

# **EUROMOD**

## **COUNTRY REPORT**



# **CROATIA (HR)**

## **2011-2015**

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**EUROMOD version G3.0**



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

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

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

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The results presented in this report are derived using EUROMOD version G3.0. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD.

For more information, see: <https://www.euromod.ac.uk>

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## 1. BASIC INFORMATION

### 1.1 Basic information about the tax-benefit system

- Public sector in Croatia consists of the general government and public enterprises. The general government has three levels: (a) the central government (CG) includes state ministries, budgetary and extrabudgetary funds, (b) the regional self-government (RSG) entails 20 counties and the City of Zagreb, and (c) the local self-government (LSG) involves 127 cities and 428 municipalities.
- Social security funds are part of CG. These funds are administered by three national social insurance funds – the Croatian Institute for Pension Insurance (*Hrvatski zavod za mirovinsko osiguranje*), the Croatian Employment Service (*Hrvatski zavod za zapošljavanje*) and the Croatian Institute for Health Insurance (*Hrvatski zavod za zdravstveno osiguranje*).
- The whole revenue from social insurance contributions (SC; *doprinosi za obvezna osiguranja*) belongs to the Croatian Institute for Pension Insurance, the Croatian Employment Service and the Croatian Institute for Health Insurance. The revenue from major tax sources – value added tax, excise taxes and corporate income tax – also belongs to the CG. The revenue from personal income tax (PIT) is *shared* between RSG units, LSG units and the CG. There are several *non-shared* RSG and LSG taxes.
- The cash social insurance benefits are paid by national social insurance funds. Major social assistance benefits are paid by the CG. LSG units provide their own social benefits, which top-up the existing CG benefits. The primary examples are the housing benefits and the lump-sum grant for newborn children.
- The tax and benefit year is equivalent to the calendar year (runs from January 1 to December 31). January 1 is usually the date when changes in tax and benefit laws come into force. January 1 and July 1 are the dates when the “actual value of pension” is adapted.
- In 2015 the statutory pension age is 65 for men and 61.25 for women. For women, the statutory age gradually increases from 60 in 2010 to 65 in 2030. For men, it will gradually increase from 65 in 2030 to 67 in 2038.
- In 2002 the Croatian pension system underwent a major reform, which introduced three pillars: (1) intergenerational solidarity (*međugeneracijska solidarnost*), (2) mandatory individual savings (*individualna kapitalizirana štednja*), and (3) voluntary individual savings (*dobrovoljno mirovinsko osiguranje*). The savings in pillars 2 and 3 are collected by private pension funds. Two parallel contributory schemes are created: (a) scheme A, whereby persons participate in pillar 1 only, and (b) scheme B, whereby persons participate both in pillar 1 and pillar 2. Persons who were aged above 50 (below 40) in January 2002 are automatically involved into scheme A (B), while people aged between 40 and 50 could choose whether to become members of scheme A or B. People in scheme A pay contributions to pillar 1 only; these contributions are called Pension contributions A. Correspondingly, people in scheme B receive pension from pillar 1 only. Below we describe the pension benefits for these pensioners only, because in the period 2011-2015 they still make the overwhelming majority of new retirees. People in scheme B pay contributions both to pillar 1 (Pension contributions B1) and to pillar 2 (Pension contributions B2).

- Children must remain in the primary education till the end of the school year during which they turn 15. School years last from September to June. Secondary school is not obligatory.
- Definitions of dependent children vary for purposes of different taxes and benefits. For the purposes of PIT and subsistence benefit, dependent children are those who are involved in regular primary, secondary or tertiary education. For subsistence benefit the age limit is 25 (29 in 2015), while for PIT no specific maximum age is set. Child benefit sets the age limit at 19.
- Large families are not recognised by current tax and benefit regulations. For the purposes of subsistence benefit in 2010-2013, a single parent is a parent who is (a) not married, (b) not living in an extramarital relationship, (c) is unaided in support and care of her/his children. For the purposes of subsistence benefit in 2014 and 2015, only condition (c) is required. PIT does not recognise lone parents.
- The personal income tax (PIT) system is an individual system, with the spouses being assessed independently.
- In principle, PIT taxes market incomes, while non-pension social benefits are non-taxable. Major taxable income sources are employment earnings, income from self-employment, pensions, rental income, some forms of capital income, and “other income”. “Other income” is a specific category defined by law, which, basically, captures income similar to income from employment and self-employment, but not earned from *regular* employment and self-employment.
- The tax-benefit system recognises various groups of people according to their employment and income-earning status. The most relevant groups are: (a) *employed persons* – includes workers hired by employers and officials hired by CG/RSG/LSG, (b) *self-employed persons* – those who regularly perform market activities as sole-merchants, craftsmen, entrepreneurs (firm owners), producers in agriculture (farmers), professionals (lawyers, dentists), artists, sportsmen, etc., (c) “*other income*” earners – persons whose primary income source is “other income”, (d) *family workers in agriculture* – persons who work on family farms, but are not self-employed persons, (e) *pensioners* – persons whose primary income source is pension, (f) *unemployed persons* – see definition below, (g) *inactive persons* – those who are out of work, but not unemployed, pensioners or students.
- Employed persons receive gross wage. Employers’ SC are paid upon the gross wage. Thus, the labour cost is equal to gross wage *plus* employers’ SC. Employees’ SC are paid out of the gross wage. Net wage is then equal to gross wage minus employees’ SC minus PIT and LSG surtax.
- PIT has a general schedule, which is progressive, with three rates and several income-source-specific schedules. The general schedule applies to income reported in yearly tax returns. The monthly-adjusted general schedule is derived from the general schedule and applies to employment earnings and pensions paid out on a monthly basis. Income-source-specific schedules are one-rate and apply to rental income, income from sale of assets, income from insurance, capital income, and “other income”. All income sources, except income from self-employment, are taxed by withholding.
- Generally, taxpayers are not obliged to fill in a tax return, except in several prescribed situations, for example, if employed person works simultaneously for two employers. Self-employed persons must fill in a tax return. Taxpayers *may* fill in a tax return if they want to use some allowances and deductions, or if they assume that their final obligation would be lower than the amount withheld. In case of filling in a tax return, incomes from *all* sources must be reported.

- The “current value of pension” (*aktualna vrijednost mirovine*, CVP) is used for calculation of new retirees’ pensions and for the adjustment of pensions of existing pensioners. CVP is revised twice a year (on January 1 and July 1), using an indexation rule which takes into account both the change in average gross wage and the consumer price index. The amounts of many social benefits are obtained as products of relevant coefficients and the so-called “budgetary base” (*proračunska osnovica*, BUB), which is determined every year in the CG budget law. Interestingly, the amount of the budgetary base has remained constant through the period from 2002 to 2015, at 3,326 HRK. PIT brackets are not indexed, but are adjusted irregularly as part of PIT reforms.
- In calculations of some benefits and social contributions the following indicators are used: (a) average gross wage from January to August of the previous year (AGWPY), (b) average net wage from January to August of the previous year (ANWPY1), (c) average net wage from January to December of the previous year (ANWPY2), (d) gross minimum wage in the current year (GMWCY), (e) net minimum wage in the current year (NMWCY). The amounts of these indicators are presented in section 2.4.
- For PIT purposes incomes are assessed: (a) monthly, for income from regular employment and pensions, (b) yearly, for income from regular self-employment, and (c) at the moment of the occurrence, for all the remaining income sources. Income from the preceding calendar year is assessed for purpose of child benefit. For purpose of subsistence benefit, income from three months preceding the appraisal process.
- All residents are covered by the mandatory health insurance. Working groups of the population must pay health SC, while non-working groups are generally covered by CG. Employed and self-employed persons are entitled to receive sickness benefits, maternity and parental leave benefits. Minimum insurance period conditions apply. Besides them, unemployed and inactive people are also entitled to receive parental benefits through schemes that are separate from maternity and parental leave benefits.
- A person is defined as unemployed if he/she is aged between 15 and 65, is able (or partially able) to work, is actively searching for a job and is available for work. To be considered as unemployed, a person should not: (a) perform work as self-employed or be the owner of an enterprise; (b) obtain monthly taxable income that is higher than the average unemployment benefit paid out in the preceding year; (c) be a regular student, or pensioner, or a person who satisfies the conditions for retirement. Other conditions apply.
- All the tax and benefit rates provided below are those valid in June 30 of each respective year.

### 1.2 Minimum wage

Minimum wage law was first introduced in July 2008. The amount of gross minimum wage (GMW) was set to 39% of 2007 average gross wage, and equalled HRK 2,747. After that, GMW was adjusted each June 1, using the real GDP growth rate. Before June 2013, when the new law came to effect, GMW equalled HRK 2,814. According to the new law, the starting value of GMW is obtained by a formula using several factors, among them the poverty threshold. The amount for the period from January to December 2015 is HRK 3,030. New GMW is set every January 1 by the ministry of labour, whereby its nominal amount cannot decline. Both the new and the old law formulas for the calculation of minimum wage are relatively inexact. Prior to 2013, a reduced minimum wage was applied for several industries;

thus, in 2011 and 2012, the minimum wage in textile, wood-processing, and leather-footwear industries was set to 98% of GMW.

### 1.3 Social benefits

#### 1.3.1 Retirement benefits

**Full-age retirement pension** (*starosna mirovina*) (scheme A) is obtained by a person who retires at the statutory age and has at least 15 years of service (*mirovinski staž*). The level of pension depends on wages (or contributions) during the whole working period. A hypothetical man who has worked for 40 years, earning average gross wage in each year (henceforth, average worker), and retires in January 2015, receives a pension of HRK 3,094.

**Early-age retirement pension** (*prijevremena starosna mirovina*) (scheme A) by a person who retires at most five years before the statutory age and has at least 35 years of service (for men in 2015; 31.25 for women). The level of pension is also based on previous wages (contributions), but a penalizing factor is applied, which depends on age and years of service; the maximum is 20.4% for men who retire with 35 years of service at the age of 60. A hypothetical male average worker, who has worked for 35 years and retires in January 2015, receives a pension of HRK 2,155.

For retirement and early retirement pensions, as well as for survivors' and disability pensions described below, minimum and maximum pension rules apply. The *minimum pension* is proportional to the years of service, and also depends on the type of pension. For a man with 40 years of service retired at the statutory age, it amounts to HRK 2,362 in January 2015. The *maximum pension* equals about 3 times the pension of the average worker.

#### 1.3.2 Survivors benefits

**Family pension** (*obiteljska mirovina*) is received by a widower of the passed-away insured person (PAIP), if the widower is above 50 or below 50 if unable to work or if taking care of children. A child of a PAIP is a beneficiary if involved in secondary or tertiary education; the age limit is 26, unless a person is unable to work. The pension amount is obtained as the *base* multiplied by a factor which depends on the number of survivors, and ranges from 0.7 for one survivor to 1.0 for four or more survivors. The base is equal to the PAIP's last pension (if the PAIP was a pensioner) or to the eventual PAIP's invalidity pension (if the PAIP was working). Certain minimum years of service are required.

#### 1.3.3 Disability benefits

**Disability pension** (*invalidska mirovina*) is obtained by persons with partial or full loss of working ability. Certain minimum years of service are required, depending on age. The pension amount is obtained as in the case of retirement pensions, however, the years of service are augmented by a certain factor. The amount also depends on whether a partial or full loss of working ability has occurred.

**Professional rehabilitation benefit** (*naknada plaće za vrijeme profesionalne rehabilitacije*) is obtained by a disabled worker involved in the program of professional education and requalification. When the cause of disability is general (related to work injuries and occupational illness), the maximum duration of benefit receipt is 12 (24) months. The amount of the benefit is related to the disability pension that could be realised at the time of rehabilitation.

**Physical impairment supplement** (*naknada zbog tjelesnog oštećenja*) is obtained by a person whom work injuries and occupational illness have caused physical damages. The amount of benefit depends on the degree of physical impairment, which is expressed as a percentage; e.g. for a 100% impairment, the benefit amounts to HRK 480.

**Allowance for assistance and care** (*doplatak za pomoć i njegu*) is received by a person who needs assistance and care of another person in satisfying the basic living functions, such as preparing meals and feeding, house cleaning, dressing, personal hygiene, etc. Income and wealth means tests are applied. The amount of benefit ranges from HRK 350 to 500, depending on the level of disability.

**Personal disability allowance** (*osobna invalidnina*) is intended for persons with severe disability or other severe permanent changes in their health condition. Income and wealth means tests are applied. The beneficiary cannot obtain Allowance for assistance and care at the same time. The amount of benefit is HRK 1,250 minus income from other sources, excluding Subsistence benefit, Housing benefit, Minimum pension, Child benefit, etc.

**Pre-employment supplement** (*naknada do zaposlenja*) is received by younger persons with severe disability or other severe permanent changes in their health condition, who have finished their education, are able to work and unemployed. The amount of benefit is HRK 350, and cannot be obtained together with the Supplement for constant care.

**Supplement for caregiver** (*naknada za roditelja njegovatelja ili za njegovatelja*) is received by parents or other family members who take care of persons who are completely dependent on the help of others, due to severe physical, mental or health disabilities. The amount of benefit is HRK 2,500.

### 1.3.4 Unemployment benefits

**Unemployment benefit** (*novčana naknada za vrijeme nezaposlenosti*) is received by unemployed persons who have worked for at least 9 months during the last 24 months; the termination of previous job post should not be voluntary or caused by worker's violations of working obligations; other conditions apply. The duration of benefit receipt increases with the insurance record: from a minimum of 90 days for less than 2 years spent in work to 450 days for people who have spent 25 to 32 years spent in work. For persons who were uninterruptedly unemployed for more than 12 months, the duration of benefit is extended by 30 to 120 days. This measure is called the "extended unemployment benefit" (*produžena novčana naknada*) and was abolished in January 2014. For a person who has been using the benefit and then re-employed, the time spent in work is counted from the beginning of new employment. For those having worked for more than 32 years and will satisfy the statutory age condition in less than five years, the duration of benefit is unlimited. The amount of benefit is proportional to the benefit base, i.e. the average income earned in the 3-month period prior to unemployment. During the first 90 days the benefit is equal to 70% of the base, falling to 35% of the base for the rest of the period; maximum (minimum) levels apply.

**Allowance and refund of expenses during education of unemployed** (*novčana pomoć i naknada troškova tijekom obrazovanja*) is received by unemployed persons who are involved in education programs organized by the Croatian Employment Service. The benefit includes cash allowance (equal to HRK 1,600 in 2011; 50% of NMWCY in 2012-2015), augmented by compensations for transportation, food and other costs.

**Allowance during vocational training for unexperienced workers** (*naknada za vrijeme stručnog osposobljavanja za rad bez zasnivanja radnog odnosa*) is introduced in 2012 and is intended for young unemployed persons to earn initial working experience. These persons work

for employers without settling an employment contract. Beneficiaries receive monthly allowance of HRK 1.600, which was raised to HRK 2,400 since January 2015.

**Lump-sum allowance and reimbursement of travel and resettlement expenses** (*jednokratna novčana pomoć i naknada putnih i selidbenih troškova*) is intended for unemployed persons who get employed in places that are more than 80 kilometres away from their current place of residence. The benefit consists of a lump-sum grant and a lump-sum compensation for travel and resettlement costs.

### 1.3.5 Sickness benefits

Sick-leave benefits are paid to insured employed and self-employed persons during the temporary work-break due to sickness and corresponding medical treatment. There are two types of sick-leave benefits, defined according to the cause of sickness: (a) **Sickness benefit A** – when the cause of sick-leave is general, and (b) **Sickness benefit B** – when the cause of sick-leave is related to work injuries and occupational illness.

**Sickness benefit A** (*naknada plaće u vrijeme bolovanja*). Typically, the employer is obliged to continue salary payment for a time of 42 days after sick-leave has begun. After that, sickness benefits are paid by the Croatian Institute for Health Insurance. The maximum duration of benefit receipt depends on the type of sickness, but generally it can last up to 3 years. The amount of benefit is proportional to the benefit base, i.e. the average net income earned in the 6-month period prior to sick-leave. During the first 6 months of sick-leave, the benefit equals 70% of the base (or 100% in specific cases); minimum limits apply (25% of BUB); maximum limits apply (128% of BUB), except in certain cases. In the rest of the sick leave period, the benefit amount is cut by a half, except in certain cases. Eligibility depends on the health insurance coverage. Preceding the event of sickness, the beneficiary must have been insured, either: (a) at least 9 months continuously, or (b) at least 12 months with interruptions during a 24 month period. If neither of these conditions is satisfied the benefit equals 25% of BUB.

**Sickness benefit B** (*naknada plaće u vrijeme bolovanja zbog ozljede na radu ili profesionalne bolesti*) is in most respects equal to Sickness benefit A. However, the minimum working period preceding the event of sickness is not required and during the first 6 months of sick-leave the benefit equals 100% of the base in all cases.

Other benefits in this group include **reimbursement of travel expenses** related to the use of health care (*naknada za prijevoz radi korištenja zdravstvene zaštite*), **compensation for the accommodation costs** of the person caring for the child during hospitalization (*naknada za troškove smještaja*), and **compensation for funeral expenses** in case of death of the insured person as a consequence of work injuries and occupational illness (*naknada pogrebnih troškova u slučaju smrti osigurane osobe*).

