92	0.97	0.94	0.91	0.92	0.83	0.80	0.77	0.79

Notes: Contributions to the funded pension scheme (both employer and employee part) are included in the funded pension contributions in the national statistics.

#### 4.1.4 Simulated social benefits

- *Family benefits*

Family benefits are simulated reasonably well, around 96-97% with SILC data and 106% with HBS data (see Table 47). Child allowance (*lapsetoetus*) is simulated almost perfectly. Small benefit groups, such as childbirth allowance, have some problems with precision, especially in



the HBS data, but their impact on overall expenditures is relatively small. As all the benefits are universal and depend only on the number of children, the share of simulated recipients follows the similar pattern (see Table 48).

Simulated expenditures and benefit recipients are presented in the annex. Note that the only minor discrepancies between EUSILC and EESILC concern the simulation of child care allowance, where EESILC has a slightly higher number of benefit recipients.

Table 47. EUROMOD validation: universal family benefits, 2005-2008, simulated expenditure relative to actual data

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Child allowance	0.98	1.00	0.95	1.04	0.98	1.00	0.95	1.04	1.05	1.08	1.02	1.17
Large family allowance	0.91	0.98	1.96	-	0.91	0.98	1.96	-	1.34	1.36	2.74	-
School allowance	1.01	1.07	1.11	1.16	1.01	1.07	1.11	1.16	1.18	1.25	1.31	1.36
Childbirth allowance	0.87	0.86	0.80	0.78	0.87	0.86	0.80	0.78	0.52	0.53	0.49	0.48
Childcare allowance	0.93	0.98	0.95	1.04	0.96	1.01	0.98	1.07	1.09	1.11	1.08	1.18
Large family parent allowance*	0.97	0.97	0.99	1.05	0.97	0.97	0.99	1.05	1.28	1.27	1.30	1.38
All child benefits	0.96	0.99	0.98	1.03	0.97	1.00	0.98	1.04	1.06	1.08	1.07	1.15

Table 48. EUROMOD validation: universal family benefits, 2005-2008, simulated recipients relative to actual data

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Child allowance	0.98	1.02	1.04	1.06	0.98	1.02	1.04	1.06	1.05	1.09	1.11	1.13
Large family allowance	0.86	0.87	0.98		0.86	0.87	0.98		1.11	1.12	1.27	
School allowance	1.03	1.09	1.14	1.19	1.01	1.06	1.11	1.16	1.29	1.36	1.42	1.49
Childbirth allowance	0.88	0.84	0.80	0.78	0.88	0.84	0.80	0.78	0.54	0.51	0.49	0.48
Childcare allowance	0.92	0.96	0.92	0.98	0.93	0.98	0.94	1.01	1.58	1.65	1.59	1.70
Large family parent allowance	1.02	1.01	1.07	1.12	1.02	1.01	1.07	1.12	1.25	1.24	1.31	1.37



- *Unemployment benefits*

Simulation of unemployment insurance benefits and unemployment assistance benefits is the most complicated task. First, unemployment benefit receivers are underestimated in the survey data. Only 47% of benefit expenditures and receivers are covered in 2005, the base year. Therefore a simulation which (partly) relies on observed receipt cannot have much better coverage. Furthermore, additional assumptions are needed such as on contribution history, replacement rates, duration of unemployment insurance and assistance benefits (in case of EUSILC and HBS data).

The current simulations cover only about 40% of expenditures and 20% of receivers. Unemployment insurance benefits are better simulated, because they are simulated first and only after that assistance benefits are simulated. Because unemployment expenditures are better simulated than recipients, it follows that the number of recipients of small benefit amounts are undersimulated.

Also, the means-tested income condition of unemployment assistance benefits may cause lower number of recipients, because we need to use average monthly income, which may overestimate actual income during the months when the person is eligible to the unemployment assistance benefits. For example, in 2005 (using EESILC), without income condition, the income from UA benefits would be 21 mln EEK, which is twice the baseline result, and number of receivers would be 8 thousand, 2.5 times higher than baseline result.

