

EUROMOD

COUNTRY REPORT



CROATIA (HR)

2013-2016

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February 2017

EUROMOD version G4.0



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 G4.0. 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>

This document is supported by the European Union Programme for Employment and Social Innovation “Easi” (2014-2020). For further information please consult <http://ec.europa.eu/social/easi>. The information contained within this document does not necessarily reflect the position or opinion of the European Commission.

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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 Pension Insurance Institute (CPII; *Hrvatski zavod za mirovinsko osiguranje*), the Croatian Employment Service (CES; *Hrvatski zavod za zapošljavanje*) and the Croatian Institute for Health Insurance (CIHI; *Hrvatski zavod za zdravstveno osiguranje*).
- The whole revenue from social insurance contributions (SC; *doprinosi za obvezna osiguranja*) belongs to CPII, CES and CIHI. 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 2016 the statutory retirement age is 65 for men and 61.5 for women. For women, the statutory retirement age gradually increases from 60 in 2010 to 65 in 2030. For both men and women, the statutory retirement age will start to gradually increase in the period 2031-2037, to reach 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 2013-2016 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).

- For certain groups of pension beneficiaries, special and more favourable rules apply concerning the statutory requirements for retirement and pension formulas. These groups include HBDR, war veterans from the World War II, some groups of government officials, full members of Croatian academy of sciences and arts, etc.
- 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 29 in 2014-2016 (25 in 2013), 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 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 2014-2016, 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.
- Besides the social benefits available to general public, there exist subsystems of special benefits, stemming from the Croatian Homeland War, World War II and peace-time military activities. Croatian Defenders of the Homeland War (*hrvatski branitelji iz Domovinskog rata*, HBDRs) are persons who have participated in the organized armed defence in the period from August 1990 to June 1996. Croatian military war invalids of the Homeland War (*hrvatski ratni vojni invalidi iz Domovinskog rata*, HRVI) are HBDRs who have suffered bodily damages of at least 20%, during the organised armed defence or imprisonment in hostile jail or camp. Killed HBDRs (*smrtno stradali HBDR*) are HBDRs who were killed in organised armed defence or during the imprisonment in hostile jail or camp, or their death is closely related to defence activities. Further groups include civil invalids of the Homeland War or World War II (*civilni invalidi rata*; CIRs), invalids from the 2nd World War (*ratni vojni invalidi*, RVIs) and peace-time military invalids (*hrvatski*

mirnodopski vojni invalidi, HMVIs). Various retirement, disability, survivors and social assistance benefits are available to the above mentioned groups or their family members.

- 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.
- 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. The amount of BUB has remained constant through the period from 2002 to 2016, 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 2016 is HRK 3,120. 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.

1.3 Social benefits

1.3.1 Retirement benefits

Full-age retirement pension (*Starosna mirovina*) is obtained by a person who retires at the statutory retirement 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 from “group A”, who has worked for 40 years, earning average gross wage in each year (henceforth, average worker), and retires in January 2016, receives a pension of HRK 3,104.

Early-age retirement pension (*Prijevremena starosna mirovina*) by a person who retires at most five years before the statutory retirement age and has at least 35 years of service (for men, and 31.5 for women in 2016). For women, the minimum years of service gradually increase from 30 in 2010 to 35 in 2030. The level of pension is also based on previous wages (or 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 from “group A”, who has worked for 35 years and retires in January 2016, receives a pension of HRK 2,162.

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* (*najniža mirovina*) is proportional to the years of service, and also depends on the type of pension. For a man from “group A”, who retired at the statutory age with 40 years of service, the minimum pension amounts to HRK 2,362 in January 2015. The *maximum pension* (*najviša mirovina*) equals about 3 times the pension of the average worker.

As mentioned in section 1.1, for certain groups of pension beneficiaries, special and more favourable rules apply concerning the statutory requirements for retirement and pension formulas. For more details, see Bađun (2009).

1.3.2 Survivors benefits

Survivors pensions

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.

As mentioned in section 1.1, for certain groups of pension beneficiaries, special and more favourable rules apply concerning the statutory requirements for retirement and pension formulas.

Special survivors benefits

There exists a range of survivors benefits related to family members of HBRDs, HRVIs, HMVIs, RVIs and CIRs, here referred to as **Special survivors allowances**.

1.3.3 Disability benefits

Disability pensions

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.

As mentioned in section 1.1, for certain groups of pension beneficiaries, special and more favourable rules apply concerning the statutory requirements for retirement and pension formulas.

General disability benefits

Supplement 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 Supplement 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.

Benefits for caregivers

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.

Supplement for half-time employed caregiver of a child in need of additional care (*Naknada tijekom rada s polovicom punog radnog vremena radi pojačane njege djeteta*) is received by employed or self-employed person until the age of a child is 3 years. The amount of benefit is HRK 1,663 (50% of BUB).

Supplement for caregiver of a child with severe disability (*Naknada tijekom dopusta radi njege djeteta s težim smetnjama u razvoju*) is obtained by employed or self-employed person until the age of a child is 8 years. The amount of benefit is HRK 2,162 (65% of BUB).

Supplement for half-time employed caregiver of a child with severe disability (*Naknada tijekom rada s polovicom punog radnog vremena radi njege djeteta s težim smetnjama u razvoju*) is similar to the previous benefit. The benefit amount for employed person equals the net wage obtained by caregiver at half-time work; for self-employed person it equals 50% of SIC contribution base.

Work-related disability benefits

Professional rehabilitation benefit for disabled worker (*Naknada plaće za vrijeme profesionalne rehabilitacije invalida rada*) is obtained by a disabled worker involved in the program of professional education and prequalification. 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.

Supplement for physical impairment due to work injuries and occupational disease (*Naknada zbog tjelesnog oštećenja uslijed ozljede na radu ili profesionalne bolesti*) 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.

Other benefits in this sub-group include the **Benefit for workers exposed to asbestos** (*Novčana naknada radnicima izloženima azbestu*) and **Supplement for professional rehabilitation of HRVI** (*Posebni doplatak za profesionalnu rehabilitaciju HRVI-a*).

Special disability allowances

There exists a range of disability benefits related to HBRDs, HRVIs, HMVIs, RVIs and CIRs, here referred to as **Special disability allowances**. They can be grouped into supplements for assistance and care, supplement for assistance at home and orthopaedic allowances.

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 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. 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. 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. *Extended unemployment benefit* (*Produžena novčana naknada*) is a measure within Unemployment benefit, which was

introduced in 11/2010 and abolished in 01/2014. For persons who were uninterruptedly unemployed for more than 12 months, the duration of benefit was extended by 30 to 120 days.

Allowance and reimbursement of travel expenses for education and training of unemployed (*Novčana pomoć i naknada troškova tijekom obrazovanja i osposobljavanja*) is received by unemployed persons who are involved in education and training programs organised or initiated by the CES. The benefit amount is related to the minimum amount of Unemployment benefit and the duration of the program. Additionally, related travel expenses are reimbursed.

Allowance and reimbursement of travel expenses during vocational training of 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 01/2015. Additionally, related travel expenses are reimbursed.

Several benefits are intended for unemployed persons who get employed in a place that is more than 80 kilometres away from their current place of residence. The benefits are obtained if the CES cannot find employment for these persons in their current place of residence, and if employment lasts for at least 6 months (except in some cases). **One-time allowance for resettling unemployed** (*Jednokratna novčana pomoć za nezaposlenu osobu*) amounts to HRK 1,200. **Reimbursement of travel and resettling expenses for resettling unemployed** (*Naknada putnih i selidbenih troškova za nezaposlenu osobu*) is available for one-time travel of an unemployed person and her family members, at a maximum amount of HRK 300 per person (if employment last for less than 6 months, the benefit covers only the unemployed person). **Reimbursement of travel and resettling expenses for resettling unemployed** (*Naknada putnih i selidbenih troškova za nezaposlenu osobu*) equals 50% of the cost of resettlement, with a maximum amount of HRK 1,000.