### 1.3.6 Maternity, parental and child benefits

Maternity and parental benefits are intended for parents of newborn children. Effectively, all parents, whether working or not, can receive these benefits, but the duration and amounts are different. Three groups of parents are defined: (a) employed persons and self-employed persons, (b) “other income” earners, workers in agriculture and unemployed persons, (c) inactive persons. Group (a) receives Maternity leave benefit and Parental leave benefit. The base for these two benefits is equal to the average gross wage earned in the 6-month period prior to the work-break. Groups (b) and (c) receive Support during the newborn child care, which does not depend on previous earnings.

**Maternity leave benefit** (*naknada plaće tijekom rodiljnog dopusta*) is received by a mother who is employed or self-employed person, after the birth of a child (children). The leave is divided into mandatory and voluntary work-break period. The mandatory work-break period spans between the 28<sup>th</sup> day before the expected delivery date (or from the 45<sup>th</sup> day, upon medical approval) and the 70<sup>th</sup> day after the birth. The voluntary work-break period spans between the 70<sup>th</sup> day and the end of the 6<sup>th</sup> month after the birth. During both these periods the benefit is equal to the benefit base, which is income related. Minimum amount of benefit is HRK 1,663 (50% of BUB). Maximum amount is not limited if the beneficiary satisfies the insurance period condition. Otherwise, the benefit equals the minimum amount.

**Parental leave benefit** (*naknada plaće tijekom roditeljskog dopusta*) is obtained by a mother or a father who are employed or self-employed persons, in the period after the end of the 6<sup>th</sup> month following the birth of a child. The benefit is received up to 6 months if only the mother uses the parental leave, or up to 8 months, if the father uses four months of parental leave. In cases when twins are born or if the 3<sup>rd</sup> or each subsequent child is born, the duration of benefit receipt can reach 30 months. The benefit base is the same as for the Maternity leave benefit. The amount of benefit in the first 6 (8) months is equal to the benefit base, with maximum set to HRK 2,661 (80% of BUB). In the remaining period, i.e. after the 6<sup>th</sup> (8<sup>th</sup>) month, the benefit amounts to HRK 1,663 (50% of BUB).

**Support during the newborn child care** (*naknada za roditeljsku brigu*) is available to parents of a newborn child who are “other income” earners, workers in agriculture, unemployed persons or inactive persons. The benefit receipt starts with the child’s birth and lasts for 12 months, or 36 months, if twins or the 3<sup>rd</sup> or each subsequent child are born. The amount of benefit is HRK 1,663 during the whole period of receipt.

**One-time grant for newborn children** (*jednokratna potpora za novorođeno dijete*) is received by all parents of newborn children and amounts to HRK 1,328 (40% of BUB).

**Child benefit** (*doplatak za djecu*) is a means-tested benefit received by a parent or other person taking care of one or more children. The amount of benefit per child equals 300 (9% of BUB), 250 (7.5% of BUB), and HRK 200 (6% of BUB), respectively, depending on household income per member. Supplements are given for children without one or both parents and for children with health challenges. Substantial top-up amounts are given to households with three and four or more children, HRK 500 and 1,000, respectively; this is unofficially called the pronatality supplement (*pronatalitetni dodatak*).

### 1.3.7 Social assistance benefits

**Subsistence benefit** (*pomoć za uzdržavanje, stalna pomoć, zajamčena minimalna naknada*) is a means-tested benefit intended for households whose income is below the “means of subsistence”. The latter represent the amount of money necessary to satisfy the basic needs of the particular household. They are obtained as a sum of individual contributions depending on household members’ characteristics. When calculating means of subsistence, children, the elderly and people unable to work are automatically accounted; working-able individuals between 18 and 65 are not taken into account unless they satisfy the conditions for being characterised as unemployed (see section 1.1.).

This benefit was introduced in 1998 under the name “subsistence support” (*pomoć za uzdržavanje*). In the period from 08/2007 to 05/2011 it was called “permanent support” (*stalna pomoć*). However, in the whole period from 01/1998 to 12/2013 there were no important changes in the benefit design. In 01/2014 subsistence support was replaced by “guaranteed minimum benefit” (*zajamčena minimalna naknada*), which introduces the following changes: (a) the contribution of children in the calculation of the “means of subsistence” is significantly

lowered; (b) additional conditions for working-able individuals, (c) the wealth test is tightened, etc. Moreover, with the introduction of guaranteed minimum benefit, two HBDR / HRVI related benefits were abolished, and also the extended unemployment benefit. Despite these changes guaranteed minimum benefit is treated here as a continuation of subsistence support.

**Housing benefit** (*pomoć za podmirenje troškova stanovanja*) is received for covering the costs of rent, electricity, gas, heating, water, and other housing bills. The benefit is financed and disbursed by LSG units, which also determine income tests and amounts of benefit. The maximum amount is equal to 50% of the amount of Subsistence benefit. Since 01/2014 it is explicitly defined that the beneficiaries must be receivers of Subsistence benefit. The recipients of Subsistence benefit also have the right to claim the **Benefit for covering of the wood-heating costs**, which is also administered and financed by LSG units.

**Lump-sum assistance** (*jednokratna pomoć osobama u trenutačnim materijalnim poteškoćama*) is a purpose-defined benefit received by a household for covering the costs related to transportation, education, clothing, child birth, funeral expenses. The maximum yearly amount is equal to HRK 3,500 for a household. Exceptionally, upon approval of the ministry of social care, the amount of benefit can reach up to HRK 10,000.

### 1.3.8 HBDR / HRVI related benefits

Croatian Defender of the Homeland War (*hrvatski branitelj iz Domovinskog rata*, HBDR) is a person who has participated in the organized armed defence in the period from August 1990 to June 1996. Croatian military war invalid of the Homeland War (*hrvatski ratni vojni invalid iz Domovinskog rata*, HRVI) is a HBDR who has suffered bodily damages of at least 20%, during the organized armed defence or imprisonment in hostile jail or camp. HRVIs are categorised into 10 groups according to the level of bodily impairment sustained during the war. In group 1 there are people with 100% impairment who need constant care of others; in group 10, there are HRVIs with 20% impairment. The following review presents the most important benefits for HBDR, HRVI and their family members.

#### *Pension benefits:*

**Retirement pension supplement** (*starosna mirovina za HBDR*) is received by a HBDR who satisfies conditions for full-age or early-age retirement pension. Depending on the time spent in Homeland War, the supplement amounts from 10% to 30% of the regular retirement pension. However, the combined amount, equal to regular pension plus the supplement, cannot exceed the retirement pension that would have been earned if the beneficiary had accomplished 40 years of service.

#### *Disability benefits:*

**Disability pension for HRVI** (*invalidska mirovina za HRVI*) is received by HRVIs with general or partial loss of working ability. The calculation of benefit takes into account the years of service, but also some specific parameters, such as the military rank and position. The use of specific factors make this pension different from the regular disability pension for equal years of service.

**Disability benefit for HRVI** (*osobna invalidnina*). The amount of benefit depends on the percentage bodily damage, and ranges from HRK 100 (group 10) to HRK 3,825 (group 1; 115% of BUB). The supplement, equal to one half of the regular amount, is available for HRVIs during professional rehabilitation.

**Orthopaedic allowance** (*ortopedski doplatak*) is received by HRVIs for whom the wounds, injury or illness led to the amputation of limbs, severe damages to the limbs functionality or

complete loss of vision in both eyes. The amount of benefit depends on the level of bodily impairment, and ranges HRK from 268 to 1,109.

**Supplement for constant care of HRVI** (*doplatak za njegu i pomoć druge osobe*) is obtained by HRVIs who need constant care of other people. The amount of benefit is 3,825 HRK (115% of BUB) for HRVIs from group 1 and 2,524 HRK for HRVIs from several other groups of invalidity, who have the same needs.

*Survivors' benefits:*

**HBDR related survivors pension** (*obiteljska mirovina za članove obitelji smrtno stradalih HBDR i preminulih HRVI*) is received by family members of HBDR who were killed in action and of passed away HRVIs; special eligibility and calculation rules apply. There are several other related benefits for HBDR survivors.

*Maternity, parental and child benefits:*

**Child benefit, HBDR related** (*doplatak za djecu smrtno stradalog i zatočenih ili nestalih HBDR*) is received by children of killed-in-action, captured and missing HBDRs. This is a non-means tested benefit, whose amount is HRK 300 for each child.

Note that similar sub-system of benefits, as shown in section 1.3.8 (including disability benefits, supplements for constant care, and other benefits) also exists for recipients who are civil invalids of the Homeland War, invalids from the 2<sup>nd</sup> World War, non-war invalids – members of Croatian Army, and for members of their families.

### 1.3.9 Benefits provided by local self-government units

As mentioned in section 1.3.7, LSGs provide Housing benefit and Benefit for covering of the wood-heating costs. Most LSGs units provide their own lump-sum grants for newborn children. In some cases, they are more generous than the grant paid from the central government; e.g. in Zagreb, the amount is HRK 1,800 for the 1<sup>st</sup> child, HRK 3,600 for the 2<sup>nd</sup> child and HRK 54,000 for every other child. However, the mode value is HRK 1,000. LSGs also provide: (a) cash supplements to low income pensioners, people with disability, unemployed, etc., (b) subsidies for transportation costs for various groups of citizens (pensioners, unemployed, people with disability, school children, etc.), (c) lump-sum benefits and food packages for the poor, (d) various benefits for school children and students (grants, subsidies for school books, school meals, etc.). Total amount of spending of LSGs on social protection is about 0.5% of GDP.

## 1.4 Social contributions

### 1.4.1 Types of social contributions and payers

The social contributions system defines (a) several types of contributions, and (b) a range of income sources, income earning activities and occupations, that are subject to payment of SC.

The main types of contributions are:

**General health contributions** (*doprinos za zdravstveno osiguranje*): the rate was 15% until 04/2012. From 05/2012 to 03/2014 the rate was equal to 13%. From 04/2014 and on the rate is 15%.

**Occupational health contributions** (*doprinos za zdravstveno osiguranje zaštite zdravlja na radu*): the rate is 0.5%.

**Pensioner health contributions** (*dodatni doprinos umirovljenika za zdravstveno osiguranje*): the rates are 1% and 3%.

**Employment contributions** (*doprinos za obvezno osiguranje u slučaju nezaposlenosti*): the rate is 1.7%.

**Pension contributions A** (*doprinos za prvi stup mirovinskog osiguranja*) are the contributions to pillar 1, paid by persons in contributory scheme A. The rate is 20%.

**Pension contributions B1** (*doprinos za prvi stup mirovinskog osiguranja*) are the contributions to pillar 1, paid by persons in contributory scheme B. The rate is 15%.

**Pension contributions B2** (*doprinos za drugi stup mirovinskog osiguranja*) are the contributions to pillar 2, paid by persons in contributory scheme B. The rate is 5%. (persons in contributory scheme A do not pay contributions to pillar 2).

Thus, a person pays either Pension contributions A, or the sum of Pension contributions B1 and Pension contributions B2. The overall rate of Pension contributions is 20% in both cases.

In the next few sections we define four main groups of persons who must pay SC because they are earning certain source of income or performing certain occupational activities.

### 1.4.2 Wage related social contributions

Employment earnings are subject to employer and employee SC. The contribution base is equal to the gross employment earnings.

Employer SC include general health contributions, occupational health contributions, and employment contributions.

Employee SC involve pension contributions.

### 1.4.3 Social contributions for self-employed persons

These contributions are paid by self-employed persons. The contribution base is not income related, but is a lump-sum obtained as some percentage of the average gross wage of the previous year (from January to August). This percentage ranges from 35% to 110% for various types (occupations). Self-employed persons pay General health contributions, Occupational health contributions and Pension contributions. Since 04/2014 they also pay Employment contributions.

### 1.4.4 “Other income” related social contributions

SC are also paid on “other income”. These contributions are mimicking the system of employer and employee contributions. In that respect, there is a part of contributions paid by the purchaser of services (“employer”) and a part paid by the provider of services (“employee”). The contribution base is equal to the gross income amount. General health contributions are paid by the “employer”, while the earner of “other income” pays Pension contributions. Some types of “other income” are exempt from SC, and among these the most important ones are those that relate to honoraria for original works of scientists, journalists, artists, etc.

### 1.4.5 Pensioner social contributions

Pensioners who receive domestic pensions pay Pensioner health contributions. The contribution base is the monthly gross pension.

## 1.5 Taxes

### 1.5.1 Consumption taxes

**Value added tax** (*porez na dodanu vrijednost*) exists since 1998. Following the accession of Croatia in EU, in July 2013, VAT became fully harmonised with EU VAT. Taxpayer is every person engaged in the provision of goods and services. The tax base is the value of (a) goods and services provided by a taxpayer within the territory of Croatia, (b) goods and services purchased by a taxpayer from providers residing in other EU countries, and (c) goods and services purchased (i.e., imported) from countries outside the EU. The standard VAT rate is 25%. A minimum rate of 5% applies to bread, milk, educative books, medical drugs, newspapers, cinema tickets, scientific journals. A reduced rate of 13% applies to accommodation and restaurant services, edible oils and fats, baby food, delivery of water, concerts tickets, culture/art magazines, etc.

**Excise taxes** (*posebni porezi na dobra i usluge, trošarine*). Taxpayers are producers and importers of different goods. The subjects of taxation are: (a) motor vehicles for personal uses, (b) coffee products, (c) alcoholic and non-alcoholic beverages, (d) tobacco products, (g) energy products and electricity. Before 2013 there existed also excise taxes on vessels and aircrafts for personal use, on luxury products, beer, etc.

**Beverages tax** (*porez na potrošnju pića*). Taxpayers are providers of bar and restaurant services. The tax base is the sale price of served beverages.

### 1.5.2 Income taxes

**Corporate income tax** (*porez na dobit*). Taxpayers are principally legal entities performing economic activities for profit; under some circumstances, individuals are also subject to the tax. The tax base is profit (the difference between revenues and expenditures) determined pursuant to the accounting regulations, increased and reduced in accordance with certain provisions determined by the law. The tax rate is 20%.

**Personal income tax** (*porez na dohodak*). Taxpayers are individuals earning income from taxable sources, i.e. employment earnings, income from self-employment, pensions, rental income, some forms of capital income, and “other income”. General schedule has four rates till 2010 (15%, 25%, 35% and 45%) and three rates (12%, 25% and 40%) in 2011-2015. In 2012, taxation of dividends was introduced, and since 2015 interest income is also taxable. Employment earnings and pensions are taxed by withholding using the monthly-adjusted general schedule. “Other income”, rental income, interest income and dividends are also taxed by withholding, but using income source specific one-rate schedules. In general, tax withholding is “final”, which means that taxpayers do not have to submit a yearly tax return. However, taxpayers *may* fill in a tax return if they want to use some allowances and deductions, or if they assume that their final obligation would be lower than the amount withheld. Some groups of taxpayers *are obliged* to submit a yearly tax return (e.g., self-employed persons and employed persons who worked simultaneously for two employers). In tax returns incomes from all sources are must be reported; the tax base is equal to total income minus allowances and deductions; general schedule is applied. In mid-2010 several deductions were abolished, namely for insurance premiums, housing and health expenses; the current system has relatively few

deductions, for given donations and research activities. There are several deductions for inhabitants of less developed and war stricken areas.

**Surtax** (*prirež*) is paid by PIT taxpayers. The tax base is the amount of PIT. LSG units set the level of the rate. The maximum rates can be set to: (a) 10% in municipalities, (b) 12% in cities with a population below 30,000, (c) 15% in cities with a population over 30,000, except (d) 30% in Zagreb (where the current rate is 18%).

### 1.5.3 Property taxes

There is no general, standard property tax in Croatia. However, there are several taxes on different types of assets held and used by natural and legal persons. These taxes are Inheritance and gifts tax (*porez na nasljedstva i darove*), Real estate transfer tax (*porez na promet nekretnina*), Tax on vacation houses (*porez na kuće za odmor*), Tax on road motor vehicles (*porez na cestovna motorna vozila*), Tax on vessels (*porez na plovila*), Trade name tax (*porez na tvrtku ili naziv*), Tax on the use of public land (*porez na korištenje javnih površina*), etc.

## 2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

### 2.1 Scope of simulation

EUROMOD is a cross-country comparative benefit-tax model. The model simulates a variety of taxes and benefits. However, not all taxes and benefits mentioned in section 1 are simulated. Some are entirely beyond the scope of the model, and are not included either in the EUROMOD input database or as output variables, while others are included as non-simulated output variables. Tables 2.1 and 2.2 classify the main tax and benefit instruments according to how each is treated in EUROMOD, and provide a brief explanation as to why the instrument is not fully simulated when this is the case.

Table 2.1 Simulation of benefits in EUROMOD

	Variable name	Treatment in EUROMOD					Why not fully simulated
		2011	2012	2013	2014	2015	
<b>Retirement benefits/pensions</b>							
Old age pension	poa	I	I	I	I	I	1
Survivors' pension	psu	I	I	I	I	I	1
Disability pensions	pdi	I	I	I	I	I	1
<b>Unemployment benefits</b>							
Unemployment benefit	bunct_s	PS	PS	PS	PS	PS	1
Other (minor) unemployment benefits	bunot	I	I	I	I	I	2
<b>Family benefits</b>							
Child benefit	bch_s	S	S	S	S	S	
<b>Sickness – maternity benefits</b>							
Sickness benefits	bhl	I	I	I	I	I	2
Maternity leave benefit	bfama_s	S	S	S	S	S	
Parental leave benefit	bfapl_s	S	S	S	S	S	
Support during the newborn child care	bfacc_s	S	S	S	S	S	
Lump-sum grant for newborn children	bfaba_s	S	S	S	S	S	
<b>Social assistance benefits</b>							
Subsistence benefit	bsa_s	S	S	S	S	S	
Other social assistance benefits	bsaot	I	I	I	I	I	2
<b>Housing benefits</b>	bho	I	I	I	I	I	2
<b>Education allowances</b>	bed	I	I	I	I	I	2
<b>Disability benefits</b>	bdi	I	I	I	I	I	2
<b>Minimum wage</b>	yem	S	S	S	S	S	

Notes: 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;  
 1: no data on contribution history;  
 2: data available not sufficient to simulate all eligibility conditions.