Table 49. EUROMOD validation: unemployment benefits, 2005-2008, simulated expenditure and recipients relative to actual data

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
<b>Expenditures</b>												
Unemployment benefits total	0.39	0.60	0.66	0.34	0.40	0.61	0.67	0.34	0.38	0.53	0.66	0.34
Unemployment insurance benefits	0.45	0.65	0.67	0.29	0.46	0.67	0.70	0.30	0.34	0.44	0.45	0.20
Unemployment assistance benefits	0.24	0.42	0.64	0.48	0.24	0.40	0.61	0.46	0.50	0.86	1.03	0.82
<b>Recipients</b>												
Unemployment benefits total	0.15	0.22	0.29	0.19	0.19	0.29	0.36	0.23	0.19	0.29	0.33	0.22
Unemployment insurance benefits	0.26	0.36	0.40	0.21	0.42	0.58	0.65	0.34	0.19	0.26	0.29	0.15
Unemployment assistance benefits	0.10	0.16	0.24	0.17	0.10	0.15	0.22	0.16	0.19	0.30	0.35	0.26



- *Subsistence benefit*

We oversimulate total income from subsistence benefits by 50% in 2005 and even more in following years as we do not take into account reduction in unemployment. The average amount per household per application is close (2-3% oversimulation in 2005 with EUSILC and EESILC data).

The average number of households per month who receive subsistence benefits is undersimulated when compared to total number of different households who have received subsistence benefits during a year with our simulated values (about 20% undersimulation in 2005 with EUSILC and EESILC data). However, when we compare our average number of households per month who receive subsistence benefits with average number of applications per month according to registry data then it shows that we considerably oversimulate it (45 or 48% in 2005 with EUSILC and EESILC data, respectively). And this leads to oversimulation of total expenditures.

There may be several reasons of oversimulation. Partly it is related to simplified rules that we use for calculating housing costs. Higher ad hoc restrictions to housing costs could improve that. Also, there may be additional job search requirements, not taken into account in the model. Namely, local governments 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.

We take into account benefit non take-up in our baseline scenario, because in practice, very small amounts of benefits are not taken up. In our baseline simulation we assume that if the simulated benefit is smaller than 100 EEK in 2005 (2000 EEK in later years) or less than 10% of the household's disposable income the benefit is not applied for. Application of the lower threshold reduces expenditures by 2-3%, and recipients by 20% in 2005, indicating that we have many households with potentially very small amounts of subsistence benefits. Based on average amounts of the benefits this lower threshold is justified, as resulting mean values are closer to the actual mean values.



Table 50. EUROMOD validation: subsistence benefits, 2005-2008

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
<b>Benefits (mln EEK)</b>												
Baseline*	318	306	366	399	307	290	349	379	310	288	341	289
Non-take up switched off	327	310	371	404	312	296	354	384	321	296	349	299
<b>Compared with registry data: Simulated value / actual value</b>												
Baseline*	1.53	2.26	3.85	4.47	1.48	2.14	3.67	4.25	1.49	2.13	3.58	3.24
Non-take up switched off	1.57	2.29	3.90	4.53	1.50	2.18	3.72	4.30	1.55	2.19	3.67	3.35
<b>Total number of recipients (households)</b>												
Baseline*	21,546	19,767	19,766	19,127	21,145	17,669	18,238	17,733	23,379	19,630	20,401	15,770
Non-take up switched off	26,895	21,912	22,051	21,324	24,915	20,409	21,092	20,273	30,169	25,054	24,410	19,882
<b>Comparison of recipients with register data (total number of recipients): simulated values / actual values</b>												
Baseline*	0.81	1.03	1.52	1.68	0.79	0.92	1.41	1.56	0.87	1.02	1.57	1.38
Non-take up switched off	1.01	1.14	1.70	1.87	0.93	1.06	1.63	1.78	1.13	1.30	1.88	1.75
<b>Comparison of recipients with register data (average number of applications per month): simulated values / actual values</b>												
Baseline*	1.48	2.10	3.27	3.85	1.45	1.88	3.02	3.57	1.61	2.08	3.37	3.18
Non-take up switched off	1.85	2.33	3.65	4.29	1.71	2.17	3.49	4.08	2.08	2.66	4.04	4.00

Notes: \* - baseline includes simulated non-take up. If the simulated benefit is less than 100 EEK (200 EEK in 2006-2008) or 10% of current income.