1.3.5 Sick-leave benefits

Sick-leave benefits are paid to insured employed and self-employed persons and “other income” earners during the temporary work-break due to sickness and corresponding medical treatment.

Sickness benefit for employed and self-employed persons (*Naknada plaće zbog privremene nesposobnosti ili spriječenosti za rad radi korištenja zdravstvene zaštite*). The cases of sick leave can be divided into three groups: (a) regular – related to illness and medical treatment, other than in cases mention below, (b) special – related to isolation due to infection, organ transplantations, escorting and nurturing of other sick persons, illnesses and complications related to pregnancy and childbirth, (c) work – related to injuries at work or occupational illness, (d) HBDR – related to wounds, injuries or illnesses that are the direct consequence of participation in the Homeland War. In case (a), the employer is obliged to pay the *salary replacement* for a time of 42 days after sick-leave has begun. After that period, HZZO pays the sickness benefit. In cases (b), (c) and (d), HZZO pays the benefit since the beginning of sick leave. The benefit base is obtained as the average “netted” gross wage or SC contribution base in the 6-month period prior to sick-leave. The minimum salary replacement is 70% of the benefit base. In case (a), the sickness benefit equals 70% of the benefit base, during the first 6 months of sick-leave; maximum (128% of BUB) and minimum (25% of BUB) limits apply. In cases (b), (c) and (d) the benefit equals 100% of the benefit base. 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 for “other income” earners (*Novčana naknada zbog nemogućnosti obavljanja poslova na osnovi kojih se ostvaruju primitci od kojih se utvrđuje drugi dohodak prema propisima o porezu na dohodak*). Eligibility depends on the health insurance coverage. The benefit base is the average “netted” gross “other income” in the 6-month period prior to sick-leave; for eligibility, the benefit base must be greater than the floor employer SC base. The benefit equals 70% of the benefit base and terminates after sick leave has begun.

Other sickness benefits are various reimbursements of costs, which incurred in relation to the use of health care or death of the medically treated person (travel costs, accommodation costs for child-caring parents during hospitalization, funeral expenses, etc.).

1.3.6 Family benefits

Benefits for parents, adoptive parents and foster parents

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. Analogous benefits are available to adoptive parents

Maternity leave benefit (*Naknada za rodiljni dopust*) 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 28th day before the expected delivery date (or from the 45th day, upon medical approval) and the 70th day after the birth. The voluntary work-break period spans between the 70th day and the end of the 6th 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 za roditeljski dopust*) is obtained by a mother or a father who are employed or self-employed persons, in the period after the end of the 6th 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 3rd 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 6th (8th) month, the benefit amounts to HRK 1,663 (50% of BUB).

Support during the newborn child care (*Naknade za rodiljnu i roditeljsku brigu i poštedu od rada*) 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 3rd or each subsequent child are born. The amount of benefit is HRK 1,663 during the whole period of receipt.

Adoptive parent adoption leave benefit (*Naknada za posvojiteljski dopust*) is obtained by adoptive employed or self-employed parents. The adoption leave begins with the moment of a child adoption and lasts for up to 6 months. The benefit amount is obtained analogously as in the case of Maternity leave benefit.

Adoptive parent parental leave benefit (*Naknada za roditeljski dopust posvojitelja*) is obtained by adoptive employed or self-employed parents. The duration of the parental leave of adoptive parent and the amount of benefit are assessed analogously as for the Parental leave benefit, in the case of the 1st or the 2nd child's birth.

Support during the adopted child care (*Naknade za posvojiteljsku brigu i poštedu od rada*) is the benefit intended to adoptive parents who are “other income” earners, workers in agriculture, unemployed persons or inactive persons. The duration and the amount of the benefit are determined as for the Support during the newborn child care, in the case of the 1st or the 2nd child's birth.

Allowance for settlement of a child in a foster family (*Naknada za smještaj djeteta u udomiteljsku obitelj*). The amounts of benefit for a pre-school and school child are HRK 1,800 (54.14% of BUB) and HRK 2,000 (60.16% of BUB). These amounts are supplemented for children with health impairment and disability.

Personal allowance for a person performing child foster care (*Osobna naknada udomitelju djeteta*) is a compensation for a foster caregiver. The benefit amount depends on the number and age of fostered children, and on whether a foster caregiver is the legal supporter of children; the minimum amount for one child is HRK 400 (12% of BUB).

Child benefits

One-time grant for newborn children (*Jednokratna novčana potpora za novorođeno dijete*) is received by all parents of newborn children and amounts to HRK 2,328 (70% 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 HRK 300 (9% of BUB), HRK 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 impaired health. Substantial top-up amounts are given to households with three and four or more children, HRK 500 and 1,000, respectively; this is called the pronatality supplement (“*pronatalitetni dodatak*”). Means-testing is not applied for two groups of children: (a) children with severe disability, for whom the benefit amount is HRK 832 (25% of BUB), and (b) children of a killed, captured or missing HBDR, where the benefit amount is HRK 374 (11.25% of BUB).

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 the 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 / RVI / CIR related benefits were abolished (see below), and also the Extended unemployment benefit. Despite these changes the Guaranteed minimum benefit is treated here as a continuation of Subsistence support.

Lump-sum assistance for households in need (*Jednokratna pomoć osobama u trenutačnim materijalnim poteškoćama*). Beneficiaries are households that cannot meet basic needs in certain occasions. The benefit serves to cover the expenses typically related to education, clothing, child birth, funeral expenses or transportation. The maximum yearly amount is equal to HRK 3,500 for a household. Exceptionally, upon approval of the ministry of social care, the benefit amount can reach up to HRK 10,000.

Housing benefit (*Naknada za troškove 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** (*Naknada za ogrjev*), at typical amount of HRK 950, which is also administered and financed by LSG units.

Allowance for the costs of electricity (*Naknada za ugroženog kupca energenata*) was introduced in 10/2015. Beneficiaries are households which receive Subsistence benefit, or households whose members receive Personal disability allowance. The amount of the benefit for a household is equal to the monthly cost of electricity, with maximum set at HRK 200.

Allowance for settlement of an adult person in a foster family (*Naknada za smještaj odrasle osobe u udomiteljsku obitelj*). The amount of benefit for one fostered adult person is HRK 1,800 (54.14% of BUB); the amount is increased for semi-mobile and immobile persons.

Personal allowance for a person performing adult foster care (*Osobna naknada udomitelju odrasle osobe*) is a compensation for a foster caregiver. The benefit amount depends on the number and mobility of fostered persons.

Subsistence supplement for HBDR, HRVI and their family members (*Opskrbnina za HBDR, HRVI i članove njihovih obitelji*) and **Subsistence supplement for RVI, CIR and their family members** (*Opskrbnina za RVI i CIR*) were means-tested subsistence income schemes, intended for special groups of beneficiaries. They were abolished in 01/2014, with the introduction of the Guaranteed minimum benefit.