Table 2.2 Simulation of taxes and social contributions in EUROMOD

	Variable name	Treatment in EUROMOD					Why not fully simulated
		2011	2012	2013	2014	2015	
<b>Taxes</b>							
Personal income tax	tin_s	S	S	S	S	S	
Surtax	tmu_s	S	S	S	S	S	
Property taxes	tpr	I	I	I	I	I	2
<b>Social insurance contributions</b>							
Employers	tscer*_s	S	S	S	S	S	
Employees	tscee*_s	S	S	S	S	S	
Pensioners	tscbesi_s	S	S	S	S	S	
Self-employed and “other income” earners	tscese*_s	S	S	S	S	S	
Credited SIC	tsctt_s	S	S	S	S	S	

Notes: I: *included* in the micro-data but not simulated;  
 S: *simulated* although some minor or very specific rules may not be simulated;  
 2: data available not sufficient to simulate all eligibility conditions.

- *Structural changes between 2011 and 2012*

No structural changes occurred.

- *Structural changes between 2012 and 2013*

No structural changes occurred.

- *Structural changes between 2013 and 2014*

(a) Unemployment insurance contributions for self-employed were introduced (section 2.6.3);

(b) Occupational health insurance contributions for farmers exempted from PIT taxation were introduced (section 2.6.3);

(c) Subsistence benefit: an additional amount for lone parents was introduced and the additional amount for children of lone parents was abolished; since 2014, the maximum benefit for any household is set to the level of gross minimum wage (section 2.5.1).

- *Structural changes between 2014 and 2015*

(a) The personal deduction of up to HRK 12,000 yearly for income from dividends was abolished (section 2.7.7).

(b) Interest income is taxable by PIT (section 2.7.7).

## **2.2 Order of simulation and interdependencies**

The following table shows the order of policies' simulation in the Croatian system in 2011-2015. The policy spine starts with minimum wage, which changes employment income for those observed below the legal limit. This policy is switched off in the baseline scenario. After that, the model simulates the unemployment insurance benefit, which is needed for the simulation of subsistence benefit. Social insurance contributions, levied on employment and self-employment income, come next. They are followed by personal income tax and maternity and paternal benefits. The last elements of the spine include untaxed benefits, credited social insurance contributions and the surtax.

Note that maternity and parental benefits depend on beneficiaries' net wage. At the same time they are also needed for the simulation of personal income tax (in the calculation of personal allowance for supported family members). Therefore, the PIT policy is run twice: first with these benefits set to zero and then again with the benefits' final values.

Table 2.3 EUROMOD Spine: order of simulation

Policy	2011	2012	2013	2014	2015	Description of policies
SetDefault_hr	on	on	on	on	on	DEF: Default values for variables
Uprate_hr	on	on	on	on	on	DEF: Uprating factors
ConstDef_hr	on	on	on	on	on	DEF: Constants
ildef_hr	on	on	on	on	on	DEF: Income concepts
tundef_hr	on	on	on	on	on	DEF: Assessment units
yem_hr	off	off	off	off	off	DEF: Minimum wage
neg_hr	on	on	on	on	on	DEF: Recode negative self-employment income to zero
InitVars_hr	on	on	on	on	on	DEF: Initialise variables
bunct_hr	on	on	on	on	on	BEN: Unemployment benefit
tscer_hr	on	on	on	on	on	SIC: Employer social insurance contributions
tscee_hr	on	on	on	on	on	SIC: Employee social insurance contributions
tscse00_hr	on	on	on	on	on	SIC: Self-employed social insurance contributions
tscse01_hr	on	on	on	on	on	SIC: Social insurance contributions - other incomes
tscbesi_hr	on	on	on	on	on	SIC: Social insurance contributions – pensioners
tin_hr	on	on	on	on	on	TAX: Personal income tax
bfapl_hr	on	on	on	on	on	BEN: Parental leave benefit
bfama_hr	on	on	on	on	on	BEN: Maternity leave benefit
bfaba_hr	on	on	on	on	on	BEN: Lump-sum grant for newborn children
bfacc_hr	on	on	on	on	on	BEN: Support during the newborn child care
tin_hr	on	on	on	on	on	TAX: Personal income tax (repetition of policy with order 15)
tmu_hr	on	on	on	on	on	TAX: Surtax
tsct_hr	on	on	on	on	on	SIC: Credited social insurance contributions
bch_hr	on	on	on	on	on	BEN: Child benefit
bsa_hr	on	on	on	on	on	BEN: Subsistence benefit
output_std_hr	on	on	on	on	on	DEF: Standard output individual level
output_std_hh_hr	off	off	off	off	off	DEF: Standard output household level

### 2.3 Important indicators

In calculations of some benefits, personal income tax and social contributions the following indicators are used: (a) average gross wage from January to August of the previous year (AGWPY), (b) average net wage from January to August of the previous year (ANWPY1), (c) average net wage from January to December of the previous year (ANWPY2), (d) gross minimum wage in the current year (GMWCY), (e) net minimum wage in the current year (NMWCY), (f) Regular basic personal allowance (RBPA) and (g) Maximum pensioner’s basic personal allowance (MPBPA).

Table 2.4 Indicators used in calculations of some benefits, personal income tax and social contributions (2011-2014), HRK per month

	2011	2012	2013	2014	2015
AGWPY	7,657	7,756	7,867	7,941	7,943
ANWPY1	5,305	5,408	5,464	5,507	5,510
ANWPY2	5,343	5,445	5,478	5,515	5,553
GMWCY	2,814	2,814	2,985	3,018	3,030
NMWCY	2,251	2,251	2,388	2,414	2,424
RBPA	1,800	2,200	2,200	2,200	2,600
MPBPA	3,200	3,400	3,400	3,400	3,800

Source: Croatian Bureau of Statistics; Tax administration.

## 2.4 Minimum wage

- *Brief description*

The minimum wage determines the minimum legally allowed gross monthly wage for full-time work.

- *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.

- *Benefit amount*

As Table 2.4 shows, gross minimum wage in 2011-2012 equals HRK 2,814. In 2013, 2014 and it equals HRK 2,985, HRK 3,018 and HRK 3,030 respectively.

## 2.5 Social benefits

### 2.5.1 Subsistence benefit (*bsa\_s*)

- *Brief description*

Subsistence benefit is a means-tested benefit intended for households whose income is below the “means of subsistence”.

- *Definitions*

2011-2013

The considered unit is a “family” (*obitelj*), which “consists of spouses, children and other relatives who live together, and generate and consume income together”. However, in practice, “family” was equivalent to “household”. Therefore, the unit of analysis is the household.

2014-2015

The considered unit is a “household” (*kućanstvo*), which is “the family or other community of people who live together and settle living expenses together, regardless of kinship”.

- *Eligibility conditions*

Eligible household members are all persons aged below 15 and above 65.

In order to qualify as eligible household members, persons aged between 15 and 65 must satisfy the conditions for being characterised as unemployed, except in cases when a person is:

2011-2012

- (a) unable to work;
- (b) taking care of a child up to age of 1 year;
- (c) taking care of twins up to age of 3;
- (d) taking care of 3 or more children all aged below 10;
- (e) taking care of a person with physical, mental or health impairments;
- (f) those whose age is above the ‘statutory pension age *minus* 5 years’.

2011-2013

- (a) to (f), and additionally:
- (g) aged between 15 and 25 and involved in regular education;
- (h) pregnant, after the 12<sup>th</sup> week of pregnancy;
- (i) working-able persons above 55, who in the past ten years have not been employed or self-employed;
- (j) members of agricultural households above 55.

2014-2015

- (a) to (f), and additionally:
- (k) aged between 15 and 29 and involved in regular education;
- (l) pregnant, from the beginning of pregnancy.

- **Income test**

Household income is the sum of incomes of all household members, both of eligible and non-eligible ones. Household income must be lower than its “means of subsistence” (*sredstva uzdržavanja*). The household’s “means of subsistence” are a sum of contributions of eligible household members. These contributions depend on personal characteristics of each member, and are presented by the following table:

Table 2.5 Means of subsistence: main amounts (2011-2015), HRK per month

	2011-2013	2014-2015
Single adult	600	800
Single adult unable to work	850	800
Adult who lives in a family	400	480
Adult who lives in a family, unable to work	550	480
Child aged 0-6 years	400	320
Child aged 7-14 years	450	320
Child aged 15-17 years	500	320
Child aged 18-25, involved in regular education	500	480

“Means of subsistence” are additionally increased, for each child of a single parent and for each single parent, by the following amounts:

Table 2.6 Means of subsistence: additional amounts (2011-2015), HRK per month

	2011-2013	2014-2015
Child of a single parent	125	0
Single parent	0	320

Household income includes all sorts of incomes, excluding the following ones: (a) lump-sum donations from individuals and legal entities up to HRK 5,000 per year, (b) housing benefit, (c) child benefit, (d) lump-sum grant for newborn children, (e) allowance and refund of expenses during the education of unemployed, (e) disability benefits (except disability pension, professional rehabilitation benefit and disability pension for HRVI). All incomes are taken in net terms, i.e. after deduction of SICs and PIT.

- **Benefit amount**

The benefit equals the difference between means of subsistence and household income. Before 01/2014, the amount of benefit was not limited. Since 01/2014, the maximum benefit for any household is set to the level of gross minimum wage in Croatia (GMWCY).

In 01/2014 a “*make work pay*” measure was introduced. It is intended for the non-employed working-able persons, whose households receive the Subsistence benefit for at least one year. If such a person gets employed, a different benefit calculation procedure applies. Denote with  $B_i$  the benefit amount in the  $i$ th month, where  $i = 0$  for the month preceding the employment. The monthly benefit amounts in months  $i = 0, 1, 2, 3$ , are: (a)  $B_0$ , (b)  $B_1 = B_0$ , (c)  $B_2 = 0.75 \cdot B_0$ , (d)  $B_3 = 0.50 \cdot B_0$ , respectively. If employment lasts more than 3 months, the benefit amount is recalculated, taking into account the average household income in the preceding 3 months.

- **EUROMOD notes**

The law requires that working-able Subsistence benefit recipients regularly report to the Croatian Employment Service, participate in education programmes and show preparedness to accept a job. Since the SILC data provide no information on whether these conditions are satisfied, we assume that persons aged between 15 and 65 do satisfy the above mentioned conditions.

Moreover, since we have no information on whether a person is a benefit recipient for more than one year, the “*make work pay*” element of the policy is not simulated in EUROMOD.

## 2.5.2 Unemployment benefit (*bunct\_s*)

- **Brief description**

Unemployment benefit is received by unemployed persons, under various conditions, during a limited period that depends on previous working record.

- **Definitions**

The benefit is received by employed persons who become unemployed.

- **Eligibility conditions**

Unemployed persons who have worked for at least 9 months during the last 24 months are eligible for benefit receipt. The time spent on sick-leave and parental leave are counted as working time. The termination of the previous job position should not have been voluntary or caused by worker’s violations of working obligations.

The benefit ceases to be received at the moment of new employment, retirement, fulfilment of the statutory pension age condition, during the period of maternity or parental leave, or in any other condition in which the person loses his/her unemployment status.

The duration of benefit depends on the history of previous employment. For a person who has been using the benefit and then employed again, the time spent in work is counted from the beginning of new employment. The relationship between months spent in work and the duration of benefit is shown in the first two columns of the following table.

If a person is uninterruptedly unemployed for more than 12 months, the benefit can be prolonged for the period shown in column 3. This extension in duration of unemployment benefit, called the “extended unemployment benefit”, was abolished in 01/2014.

A special rule relates to people who have worked more than 32 years and whose age is above the statutory pension age minus 5 years. They can receive the benefit until re-employment or retirement.

Table 2.7 Duration of unemployment benefit

Months spent in work	Basic duration (in months) 2011-2015	Extended duration (in months) 2011-2013
9 to 24	3	4
25 to 36	4	4
37 to 48	5	4
49 to 60	6	3
61 to 72	7	3
73 to 84	8	3
85 to 96	9	2
97 to 108	10	2
109 to 120	11	2
121 to 180	12	1
181 to 240	13	1
241 to 300	14	1
301 to 384	15	0

- ***Income test***

No income test applies.

- ***Benefit amount***

The unemployment benefit base (UBB) is the worker’s mean post-contributions wage during the three-month period preceding unemployment. Post-contributions wage is the gross wage minus employee social contributions.

The amount of benefit is proportional to the benefit base, but maximum and minimum values are set, which depend on certain percentages of average gross wage and gross minimum wage (see section 2.4). The amount of benefit decreases with time, in steps. The details are presented in the following table:

Table 2.8 Unemployment benefit rates (2011-2015)

2011-2015	
<i>During the first 90 days</i>	
Amount	70% of UBB
Maximum	70% of ANWPY2
Minimum	50% of NMWCY
<i>In the rest of the period</i>	
Amount	35% of UBB
Maximum	35% of ANWPY2
Minimum	50% of NMWCY

- **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. unemployment history) is available several assumptions are made and some rules are considered automatically fulfilled for those in receipt. This approach is chosen so that the benefit can be also modelled for those currently employed if needed (e.g. to simulate their entitlement if they become unemployed, e.g. for replacement rates calculations).<sup>1</sup>

Unemployment duration (*lunmy\_s*) is set equal to the maximum of observed unemployment duration (*lunmy*) and observed benefit receipt (*bunctmy*). With regards to the minimum qualifying contribution period, those currently unemployed and in receipt are assumed to satisfy it, while those currently unemployed and not in receipt are assumed to have not passed it. At this point, working age people who are unemployed (*lunmy\_s* > 0) and have sufficient contribution history, are considered eligible. Benefit duration (*bunmy\_s*) is calculated according to the rules described in Table 2.7, using modelled contribution history, while also controlling for the unemployment duration. In order to (indirectly) take into account the extended duration rules, the benefit duration in 2011-2013 is set equal to the maximum of simulated months according to the basic rules and observed period in receipt.

Benefit entitlement is calculated based on previous earnings and benefit duration, subject to the lower and upper thresholds. For those currently unemployed and in receipt, previous earnings (*yempv*) were calculated by reversing unemployment insurance benefit rules. Finally, the benefit amount is adjusted with the number of months in receipt.

### 2.5.3 Maternity leave benefit (*bfama\_s*)

- **Brief description**

The benefit is received by a working mother who is employed or self-employed person, one month before and six months after the birth of a child (children).

- **Definitions**

The unit of analysis is the family, which consists of partners and own dependent children aged 0 or 1.

- **Eligibility conditions**

<sup>1</sup> Employment changes are modelled in combination with a specific add-on tool and are not part of the baseline simulations.

Mothers who are employed or self-employed persons are eligible for receiving the benefit. The period of receipt is divided into two parts. The *mandatory period*, used by pregnant women / mothers, lasts from the 28<sup>th</sup> day before the expected delivery date (or from the 45<sup>th</sup> day, upon medical approval) to the 70<sup>th</sup> day after birth. The *voluntary period* can also be used by the father. It lasts from the end of the mandatory period to the end of the 6<sup>th</sup> month after birth.

- ***Income test***

This is not a means-tested benefit.

- ***Benefit amount***

The benefit base is the beneficiary's average "netted SC contribution base", obtained during the six-month period preceding work-leave. For employees, the "netted SC contribution base" is gross wage minus employee's contributions, PIT and Surtax. For self-employed the "netted SC contribution base" is the base for SC counterfactually taxed by employees' SC, PIT and Surtax. The "insurance period condition" assumes that preceding the maternity leave, the beneficiary has been insured, either: (a) at least 12 months continuously, or (b) at least 18 months with interruptions during a 24 month period. If the insurance period condition is fulfilled, the benefit amount is equal to 100% of the benefit base during the whole period. The minimum benefit amount is HRK 1,663 (50% of BUB). If the "insurance period condition" is not met, the benefit is equal to the minimum amount.

- ***EUROMOD notes***

Note that the exact month of birth is not available in the data; only the quarter of the year is known. Hence, it was assumed that children born in the first, second, third and fourth quarter of the year are born in February, May, August and November respectively.

According to administrative data less than 3% of recipients are men. Hence, in EUROMOD the benefit receipt is only granted to mothers for both the mandatory and the voluntary period. Data on average duration of benefit receipt are not available; however, based on common perception, maximum duration is assumed, i.e. 7 months. Mothers of children aged 0 born in February or May receive the benefit for the whole period (i.e. 7 months); mothers of children aged 0 born in August and November receive the benefit for 6 and 3 months respectively. Mothers of children aged 1 born in November and August receive the benefit for 4 and 1 month respectively.

### 2.5.4 Parental leave benefit (*bfapl\_s*)

- ***Brief description***

The benefit is received by working parents taking care of a small child (children).