Table 51. EUROMOD validation: average actual and simulated subsistence benefits, 2005

	EUSILC	EESILC	HBS
Simulated baseline* (EEK)	1,231	1,210	1,105
Simulated with non-take up switched off (EEK)	1,012	1,042	888
<b>Ratio to actual (i.e. 1,192 EEK - average benefit of applications, registry data)</b>			
Baseline*	1.03	1.02	0.93
Non-take up switched off	0.85	0.87	0.74

Notes: \* - baseline includes simulated non-take up. If the simulated benefit is less than 100 EEK (200 EEK in 2006-2008) or 10% of current income.



#### 4.1.5 Impact of minimum wage on taxes, social contributions and subsistence benefits

In this section we give a brief overview what is the impact of minimum wage policy, if switched on. In our baseline scenario the minimum wage policy is switched off. We present here the results using only EESILC data, as EUSILC gives very similar results.

Minimum wage condition affects 2.7% of people with positive labour earnings in 2005. On average it increases the monthly wage of those affected by 344 EEK.

It increases total earnings of employees by 0.1% (see the following table). Income tax and social contributions are also increased by 0.1%. Income from subsistence benefits are decreased by 1.6% in 2005. Unemployment assistance benefits are decreased by about 9% in 2005 and 2006. The latter is due to means testing used in determining unemployment assistance benefits.

Table 52. Impact of minimum wage policy on wages, taxes and benefits, EESILC data, ratio of values in two scenarios

	2005	2006	2007	2008
Total employment income (yem)	0.1%	0.1%	0.1%	0.1%
Income tax (both final and withheld)	0.1%	0.1%	0.1%	0.1%
Employee social contributions (pension, health, unemployment)	0.1%	0.1%	0.1%	0.1%
Subsistence benefits (bsa00_s)	-1.6%	-1.6%	-1.3%	-1.8%
Unemployment assistance benefits (bunnc_s)	-8.9%	-9.1%	-1.2%	0.0%

#### 4.2 Income distribution

All income distribution results presented next are computed for individuals according to their household disposable income (HDI) equivalised by the “modified OECD” equivalence scale, if not specified otherwise. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

We compare our results with statistics based on the Estonian version of SILC data. Formal poverty rates, Gini coefficient and quintile ratio, which Statistics Estonia calculates based on national version of the SILC, are presented in the following table.





Table 53. Relative poverty rates and income inequality, 2005-2008

	2005	2006	2007	2008
Relative poverty (60% of median equivalent income)				
Total	18.3	19.4	19.5	19.7
Children (<19)	20.1	18.2	17.1	20.6
Age group: 0-15	19.8	17.3	17.1	20.4
Age group: 16-24	18.0	18.6	15.7	16.8
Age group: 25-49	14.3	13.8	12.5	14.1
Age group: 50-64	18.6	19.9	19.5	19.0
Age group: 65+ (Elderly)	25.1	33.1	39.0	33.9
Males	16.3	16.7	16.5	17.5
Females	20.0	21.6	22.0	21.6
Relative poverty 40% of median equivalent income	5.8	6.2	5.5	5.3
Relative poverty 50% of median equivalent income	10.8	11	11.5	10.2
Relative poverty 70% of median equivalent income	26.3	27.1	27.8	27.5
Gini coefficient	0.331	0.334	0.309	0.314
Income quintile ratio (S80/S20)	5.5	5.5	5.0	5.0

Notes: Based on national SILC data

Sources: Statistics Estonia, on-line database, last accessed 30 August 2010

The simulation results are presented in the following tables. The overall relative poverty rate is slightly undersimulated with EUSILC and EESILC. The difference is largest in 2008, when formal poverty rate is 19.7%, but simulated value is 17.6%. Relative poverty of children (see also Table 56), is undersimulated in 2005 and 2008, and oversimulated in 2006-2007. Most drastic changes occur in the poverty of elderly, which actually increases to 39% in 2007, but our simulated data reaches only to 26% in 2007.