1.3.8 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 1st child, HRK 3,600 for the 2nd 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 06/2010 (15%, 25%, 35% and 45%) and three rates (12%, 25% and 40%) since 07/2010. In 2012, taxation of dividends was introduced; since 2015 interest income is also taxable; since 2016 capital gains are 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 (but there are exceptions for certain types of taxpayers and income types); the tax base is equal to total income minus allowances and deductions; the 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 (*Priraz*) 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
		2013	2014	2015	2016	
Retirement benefits/pensions						
Old age pension	poa	I	I	I	I	1
Survivors pension	psu	I	I	I	I	1
Disability pension	pdi	I	I	I	I	1
Unemployment benefits						
Unemployment benefit	bunct_s	PS	PS	PS	PS	1
Other (minor) unemployment benefits	bunot	I	I	I	I	2
Family benefits						
Child benefit	bch_s	S	S	S	S	
Sickness – maternity benefits						
Sickness benefits	bhl	I	I	I	I	2
Maternity leave benefit	bfama_s	S	S	S	S	
Parental leave benefit	bfapl_s	S	S	S	S	
Support during the newborn child care	bfacc_s	S	S	S	S	
Lump-sum grant for newborn children	bfaba_s	S	S	S	S	
Social assistance benefits						
Subsistence benefit	bsa_s	S	S	S	S	
Other social assistance benefits	bsaot	I	I	I	I	2
Housing benefits	bho	I	I	I	I	2
Education allowances	bed	I	I	I	I	2
Disability benefits	bdi	I	I	I	I	2
Old-age benefits	boa	I	I	I	I	2
Survivors benefits	bsu	I	I	I	I	2
Minimum wage	yem	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
		2013	2014	2015	2016	
Taxes						
Personal income tax	tin_s	S	S	S	S	
Surtax	tmu_s	S	S	S	S	
Property taxes	tpr	I	I	I	I	2
Social insurance contributions						
Employers	tscer*_s	S	S	S	S	
Employees	tscee*_s	S	S	S	S	
Pensioners	tscbesi_s	S	S	S	S	
Self-employed and “other income” earners	tscse*_s	S	S	S	S	
Credited SIC	tsct_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 2013 and 2014***

- (a) Employment contributions for self-employed were introduced (section 2.7.3);
- (b) Occupational health contributions for farmers exempted from PIT taxation were introduced (section 2.7.3);
- (c) Subsistence benefit – important changes in the “means of subsistence” formulas were introduced: (1) the amount for an adult in one-member household was increased, (2) supplemental amounts for adults unable to work were abolished, (3) the amounts for children were reduced and did no longer depend on age, (4) an additional amount for lone parents was introduced, whereas the additional amount for children of lone parents was abolished; (5) the maximum benefit for any household was set to the level of gross minimum wage.

- ***Structural changes between 2014 and 2015***

- (a) The personal deduction of up to HRK 12,000 yearly for income from dividends was abolished (section 2.8.7);
- (b) Interest income became taxable by PIT (section 2.8.7).

- ***Structural changes between 2015 and 2016***

- (a) Capital gains became taxable by PIT;
- (b) Subsistence benefit – several changes in the “means of subsistence” formulas were introduced: (1) supplemental amount was reintroduced for adults in one-member households who are unable to work; (2) supplemental amount for a child of a single parent was reintroduced.

2.2 Order of simulation and interdependencies

The following table shows the order of policies’ simulation in the Croatian system in 2013-2016. The spine starts by setting default values for some variables. Then there is a switch to set the approach to uprating pensions (for more information see section 2.3) and a policy to uprate all monetary variables up to 2016 (for uprating factors see section 3.4). Next, constants, income lists and tax units are defined. The policy spine begins with the simulation of the 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 recodes all negative self-employment income to zero. Social insurance contributions, levied on employment and self-employment income, come next. They are followed by personal income tax, maternity and paternal benefits and the unemployment insurance benefit. 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 simulations

Policy	2013	2014	2015	2016	Description of policies
SetDefault_hr	on	on	on	on	DEF: Default values for variables
uaa_hr	on	on	on	on	SWITCH: Uprating by Average Adjustment (for pensions)
Uprate_hr	on	on	on	on	DEF: Uprating factors
ConstDef_hr	on	on	on	on	DEF: Constants
ilsdef_hr	on	on	on	on	DEF: Standardised income lists
ildef_hr	on	on	on	on	DEF: Non-standardised income lists
tundef_hr	on	on	on	on	DEF: Assessment units
yem_hr	off	off	off	off	DEF: Minimum wage
neg_hr	on	on	on	on	DEF: Recode negative self-employment income to zero
InitVars_hr	on	on	on	on	DEF: Initialise variables
tscer_hr	on	on	on	on	SIC: Employers
tscee_hr	on	on	on	on	SIC: Employees
tscse00_hr	on	on	on	on	SIC: Self-employed
tscse01_hr	on	on	on	on	SIC: “Other income” earners
tscbesi_hr	on	on	on	on	SIC: Pensioners
tin_hr	on	on	on	on	TAX: Personal income tax
bfapl_hr	on	on	on	on	BEN: Parental leave benefit
bfama_hr	on	on	on	on	BEN: Maternity leave benefit
bfaba_hr	on	on	on	on	BEN: Lump-sum grant for newborn children
bfacc_hr	on	on	on	on	BEN: Support during the newborn child care
bunct_hr	on	on	on	on	BEN: Unemployment benefit
tin_hr	on	on	on	on	TAX: Personal income tax (repetition of policy with order 16)
tmu_hr	on	on	on	on	TAX: Surtax
tsctt_hr	on	on	on	on	SIC: Credited
bch_hr	on	on	on	on	BEN: Child benefit
bsa_hr	on	on	on	on	BEN: Subsistence benefit
output_std_hr	on	on	on	on	DEF: Standard output individual level
output_std_hh_hr	off	off	off	off	DEF: Standard output household level

2.3 Policy switches

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

The Croatian model has one switchable policy, UAA_hr, which allows choosing between two alternative approaches to pension uprating. By default (i.e. in the baseline), old-age, survivors and disability pensions are uprated according to pension indexation rules. As an alternative, pensions can be uprated according to their average yearly growth.

2.4 Important indicators

In calculations of some benefits, personal income tax and social contributions the following indicators are used: (a) “budgetary base” (BUB), (b) average gross wage from January to August of the previous year (AGWPY), (c) average net wage from January to August of the

previous year (ANWPY1), (d) average net wage from January to December of the previous year (ANWPY2), (r) gross minimum wage in the current year (GMWCY), (f) net minimum wage in the current year (NMWCY), (g) Regular basic personal allowance (RBPA), (h) Maximum pensioner’s basic personal allowance (MPBPA), and (i) average gross wage (AGW).

Table 2.4 Indicators used in calculations of some benefits, personal income tax and social contributions (2013-2016), HRK per month

	2013	2014	2015	2016
BUB	3,326	3,326	3,326	3,326
AGWPY	7,867	7,941	7,943	8,037
ANWPY1	5,464	5,507	5,510	5,693
ANWPY2	5,478	5,515	5,553	5,711
GMWCY	2,985	3,018	3,030	3,120
NMWCY	2,388	2,414	2,424	2,496
RBPA	2,200	2,200	2,600	2,600
MPBPA	3,400	3,400	3,800	3,800
AGW	7,939	7,953	8,055	N/A

Source: Croatian Bureau of Statistics; Tax administration.

2.5 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*

The amounts of gross minimum wage in 2013-2016 are shown in Table 2.4, by item GMWCY. In the period 2013-2015 it is relatively constant, around HRK 3.000, while it increases in 2016 by about 4%, to HRK 3,120.

2.6 Social benefits

2.6.1 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*

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.

2014-2016

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:

- (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’.

2013:

- (a) to (f), and additionally:
- (g) aged between 15 and 25 and involved in regular education;
- (h) pregnant, after the 12th 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.