- ***Definitions***

The unit of analysis consists of partners and own children aged 0 to 3.

- ***Eligibility conditions***

Mothers and fathers who are employed or self-employed persons are eligible for receipt. The benefit can be claimed from the end of the 6<sup>th</sup> month after the child's birth until the child reaches the age of 8.

There are two cases: (a) the child is the 1<sup>st</sup> or the 2<sup>nd</sup> in a family, (b) the child is the 3<sup>rd</sup> or subsequent child in family or twins (multiples) are born. In case (a), the leave lasts 6 months if it

is only used by the mother, or 8 months if mother and father use 4 months each. In case (b), the leave lasts 30 months and can be also used by mother only, or equally shared by the parents.

- **Income test**

This is not a means-tested benefit.

- **Benefit amount**

The benefit base is the beneficiary's mean net wage received during the six-month period preceding the work-leave.<sup>2</sup> During the months 1 to 6 (or 1 to 8, if parents share the leave in equal parts), the benefit amount is equal to 100% of the base. The maximum is set to HRK 2,661 (80% of BUB), while the minimum equals HRK 1,663 (50% of BUB). In cases (b), the benefit is equal to HRK 1,663 (50% of BUB), in the remaining period (months 7 to 30, or 9 to 30, if parents share the leave in equal parts during the first 8 months).

- **EUROMOD notes**

According to administrative data less than 3% of recipients are men. Hence, in EUROMOD the benefit receipt is only granted to mothers. Data on average duration of benefit receipt are not available. Based on common perception, maximum duration is assumed for case (a). As a consequence, the maximum simulated duration of benefit receipt in that case is 6 months. In case (b) it is assumed that the benefit is used all at once and that it lasts for its maximum duration (i.e. 30 months). The benefit duration (depending on the case and on children's month of birth) is described in Table 2.9.

Table 2.9 Duration of parental leave benefit (nr of months)

<i>for mothers of...</i>	<b>born in February</b>	<b>born in May</b>	<b>born in August</b>	<b>born in November</b>
children aged 0	5	2	0	0
up to 2 children, youngest aged 1	1	4	6	6
> 2 children/twins, youngest aged 1	12	12	11	8
> 2 children/twins, youngest aged 2	12	12	12	12
> 2 children/twins, youngest aged 3	1	4	7	10

Notes: The months of birth refer to the youngest child in the benefit unit. Mothers need to have exhausted maternity leave benefit (provided one month before and six months after the birth of a child) before receiving parental leave benefit.

### 2.5.5 Support during the newborn child care (*bface\_s*)

- **Brief description**

The benefit is received by parents of newborn children who are unable to claim for the maternity and the parental leave benefits.

- **Definitions**

<sup>2</sup> For employees, the net wage is gross wage minus employee's contributions and PIT. For self-employed the benefit base is the base for SC counterfactually taxed by employees' SC and PIT.

The unit of analysis consists of partners and own children aged 0 to 3.

- **Eligibility conditions**

This benefit is designed to provide support to parents taking care of a newborn child (children) who do not qualify as employed or self-employed persons. The following groups are considered as eligible: “other income” earners, workers in agriculture, unemployed and inactive persons.

The benefit is received from the child’s birth and can last 12 months at most if the child is the 1<sup>st</sup> or the 2<sup>nd</sup> in the family, or 36 months at most if it is the 3<sup>rd</sup> or subsequent child in the family or if twins (multiples) are born.

- **Income test**

This is not a means-tested benefit.

- **Benefit amount**

The benefit amount equals HRK 1,663 per month (50% of BUB).

- **EUROMOD notes**

The benefit receipt is only granted to mothers. The benefit duration (depending on the case and on children’s month of birth) is described in Table 2.10.

Table 2.10 Duration of support during the newborn child care (nr of months)

<i>for mothers of...</i>	<b>born in February</b>	<b>born in May</b>	<b>born in August</b>	<b>born in November</b>
children aged 0	11	8	5	2
up to 2 children, youngest aged 1	1	4	7	10
> 2 children/twins, youngest aged 1	12	12	12	12
> 2 children/twins, youngest aged 2	12	12	12	12
> 2 children/twins, youngest aged 3	1	4	7	10

Notes: The months of birth refer to the youngest child in the benefit unit.

### 2.5.6 Lump-sum grant for newborn children (*bfaba\_s*)

- **Brief description**

The grant is received by parents of newborn children.

- **Definitions**

The unit of analysis consists of partners and own children aged 0.

- **Eligibility conditions**

All parents of newborn children are eligible, irrespectively of their working status.

- **Income test**

This is not a means-tested benefit.

- **Benefit amount**

The benefit amount is HRK 2,328 (70% of BUB).

### 2.5.7 Child benefit (*bch\_s*)

- **Brief description**

Child benefit is a monthly means-tested benefit paid to families with children below a certain age limit.

- **Definitions**

The unit of analysis consists of households with dependent children. The latter are defined as (a) persons aged up to 15; (b) persons aged 15, if involved in primary education – until the end of the school year; (c) persons aged between 15 to 19, if involved in secondary education – until the end of the school program, (d) persons aged up to 27, if facing severe health issues.

- **Eligibility conditions**

Beneficiaries are households with dependent children.

- **Income test**

Monthly household income per member (total household income divided by the number of household members) must be lower than HRK 1,663 (i.e. 50% of BUB). Household income is defined the same way as for the Subsistence benefit; the Subsistence benefit is not part of household income.

- **Benefit amount**

Benefit amounts per child are presented in the following table:

Table 2.11: Child benefit income thresholds and benefit rates (2011-2015), HRK per month

Household income per member	2011-2015
less than HRK 543.14	299.34
HRK 543.14 – 1,119.53	249.45
HRK 1,119.53 – 1,663	199.56

The amounts of the above table are increased by 25% if both parents are missing or if they are ‘permanently incapable of independent living’. The amounts are increased by 15% if one parent is missing or if he/she is permanently incapable for independent living. The amount designated to a child with invalidity is increased by 25%.

“*Pronatality supplement*”: the benefit amount is augmented by HRK 500 if a household has 3 children and HRK 1,000 if a household has 4 or more children.

- **EUROMOD notes**

In EUROMOD the state of ‘permanent incapability of independent living’ is proxied by people’s disability status.

## 2.6 Social contributions

### 2.6.1 Employee social contributions (*tscee\_s*)

- *Liability to contributions*

All employers are required to pay social insurance contributions for each person they employ.

- *Income base used to calculate contributions*

The contribution base is gross employment earnings.

The floor base is 35% of AGWPY (see Table 2.4). There is no ceiling base for these contributions.

- *Contribution rates*

(a) General health contributions: the rate was 15% until 04/2012. From 05/2012 to 03/2014 the rate was equal to 13%. From 04/2014 and on the rate is 15%.

(b) Occupational health contributions: the rate is 0.5% of gross employment earnings.

(c) Employment contributions: the rate is 1.7% of gross employment earnings.

### 2.6.2 Employer social contributions (*tscer\_s*)

- *Liability to contributions*

These contributions are paid by private and public sector employees. Persons belonging in contributory scheme A pay Pension contributions A only. Persons in contributory scheme B pay both Pension contributions B1 and B2.

- *Income base used to calculate contributions*

The contribution base is gross employment earnings. The floor base is 35% of AGWPY. For Pension contributions A and Pension contributions B1, both monthly and yearly ceilings are determined: monthly ceiling base is equal to 6 times AGWPY and yearly ceiling base is 72 times AGWPY. For Pension contributions B2 only monthly ceiling base is determined, equal to 6 times AGWPY.

- *Contribution rates*

Persons in contributory scheme A pay Pension contributions A: the rate is 20% of the contribution base.

Persons in contributory scheme B pay (1) Pension contributions B1: the rate is 15% of the contribution base, and (2) Pension contributions B2: the rate is 5% of the contribution base.

- *EUROMOD notes*

In order to distinguish people contributing to pillar 1 from people contributing to both pillars 1 and 2 we calculated their age in 2002. If it was less than 40, they had to contribute to both pillars. If it was above 50, they had to contribute to pillar 1 only. People aged between age 40 and 50 could choose voluntarily to which pillar to contribute. However, as we know from the administrative data that 70% of these people had chosen to be in pillar 1, all people of this age group were assumed to contribute only to this pillar.

### 2.6.3 Self-employed social contributions (*tscse00\_s*)

- **Liability to contributions**

Self-employed persons are obliged to pay social contributions. For a definition of self-employed person, see section 1.1. There exist various taxation schemes for self-employed people, which depend on their yearly revenue, type of activity, voluntary choices, etc. The largest group are self-employed persons who run their accounting books on cash basis, and calculate their yearly income as a difference between total receipts and total outlays; they are PIT payers (group A). Some opt for corporate income tax instead of PIT, whereby they use accrual basis for accounting (group B). Entrepreneurs in agriculture may be members of group A or group B, however, if their yearly receipts are below certain thresholds, they can opt for lump-sum PIT (group C) or they can be exempted from PIT taxation (group D). Belonging to certain group determines the SC bases and rates.

We focus on self-employed persons who run accounting books on cash basis and pay PIT (group A). They are divided into four groups: “professionals I”, “professionals II”, “craftsmen” and “farmers I”. A separate group, “farmers II”, is formed, which contains farmers exempted from PIT taxation (group D).

- **Income base used to calculate contributions**

Income bases are lump-sum, i.e. they do not depend on income earned. There are several different lump-sum amounts, which depend on the type of self-employment. The base is obtained as product of AGWPY and type-specific coefficients, which are shown in the following table:

Table 2.12: Coefficients used in the calculation of self-employed social contributions base

Type of self-employment	Coefficient
professionals I	1.10
professionals II	0.65
craftsmen	0.65
farmers I	0.55
farmers II	0.35

Notes: *Professionals I*: health care workers, veterinarians, lawyers, notaries, auditors, engineers, architects, tax advisors, bankruptcy trustees, interpreters, translators, tourist workers;  
*Professionals II*: nurses, dental technicians, physiotherapists, film workers, journalists.  
*Farmers I*: farmers who run accounting books on cash basis, and are PIT payers  
*Farmers II*: farmers who are exempted from PIT

- **Contribution rates**

The contribution rates for different groups of self-employed people are summarised in the following table:

Table 2.13: Contribution rates

	Other than Farmers II		Farmers II	
General health contributions	2011:	15%	2011:	7.5%
	2012-2013:	13%	2012-2013:	6.5%
	2014-2015:	15%	2014-2015:	7.5%
Occupational health contributions	2011-2015:	0.5%	2011-2013:	n/a
			2014-2015:	0.5%
Employment contributions	2011-2013:	n/a	2011-2013:	n/a
	2014-2015:	1.7%	2014-2015:	1.7%
Pension contributions A	2011-2015:	20%	2011-2015:	10%
Pension contributions B1	2011-2015:	15%	2011-2015:	5%
Pension contributions B2	2011-2015:	5%	2011-2015:	5%

Notes: Persons in contributory scheme A pay Pension contributions A; Persons in contributory scheme B pay Pension contributions B1 and Pension contributions B2

- **EUROMOD notes**

Information on which group a person belongs concerning his/her taxation status is not available in the data. For non-agricultural self-employed persons, we assume that they all run accounting books on cash basis and pay PIT (as group A). They are divided into “professionals I”, “professionals II” and “craftsmen”. Agricultural self-employed persons are divided into “farmers I”, which pay PIT (as group A), and “farmers II”, which are exempted from PIT (as in group D). The division between “farmers I” and “farmers II” is made using an income threshold, which is a proxy for their annual receipts.

#### 2.6.4 “Other income” earners contributions (*tscse01\_s*)

- **Liability to contributions**

The contributions are paid by earners of “other income”. For more information on “other income” earners, see Section 1.1 and Section 1.4.4. Some types of “other income” (honoraria for original works of scientists, journalists, artists, etc.) are exempt from paying SC.

- **Income base used to calculate contributions**

The contribution base is equal to gross “other income”. There are no floors or ceilings.

- **Contribution rates**

(a) General health contributions: the rate was 15% until 04/2012. From 05/2012 to 03/2014 the rate was equal to 13%. From 04/2014 and on the rate is 15%.

(b) Pension contributions

Persons in contributory scheme A pay Pension contributions A: the rate is 20% of the contribution base.

Persons in contributory scheme B pay (1) Pension contributions B1: the rate is 15% of the contribution base, and (2) Pension contributions B2: the rate is 5% of the contribution base.

#### 2.6.5 Pensioner contributions (*tscbesi\_s*)

- **Liability to contributions**

The contributions are paid by pensioners who receive public pensions.

- ***Income base used to calculate contributions***

The contribution base is the “gross pension”.

- ***Contribution rates***

Pensioner health contributions: the rate is 1% of contribution base if the contribution base is not greater than ANWPY1 (see Table 2.4); the rate is 3% of contribution base if the contribution base is above ANWPY1.

## **2.6.6 Credited insurance contributions (*tsct\_s*)**

- ***Eligibility***

For recipients of Sickness benefits, Maternity leave and Parental leave benefits, pension contributions to pillar 2 are paid from the state budget. This is also the case for a very small sub-category of unemployed people (i.e. those who have reached the statutory retirement age without having spent enough years in insurance).

- ***Contribution base***

The contribution base for unemployed is 35% of AGWPY. For recipients of Sickness benefits, Maternity leave and Parental leave benefit the contribution base is equal to the amount of the respective benefit.

- ***Contributed rates/ amounts***

Pension contributions B2: the rate is 5% of the contribution base.

- ***EUROMOD notes***

Credited insurance contributions are only simulated for recipients of sickness, maternity leave and parental leave benefits.

## **2.7 Personal income tax (*tin\_s*)**

### **2.7.1 Tax unit**

The tax unit is an individual who receives income from a taxable income source.

### **2.7.2 Exemptions**

Social benefits are generally excluded from personal income tax. Taxation of dividends was introduced in 2012, with personal deduction of up to HRK 12,000 yearly and a rate of 12%. This deduction is abolished in 2015, and taxation of interest on savings accounts, current accounts and securities is introduced, also at a rate of 12%.

### **2.7.3 Schedule types**

As noted in sections 1.1 and 1.4.2, different income sources are taxed using different schedule types:

(a) General schedule: it applies for persons who submit yearly tax returns.

(b) Monthly-adjusted general schedule: it applies in the taxation of employment earnings and pensions. It is similar to the general schedule, but on a monthly basis.

(c) Income source specific one-rate schedules: they apply in the taxation of rental income, dividends, and “other income”.

#### 2.7.4 Tax allowances

- *Eligibility conditions*

Social contributions represent tax allowances. For employed persons this involves Pension contributions; for self-employed persons all social contributions i.e., General health contributions, Occupational health contributions and Pension contributions; for “other income” earners Pension contributions; for pensioners Pensioner health contributions.

Each tax unit can claim the *regular basic personal allowance*. Persons who receive pensions based on mandatory contributions claim *pensioner’s basic personal allowance*.

In addition to regular and pensioner’s basic personal allowance, a tax unit can claim *regular personal allowance for supported family members* – children and other immediate family members (spouses, parents, parents in law, grandparents, grandchildren). The PIT law is not specific on the maximum age of supported children: all children in regular education are included; children who finished their regular education and are waiting for the first job are also included.

The above mentioned personal allowances are available in the monthly-adjusted general schedule for all taxpayers to which this schedule applies. These allowances are also available in the general tax schedule, but some taxpayers can use *enlarged* personal allowances (see below). Personal allowances are not available in income-specific schedules and to claim them when these schedules apply, taxpayers must fill in a tax return.

People who live in “special areas” can claim *enlarged* basic personal allowance and the corresponding *enlarged* personal allowance for supported family members. These allowances are available only in the general tax schedule. Thus, in order to claim them, a taxpayer must fill in a tax return. Before 2014, special areas were war-stricken and mountainous cities and municipalities and the amounts of enlarged personal allowances were up to 114% higher than regular. Since 2014, special areas are cities and municipalities whose economic development index is below average and enlarged allowances are up to 45% higher than general.

In the period from 2012 to 2015, each tax unit has a personal tax allowance for income from dividends at a yearly amount of HRK 12,000. The tax allowance for income from dividends is available only in the general tax schedule.

- *Income test*

Total personal income of supported child or supported adult (excluding social benefits and children’s family pension) may not exceed: (a) HRK 10,800 in 2011, (b) HRK 11,000 in 2012-2014, and (c) HRK 13,000 in 2015.

- *Amounts of allowances*

Basic personal allowance is equal to  $BPA = RBPA$  for non-pensioners, where RBPA is the indicator from Table 2.13. For pensioners, basic personal allowance is obtained as  $BPA = \min(\max(pens, RBPA), MBPA)$ , where *pens* denotes pensions based on mandatory contributions, whereas MPBPA is the indicator from Table 2.4.

Suppose that persons A and B are parents of  $c$  children. The personal allowance for the  $i$ th child is obtained as  $CA_i = RBPA \cdot [0.4 + 0.1 \cdot i \cdot (i + 1)/2]$ . Total personal allowance for  $c$  children is equal to  $TAC = \sum_i^c CA_i$ . The amount TAC can be divided among two parents in whatever proportion. Thus, persons A and B obtain  $TAC_A = p \cdot TAC$  and  $TAC_B = (1 - p) \cdot TAC$ , respectively. In practice, the parent with larger income uses the whole amount of TAC, i.e.  $p = 1$  or  $p = 0$ ; only a minor share of parents divide TAC.