The high increase of relative poverty of elderly is caused by majority of them being in the neighbourhood of the relative poverty line. And growth of employment or higher wage growth of labour market income compared to pensions can very easily shift pensioners from above of the relative poverty line to below the relative poverty line. As our simulations do not take into account changes in the structure of population, we are not able to predict the change of pensioners in the income distribution.



Table 54. EUROMOD validation: simulated relative poverty rates and inequality measures, 2005-2008

	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
<b>Simulated values</b>												
Total (60% of median equivalent income)	17.9	18.2	18.6	17.6	18.0	18.3	18.6	17.6	17.6	17.8	18.3	17.7
Children (<19)	19.0	19.6	20.1	20.0	19.0	19.4	20.2	19.9	19.3	19.9	20.5	20.4
Elderly (>64)	25.5	25.5	25.9	21.0	25.8	25.7	26.5	21.4	18.7	18.1	18.9	15.8
Males	15.9	16.3	16.7	16.1	16.0	16.4	16.7	16.0	16.9	17.1	17.5	17.2
Females	19.6	19.9	20.2	18.8	19.6	19.9	20.3	18.9	18.3	18.4	18.9	18.1
Gini coefficient	0.32	0.33	0.33	0.33	0.32	0.33	0.33	0.33	0.32	0.33	0.33	0.33
Income quintile ratio (S80/S20)	5.1	5.3	5.4	5.3	5.1	5.3	5.4	5.3	5.2	5.4	5.6	5.5
<b>Compared with external source (SILC)</b>												
<b>Simulated value/ actual value</b>												
60% of median equivalent income	0.98	0.94	0.95	0.89	0.98	0.94	0.96	0.89	0.98	0.98	1.08	1.05
Children (<19)	0.95	1.08	1.18	0.97	0.95	1.07	1.18	0.96	0.95	0.99	1.11	1.10
Elderly (>64)	1.02	0.77	0.67	0.62	1.03	0.78	0.68	0.63	0.98	0.98	1.08	1.05
Males	0.97	0.98	1.01	0.92	0.98	0.98	1.01	0.92	0.95	0.99	1.11	1.10
Females	0.98	0.92	0.92	0.87	0.98	0.92	0.92	0.88	0.98	0.98	1.08	1.05
Gini coefficient	0.98	0.97	1.07	1.04	0.98	0.98	1.07	1.04	0.95	0.99	1.11	1.10
Income quintile ratio (S80/S20)	0.94	0.96	1.08	1.05	0.94	0.96	1.08	1.06	0.98	0.98	1.08	1.05

Notes: 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.

Comparison of simulated relative poverty rates at different poverty levels, confirms what we have found earlier regarding subsistence benefits that we oversimulate income at the very bottom of income distribution, as the simulated relative poverty rates at 40% of median income are considerably lower than in the actual data (see the following table). The poverty rates using other poverty lines (50%, 60% or 70% of median income) are better simulated with minor discrepancy.



Table 55. EUROMOD validation: simulated relative poverty rates at different poverty levels, 2005-2008

% of median equivalent income	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
40%	5.1	5.8	6.0	5.8	5.4	6.1	6.1	5.9	5.8	6.5	6.9	7.6
50%	10.6	10.8	11.1	10.7	10.7	10.9	11.0	10.6	10.7	11.3	11.6	11.7
60%	17.9	18.2	18.6	17.6	18.0	18.3	18.6	17.6	17.6	17.8	18.3	17.7
70%	26.4	26.4	26.6	25.9	26.5	26.4	26.8	26.1	25.2	25.3	25.6	25.2
<b>Compared with external source (SILC)</b>												
<b>Simulated value/ actual value</b>												
40%	0.88	0.93	1.10	1.10	0.93	0.98	1.11	1.12	1.01	1.04	1.26	1.44
50%	0.98	0.98	0.97	1.05	0.99	0.99	0.96	1.04	0.99	1.03	1.01	1.15
60%	0.98	0.94	0.95	0.89	0.98	0.94	0.96	0.89	0.96	0.92	0.94	0.90
70%	1.00	0.97	0.96	0.94	1.01	0.97	0.96	0.95	0.96	0.93	0.92	0.92

Detailed analysis of age groups shows that we undersimulate the poverty among young and oversimulate the poverty among elderly in the base year 2005. But there is no clear pattern over the years. In some years we overestimate it and in other years underestimate. The main reason is that our uprating does not take into account changing labour market status in the population during that period.