2014-2016:

- (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: amounts (2013-2016), HRK per month

	2013	2014-2015	2016
<i>Adult in a one-member household</i>			
Able to work	600	800	800
Unable to work	850	800	920
<i>Adult in a multiple-member household</i>			
Able to work	400	480	480
Unable to work	550	480	480
<i>Lone parent</i>			
Able to work	400	400	800
Unable to work	550	550	800
<i>Child of a non-single parent</i>			
Aged 0-6 years	400	320	320
Aged 7-14 years	450	320	320
Aged 15-17 years	500	320	320
Aged 18-25, in regular education	500	480	480
<i>Child of a single parent</i>			
Aged 0-6 years	525	320	440
Aged 7-14 years	575	320	440
Aged 15-17 years	625	320	440
Aged 18-25, in regular education	625	480	480

“Single parent” is a person with children who lives without a spouse. Two cases are distinguished: (a) the single parent’s spouse is known and alive, and (b) the single parent’s spouse is dead or unknown. For a person from case (b), we use the special term “lone parent”. This classification is introduced in 09/2015, whereby lone parent obtains the larger amount of the means of subsistence (HRK 800). All children of single parents, whether lone parents or not, receive larger amount since 09/2015 (HRK 440).

Household income includes all types of taxable income (see section 2.8.), which are taken in net terms, i.e. after deduction of SICs and PIT. The following social benefits are included: sickness benefits, Unemployment benefit, Maternity leave benefit, Parental leave benefit and Support during the newborn child care. Paid alimonies are deducted from total income. Since 01/2014 received alimonies are also included in household income, but only the part above a certain threshold, which equals 8.5%, 10% and 11% of ANWPY2, for each supported child aged 0-6, 7-12 and 13-18 years, respectively.

- **Wealth test**

In order to qualify for the benefit, the members of a household must satisfy several conditions regarding the possession and the use of assets, as follows.

Household members are not allowed to use a personal vehicle, whether their own or borrowed. Exceptions are made for households: (a) which have a large number of members (6 or more), (b) in which the vehicle is used for transportation of disabled members, or (c) whose place of living is distanced from the city, if there are no means of public transportation available.

Household members should not own real estate other than the one used for living. More generally, they should not own assets, either non-financial or financial, that could be disposed of without compromising the basic needs of household members.

- **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 CES, 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.

There is no information to establish whether a person is a lone parent. The lone parent is defined as a person with children who does not have a partner and does not receive an alimony.

The wealth test is partially incorporated by checking whether a household has a car or not; exclusions are simulated for large families and households having members with disability, while the exclusion for distanced households is not simulated due to lack of data. Other types of wealth tests are not simulated because no information is available on the possession of secondary houses/apartments, and other assets.

2.6.2 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 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 2.6 Duration of unemployment benefit

Months spent in work	Basic duration	Extended duration
	(in months) 2013-2016	(in months) 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 2.7 Unemployment benefit rates (2013-2016)

	2013-2016
<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).¹

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 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.

2.6.3 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**

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 28th day before the expected delivery date (or from the 45th day, upon medical approval) to the 70th 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 6th month after birth.

- **Income test**

This is not a means-tested benefit.

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

- ***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.

2.6.4 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 6th month after the child's birth until the child reaches the age of 8.

There are two cases: (a) the child is the 1st or the 2nd in a family, (b) the child is the 3rd 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.² 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 the following table:

Table 2.8 Duration of parental leave benefit (nr of months)

<i>for mothers of...</i>	born in February	born in May	born in August	born in November
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.

2.6.5 Support during the newborn child care (*bfacc_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**

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.

² 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 benefit is received from the child’s birth and can last 12 months at most if the child is the 1st or the 2nd in the family, or 36 months at most if it is the 3rd 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 the following table:

Table 2.9 Duration of support during the newborn child care (nr of months)

<i>for mothers of...</i>	born in February	born in May	born in August	born in November
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.

2.6.6 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).

2.6.7 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. Special categories of children are further defined: (g1) children with ‘impaired health’, (g2) children with ‘severe disability’, and (g3) children of killed, captured or missing HBDR. Children in groups (g1) and (g3) must satisfy age conditions (a), (b) or (c). For children in group (g2), the age limit is 27; since 9/2015, this age limit is removed, under certain conditions.

- **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, except that alimonies are not included; the Subsistence benefit is not part of household income.

- **Benefit amount**

Benefit amounts per child are presented in the following table:

Table 2.10 Child benefit income thresholds and benefit rates (2013-2016), HRK per month

Household income per member	2013-2016
less than HRK 543.14	299.34
HRK 543.14 – 1,119.53	249.45
HRK 1,119.53 – 1,663	199.56

The benefit amounts per child, shown in table above, are increased: (a) by 25%, if both parents are missing or if they are ‘permanently incapable for work and independent living’; (b) by 15%, if one parent is missing or if he/she is ‘permanently incapable for work and independent living’, (c) by 25%, for a child with ‘impaired health’.

Apart from the amounts shown in the table above, the benefit amount designated to a child with ‘severe disability’ is HRK 831.50, irrespectively of household income. Likewise, the amount designated to a child of a killed, captured or missing HBDR is HRK 374.18, irrespectively of household income.

The benefit amount for a household is the sum of amounts designated to each child, according to the rules described above. The benefit amount for a household is augmented by the so-called ‘natality supplement’ (*‘pronatalitetni dodatak’*), which is obtained if the household income per member is below HRK 1,663. The amount of the ‘natality supplement’ is: (a) HRK 500, if a household has 3 dependent children, and (b) HRK 1,000, if a household has 4 or more dependent children.

- **EUROMOD notes**

In EUROMOD the state of ‘permanent incapability for work and independent living’ (for parents) and the state of ‘severe disability’ (for children) is proxied by disability status, whereas the state of ‘impaired health’ is not modelled due to lack of relevant information. Child benefit for a child of a killed, captured or missing HBDR is not simulated in EUROMOD due to lack of data.

2.7 Social contributions

2.7.1 Employer social contributions (*tscer_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.

2.7.2 Employee social contributions (*tscee_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.

2.7.3 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 2.11 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 2.12 Contribution rates

	Year	Other than Farmers II	Farmers II
General health contributions	2013	13%	6.5%
	2014-16	15%	7.5%
Occupational health contributions	2013	0.5%	n/a
	2014-16	0.5%	0.5%
Employment contributions	2013	n/a	n/a
	2014-16	1.7%	1.7%
Pension contributions A	2013-16	20%	10%
Pension contributions B1	2013-16	15%	5%
Pension contributions B2	2013-16	5%	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.

2.7.4 “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.

2.7.5 Pensioner contribution (*tscbesi_s*)

- **Liability to contributions**

The contribution is paid by pensioners who receive public pensions.

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

The contribution base is the “gross pension”.

- ***Contribution rates***

Pensioner health contribution: 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.

2.7.6 Credited insurance contributions (*tscct_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.

2.8 Personal income tax (*tin_s*)

2.8.1 Tax unit

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

2.8.2 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%. Capital gains were exempted from taxation prior to 2016; since then they are taxed at a rate of 12%.

2.8.3 Schedule types

As noted in sections 1.1 and 1.5.2, 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”.

2.8.4 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 2014, each tax unit had a personal tax allowance for income from dividends at a yearly amount of HRK 12,000. The tax deduction for income from dividends was available only in the general tax schedule and was abolished in 2015.

- *Income test*

Total personal income of supported child or supported adult (excluding social benefits and children’s family pension) may not exceed: (a) HRK 11,000 in 2013-2014, and (b) HRK 13,000 in 2015 and 2016.

- *Amounts of allowances*

Basic personal allowance is equal to $BPA = RBPA$ for non-pensioners, where RBPA is the indicator from Table 2.4. 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 supported spouse and 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 the following table:

Table 2.13 Personal tax allowances (2013-2016), HRK per month

	2013-2014	2015-2016
Basic personal allowance for non-pensioner	2,200	2,600
Basic personal allowance for pensioner	2,200-3,400	2,600-3,800
Regular personal allowance for supported family members		
(a) each supported non-child member	1,100	1,300
(b1) the first child	1,100	1,300
(b2) the second children	1,540	1,820
(b3) the third child	2,200	2,600
(b4) etc. (see formula above)		
(c1) supplement for each taxpayer and supported member with disability	660	780
(c2) supplement for each taxpayer and supported member with 100% disability	2,200	2,600

2.8.5 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.