For each supported non-child member the personal allowance is equal to  $0.5 \cdot RBPA$ .

If the taxpayer or her (his) supported members are persons with disability, supplemental personal allowance is given. For taxpayer and each dependant with less than 100% disability, the supplement equals  $0.3 \cdot RBPA$ , while it equals  $1.0 \cdot RBPA$  for persons with 100% disability.

Monthly personal tax allowances for tax units residing in general areas are presented in Table 2.13.

Table 2.13 Personal tax allowances (2011-2015), HRK per month

	2011	2012-2014	2015
Basic personal allowance for non-pensioner	1,800	2,200	2,600
Basic personal allowance for pensioner	1,800-3,200	2,200-3,400	2,600-3,800
Regular personal allowance for supported family members			
(a) each supported non-child member	900	1,100	1,300
(b1) the first child	900	1,100	1,300
(b2) the second children	1,260	1,540	1,820
(b3) the third child	1,800	2,200	2,600
(b4) etc. (see formula above)			
(c1) supplement for each taxpayer and supported member with disability	540	660	780
(c2) supplement for each taxpayer and supported member with 100% disability	1,800	2,200	2,600

## 2.7.5 Tax deductions

- *Types of deductions*

The following tax deductions are available:

(D1) Donations for cultural, educational, scientific, medical, humanitarian, sports and religious purposes;

(D2) Contributions paid to voluntary pension funds by employers on behalf of their employees or by self-employed persons on behalf of themselves.

Other deductions include: (a) deductions for self-employed who employ persons living in “special areas”, (b) deductions for self-employed, for expenditures on research and development, and outlays for education of young employees, (c) Deductions for HRVI and receivers of HBDR related survivors pension, etc.

- *Eligibility conditions*

Each tax unit can claim deductions D1 and D2 if the relevant outlays can be documented. Deduction D1 is available in the general schedule only.

- *Amounts*

The maximum amount of D1 is 2% of the previous tax year's income. The total yearly amount of D2 is capped on HRK 6,000.

- *EUROMOD notes*

Due to lack of information, the only tax deduction that has been simulated in EUROMOD was the one for private insurance contributions for the self-employed.

### 2.7.6 Tax base

In the general schedule, the tax base is equal to total yearly taxable income minus yearly personal tax allowances and deductions.

In the monthly-adjusted general schedule, the tax base is equal to monthly taxable income minus monthly personal tax allowances.

In income-specific schedules, the tax base is equal to total taxable income.

### 2.7.7 Tax schedule

In the general schedule, both yearly and monthly-adjusted, the tax schedules rates are applied as described in the tables below:

Table 2.14 Tax schedule (2011)

Tax band	Income bracket (HRK per month)		Tax rate
	Lower limit	Upper limit	
1	0	3,600	12%
2	3,600	10,800	25%
3	10,800	-	40%

Table 2.15 Tax schedule (2012-2014)

Tax band	Income bracket (HRK per month)		Tax rate
	Lower limit	Upper limit	
1	0	2,200	12%
2	2,200	8,800	25%
3	8,800	-	40%

Table 2.16 Tax schedule (2015)

Tax band	Income bracket (HRK per month)		Tax rate
	Lower limit	Upper limit	
1	0	2,200	12%
2	2,200	13,200	25%
3	13,200	-	40%

There are several income-specific schedules, of which we describe the following four:

Table 2.17 Income specific tax schedules

Income source	Tax base	Tax rates		
		2011	2012-2014	2015
Rental income	gross income	12%	12%	12%
“Other income”	gross income <i>minus</i> pension contributions	25%	25%	25%
Dividends	gross income above the amount of personal deduction	0%	12%	12%
Interest income	gross income	0%	0%	12%

Notes: (a) The personal deduction in taxation of dividends equalled HRK 12,000 per year in 2012-2014; in 2015 this personal deduction was abolished;

(b) As noted in Section 1.4.4 and 2.6.4, “other income” related to honoraria for original works of scientists, journalists, artists, etc., is exempt from SC; in PIT assessment, special “standardised costs” are further deducted in calculation of tax base (equalling 30% or 55% of tax base in Table 2.17). However, due to lack of information, these regulations are not simulated in EUROMOD.

- **EUROMOD notes**

In EUROMOD investment income (yiy) includes both dividends and interest income. As disentangling the two is not possible due to lack of available information, the taxation rules that are applicable for dividends were implemented for this income source.

## 2.8 Other taxes

### 2.8.1 Surtax (*tmu\_s*)

- **Tax unit**

The unit of analysis is individual.

- **Tax base and tax schedule**

The tax base is the amount of PIT. LSG units set the level of the rate. The maximum rates can be set to: (a) 10% in municipalities, (b) 12% in cities with a population below 30,000, (c) 15% in cities with a population over 30,000, except (d) 30% in Zagreb (where the current rate is 18%).

- **EUROMOD notes**

Due to lack of information on LSG units, the simulated tax rates in EUROMOD were (a) 16% for people living in densely populated areas, (b) 12% for those living in intermediate populated areas and (c) 6% for people living in thinly populated areas. These rates are based on the fact that cities have, on average, larger surtax rates than municipalities. Furthermore, the rates are tuned in such a way so that the ratio between total simulated surtax and PIT aligns with the relevant ratio obtained from administrative data.

### 3. DATA

#### 3.1 General description

The Croatian dataset for EUROMOD 2011-2015 simulations is derived from the EU-SILC standard UDB 2012 (income reference year 2011). It contains the data from wave 2012 of the Croatian SILC survey which is implemented as a 4-year rotating household panel survey.

Commission Regulation 28/2004 defines indicators aimed at measuring unit non-response in EU-SILC final quality reports. At the time of writing the Croatian EU-SILC Quality Report has not yet become available.

Table 3.1 EUROMOD database description

EUROMOD database	HR_2012_a2
Original name	UDB_c12_ver 2012-1 from 01-03-14
Provider	Eurostat
Year of collection	2012
Income reference period	2011
Sample size	Indiv: 15,166 HH: 5,838

#### 3.2 Data adjustment

This section summarises the most important adjustments performed to make data from EU-SILC suitable for the purposes of EUROMOD.

#### 3.3 Imputations and assumptions

##### 3.3.1 Time period

The reference period for the various attributes is:

- Demographic variables (age, marital status, education): at the date of the interview;
- Economic activity status: recorded both at the date of interview and for each month during the income reference year;
- Current employment variables: at the date of the interview;
- Income data: calendar year 2011 (based on 12-months period of receipt);
- Housing, durables possessions, financial, social, and health situation of household: at the date of the interview.

All monetary amounts in the SILC are expressed in annual terms. These are converted into monthly terms (dividing by 12) for the EUROMOD database.

##### 3.3.2 Dropped observations

People with year of birth equal to 2012 (18 cases) were excluded from EUROMOD's database, as they were not born in SILC's income reference period. Moreover, 33 non-respondent households were dropped from the original sample.

### 3.3.3 Gross incomes

In the SILC data missing values are being imputed, if necessary. Most of the imputations are done by the Croatian Bureau of Statistics (CBS). In cases there were still some missing values imputations were done jointly by the authors and they are described in detail in the Data Requirement Document (DRD), following the templates prepared by the EURMOD core team.

By default in EU-SILC all values of income components are in gross terms. The authors have checked the relationship between gross and net incomes from SILC data for all taxable income sources. Certain irregularities have been revealed in the case of self-employment income. For self-employed persons, the CBS staff has used an algorithm that treats all these persons as if they are included into corporate income system (denoted as “group B” in section 2.6.3). However, actually, this relates only to a small percentage of self-employed persons. Therefore, the estimates of imputed SIC, PIT and gross income for majority of these persons are biased. To cure the problem the *‘Net-to-Gross Income Conversion Model’* was created, consisting of six parts, which perform the following functions:

- (1) Dividing people who earned self-employment income into groups;
- (2) Preparation of income variables;
- (3) Grouping household members into 'native families';
- (4) Calculation of PIT;
- (5) Calculation of SIC and gross income;
- (6) Obtaining the final variables.

SILC variables py050g and py050n contain gross and net incomes of all self-employed income people, including various groups of self-employed persons and “other income” earners (see section 2.6.3). Self-employed persons are those whose economic status is farmer, employer or self-employed. All other persons with positive self-employment income are “other income” earners. Self-employed persons are divided into five mutually exclusive groups: (a) family workers – persons whose self-employed status is “family worker”, (b) farmers – those whose branch of industry is agriculture, (c) “professionals I” – those whose occupation is professionals, (d) “professionals II” – those whose occupation is technicians and associate professionals, (e) all other self-employed persons. Farmers are further divided into “farmers I” (if the yearly net income is above HRK 60,000) and “farmers II” (otherwise).

### 3.3.4 Disaggregation of harmonized variables

A range of UDB EU-SILC benefit variables have been obtained after aggregation of several country-specific benefits that are recorded by the National SILC survey. The aggregation is done by benefit function, e.g. for old-age, disability, sickness, unemployment, family etc. However, to simulate certain policies in EUROMOD information about the entitlement of single benefits is required. Thus, efforts were made to disaggregate the broader benefit categories by imputing the separate components. The imputations have been done using information in EU-SILC on individual/household characteristics and receipt of the aggregated variables.

Table 3.2 contains the main variables that are derived for the Croatian part of EUROMOD dataset by imputations.

Table 3.2 EUROMOD database description

Variable name in EUROMOD	Variable description	Component of the aggregated variable in EU-SILC
bsa00	Subsistence benefit	HY060G
bsaot	Other social assistance benefits	HY060G
bunct	Unemployment insurance benefit	PY090G
bunot	Other unemployment benefits	PY090G
ysv	Severance pay	PY090G
pdi	Disability pension	PY130G
bdi	Disability benefits	PY130G

In the following description we use the abbreviations  $hy060g$ ,  $py090g$  and  $py130g$ , which represent the actual values of SILC variables HY060G, PY090G and PY130G, multiplied by the HRK/EUR exchange rate and divided by 12.

As explained in section 1.3.7, there are several social assistance benefits, among which the primary role is taken by the Subsistence benefit. Because the variable HY060G sums up together all these benefits, and only Subsistence benefit can be modelled in EUROMOD, imputation of Subsistence benefit is performed. The amount of Subsistence benefit ( $bsa00$ ) is calculated for all households, for which purpose a model is created, that uses the parameters described in section 2.5.1. For households in which  $bsa00 > hy060g$ , the value of Subsistence benefit was reduced to  $bsa00 = hy060g$ . For households in which  $bsa00 < hy060g$ , the value of Subsistence benefit was kept the same, and furthermore, the value of Other social assistance benefits is obtained as  $bsaot = hy060g - bsa00$ .

As explained in section 1.3.4, there are several unemployment benefits, among which the Unemployment benefit has the major role. The variable PY090G bunches them together, also including severance and termination pay. A simple model is created, which calculates the maximum duration of unemployment benefit for each person with  $PY090G > 0$ . Maximum potential yearly amount of unemployment benefit (MUB) is then obtained. If  $MUB > PY090G$ , the difference  $MUB - PY090G$  is allocated to Severance pay. The rest of MUB (RMUB) is allocated between: (a) Unemployment benefit – if RMUB is greater than the minimum Unemployment benefit that can be obtained for one month (i.e. 50% of NMWCY; see section 2.5.2), and (b) Other unemployment benefits (bunot) – if otherwise.

The variable PY130G contains both the Disability pension and various disability non-pension benefits, which are described in section 1.3.3. To separate the Disability pension from other benefits, we used the knowledge of typical values of other benefits. Thus, if the value of  $py130g$  was, in monthly terms: (a) up to HRK 500, (b) HRK 1,250, (c) HRK 2,500, the value of  $py130g$  was allocated to: (a) “Physical impairment supplement”, “Allowance for assistance and care” and “Pre-employment supplement”, (b) “Personal disability allowance”, and (c) “Supplement for caregiver”, respectively. Summing up the values under (a), (b) and (c), the variable disability benefits is obtained ( $bdi$ ), whereas the variable disability pension ( $pdi$ ) is obtained as the difference  $py130g - bdi$ .

### **3.4 Uprating**

To account for any time inconsistencies between the input dataset and the policy year, uprating factors are used. Each monetary variable (i.e. each income component) is uprated so as to account for changes in the non-simulated variables that have taken place between the year of the data and the year of the simulated tax-benefit system. Uprating factors are generally based on changes in the average value of an income component between the year of the data and the policy year.

As a rule, uprating factors are provided both for simulated and non-simulated income components present in the input dataset. Note however that in the case of simulated variables, the actual simulated amounts are used in the baseline rather than the uprated original variables in the dataset. Uprating factors for simulated variables are provided so as to facilitate the use of the model in cases when the user wishes to turn off the simulation of a particular variable. The list of uprating factors as well as the sources used to derive them can be found in Table 3.3.

Table 3.3 Raw indices for deriving EUROMOD uprating factors

Index	Constant name	Values of the raw indices					Source	Income components uprated by the index	Notes
		2011	2012	2013	2014	2015			
Harmonized CPI	\$HICP	102.25	105.75	108.08	107.86	107.53	S1 and S2	afc, xhcmomi, xhcot, xmp, xpp, ypp	N1
GDP	\$f_gdp	100.00	99.36	99.26	98.59	98.98	S2	yyi, ysv,	N2
employment income	\$f_yem	7,796	7,875	7,939	7,953	7,990	S3 and S4	bhl, kfb, kfbcc, kivho, yem, yempv, yivwg, yot, ypt,	N3
self-employment income	\$f_yse	100.00	99.36	99.26	98.59	98.98	S2	ysenr00, ysenr01, ysere00, ysere01, yse	
property income	\$f_ypr	100.00	99.36	99.26	98.59	98.98	S2	xhcr, ypr	
investment income	\$f_yiy	3.19	3.15	3.07	2.98	2.78	S5		
old-age pensions	\$f_poa	58.370	59.225	60.620	60.920	60.920	S6	poa	
disability pensions	\$f_pdi	58.370	59.225	60.620	60.920	60.920	S6	pdi	
survivors' pensions	\$f_psu	58.370	59.225	60.620	60.920	60.920	S6	psu	
unemployment insurance benefit	\$f_bunct	1,392	1,366	1,402	1,245	1,245	S7	bunct	
other unempl. benefits	\$f_bunot	102	118	233	309	309	S7	bunot	
family benefits	\$f_bfa	4,905	4,917	4,879	4,879	4,879	S8	bfa	
housing benefits	\$f_bho	97.9	71.8	60.9	60.9	60.9	S9	bho	
education allowances	\$f_bed	100.00	99.36	99.26	98.59	98.98	S2	\$f_bed	
subsistence benefit	\$f_bsa00	615	585	612	643	643	S9	bsa00	
other social assistance benefits	\$f_bsaot	159.18	150.32	155.81	155.81	155.81	S9	bsaot	
one	\$f_one	1	1	1	1	1		tad, tin, tis, tpr, tscee, tscer, tscse, yds	
disability benefits	\$f_bdi	2,311	2,243	2,315	2,315	2,315	S8	bdi	

Notes:

N1: For 2015 imputation performed using data on projected growth rate of Harmonised index of consumer prices (S2)

N2: GDP index 2011-2015 is obtained using data on GDP real growth rates and GDP deflator growth rates (S2)

N3: The figure for 2015 shows the average for the period 01/2015 to 05/2015.

Sources:

S1: Croatian Bureau of Statistics: Statistics in line - Prices, Table 14.1. CONSUMER PRICE INDICES, <http://www.dzs.hr/Hrv/publication/StatisticsInLine.htm>

S2: European Commission: Macroeconomic imbalances, Country Report – Croatia 2015, EUROPEAN ECONOMY, Occasional Papers 218, Table 1.1: Key economic, financial and social indicators, [http://ec.europa.eu/economy\\_finance/publications/occasional\\_paper/2015/op218\\_en.htm](http://ec.europa.eu/economy_finance/publications/occasional_paper/2015/op218_en.htm)

S3: Croatian Bureau of Statistics: Statistical Yearbook of the Republic of Croatia 2014, Table 7-1. AVERAGE MONTHLY PAID OFF NET AND GROSS EARNINGS PER PERSON IN PAID EMPLOYMENT, [http://www.dzs.hr/Hrv\\_Eng/ljetopis/2014/sljh2014.pdf](http://www.dzs.hr/Hrv_Eng/ljetopis/2014/sljh2014.pdf)

S4: Croatian Bureau of Statistics: Report, AVERAGE MONTHLY GROSS EARNINGS OF PERSONS IN PAID EMPLOYMENT For May 2015, Table 1. AVERAGE MONTHLY GROSS EARNING FOR MAY 2015, [http://www.dzs.hr/Hrv\\_Eng/publication/2015/09-01-02\\_05\\_2015.htm](http://www.dzs.hr/Hrv_Eng/publication/2015/09-01-02_05_2015.htm)

S5: Croatian National Bank: Statistical overview, Table G1b: Credit institutions' interest rates on kuna deposits indexed to foreign currency (new business), <http://www.hnb.hr/statistika/>

S6: Croatian Institute for Pension Insurance: Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje, broj 2, Tablica 24. AKTUALNA VRIJEDNOST MIROVINE I NAJNIŽE MIROVINE TE POSTOTAK USKLAĐIVANJA, <http://www.mirovinsko.hr/default.aspx?id=6364>

S7: Croatian Employment Service: Godišnjak (2011., 2012., 2013., 2014.), Tables: Nezaposlene osobe - korisnici prava iz materijalnog osiguranja, Financijsko izvješće o приходима i rashodima, <http://www.hzz.hr/default.aspx?id=10055>

S8: Croatian Bureau of Statistics: SOCIAL PROTECTION IN THE REPUBLIC OF CROATIA (ESSPROS METHODOLOGY), 2013, Table: Total social protection expenditures and expenditures for social protection benefits, by function, [http://www.dzs.hr/Hrv\\_Eng/publication/2015/10-01-05\\_01\\_2015.htm](http://www.dzs.hr/Hrv_Eng/publication/2015/10-01-05_01_2015.htm)

S9: Ministry of Social Policy and Youth: Godišnje statističko izvješće, Table 2-4. LOKALNI I REGIONALNI IZDACI ZA SOCIJALNU SKRB, [http://www.mspm.hr/djelokrug\\_aktivnosti/socijalna\\_skrb/statisticka\\_izvjesca/godisnje\\_izvjesce\\_2011](http://www.mspm.hr/djelokrug_aktivnosti/socijalna_skrb/statisticka_izvjesca/godisnje_izvjesce_2011)

## 4. VALIDATION

### 4.1 Aggregate Validation

EUROMOD results are validated against external benchmarks. Detailed comparisons of the number of people receiving a given income component and total yearly amounts are shown in Annex 2. Both market incomes and non-simulated taxes and benefits in the input dataset as well as simulated taxes and benefits are validated against external official data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

#### 4.1.1 Components of disposable income

In this section, the main differences between the definition of disposable income in EUROMOD and EU-SILC are presented.