Table 56. EUROMOD validation: simulated relative poverty rates by age groups, 2005-2008,

Age group	EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
0-15	18.5	19.2	19.8	19.7	18.4	18.9	19.8	19.5	17.8	18.4	19.0	19.0
16-24	17.7	18.0	18.4	18.1	17.8	18.3	18.5	18.2	17.7	18.2	18.6	19.0
25-49	13.8	14.3	14.5	14.4	13.9	14.1	14.3	14.2	16.1	16.4	16.8	16.7
50-64	18.3	18.5	18.8	18.2	18.4	18.7	18.8	18.4	19.1	19.2	19.4	18.9
65-	25.5	25.5	25.9	21.0	25.8	25.7	26.5	21.4	18.7	18.1	18.9	15.8
<b>Compared with external source (SILC)</b>												
<b>Simulated value/ actual value</b>												
0-15	0.93	1.11	1.16	0.96	0.93	1.09	1.16	0.95	0.90	1.06	1.11	0.93
16-24	0.98	0.97	1.17	1.08	0.99	0.98	1.18	1.08	0.98	0.98	1.18	1.13
25-49	0.96	1.04	1.16	1.02	0.97	1.03	1.15	1.01	1.13	1.19	1.34	1.19
50-64	0.98	0.93	0.96	0.96	0.99	0.94	0.97	0.97	1.03	0.96	0.99	0.99
65-	1.02	0.77	0.67	0.62	1.03	0.78	0.68	0.63	0.75	0.55	0.48	0.47

Comparison of income equalised annual income levels of different income quintiles and deciles shows that we oversimulate the average equalised income in the first quintile by 7% using SILC data and 16% in the first decile. This is the result of oversimulation of subsistence benefits.



Table 57. EUROMOD validation: actual and simulated equalised annual income by quintile (EEK), 2005

Quintile	Official statistics	Simulated data			Ratio to SILC data		
	(based on SILC data)	EUSILC	EESILC	HBS	EUSILC	EESILC	HBS
1	25,137	26,807	26,856	23,176	1.07	1.07	0.92
2	42,091	42,314	42,474	37,703	1.01	1.01	0.90
3	57,104	57,214	57,460	50,132	1.00	1.01	0.88
4	77,960	77,924	78,144	68,299	1.00	1.00	0.88
5	138,371	137,962	138,054	121,135	1.00	1.00	0.88
Total	68,135	68,418	68,592	60,067	1.00	1.01	0.88

Sources: Statistics Estonia, on-line database, last accessed 30 August 2010

Table 58. EUROMOD validation: actual and simulated equalised annual income by decile (EEK), 2005

Decile	Raw SILC data	Simulated data			Ratio to SILC data		
		EUSILC	EESILC	HBS	EUSILC	EESILC	HBS
1	18,539	21,484	21,465	18,250	1.16	1.16	0.98
2	31,742	32,146	32,272	28,106	1.01	1.02	0.89
3	38,776	38,986	39,140	34,763	1.01	1.01	0.90
4	45,415	45,641	45,816	40,643	1.00	1.01	0.89
5	52,727	52,718	52,981	46,511	1.00	1.00	0.88
6	61,517	61,697	61,941	53,769	1.00	1.01	0.87
7	71,539	71,566	71,784	62,601	1.00	1.00	0.88
8	84,451	84,265	84,522	74,022	1.00	1.00	0.88
9	104,166	103,727	103,939	91,091	1.00	1.00	0.87
10	172,609	172,107	172,188	151,183	1.00	1.00	0.88
Total	68,135	68,418	68,592	60,067	1.00	1.01	0.88

Note: There is no formal statistics on the annual income levels in deciles, therefore we calculate it ourselves based on national SILC 2006 data.