2.8.6 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.

2.8.7 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 (2013-2014)

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 2.15 Tax schedule (2015-2016)

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 five:

Table 2.16 Income specific tax schedules

Income source	Tax base	Tax rates		
		2013-2014	2015	2016
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	12%	12%	12%
Interest income	gross income	0%	12%	12%
Capital gains	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 2.7.4, “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). However, due to lack of information, these regulations are not simulated in EUROMOD.

- **EUROMOD notes**

In EUROMOD investment income (y_{iy}) includes dividends, interest income and capital gains. As disentangling the three components is not possible due to lack of available information, the taxation rules that are applicable for dividends were implemented for this income source.

2.9 Other taxes

2.9.1 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 2013-2016 simulations is derived from the EU-SILC standard UDB 2014 (income reference year 2013). It contains the data from wave 2014 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_2014_a2
Original name	UDB_c14_ver 2014-1 from 01-01-16
Provider	Eurostat
Year of collection	2014
Income reference period	2013
Sample size	Indiv: 14,013; HH: 5,442

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 2013 (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 2014 (23 cases) were excluded from EUROMOD's database, as they were not born in SILC's income reference period. Moreover, 1 non-respondent household, containing 3 individuals, was 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 2.7.3). 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).

As explained in section 2.7.5, public pensions are subject to Pensioner contribution, whose rate is 1% or 3%, depending on the pension amount. SILC data on pensions do not include this contribution within the gross pension amounts. Therefore, we have implemented a simple algorithm, which “inflates” the existing gross pension values by the corresponding factor, in order to obtain the true gross values of pensions.

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.

2014 SILC data provide more detailed benefit variables. Namely, each of the function variables is divided into four component variables, which represent contributory means-tested, contributory non-means-tested, non-contributory means-tested and non-contributory non-means-tested benefits. This separation simplifies the identification procedure. Nevertheless, some imputations are necessary, as shown in the rest of this section.

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
bfamh	maternity and parental benefits	HY052G
bch	Child benefit	HY053G
bfaba	lump-sum grants for newborn children	HY054G
bsa00	Subsistence benefit	HY060G
bsaot	other social assistance benefits	HY060G
bunct	Unemployment benefit	PY092G
bunot	other unemployment benefits	PY092G
ysv00	severance pay - for surplus workers	PY094G
poa	old-age pensions	PY102G
boa	old-age benefits	PY103G
ysv02	severance pay - upon old-age retirement	PY104G
psu	survivors pensions	PY112G
bsu	survivors benefits	PY113G
pdi	disability pensions	PY132G
bdi	disability benefits	PY133G
ysv01	severance pay - upon retirement due to disability	PY134G

In the following description we use the abbreviations such as hy052g, which represents the actual values of SILC variable HY052G, multiplied by the HRK/EUR exchange rate and divided by 12.

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 pay. However, 2014 SILC for Croatia disaggregates PY090G into PY092G and PY094G, where the latter represents severance pay for surplus workers, and the former contains all other unemployment benefits. Severance pay for surplus workers is simply obtained as $ysv00 = py094g$. In the next step, a simple model is created, which disentangles $py092g$ into Unemployment benefit and other unemployment benefits. The model first simulates the duration of unemployment benefit for each person with $py092g > 0$ (see section 2.6.2). The amount of $py092g$ is then allocated between: (a) Unemployment benefit (bunct): if the duration of unemployment benefit is at least 1 month and if $py092g > 0.5 * NMWCY$ (i.e. the minimum Unemployment benefit that can be obtained for 1 month), and (b) other unemployment benefits (bunot), if otherwise.

The variable PY130G, which contains disability benefits, is also disaggregated in the 2014 SILC. The variables PY132G, PY133G and PY134G contain disability pensions, disability

benefits and severance pay upon retirement due to disability, respectively, from which the variables *pdi*, *bdi* and *ysv01* are created.

In a similar way, from the variables *PY102G*, *PY103G* and *PY104G* we have obtained old-age pensions (*poa*), old-age benefits (*boa*) and severance pay upon old-age retirement (*ysv02*). Total severance pay is the sum of individual components ($ysv = ysv00 + ysv01 + ysv02$).

Survivors pensions (*psu*) and survivors benefits (*bsu*) are obtained from *PY112G* and *PY113G*, respectively.

There are several social assistance benefits (section 1.3.7), among which the primary role is taken by the Subsistence benefit. The variable *HY060G* contains these benefits and because they are all non-contributory and means-tested, no disaggregation is possible within SILC. Since 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 2.6.1. 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 $bsaot = hy060g - bsa00$.

The variable *HY060G* contains family benefits. It is separated into three components – *HY052G*, *HY053G* and *HY054G* – from which maternity and parental benefits (*bfamh*), Child benefit (*bch*) and lump-sum grants for newborn children (*bfaba*) are identified.

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				Income components uprated by the index	Source	Notes
		2013	2014	2015	2016			
Harmonized CPI	\$HICP	100.04	100.26	100.00	100.30	afc, xhcmomi, ypp, xpp, xmp, xhcot	S2; S1	N1
GDP	\$f_gdp	98.61	98.27	100.00	103.33	y _{sv}	S3; S1	N2
employment income	\$f_yem	98.56	98.74	100.00	101.50	kivho, kfbcc, kfb, bhl, yem_a, yivwg, ypt, yot, yem, yempv	S4; S1	N3
self-employment income	\$f_yse	98.56	98.74	100.00	101.50	ysenr00, ysere01, ysere00, ysenr01, yse	\$f_yem	
property income	\$f_ypr	98.61	98.27	100.00	103.33	xhert, ypr	\$f_gdp	
investment income	\$f_yiy	3.07	2.98	2.64	2.27	yiy	S5	N4
old-age pensions	\$f_poa	60.62	60.92	61.01	61.38	poa	S6	N5
disability pensions	\$f_pdi	60.62	60.92	61.01	61.38	pdi	\$f_poa	
survivors pensions	\$f_psu	60.62	60.92	61.01	61.38	psu	\$f_poa	
unemployment benefit	\$f_bunct	98.56	98.74	100.00	101.50	bunct	\$f_yem	
other unemployment benefits	\$f_bunot	1600.00	1600.00	2400.00	2400.00	bunot	S7	N6
family benefits	\$f_bfa	3326.00	3326.00	3326.00	3326.00	bfa	S8	N7
housing benefits	\$f_bho	100.15	100.00	100.00	103.27	bho	\$f_bsa00	
education allowances	\$f_bed	98.61	98.27	100.00	103.33	bed	\$f_gdp	
subsistence benefit	\$f_bsa00	100.15	100.00	100.00	103.27	bsa00	S9	N8
other social assistance benefits one	\$f_bsaot \$f_one	500.00 1.00	500.00 1.00	500.00 1.00	500.00	bsaot 1.00 tis, tscer, tscee, tad, tpr, ydses_o, yds, tscse, tin, tmu	S10	
disability benefits	\$f_bdi	99.84	99.91	100.00	100.16	bdi		
child benefit	\$f_bch	3326.00	3326.00	3326.00	3326.00	bch	\$f_bfa	
grants for newborn children	\$f_bfaba	3326.00	3326.00	3326.00	3326.00	bfaba	\$f_bfa	
maternity and parental benefits	\$f_bfamh	98.56	98.74	100.00	101.50	bfamh	\$f_yem	
survivors benefits	\$f_bsu	3326.00	3326.00	3326.00	3326.00	bsu	\$f_bfa	
old-age benefits	\$f_boa	60.62	60.92	61.01	61.38	boa	\$f_poa	
old-age pensions	\$f_poa_av	99.42	99.67	100.00	100.62	poa	S11	