Table 4.1 Components of disposable income

	EUROMOD 2012	EU-SILC 2012
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
Company car	0	+
Contributions to individual private pension plans	0	0
Cash benefits or losses from self-employment	+	+
Pension from individual private plans	+	0
<i>Unemployment benefits</i>	+	+
<i>Old-age benefits</i>	+	+
<i>Survivor' benefits</i>	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
<i>Family/children related allowances</i>	+	+
Social exclusion not elsewhere classified	+	+
Housing allowances	+	+
Regular inter-household cash transfer received	+	+
Interests, dividends, etc.	+	+
Income received by people aged under 16	+	+
Regular taxes on wealth	-	-
<i>Regular inter-household cash transfer paid</i>	-	-
<i>Tax on income and social contributions</i>	-	-
<i>Repayments/receipts for tax adjustment</i>	0	+

#### 4.1.2 Validation of incomes inputted into the simulation

Table 4.2 in Annex presents the differences between the number of employed and unemployed in the input dataset and external statistics.

There is a huge discrepancy concerning the number of unemployed, where the SILC-based figure for 2011 is twice as high as the figure based on external statistics, which are based on the Labour Force Survey (LFS). This can be explained by the differences in methodology, where the LFS definition of unemployed person is much stricter than the one of SILC. Evidently, large numbers of LFS-inactive have reported themselves as unemployed in SILC. It can be seen that among the 418 thousand persons who have been unemployed during all 12 months in 2011 in the SILC data, only 254 thousand have been “actively looking for a job in previous 4 weeks” (according to variable PL020). On the other hand, the number of employed is quite similar in SILC and LFS data.

Table 4.3 in Annex 2 shows the differences between the number of recipients of various types of market income in the input dataset and external statistics. Table 4.4 presents the differences in aggregate annual amounts.

The input dataset is based on SILC, while external statistics come from Tax Administration. SILC-based figures are about 15% lower than the administrative ones, both for the number of employed and the total employment income. As employment income is one of the main income sources, we have performed a comparison of wage distributions from the two data sources. Employment incomes are divided into eight brackets. Let us concentrate on 2011. Administrative data show significantly larger number (69%) of employees in the interval of 25% to 50% AGWPY. This is probably due to common feature of Croatian labour market, where many employers report their employees at the minimum wage, which lies in this interval, and pay the other part of salary in cash. SILC data show a larger number of employees in the next interval, of 50% to 75% AGWPY, by 14%. In all subsequent brackets, SILC data show smaller numbers of employees than administrative data, and the coverage ratio falls with gross income. The ratio between the number of wage earners in SILC and administrative data is only 28% for the income interval beyond 300% AGWPY. According to the tax data, 1.7% of employees fall into this bracket, but they earn 9.7% of the total wage income. On the other hand, in SILC data, people with employment income above 300% AGWPY make only 0.6% of all employees, who earn 2.8% of total employment income.

Table 4.5 in Annex 2 presents the differences between the number of recipients of various types of non-simulated benefits and numbers of payers of non-simulated taxes in the input dataset and external statistics. Table 4.6 shows the differences in aggregate yearly amounts of non-simulated taxes and benefits.

*Pensions.* According to SILC data in 2011, the number of retirement pensioners is 13% higher than the one recorded in administrative data (by the Croatian Institute for Pension Insurance). However, the number of all pension beneficiaries (retirement, disability, survivors) is by 3% lower in SILC. It seems that a part of surveyed people, who are actually disability and survivors pensioners, report themselves as retirement pensioners. The difference in total outlays on retirement pensions is even more pronounced; in SILC it is 26% higher than in the administrative source. Also, the total amount of all pensions is by 6% higher in SILC than in administrative source. A possible explanation is that some non-pension benefits may be classified by surveyed people as pension income. Furthermore, pensions earned from working abroad may be included into retirement pensions, while the administrative source captures only domestic pensions. The last suggestion has been checked through comparison of pension income distributions from two sources – SILC and Tax Administration – similarly as for employment income. In 2011, the total amount of all pensions in SILC is by 22% higher than the amount according to administrative data. The ratio between the number of pensioners in SILC and administrative data is 1.05; it ranges from 1.19 to 1.22 in the interval of 25% to 100% AGWPY, but then increases to 1.47 in the interval of 100% to 150% AGWPY, and further increases for higher brackets. Thus, the conjecture is that SILC data may cover some persons with high pensions

from abroad, which creates difference with Tax Administration data, which cover domestic pensions only.

*Housing benefits.* Total amounts of housing benefits in SILC underrepresent the official figures, by 13% to 21% in different years. Housing benefits in Croatia are connected with social assistance benefits (section 1.3.7), and some surveyed people might have allocated them into social assistance category. Furthermore, as can be seen below, there is a general trend of underreporting of social benefits in SILC.

*Sickness benefits.* The largest discrepancy for all non-simulated benefits is in the case of sickness benefits, where SILC data represent only 16% of total amount according to administrative sources. One reason for this might be that surveyed persons treat sickness benefits as employment income.

*Disability benefits.* Another underestimated category are disability benefits. Section 3.3.4 describes how the variable disability benefits (bdi) and disability pension (pdi) are obtained. The data on disability benefits are available only for 2013; the ratio between SILC/EUROMOD and official figures is only 23%. The disaggregation procedure can be questioned, in a sense that not enough amount is allocated to disability benefits; however, as we have seen, disability pensions are also underestimated in SILC.

### 4.1.3 Validation of outputted (simulated) incomes

Table 4.7 in Annex 2 presents the numbers of recipients of various types of simulated benefits and numbers of payers of simulated taxes, in EUROMOD and external statistics. Table 4.8 shows the same for aggregate yearly amounts.

*Child benefit.* EUROMOD results for Child benefit fit fairly well with the administrative data (Croatian Institute for Pension Insurance). There is a modest over-appreciation for the number of households which receive the benefit, which rises from 2%-3% in 2011-2013 to 9% in 2014. This rise is due to the sudden fall, by 6.5%, in the number of beneficiaries according to official statistics.

*Lump-sum grant for newborn children.* EUROMOD underestimates the total number of beneficiaries and the amount of Lump-sum grant for newborn children by about 20%. The official statistics (Croatian Bureau of Statistics) says that in 2011, 41.2 thousand children have been born and received the benefit. However, input data contain only 32.4 thousand children of age 0.

Concerning maternity, parental and child care benefits, a note must be made on the scarcity of administrative data. A request for data has been made by national team, asking for the number of beneficiaries, total amounts, duration of benefits, etc., but at the time of writing (January 2016), we have not yet obtained the data.

*Maternity leave benefit.* EUROMOD captures 86% of the administrative amount of Maternity leave benefit in 2011 (Croatian Institute for Health Insurance). One of the reasons is the same as for the Lump-sum grant for newborn children, as explained above. The second reason can be found in general underestimation of higher employment incomes in input data, and the benefit is related to wage (section 2.5.3).

*Parental leave benefit.* Unfortunately, we only have the administrative figures for 2013. The number of beneficiaries is somewhat underestimated, by 7%, whereas the total amount in EUROMOD is by 10% higher than administrative figure points out. One reason may be in the fact that EUROMOD assumes that all mothers use the parental benefit leave in maximum duration, whereas in reality some mothers may go back to work earlier.

*Support during the newborn child care.* EUROMOD underestimates the number of beneficiaries by 5% in 2013. Conversely, the amount of benefit is overestimated by 46%. The model assumes that each beneficiary receives the benefit in the maximum duration, but in reality this may not be the case. We could not obtain the data on distribution of benefit duration, which could be used in future to tune the model.

*Subsistence benefit.* Both the number of beneficiaries and the total amount of Subsistence benefit are overestimated by EUROMOD as compared to official figures. In former case, EUROMOD obtains 56% more beneficiaries from actual figure. On the other hand, the discrepancy in the aggregate amount is much smaller, 5%. The most likely explanation is that households with very low amounts of benefit do not take them up; these are households which have incomes from some other sources and their benefit is smaller than the “means of subsistence”. Inspection of output data reveals that 20 thousands recipients (28% of all recipients in EUROMOD) get less than HRK 300 per month, which is a half of the minimum monthly amount of Subsistence benefit for a single person (section 2.5.1).

While the administrative figure for Subsistence benefit is HRK 615 million in 2011, the SILC variable for social assistance benefits (HY060G) indicates the total amount of only HRK 390 million. Thus, SILC seriously underestimates the amount of social assistance benefits. Note that in this category other benefits are also included, such as lump-sum assistance (section 2.3.1). Our disaggregation procedure (section 3.3.4) has divided the contents of HY060G into Subsistence benefit (bsa00) and Other social assistance benefits (bsaot), which have total amounts of HRK 175 and 215 million, respectively. Thus, the disaggregation procedure has indicated even smaller amount of Subsistence benefit. The question can be posed: are the Other social assistance benefits (OSAB) appropriately allocated to different individuals? The administrative data reveal that the aggregate amount of OSAB is HRK 159 million, as compared to HRK 215 million in input data and EUROMOD. However, it should be noted that administrative data on OSAB do not capture social assistance benefits given by LSGs.

*Unemployment benefit.* SILC data seriously underestimate the number of recipients and the total amount of Unemployment benefit. According to SILC, about 80 thousands people received unemployment benefits, whereas the administrative figure for Unemployment benefit is 143 thousand people in 2011. Notice, however, that the average number of beneficiaries during 2011 according to administrative data is 75 thousands. EUROMOD uses SILC data to determine which persons are receiving Unemployment benefit, and also uses the amount of benefit recorded in SILC to calculate the benefit base (yempv).

We have seen in the previous section that input data capture only about 85% of total employment income, as registered in official sources. Consequently, similar discrepancy can be noticed for employer SC, employee SC, self-employed persons SC and personal income tax.

*Employer social contributions and Employee social contributions.* Regarding the total amount, the ratio between EUROMOD and administrative figures is between 87% and 89% in different years.

*Self-employed persons social contributions.* EUROMOD overstates the total amount of SC for self-employed persons in comparison to administrative figures by 19% in 2011.

*Personal income tax and Surtax.* The ratio between EUROMOD output and administrative data for Personal income tax is 84% in 2011, and 83% for Surtax.

## 4.2 Income distribution

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

### 4.2.1 Income inequality

Table 4.9 in Annex 2 presents income distribution indicators in EUROMOD and external statistics. External statistics on income distribution come from EUROSTAT, and are based on SILC for income years 2011 and 2012.

*Median income and Mean income.* In 2011 the mean and median income in EUROMOD and external statistics are almost identical. However, in 2012, while EUROMOD registers a slight increase in mean and median income, 1% and 1.8%, respectively, external data indicate a fall, by 1.8% and 4.5%, respectively.

*Gini coefficient.* The 2011 Gini coefficients in EUROMOD and external statistics are 29.2 and 30.9, respectively. Thus, the difference is 1.7 percentage points or 6%. The discrepancy mostly lies in the difference between EUROMOD and SILC regarding the coverage of social assistance benefits, particularly the Subsistence benefit (section 4.1.3), which significantly affects the bottom income decile. Furthermore, the recipients of Unemployment benefit tend to belong to lower part of income distribution, and the amounts of this benefit are notably larger in EUROMOD. Similar can be said of Sickness benefits and Disability benefits, which are underestimated in SILC data as compared to administrative data. Also, for given income data, EUROMOD provides “better targeting” of Child benefit than it is in reality, which may also contribute to lowering income inequality.

*Income distribution by decile groups.* The comparison by decile group income shares just confirms what has been said for the Gini coefficients. Lower income decile shares are overstated in EUROMOD, especially the first decile group (by 18%), while the tenth income decile is understated (by 3% in 2011 and 5% in 2012), in comparison to external data.

### 4.2.2 Poverty rates

Table 4.10 in Annex 2 presents poverty rates in EUROMOD and external statistics, which come from EUROSTAT and are based on SILC surveys.

*Poverty rates by age groups.* In 2011, EUROMOD shows larger poverty rate for the group ‘65+ years’, by 2%, than the external source. This may be due to application of Pensioner contributions in EUROMOD, whereas SILC data might not assume that form of contributions in conversion of net into gross income. For all other age groups, poverty rates are lower in EUROMOD, and the explanation is similar as for the Gini coefficient. Most remarkable difference in 2011 is for the group ‘0-15 years’, where EUROMOD indicates 13% lower poverty rate than the external source. This may be due to the fact that Subsistence benefit has relatively more pronounced effect on families with children.

*Poverty rates for different poverty lines.* EUROMOD shows lower poverty rates than external source for all selected poverty lines, for both men and women. The underestimation is stronger, the lower is the poverty line. Thus, for ‘40% median HDI’, EUROMOD poverty rate in 2011 is by 23% lower than in external date, while for ‘70% median HDI’ the difference is 6%. These trends are also visible in 2012, but the differences between two sources are reduced.

### 4.3 Validation of minimum wage

Table 4.11 in Annex 2 shows the results without and with implementation of the minimum wage. The implementation of the minimum wage brings negligible changes in total income and its distribution.

### 4.4 Summary of “health warnings”

The analysis in section 4.1 has shown that SILC data, which serve as input for EUROMOD, have certain deficiencies in terms of representativeness and coverage. Higher income earners are underrepresented in the SILC sample, which may particularly influence the analysis of PIT and employee/employer SCs. Some of the benefits, which cannot be simulated in EUROMOD, like sickness and disability benefits, are also underrepresented, which may give biased results on poverty rates.

*Personal income tax.* Due to the lack of data on the place of living, we could not simulate “enlarged personal allowance”, obtained by people who live on specific areas. For the same reason, we had to come up with an “educated guess” in order to specify the rates for Surtax.

*Self-employed social contributions.* Due to the lack of data on the type of self-employed persons, it was necessary to introduce certain assumptions, based on occupation and industry. As explained in section 3.3.3, due to the problems with gross incomes of self-employed persons, we had to develop our own net-to-gross computation procedure.

*Unemployment benefit.* As noted above, EUROMOD uses SILC data to determine which persons are receiving Unemployment benefit, and also uses the amount of benefit recorded in SILC to calculate the benefit base (yempv). However, the number of beneficiaries and the aggregate amount is significantly underestimated in SILC as compared to administrative data, and this problem extends to EUROMOD.