### 4.3 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.
- The weights do not control for differential non-response according to any dimension except region, age and gender.
- Direct taxes and social contributions are undersimulated when using HBS data, because wages and salaries are under-represented in the HBS data. Direct taxes and social contributions are better simulated when using EESILC and EUSILC data.
- Family benefits are simulated relatively well in all datasets and also pensions are recorded in the datasets reasonably well. The simulation of the subsistence benefit is most accurate when using HBS data.
- Overall it means that the model using EESILC or EUSILC data is more balanced in terms of simulation of taxes and benefits than the model using HBS data, which may shift the relative impact of taxes and benefits on disposable personal income.
- Excluding the non take-up of subsistence assistance benefit from simulations results in higher income at the bottom of the income distribution compared to original dataset. Hence, we suggest to simulate subsistence benefit only in combination with non take-up modelling to reduce the extent of oversimulation.
- Simulations results show that despite of EESILC having more detailed data on benefits and some additional variables relevant for tax simulations, EESILC and EUSILC dataset yield very similar results, both in terms of monetary aggregates and income distributions. Therefore for cross-country comparisons it should not matter which of the two datasets to use. On the other hand, if simulation or enhancement of detailed national policies are of interest then EESILC data might be preferential due to the availability of additional variables.



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## ANNEX 1. FILES OF ORIGINAL DATA

Table 59. Initial data files of the Household Budget Survey

Original file name	Description
perepilt	Information about structure and main demographic and social characteristics of households, including living conditions and the existence of durable goods.
pereisik	Contain information about individuals – their relationship to the head of household, employment, education, gender, age etc
pereis1	Received monthly net incomes at the individual level – monetary
pereis2	Received monthly net incomes at the individual level – non-monetary
pertoit2	Food expenditures
pertoit4	Non-monetary food expenditures
pertarb1	Other consumer good and services expenditures and data about paid taxes
jarelkys	Post-interview data – information on changes in the household and self-assessment of economic coping
hincome	Aggregated monetary and non-monetary income at household level
hexpend	Aggregated monetary and non-monetary expenditures at household level

Table 60. Initial data files of the EESILC (national version of the SILC)

Original file name	Description
Liikmed.sav	Include general information of household members (age, gender, relationships) and a section of child care
Leibkond.sav	Information on households, where at least one member, aged 16 or older, answered to questions about the household
Isik.sav	Information on persons, aged 16 or older, who answered on questions on household members.

Table 61. Initial data files of the EUSILC

Original file name	Description
UDB_c06P_ver 2006-1 from 01-03-08.csv	Personal data
UDB_c06H_ver 2006-1 from 01-03-08.csv	Household data
UDB_c06R_ver 2006-1 from 01-03-08.csv	Personal register
UDB_c06D_ver 2006-1 from 01-03-08.csv	Household register



## ANNEX 2. COMPARISON OF SURVEY DATA AND REGISTRY DATA

Table 62. EUROMOD validation: actual and simulated family benefits (mln EEK), 2005-2008

	Registry data				EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Total	1,643	1,644	1,677	1,710	1,454	1,507	1,507	1,592	1,463	1,515	1,515	1,600	1,594	1,640	1,640	1,766
Child allowance	1,035	1,007	1,060	1,125	1,009	1,009	1,009	1,173	1,009	1,009	1,009	1,173	1,083	1,083	1,083	1,319
Large family allowance	49	81	40	0	44	79	79	0	44	79	79	0	66	110	110	0
School allowance	86	81	78	74	87	87	87	87	87	87	87	87	101	101	101	101
Childbirth allowance	48	73	78	80	42	62	62	62	42	62	62	62	25	38	38	38
Childcare allowance	287	269	278	254	266	264	264	264	275	272	272	272	312	300	300	300
Large family parent allowance	6	6	6	6	6	6	6	6	6	6	6	6	7	8	8	8
Other allowances (single parent allowance, ...)	133	127	137	170												



Table 63. EUROMOD validation: actual and simulated family benefits (children), 2005-2008