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disability pensions	\$f_pdi_av	99.42	99.67	100.00	100.62 pdi	\$f_poa_av
survivors pensions	\$f_psu_av	99.42	99.67	100.00	100.62 psu	\$f_poa_av

Sources:

	Institution	Publication	Table / page	Internet link
S1	European Commission	Country Report Croatia 2016	Table 1.1: Key economic, financial and social indicators	http://ec.europa.eu/europe2020/pdf/csr2016/cr2016_croatia_en.pdf
S2	Croatian Bureau of Statistics	Statistics in line: Prices	13.1.2: Harmonised index of consumer prices	www.dzs.hr/Hrv_Eng/Pokazatelj/MSI%20CIJENE.xlsx
S3	Croatian National Bank	Statistics	Main macroeconomic indicators	https://www.hnb.hr/en/statistics/main-macroeconomic-indicators
S4	Croatian Bureau of Statistics	Statistics in line: Employment and Wages	Table 9.1.7: Persons in paid employment in legal entities, average monthly paid off net and gross earning per person in paid employment	www.dzs.hr/Hrv_Eng/Pokazatelj/MSI%20ZAPOSLENOST%20I%20PLACE.xlsx
S5	Croatian National Bank	Statistical overview	Table G1b: Credit institutions' interest rates on kuna deposits indexed to foreign currency (new business) (1.2 Time deposits)	http://www.hnb.hr/en/statistics/statistical-data/credit-institutions/interest-rates
S6	Croatian Pension Insurance Institute	Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje (Nr. 1 of April 2016)	Tablica 24. Aktualna vrijednost mirovine i najniže mirovine te postotak usklađivanja	http://www.mirovinsko.hr/default.aspx?id=723
S7	Government of the Republic of Croatia	(a) Narodne novine 12/14; (b) Narodne novine 134/14;	(a) Odluka o visini novčane pomoći za nezaposlenu osobu koju je hrvatski zavod za zapošljavanje uključio u stručno osposobljavanje za rad bez zasnivanja radnog odnosa (b) Odluka o izmjeni i dopuni odluke o visini novčane pomoći, etc.	(a) http://narodne-novine.nn.hr/clanci/sluzbeni/2014_01_12_211.html (b) http://narodne-novine.nn.hr/clanci/sluzbeni/2014_11_134_2544.html
S8	Ministry of Finance, Republic of Croatia	(a) Narodne novine 26/16; (b) Narodne novine 140/10;	(a) Zakon o izvršavanju Državnog proračuna Republike Hrvatske za 2016. godinu (b) Zakon o izvršavanju Državnog proračuna Republike Hrvatske za 2011. godinu	(a) http://narodne-novine.nn.hr/clanci/sluzbeni/2016_03_26_783.html (b) http://narodne-novine.nn.hr/clanci/sluzbeni/2010_12_140_3574.html
S9	Ministry of Social Policy and Youth	Godišnje statističko izvješće o primjenjivim pravima socijalne skrbi u 2013. godini	Table 1-2.: I.B.	http://www.mspm.hr/djelokrug_aktivnosti/socijalna_skrb/statisticka_izvjesca/godisnje_izvjesce_2013
S10	Government of the Republic of Croatia	(a) NN 114/14 (b) NN 112/13	(a) Odluka o osnovici za izračun iznosa drugih prava iz sustava socijalne skrbi	

		(c) NN 30/08	(b) Odluka o osnovici za ostvarivanje prava po osnovi socijalne skrbi (c) Odluka o osnovici za ostvarivanje prava po osnovi socijalne skrbi	
S11	Croatian Pension Insurance Institute	Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje (various issues)	Table 9	http://www.mirovinsko.hr/default.aspx?id=723

Notes:

N1: For 2016: imputation performed using data from S1 on projected growth rate of Harmonised index of consumer prices

N2: For 2016: imputation performed using data from S1 on projected growth rates of GDP and GDP deflator

N3: For 2016: imputation performed using data from S1 on projected growth rate of Nominal compensation per employee

N4: For 2016: equal to the average for the period 01/2016 to 05/2016

N5: Based on the “actual value of pension”; yearly averages. For 2016: the value set for the period 01/2016 to 06/2016

N6: Based on the monthly amount of Allowance and reimbursement of travel expenses during vocational training of unexperienced workers.

N7: Based on the monthly amount of “budgetary base” (BUB)

N8: Based on the hypothetical total amounts of benefit: the amounts of means of subsistence for different types of persons are multiplied by the respective numbers of persons – actual beneficiaries in 2013. This product is obtained for each year in the period 2011 to 2015.

N4: For 2016: equal to the figure obtained for the period 01/2016 to 05/2016

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.

The sources of external data are described in section 5.2.

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 2013	EU-SILC 2014
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
Company car	0	+
Contributions to individual private pension plans	0	0
Cash benefits or losses from self-employment	+	+
Pension from individual private plans	+	0
Unemployment benefits	+	+
Old-age benefits	+	+
Survivors benefits	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
Family/children related allowances	+	+
Social exclusion not elsewhere classified	+	+
Housing allowances	+	+
Regular inter-household cash transfer received	+	+
Interests, dividends, etc.	+	+
Income received by people aged under 16	+	+
Regular taxes on wealth	-	-
Regular inter-household cash transfer paid	-	-
Tax on income and social contributions	-	-
Repayments/receipts for tax adjustment	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 2013 is almost twice as high as the figure based on external statistics, which is 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. For example, it can be seen that among the 436 thousand persons who have been “unemployed” during all 12 months in 2013 in the SILC data (according to variable PL080), only 280 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 relatively 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 2014, while external statistics come from Tax Administration. SILC-based figures for the number of employed are about 7% lower than the administrative ones, while the difference for total employment income is 12%. 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 2013. Administrative data show significantly larger number of employees (by 31%) in the interval of 25% to 50% AGW. 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% AGW, 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 29% for the income interval beyond 300% AGW. According to the tax data, 1.7% of employees fall into this bracket, but they earn 9.8% of the total wage income. On the other hand, in SILC data, people with employment income above 300% AGW make only 0.5% of all employees, who earn 2.7% 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. We use two kinds of official data for pensions. CBS data come from the ESSPROS survey and show old-age, disability and survivors pensions (rows *poa*, *pdi* and *psu* in tables 4.5 and 4.6). Tax administration data show total pensions and structure by income brackets (rows *pen*, *pen01*, etc.). SILC data in 2013 overestimate the amount of disability pensions by 16%, while old-age and survivors pensions are underestimated by 8% and 25%. On the other hand, the numbers of pensioners in each category are lower in SILC than in ESSPROS.

Housing benefits. Total amounts of housing benefits in SILC/EUROMOD are similar to those according to administrative sources.

Survivors benefits. As shown in section 1.3.2, these benefits cover a range of survivors benefits related to family members of HBRDs, HRVIs, HMVIs, RVIs and CIRs, and their total amount according to administrative sources is somewhat above HRK 300 million. However, SILC data capture less than 10% of that amount. The reason may be that survey respondents report these benefits under survivors pensions (which are, however, also underreported, as we have seen above).

Sickness benefits. One of the largest discrepancies among non-simulated benefits is in the case of sickness benefits, where SILC data represent only about one fifth 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; the ratio between SILC/EUROMOD and official figures is about 50%. As in the case of *survivors benefits*, a part of disability benefits may be reported as disability pensions.