## 5. REFERENCES

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### Taxation

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Porezna uprava (Tax Administration), <http://www.porezna-uprava.hr/>

*Legal framework:*

Zakon o porezu na dohodak (act on personal income tax) (NN 177/04, 73/08, 80/10, 114/11, 22/12, 144/12, 43/13, 120/13, 125/13, 148/13, 83/14, 143/14)

Zakon o doprinosima (act on social insurance contributions) (NN 84/08, 152/08, 94/09, 18/11, 22/12, 144/12, 148/13, 41/14, 143/14)

### Pensions

*Institutions:*

Ministarstvo rada i mirovinskog osiguranja (Ministry of Labour and Pension System), <http://www.mrms.hr/>

Hrvatski zavod za mirovinsko osiguranje (Croatian Institute for Pension Insurance), <http://www.mirovinsko.hr/>

*Legal framework:*

Zakon o mirovinskom osiguranju (act on public pension insurance) (NN 157/13, 151/14, 33/15)

### Labour

*Institutions:*

Ministarstvo rada i mirovinskog osiguranja (Ministry of Labour and Pension System), <http://www.mrms.hr/>

Zavod za zapošljavanje (Croatian Employment Service), <http://www.hzz.hr/>

*Legal framework:*

Zakon o posredovanju pri zapošljavanju i pravima za vrijeme nezaposlenosti (act on employment services and unemployment benefits) (NN 80/08, 94/09, 121/10, 25/12, 118/12, 12/13, 153/13)

### Health

*Institutions:*

Ministarstvo zdravlja (Ministry of health), <http://www.zdravlje.hr/>

Hrvatski zavod za zdravstveno osiguranje (Croatian Institute for Health Insurance), <http://www.hzzo.hr/>

*Legal framework:*

Zakon o zdravstvenoj zaštiti (act on health protection) (NN 150/08, 71/10, 139/10, 22/11, 84/11, 154/11, 12/12, 35/12, 70/12, 144/12, 82/13, 159/13, 22/14, 154/14)

Zakon o obveznom zdravstvenom osiguranju (act on mandatory health insurance) (NN 80/13, 137/13)

### Family

*Institutions:*

Ministarstvo socijalne politike i mladih (Ministry of Social Policy and Youth), <http://www.mspm.hr/>

*Legal framework:*

Zakon o doplatku za djecu (Child benefit) (NN 94/01, 138/06, 107/07, 37/08, 61/11, 112/12)

Zakon o roditeljskim i roditeljskim potporama (act on maternity and parental benefits) (NN 85/08, 110/08, 34/11, 54/13, 152/14)

### **Social assistance**

*Institutions:*

Ministarstvo socijalne politike i mladih (Ministry of Social Policy and Youth),  
<http://www.mspm.hr/>

*Legal framework:*

Zakon o socijalnoj skrbi (act on social assistance) (NN 73/97, 27/01, 59/01, 82/01, 103/03, 44/06, 79/07, 57/11, 33/12, 157/13, 152/14)

### **Disability**

*Institutions:*

Ministarstvo socijalne politike i mladih (Ministry of Social Policy and Youth),  
<http://www.mspm.hr/>

*Legal framework:*

Zakon o zdravstvenoj zaštiti (act on health protection) (NN 150/08, 71/10, 139/10, 22/11, 84/11, 154/11, 12/12, 35/12, 70/12, 144/12, 82/13, 159/13, 22/14, 154/14)

Zakon o profesionalnoj rehabilitaciji i zapošljavanju osoba s invaliditetom (act on rehabilitation and employment of persons with disability) (NN 157/13, 152/14)

### **War veterans**

*Institutions:*

Ministry of Veterans' Affairs

*Legal framework:*

Zakon o pravima hrvatskih branitelja iz Domovinskog rata i članova njihovih obitelji (act on the benefits of Croatian Defenders of the Homeland War) (NN 174/04, 92/05, 02/07, 107/07, 65/09, 137/09, 146/10, 55/11, 140/12, 19/13, 33/13, 148/13, 92/14)

Zakon o zaštiti vojnih i civilnih invalida rata (act on the benefits of military invalids and civil invalids of the Homeland War) (NN 33/92, 77/92, 58/93, 2/94, 76/94, 108/95, 82/01, 103/03, 148/13)

## ANNEX 1: POLICY EFFECTS IN 2013-2014 AND 2014-2015

In this section we analyse the direct tax-benefit policy effect on household disposable income in Croatia between 2013 and 2014 as well as between 2014 and 2015. We try to understand how changes (or non-changes) to tax-benefit policies have affected household incomes in the two periods, abstracting from changes in the population characteristics (e.g. increased unemployment) and the distribution of market/original gross incomes (e.g. reduction in wages). It should be noted that tax-benefit policies in a given year are taken as of 30<sup>th</sup> of June.

Table A1 and Figure A1 show the policy effect measured in real terms by income component and income decile group. The effect is estimated as the difference between simulated household net income under the 2014 tax-benefit policies (deflating the tax-benefit monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2013 policies, as a percentage of mean equivalised household disposable income in 2013. Households are ranked based on their equivalised household disposable income. The total policy effect on household incomes is decomposed into the different components: public pensions, means-tested benefits, non-means-tested benefits, employees and pensioners' social insurance contributions (SIC), self-employed SIC and direct taxes. We isolate the policy effect from changes in market/original income, i.e. changes to market/original incomes are not considered as part of the policy effect and so, they have no effect on disposable income.

In comparison to 2013 policies, (deflated) 2014 policies only had a minor impact on average equivalised household disposable income. The poorest decile seems to have benefited the most from changes in means-tested benefits, and in particular from the increase in the Subsistence benefit levels. On the other hand, the simultaneous introduction of a cap in this benefit, set at the level of gross minimum wage, is estimated to have a negative impact on the second income decile.

Changes in public pension benefits led to an overall increase in average household disposable income by around 0.19%. The distribution of gains across income groups largely reflects where pensioners are located in the income distribution. The income-increasing effect from pension benefits is broadly reversed by the increase in self-employed social insurance contributions. The latter were mostly related to the increase in general health contributions, the introduction of unemployment contributions for all self-employed and expansion of occupational health contributions to farmers exempted from personal income tax.

Table A2 and Figure A2 shows the effect of policy changes in 2014-2015 on mean equivalised household disposable income by income component and income decile group, as a percentage of mean equivalised household disposable income in 2014. Again, each policy system has been applied to the same input data, deflating monetary parameters of 2015 policies by Eurostat's HICP.

Measured in real terms, policy changes led to an overall increase in average household disposable income by around 1.4%. The increase in household disposable income was almost solely driven by changes in direct taxes. Interestingly, the most important driver of this result was the increase in personal income tax allowances. The main beneficiaries were people located in the upper and middle part of the income distribution; hence, the effect of this policy change has been markedly regressive. The extension of the second personal income tax bracket from HRK 8,800 to 13,200 per month seems to have had a significant income-increasing effect only on the richest decile (35 per cent of the total direct taxation effect). Finally, the minor income-increasing effect from pension benefits is entirely driven by the slight decrease in consumer prices between the two years (deflation).

Table A1: Policy effects in 2013-2014, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee & pensioners SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.00	0.27	1.39	0.08	-0.01	-0.62	0.00	1.12
2	0.00	0.31	-0.26	0.05	-0.01	-0.25	0.00	-0.16
3	0.00	0.27	0.04	0.10	0.00	-0.33	0.02	0.10
4	0.00	0.25	0.05	0.03	-0.01	-0.21	0.02	0.13
5	0.00	0.19	0.04	0.01	0.00	-0.25	0.03	0.01
6	0.00	0.21	0.00	0.01	0.00	-0.24	0.02	0.00
7	0.00	0.19	0.00	0.02	0.00	-0.28	0.05	-0.03
8	0.00	0.18	0.00	0.03	0.00	-0.19	0.04	0.07
9	0.00	0.16	0.00	0.01	0.00	-0.26	0.07	-0.03
10	0.00	0.11	0.00	0.15	0.00	-0.19	0.06	0.14
Total	0.00	0.19	0.04	0.05	0.00	-0.25	0.04	0.07

Notes: Shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2013, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2014 policies by Eurostat’s Harmonized Index of Consumer Prices (HICP).

Figure A1: Policy effects in 2013-2014, using the CPI-indexation, %

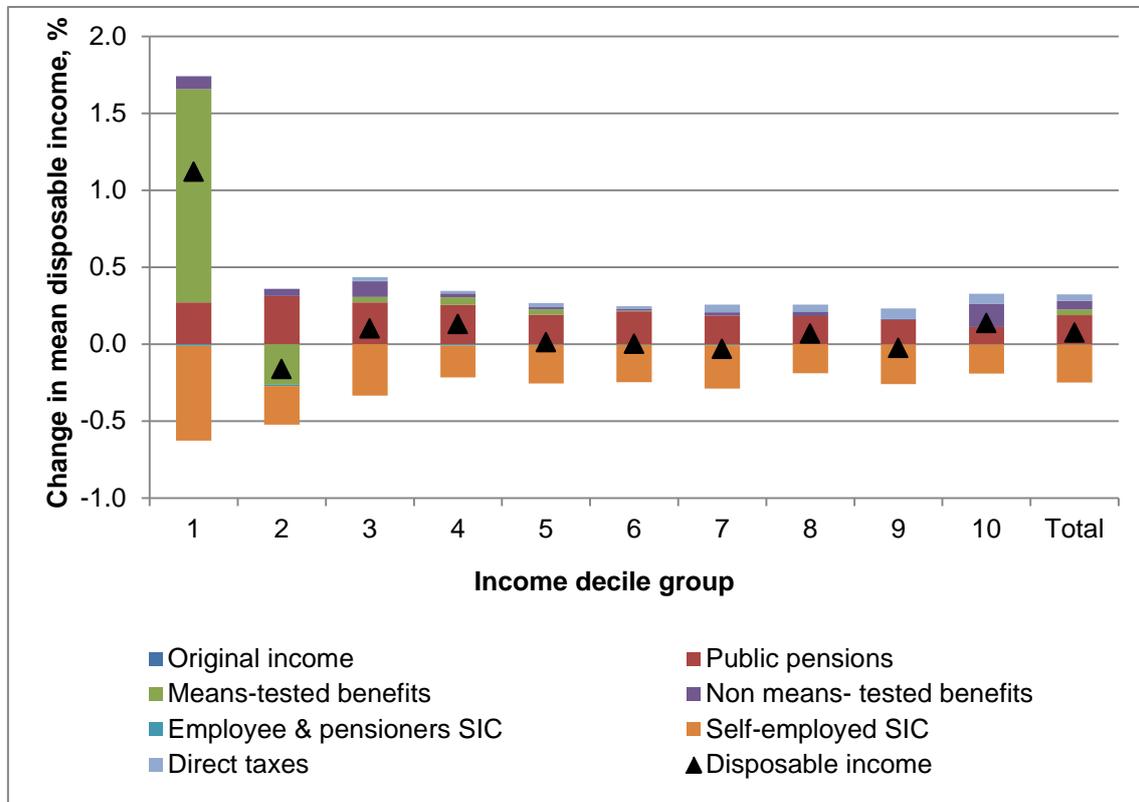
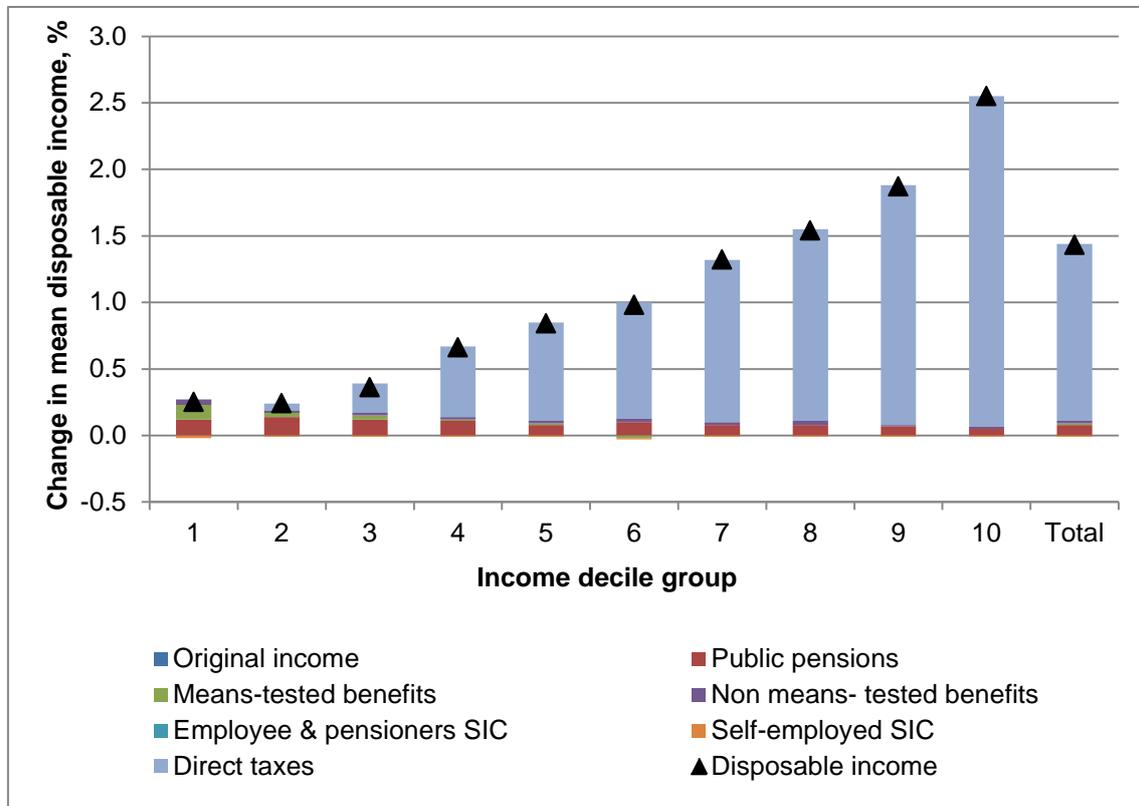


Table A2: Policy effects in 2014-2015, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee & pensioners SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.00	0.12	0.11	0.04	0.00	-0.02	0.00	0.25
2	0.00	0.14	0.03	0.02	0.00	-0.01	0.05	0.24
3	0.00	0.12	0.03	0.02	0.00	-0.01	0.22	0.36
4	0.00	0.11	0.01	0.02	0.00	-0.01	0.53	0.66
5	0.00	0.08	0.01	0.02	0.00	-0.01	0.74	0.84
6	0.00	0.10	-0.02	0.03	0.00	-0.01	0.87	0.98
7	0.00	0.08	0.00	0.02	0.00	-0.01	1.22	1.32
8	0.00	0.08	0.00	0.03	0.00	-0.01	1.44	1.54
9	0.00	0.07	0.00	0.01	0.00	-0.01	1.80	1.87
10	0.00	0.05	0.00	0.02	0.00	-0.01	2.48	2.55
Total	0.00	0.08	0.01	0.02	0.00	-0.01	1.33	1.43

Notes: Shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2014, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2015 policies by Eurostat’s Harmonized Index of Consumer Prices (HICP).

Figure A2: Policy effects in 2014-2015, using the CPI-indexation, %



## ANNEX 2: VALIDATION TABLES

Table 4.2-Number of employed and unemployed

	EUROMOD	External					Ratio				
	2011	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Number of employed	1,349,934	1,271,000	1,256,750	1,248,750	1,321,250	n/a	1.06	1.07	1.08	1.02	n/a
Number of unemployed	520,739	257,750	296,750	317,500	327,250	n/a	2.02	1.75	1.64	1.59	n/a

Table 4.3-Market income in EUROMOD - Number of recipients

		EUROMOD	External					Ratio				
years		2011	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
yem	employment income	1,290,364	1,519,043	1,509,230	1,503,622	1,513,254	n/a	0.85	0.85	0.86	0.85	n/a
yem01	empl. inc. : below 25% of AGWPY	100,135	83,423	82,511	84,269	130,928	n/a	1.20	1.21	1.19	0.76	n/a
yem02	empl. inc. : 25% to 50% of AGWPY	240,631	407,702	417,453	414,611	400,488	n/a	0.59	0.58	0.58	0.60	n/a
yem03	empl. inc. : 50% to 75% of AGWPY	412,684	360,595	354,569	362,318	366,678	n/a	1.14	1.16	1.14	1.13	n/a
yem04	empl. inc. : 75% to 100% of AGWPY	228,697	247,313	242,503	240,546	228,462	n/a	0.92	0.94	0.95	1.00	n/a
yem05	empl. inc. : 100% to 150% of AGWPY	223,164	275,659	271,284	264,924	257,929	n/a	0.81	0.82	0.84	0.87	n/a
yem06	empl. inc. : 150% to 200% of AGWPY	46,059	72,473	70,325	68,816	65,167	n/a	0.64	0.65	0.67	0.71	n/a
yem07	empl. inc. : 200% to 300% of AGWPY	31,746	45,566	43,925	42,435	40,495	n/a	0.70	0.72	0.75	0.78	n/a
yem08	empl. inc. : above 300% of AGWPY	7,248	26,312	26,659	25,703	23,105	n/a	0.28	0.27	0.28	0.31	n/a
ysenr00	tax exempted income of self-employed persons	17,173	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysenr01	non-reported/tax exempted "other income"	224,045	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysere00	reported income of self-employed persons	121,676	126,491	117,837	128,577	n/a	n/a	0.96	1.03	0.95	n/a	n/a
ysere01	reported "other income"	62,290	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysv	Severance pay	4,590	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
yot	income of children under 16	141,186	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ypp	private pensions	519	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
yyi	investment income	184,313	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ypt	private transfers received	93,837	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
xmp	maintenance payments	58,792	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 4.4-Market income in EUROMOD - Annual amounts (in millions)