	Registry data				EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Child allowance	287,459	274,985	270,087	265,418	280,296	280,296	280,296	280,296	280,296	280,296	280,296	280,296	300,867	300,867	300,867	300,867
Large family allowance	68,481	67,836	60,039		58,894	58,894	58,894		58,894	58,894	58,894		76,015	76,015	76,015	
School allowance	190,479	180,594	172,624	165,452	196,432	196,432	196,432	196,432	192,328	192,328	192,328	192,328	245,723	245,723	245,723	245,723
Childbirth allowance	14,245	14,917	15,624	16,070	12,465	12,465	12,465	12,465	12,465	12,465	12,465	12,465	7,663	7,663	7,663	7,663
Childcare allowance	50,517	48,355	50,331	46,989	46,486	46,486	46,252	46,252	47,230	47,230	47,230	47,230	79,912	79,912	79,912	79,912
Large family parent allowance	1,501	1,513	1,429	1,369	1,534	1,534	1,534	1,534	1,534	1,534	1,534	1,534	1,878	1,878	1,878	1,878



Table 64. EUROMOD validation: non-simulated benefits (mln EEK), 2005-2008

	Registry data				EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Old-age pensions (excl. pensions from abroad)*	9,241	10,904	12,696	15,563	9,477	11,215	13,119	16,139	9,477	11,215	13,119	16,139	8,751	10,355	12,113	14,901
Disability pensions	1,127	1,401	1,721	2,220	1,105	1,301	1,525	1,885	1,105	1,301	1,525	1,885	1,372	1,614	1,892	2,339
Survivors pensions	148	173	196	230	93	109	127	157	93	109	127	157	228	268	313	387
Unemployment benefits, incl	150	112	143	295	96	102	170	185	71	76	116	130	76	80	139	150
unemployment insurance benefits	108	87	90	228	57	64	74	89	50	56	65	79	42	46	54	65
unemployment assistance benefits	43	25	52	66	38	38	96	96	20	20	51	51	34	34	85	85
Parental benefit	553	898	1,113	1,867	490	543	632	762	550	609	710	855	740	820	955	1,151
Maternity benefits	297	359	460	586	177	197	229	276	248	275	321	386	21	24	28	33
Sickness benefits (without maternity benefits)	968	1,148	1,467	1,801	333	369	430	518	333	369	430	518	345	382	445	536
Subsistence benefits	208	135	95	89	77	80	85	94	77	80	85	94	135	141	150	166



Table 65. EUROMOD validation: actual and simulated social contributions (mln EEK), 2005-2008

	Registry data				EUSILC				EESILC				HBS			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
Social Tax (employers, self-employed, state)	18,252	21,973	27,500	31,425	19,344	22,698	27,440	31,373	19,381	22,728	27,470	31,397	15,354	18,025	21,795	24,925
Of which health care	7,278	8,809	11,000	12,502	7,627	8,951	10,824	12,376	7,642	8,963	10,836	12,386	6,060	7,117	8,608	9,847
Of which pension	10,975	13,165	16,500	18,923	11,717	13,747	16,617	18,996	11,739	13,765	16,635	19,011	9,294	10,908	13,187	15,078
to the funded pension scheme	1,167	1,550	2,036	2,481	1,193	1,390	1,675	1,907	1,177	1,372	1,653	1,883	,845	,984	1,186	1,351
Employees additional contribution to the funded scheme	584	775	1,018	1,241	596	695	837	954	589	686	827	942	422	492	593	676
Total contributions to the funded scheme	1,751	2,325	3,054	3,722	1,789	2,084	2,512	2,861	1,766	2,058	2,480	2,825	1,267	1,477	1,780	2,027
Unemployment insurance contributions	736	533	666	750	835	584	704	802	835	584	704	802	657	459	553	630
Employers part	256	187	233	263	289	202	243	277	289	202	243	277	228	159	192	219
Employees part	480	346	433	488	547	382	460	525	547	382	460	525	429	300	361	411
Total social contributions	19,571	23,281	29,185	33,416	20,775	23,976	28,981	33,128	20,805	23,998	29,001	33,140	16,433	18,976	22,942	26,231