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 relatively well with the administrative data (CPII). There is a modest over-appreciation for the number of households which receive the benefit, which rises from 11% in 2013 to 17-19% in 2014-2015. This rise is due to the sudden fall, by 6.5% in 2014 as compared to 2013, in the number of beneficiaries according to official statistics. The total amount is also overestimated by EUROMOD, by 11%.

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 23%. The official statistics (Croatian Bureau of Statistics) says that in 2013, 40.3 thousand children have been born and received the benefit. However, input data contain only 29 thousand children of age 0.

Maternity leave benefit. EUROMOD captures only about two thirds of the administrative amount of Maternity leave benefit. 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 underestimation of higher employment incomes in input data, and the benefit is related to wage (section 2.6.3). On the other hand, the ratio between EUROMOD and administrative figures for the number of recipients is at the decent 90% and 93% in 2015 and 2016, respectively.

Parental leave benefit. The number of beneficiaries is underestimated by 5% in 2013, and only 3% in 2016. The total amount in EUROMOD fits administrative figures in 2013, while the 7% and 11% overestimation are seen in 2015 and 2016, respectively. This can be explained by real fall in the number of newborn children in 2016, which is not simulated by the model.

Support during the newborn child care. EUROMOD underestimates the number of beneficiaries by about one quarter. Conversely, the amount of benefit is overestimated by 5% to 10%. The model assumes that each beneficiary receives the benefit in the maximum duration, but in reality this may not be the case.

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 54% more beneficiaries from actual figure in 2013 and 2014, and 47% in 2015. On the other hand, the discrepancy in the aggregate amount is significantly smaller, ranging from 9% in 2016 to 18% in 2013. 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 2013 output data reveals that 12 thousands recipients (16% of all recipients in EUROMOD) get less than HRK 200 per month, which is a third of the minimum monthly amount of Subsistence benefit for an adult in a one-member household (section 2.5.1).

While the administrative figure for Subsistence benefit is HRK 615 million in 2013, the SILC variable for social assistance benefits (HY060G) indicates the total amount of only HRK 406

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 for households in need (section 1.3.1). 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 196 and 210 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 appropriately allocated to different individuals? The administrative data from 2013 reveal that the aggregate amount of these benefits is HRK 198 million, which is quite similar to SILC/EUROMOD. Thus, the variable HY060G is another variable deserving further attention from CBS and researchers using SILC data.

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 125 thousand people in 2013 (notice, however, that the *average number* of beneficiaries during 2013 according to administrative data is 70 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). Given all these conditions, it is not unexpected that the ratio between EUROMOD and administrative total amount of Unemployment benefit is only 61%; however, the ratio increases to 85% in 2015 due to drastic fall in the number of actual beneficiaries.

We have seen in the previous section that input data capture only about 88% 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 about 90% in different years. The exception is 2014, where the ratio for employer SIC is 97%; this is due to the change in the rate of General health contributions, which occurred in 04/2014. Thus, from 01/2014 to 03/2014 the rate was 13%, and 15% in the rest of the year; however, EUROMOD assumes the 15% rate in the whole year.

Self-employed persons social contributions. EUROMOD overstates the total amount of SC for self-employed persons in comparison to administrative figures by 38% in 2013.

Personal income tax and Surtax. The ratio between EUROMOD output and administrative data for Personal income tax and Surtax is quite low: 70% in 2013, and falling to 63% in 2015. Section 2.8 has shown that PIT is highly progressive, both due to relatively high personal allowances and three-rate schedule, with the top rate reaching 40%. This structure causes that the major share of total PIT is paid by higher income individuals; but they and their income are seriously underrepresented in SILC, as indicated in section 4.1.2 (tables 4.3 and 4.4). Furthermore, in the last several years the PIT system sees an increased reliance on capital income, which also tends to be underreported. In order to reveal where these ‘leakages’ come from, Table 4.8A disentangles PIT revenue according to income sources. According to Tax administration 2015 data, HRK 652 million was collected on account of capital income, but EUROMOD registers only HRK 26 million, or 4%. In absolute terms, the largest discrepancy comes from PIT on employment income, which is further disaggregated by gross income. People whose gross wage is above 300% of AGW paid HRK 2.5 billion of PIT, but only about one fifth of this amount is noted in EUROMOD. The rest of the difference between actual and simulated PIT on employment income arrives from gross wages between 150% and 300% of AGW.

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 year 2013.

Median income and Mean income. In 2013 the mean and median income in EUROMOD and external statistics are almost identical.

Gini coefficient. The 2013 Gini coefficients in EUROMOD and external statistics are 28.5 and 30.2, 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, disability and survivors 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 16%), while the tenth income decile is understated (by 4%), 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 2013, EUROMOD shows roughly equal poverty rate for the group ‘65+ years’, as the external source. For all other age groups, poverty rates are lower in EUROMOD, and the explanation is similar as for the Gini coefficient. Most remarkable difference is for the group ‘0-15 years’, where EUROMOD indicates 20% 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, and due to “better targeting” of Child benefit.

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 2013 is by 27% lower than in external data, while for ‘70% median HDI’ the difference is 4%.

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 relatively small, but interesting changes in total income and its distribution. Employment income in 2013 would increase by about 0.6%, but this results in lower Child benefit (by 1.1%) and Subsistence benefit (by 0.8%). The rise in the mean income is complemented by the increase in median income. This pushes up the relative poverty line, and poverty rate increases.

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

5.1 Sources for tax-benefit descriptions/rules

Note: NN denotes the official gazette (Narodne Novine). Legal acts published in NN are available online in Croatian, at <http://narodne-novine.nn.hr/default.aspx>.

Taxation

Institutions:

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, 136/15)

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 Pension Insurance Institute), <http://www.mirovinsko.hr/>

Legal framework:

Zakon o mirovinskom osiguranju (act on public pension insurance) (NN 157/13, 151/14, 33/15, 93/15)

Badun, M. (2009) 'Pension beneficiaries who have been granted pensions under more favourable conditions', Newsletter Nr. 44, Institute of Public Finance Zagreb.

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, 70/16)

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, 82/15)

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, 99/15, 52/16)

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, 70/16)

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)

5.2 Sources for external data

In their publications or by request, Croatian Bureau of Statistics provides statistical data in all areas. These data represent the main source for external validation, and are supplemented by administrative data provided by various government institutions, as follows:

Taxation

Data are obtained from Tax Administration by request.

Pensions

Croatian Pension Insurance Institute: the publication “Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje” (statistical information on pensions; various issues).

Labour

Croatian Employment Service: the publication “Godišnjak” (yearly report on unemployment benefits; various issues).

Health

Croatian Institute for Health Insurance: the publication “Godišnje izvješće” (yearly report; various issues).

Family, Social assistance and Disability

Ministry of Social Policy and Youth: various yearly statistical reports.

War veterans

Government of the Republic of Croatia: Izvješće o provedbi zakona o pravima hrvatskih branitelja iz Domovinskog rata i članova njihovih obitelji (yearly report on HBDR benefits; various issues).

ANNEX 1: POLICY EFFECTS IN 2015-2016

In this section we analyse the direct tax-benefit policy effect on household disposable income in Croatia between 2015 and 2016. 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 30th 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 2016 tax-benefit policies (deflating the tax-benefit monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2015 policies, as a percentage of mean equivalised household disposable income in 2015. 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.