		EUROMOD					External				Ratio			
years		2011	2012	2013	2014	2015	2011	2012	2013	2014	2011	2012	2013	2014
yem	employment income	92,924	93,866	94,629	94,795	95,236	109,079	108,737	108,664	108,222	0.85	0.86	0.87	0.88
yem01	empl. inc. : below 25% of AGWPY	1,384	1,402	1,418	1,468	1,434	264	306	341	769	5.24	4.58	4.16	1.91
yem02	empl. inc. : 25% to 50% of AGWPY	8,781	8,907	9,020	9,098	9,099	11,447	11,607	11,901	12,106	0.77	0.77	0.76	0.75
yem03	empl. inc. : 50% to 75% of AGWPY	23,575	23,963	24,459	24,701	24,732	18,153	18,179	18,586	19,331	1.30	1.32	1.32	1.28
yem04	empl. inc. : 75% to 100% of AGWPY	18,434	18,679	18,880	19,518	19,497	18,516	18,489	18,588	18,147	1.00	1.01	1.02	1.08
yem05	empl. inc. : 100% to 150% of AGWPY	24,240	24,237	24,146	23,635	23,890	29,327	29,106	28,583	28,374	0.83	0.83	0.84	0.83
yem06	empl. inc. : 150% to 200% of AGWPY	7,171	7,251	7,605	7,481	7,470	11,025	10,857	10,749	10,376	0.65	0.67	0.71	0.72
yem07	empl. inc. : 200% to 300% of AGWPY	6,747	6,808	6,460	6,251	6,457	9,733	9,472	9,275	9,068	0.69	0.72	0.70	0.69
yem08	empl. inc. : above 300% of AGWPY	2,592	2,618	2,640	2,644	2,657	10,615	10,720	10,641	10,051	0.24	0.24	0.25	0.26
ysenr00	tax exempted income of self-employed	519	516	516	512	514	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysenr01	non-reported/tax exempted "other income"	2,564	2,548	2,545	2,528	2,538	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysere00	reported income of self-employed persons	10,222	10,156	10,146	10,078	10,117	6,769	6,572	7,249	n/a	1.51	1.55	1.40	n/a
ysere01	reported "other income"	1,879	1,867	1,865	1,852	1,860	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ysv	Severance pay	52	51	51	51	51	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
yot	income of children under 16	191	193	194	194	195	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ypp	private pensions	3	3	3	3	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
yyi	investment income	382	380	379	377	378	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ypt	private transfers received	1,205	1,217	1,227	1,230	1,235	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
xmp	maintenance payments	563	582	595	594	592	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

		EUROMOD	External				Ratio			
years		2011	2011	2012	2013	2014	2011	2012	2013	2014
<b>Benefits</b>										
poa	Old-age pensions	709,084	627,945	637,939	647,348	662,582	1.13	1.11	1.10	1.07
pdi	Disability pensions	250,461	321,566	318,912	308,553	298,629	0.78	0.79	0.81	0.84
psu	Survivor's pensions	208,741	251,732	251,409	248,794	245,149	0.83	0.83	0.84	0.85
pen	Total public pensions	1,154,379	1,101,281	1,105,369	1,218,406	1,125,334	1.05	1.04	0.95	1.03
pen01	publ. pens. : below 25% of AGWPY	419,989	489,774	457,401	534,985	454,373	0.86	0.92	0.79	0.92
pen02	publ. pens. : 25% to 50% of AGWPY	574,416	483,183	497,511	519,716	512,866	1.19	1.15	1.11	1.12
pen03	publ. pens. : 50% to 75% of AGWPY	112,395	92,130	109,691	117,074	119,071	1.22	1.02	0.96	0.94
pen04	publ. pens. : 75% to 100% of AGWPY	31,080	26,177	28,907	32,268	28,880	1.19	1.08	0.96	1.08
pen05	publ. pens. : 100% to 150% of AGWPY	13,803	9,405	10,920	12,892	9,074	1.47	1.26	1.07	1.52
pen06	publ. pens. : 150% to 200% of AGWPY	1,454	410	618	954	763	3.55	2.35	1.52	1.91
pen07	publ. pens. : 200% to 300% of AGWPY	1,243	109	177	261	179	11.38	7.03	4.76	6.94
pen08	publ. pens. : above 300% of AGWPY		94	143	257	126				
bho	Housing benefit	24,502	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bsaot	Other social assistance benefits	30,143	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bunot	Other unemployment benefits	3,843	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bed	Education allowances	27,044	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bhl	Sickness benefits	15,169	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bdi	Disability benefits	53,314	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>Taxes and Social Insurance contributions</b>										
tpr	Property tax	461,774	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

		EUROMOD					External				Ratio			
years		2011	2012	2013	2014	2015	2011	2012	2013	2014	2011	2012	2013	2014
<b>Benefits</b>														
poa	Old-age pensions	22,714	23,048	23,589	23,706	23,706	18,095	18,443	19,174	19,812	1.26	1.25	1.23	1.20
pdi	Disability pensions	8,580	8,707	8,911	8,955	8,955	9,711	9,751	9,700	9,318	0.88	0.89	0.92	0.96
psu	Survivor's pensions	4,928	5,001	5,118	5,144	5,144	6,399	6,418	6,513	6,427	0.77	0.78	0.79	0.80
pen	Total public pensions	36,222	36,756	37,618	37,804	37,804	29,800	31,457	34,124	32,715	1.22	1.17	1.10	1.16
pen01	publ. pens: below 25% of AGWPY	6,875	6,965	6,591	7,151	7,151	7,003	6,571	7,332	6,678	0.98	1.06	0.90	1.07
pen02	publ. pens: 25%-50% of AGWPY	18,821	19,100	19,998	19,619	19,619	14,954	15,677	16,634	16,459	1.26	1.22	1.20	1.19
pen03	publ. pens: 50%-75% of AGWPY	6,095	6,187	6,409	6,402	6,402	4,848	5,795	6,257	6,414	1.26	1.07	1.02	1.00
pen04	publ. pens: 75%-100% of AGWPY	2,477	2,494	2,563	2,565	2,565	2,008	2,247	2,500	2,217	1.23	1.11	1.03	1.16
pen05	publ. pens: 100%-150% of AGWPY	1,457	1,505	1,540	1,548	1,548	924	1,078	1,273	864	1.58	1.40	1.21	1.79
pen06	publ. pens: 150%-200% of AGWPY	220	223	222	223	223	46	64	100	65	4.74	3.49	2.22	3.42
pen07	publ. pens: 200%-300% of AGWPY	277	281	294	296	296	7	11	14	8	36.93	25.33	21.26	36.51
pen08	publ. pens: above 300% of AGWPY	0	0	0	0	0	10	13	15	8	0.00	0.00	0.00	0.00
bho	Housing benefit	131	96	82	82	82	151	111	103	n/a	0.87	0.86	0.79	n/a
bsaot	Other social assistance benefits	215	203	211	211	211	159	150	156	n/a	1.35	1.35	1.35	n/a
bunot	Other unemployment benefits	83	95	188	250	250	102	118	233	n/a	0.81	0.81	0.81	n/a
bed	Education allowances	178	176	176	175	176	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
bhl	Sickness benefits	204	206	208	208	209	1,290	1,236	1,170	1,098	0.16	0.17	0.18	0.19
bdi	Disability benefits	377	366	378	378	378	n/a	n/a	1,675	n/a	n/a	n/a	0.23	n/a
<b>Taxes and Social Insurance contributions</b>														
tpr	Property tax	226	226	226	226	226	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

		EUROMOD					SILC	Ratio	External				Ratio			
years		2011	2012	2013	2014	2015	2011	2011	2011	2012	2013	2014	2011	2012	2013	2014
<b>Benefits</b>																
bch	Child benefit	214,441	210,898	209,406	208,995	207,260	0	N/A	208,246	206,110	204,941	191,658	1.03	1.02	1.02	1.09
bfama	Maternity leave benefit	29,045	29,045	29,045	29,045	29,045	0	N/A	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
bfapl	Parental leave benefit	41,518	41,518	41,518	41,518	41,518	0	N/A	n/a	n/a	44,406	n/a	N/A	N/A	0.93	N/A
bfacc	Support during the newborn child care	42,052	42,052	42,052	42,052	42,052	0	N/A	n/a	n/a	44,472	n/a	N/A	N/A	0.95	N/A
bfaba	Lump-sum grant for newborn children	32,371	32,371	32,371	32,371	32,371	0	N/A	41,243	41,534	39,661	n/a	0.78	0.78	0.82	N/A
bsa	Subsistence benefit	72,086	69,667	68,651	79,730	78,007	21,222	3.40	46,189	49,254	49,901	47,352	1.56	1.41	1.38	1.68
bunct	Unemployment benefit	80,228	80,228	80,228	80,228	80,228	80,228	1.00	142,880	128,263	125,005	116,933	0.56	0.63	0.64	0.69
<b>Taxes and Social Insurance contributions</b>																
tin	Personal income tax	1,628,701	1,524,036	1,536,480	1,534,833	1,394,469	1,350,529	1.21	2,729,470	2,720,299	2,814,567	n/a	0.60	0.56	0.55	N/A
tmu	Surtax	1,628,701	1,524,036	1,536,480	1,534,771	1,394,469	1,350,529	1.21	2,729,470	2,720,299	2,814,567	n/a	0.60	0.56	0.55	N/A
tscsicer	Employers: all SIC	1,323,282	1,323,282	1,323,282	1,323,282	1,323,282	0	N/A	1,519,043	1,509,230	1,503,622	1,513,254	0.87	0.88	0.88	0.87
tscepp	Employees: pension SIC	1,290,364	1,290,364	1,290,364	1,290,364	1,290,364	0	N/A	1,519,043	1,509,230	1,503,622	1,513,254	0.85	0.85	0.86	0.85
tscsicse00	Self-employed: all SIC	118,543	118,543	118,543	118,543	118,543	0	N/A	126,491	117,837	128,577	n/a	0.94	1.01	0.92	N/A
tscsicse01	"Other income" earners: all SIC	62,290	62,290	62,290	62,290	62,290	0	N/A	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
tscbesi	Pensioners: health SIC	1,154,379	1,154,379	1,154,379	1,154,379	1,154,379	0	N/A	1,101,281	1,105,369	1,218,406	1,125,334	1.05	1.04	0.95	1.03
tscsicct	Credited SIC	60,563	60,563	60,563	60,563	60,563	0	N/A	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A

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

		EUROMOD					SILC	Ratio	External				Ratio			
years		2011	2012	2013	2014	2015	2011	2011	2011	2012	2013	2014	2011	2012	2013	2014
<b>Benefits</b>																
bch	Child benefit	1,705	1,687	1,673	1,667	1,657	0	N/A	1,725	1,709	1,689	1,637	0.99	0.99	0.99	1.02
bfama	Maternity leave benefit	767	768	773	774	796	0	N/A	896	908	867	827	0.86	0.85	0.89	0.94
bfapl	Parental leave benefit	547	548	548	548	548	0	N/A	n/a	n/a	500	n/a	N/A	N/A	1.10	N/A
bfacc	Support during the newborn child care	536	536	536	536	536	0	N/A	n/a	n/a	368	n/a	N/A	N/A	1.46	N/A
bfaba	Lump-sum grant for newborn children	76	76	76	76	76	0	N/A	95	95	89	n/a	0.80	0.80	0.85	N/A
bsa	Subsistence benefit	643	638	632	699	698	174	3.69	615	585	612	643	1.05	1.09	1.03	1.09
bunct	Unemployment benefit	917	921	956	963	968	733	1.25	1,392	1,366	1,402	1,245	0.66	0.67	0.68	0.77
<b>Taxes and Social Insurance contributions</b>																
tin	Personal income tax	8,148	8,182	8,346	8,327	6,959	8,153	1.00	9,664	9,921	10,287	n/a	0.84	0.82	0.81	N/A
tmu	Surtax	934	945	964	963	807	934	1.00	1,131	1,161	1,204	n/a	0.83	0.81	0.80	N/A
tscsicer	Employers: all SIC	16,305	14,547	14,664	16,628	16,704	0	N/A	18,762	16,528	16,517	18,614	0.87	0.88	0.89	0.89
tscepp	Employees: pension SIC	18,626	18,815	18,970	19,005	19,093	0	N/A	21,523	21,449	21,445	21,331	0.87	0.88	0.88	0.89
tscsicse00	Self-employed: all SIC	2,392	2,286	2,319	2,607	2,607	0	N/A	2,002	1,848	1,712	n/a	1.19	1.24	1.35	N/A
tscsicse01	"Other income" earners: all SIC	658	616	615	648	651	0	N/A	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
tscbesi	Pensioners: health SIC	460	467	487	486	486	0	N/A	361	389	429	401	1.27	1.20	1.13	1.21
tscsicct	Credited SIC	73	73	73	73	75	0	N/A	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A

Table 4.9-Distribution of equivalised disposable income

	EUROMOD					External			Ratio		
	2011	2012	2013	2014	2015	2011	2012	2013	2011	2012	2013
D1	3.07	3.06	3.06	3.08	3.04	2.60	2.60	n/a	1.18	1.18	N/A
D2	4.81	4.81	4.82	4.80	4.74	4.60	4.60	n/a	1.05	1.05	N/A
D3	6.17	6.18	6.22	6.21	6.14	6.00	6.00	n/a	1.03	1.03	N/A
D4	7.41	7.43	7.43	7.55	7.37	7.20	7.20	n/a	1.03	1.03	N/A
D5	8.43	8.50	8.49	8.39	8.44	8.30	8.20	n/a	1.02	1.04	N/A
D6	9.57	9.58	9.64	9.66	9.63	9.60	9.40	n/a	1.00	1.02	N/A
D7	10.79	10.91	10.85	10.84	10.85	11.00	11.10	n/a	0.98	0.98	N/A
D8	12.64	12.61	12.65	12.59	12.59	12.60	12.80	n/a	1.00	0.99	N/A
D9	15.09	15.37	15.26	15.13	15.16	15.40	15.50	n/a	0.98	0.99	N/A
D10	22.02	21.53	21.58	21.74	22.04	22.70	22.70	n/a	0.97	0.95	N/A
Median	39,989	40,691	41,012	40,952	41,477	40,000	38,194	38,194	1.00	1.07	1.07
Mean	44,500	44,932	45,390	45,391	46,123	44,546	43,755	43,755	1.00	1.03	1.04
Gini	29.2	29.0	28.9	28.9	29.4	30.9	30.9	n/a	0.94	0.94	N/A
S80/S20	4.7	4.7	4.7	4.7	4.8	5.3	5.3	n/a	0.89	0.88	N/A

Table 4.10-Poverty rates by gender and age

EUROMOD					External		Ratio		
years	2011	2012	2013	2014	2015	2011	2012	2011	2012
<b>40% median HDI</b>									
Total	6.89	7.11	6.88	7.04	7.91	9.00	8.20	0.77	0.87
Males	6.88	7.13	6.86	6.93	7.83	9.00	8.10	0.76	0.88
Females	6.91	7.08	6.90	7.14	7.98	8.90	8.30	0.78	0.85
<b>50% median HDI</b>									
Total	12.69	13.05	12.82	13.05	13.39	14.10	13.50	0.90	0.97
Males	12.28	12.58	12.38	12.65	12.94	13.80	13.40	0.89	0.94
Females	13.07	13.50	13.22	13.43	13.81	14.40	13.70	0.91	0.99
<b>60% median HDI</b>									
Total	19.55	19.68	19.09	19.07	19.79	20.40	19.50	0.96	1.01
Males	18.47	18.60	18.17	18.12	18.69	19.40	18.80	0.95	0.99
Females	20.56	20.69	19.94	19.95	20.81	21.30	20.30	0.97	1.02
<b>70% median HDI</b>									
Total	25.81	26.04	25.70	25.74	26.11	27.50	26.10	0.94	1.00
Males	24.52	24.73	24.42	24.47	24.81	26.40	25.30	0.93	0.98
Females	27.01	27.28	26.89	26.93	27.32	28.40	26.80	0.95	1.02
<b>60% median HDI</b>									
0-15 years	20.34	20.51	20.52	20.66	20.97	23.30	21.80	0.87	0.94
16-24 years	20.07	20.10	20.07	20.09	20.38	20.10	21.20	1.00	0.95
25-49 years	15.90	15.91	15.85	15.91	16.08	17.00	16.80	0.94	0.95
50-64 years	18.21	18.36	17.73	17.58	18.13	19.00	18.10	0.96	1.01
65+ years	26.09	26.40	24.14	23.97	26.33	25.60	23.40	1.02	1.13

Table 4.11-Minimum wage validation

	Baseline					Min Wage Incl.					Ratio				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
equivalised disposable income	121,990	123,159	124,495	124,568	126,536	122,116	123,284	124,682	124,769	126,747	1.00	1.00	1.00	1.00	1.00
employment income	92,924	93,866	94,629	94,795	95,236	93,077	94,009	94,855	95,041	95,481	1.00	1.00	1.00	1.00	1.00
Personal income tax	8,153	8,153	8,153	8,153	8,153	8,153	8,153	8,153	8,153	8,153	1.00	1.00	1.00	1.00	1.00
Surtax	934	934	934	934	934	934	934	934	934	934	1.00	1.00	1.00	1.00	1.00
Employers: all SIC	16,305	14,547	14,664	16,628	16,704	16,313	14,552	14,681	16,649	16,726	1.00	1.00	1.00	1.00	1.00
Employees: pension SIC	18,626	18,815	18,970	19,005	19,093	18,635	18,822	18,992	19,030	19,117	1.00	1.00	1.00	1.00	1.00
Self-employed: all SIC	2,392	2,286	2,319	2,607	2,607	2,392	2,286	2,319	2,607	2,607	1.00	1.00	1.00	1.00	1.00
"Other income"															
earners: all SIC	658	616	615	648	651	658	616	615	648	651	1.00	1.00	1.00	1.00	1.00
Pensioners: health SIC	460	467	487	486	486	460	467	487	486	486	1.00	1.00	1.00	1.00	1.00
Poverty rate (60% median HDI)	19.6	19.7	19.1	19.1	19.8	19.5	19.6	19.1	18.9	19.7	1.00	1.00	1.00	1.01	1.01
Gini coefficient	29.2	29.0	28.9	28.9	29.4	29.1	28.9	28.9	28.9	29.3	1.00	1.00	1.00	1.00	1.00

Notes: In Tables 4.2 – 4.8 no external information is available for 2015; in Table 4.9 no external information is available for 2014-15; in Table 4.10 no external information is available for 2013-15.