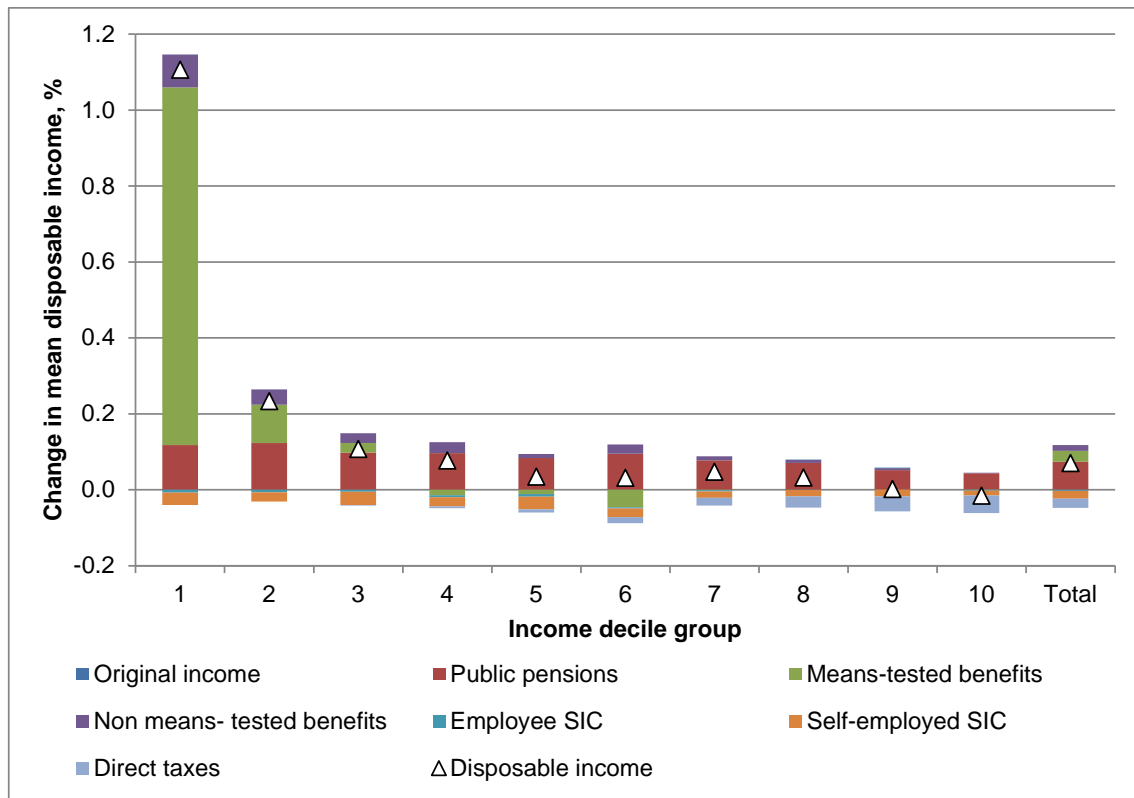
In comparison to 2015 policies, (deflated) 2016 policies only had a minor impact on average equivalised household disposable income with a progressive distributional pattern. The poorest deciles seem to have benefited from changes in means-tested benefits, and in particular from the increase in the Subsistence benefit levels (for adults in one-member households who are unable to work, lone parents and for children of single parents). Average household disposable income of the first decile group rose by 1.11%. Indexation of public pension benefits led to an overall increase in average household disposable income by around 0.07%. The distribution of gains across income groups largely reflects where pensioners are located in the income distribution.

Table A1: Policy effects in 2015-2016, 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	0.94	0.09	-0.01	-0.03	0.00	1.11
2	0.00	0.12	0.10	0.04	-0.01	-0.02	0.00	0.23
3	0.00	0.10	0.02	0.03	-0.01	-0.03	0.00	0.11
4	0.00	0.10	-0.01	0.03	-0.01	-0.02	0.00	0.08
5	0.00	0.08	-0.01	0.01	-0.01	-0.03	-0.01	0.03
6	0.00	0.09	-0.05	0.02	0.00	-0.02	-0.02	0.03
7	0.00	0.08	0.00	0.01	0.00	-0.02	-0.02	0.05
8	0.00	0.07	0.00	0.01	0.00	-0.02	-0.03	0.03
9	0.00	0.05	0.00	0.01	0.00	-0.02	-0.04	0.00
10	0.00	0.04	0.00	0.00	0.00	-0.01	-0.05	-0.02
Total	0.00	0.07	0.03	0.01	0.00	-0.02	-0.02	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 2015, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2016 policies by Eurostat’s Harmonized Index of Consumer Prices (HICP).

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



ANNEX 2: VALIDATION TABLES

Table 4.2: Number of employed and unemployed

	EUROMOD	External			Ratio		
	2013	2013	2014	2015	2013	2014	2015
Number of employed	1,417,644	1,524,000	1,566,000	1,589,000	0.93	0.91	0.89
Number of unemployed	569,171	318,000	327,000	309,000	1.79	1.74	1.84

Table 4.3: Market income in EUROMOD, number of recipients

		EUROMOD	External			Ratio		
		2013	2013	2014	2015	2013	2014	2015
yem	employment income	1,391,891	1,503,833	1,513,838	1,539,874	0.93	0.92	0.90
yem01	empl. inc. : below 25% of AGW	156,175	84,329	130,834	135,983	1.85	1.19	1.15
yem02	empl. inc. : 25% to 50% of AGW	316,400	414,714	400,913	400,111	0.76	0.79	0.79
yem03	empl. inc. : 50% to 75% of AGW	412,082	362,344	366,813	372,987	1.14	1.12	1.10
yem04	empl. inc. : 75% to 100% of AGW	218,011	240,556	228,439	232,138	0.91	0.95	0.94
yem05	empl. inc. : 100% to 150% of AGW	215,180	264,930	258,000	263,684	0.81	0.83	0.82
yem06	empl. inc. : 150% to 200% of AGW	39,488	68,818	65,177	69,041	0.57	0.61	0.57
yem07	empl. inc. : 200% to 300% of AGW	27,177	42,434	40,506	41,031	0.64	0.67	0.66
yem08	empl. inc. : above 300% of AGW	7,377	25,710	23,156	24,899	0.29	0.32	0.30
ysenr00	tax exempted income of self-employed persons	15,420	N/A	N/A	N/A	N/A	N/A	N/A
ysenr01	non-reported/tax exempted "other income"	203,804	N/A	N/A	N/A	N/A	N/A	N/A
ysere00	reported income of self-employed persons	124,171	128,843	102,787	111,502	0.96	1.21	1.11
ysere01	reported "other income"	73,988	N/A	334,305	361,968	N/A	0.22	0.20
ysv	Severance pay	14,417	N/A	N/A	N/A	N/A	N/A	N/A
yot	income of children under 16	208,899	N/A	N/A	N/A	N/A	N/A	N/A
ypp	private pensions	1,374	N/A	N/A	N/A	N/A	N/A	N/A
yyi	investment income	135,204	N/A	N/A	N/A	N/A	N/A	N/A
ypt	private transfers received	120,013	N/A	N/A	N/A	N/A	N/A	N/A
xmp	maintenance payments	65,548	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		
		2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
yem	employment income	95,578	95,752	96,974	98,429	108,671	108,277	110,739	0.88	0.88	0.88
yem01	empl. inc. : below 25% of AGW	2,158	2,162	2,190	2,222	341	769	772	6.33	2.81	2.84
yem02	empl. inc. : 25% to 50% of AGW	12,230	12,223	12,409	12,564	11,904	12,124	12,056	1.03	1.01	1.03
yem03	empl. inc. : 50% to 75% of AGW	23,936	24,009	24,286	24,680	18,587	19,346	19,631	1.29	1.24	1.24
yem04	empl. inc. : 75% to 100% of AGW	17,944	17,976	18,206	18,479	18,589	18,149	18,407	0.97	0.99	0.99
yem05	empl. inc. : 100% to 150% of AGW	24,226	24,270	24,580	24,949	28,584	28,385	29,126	0.85	0.86	0.84
yem06	empl. inc. : 150% to 200% of AGW	6,444	6,456	6,538	6,636	10,750	10,377	10,926	0.60	0.62	0.60
yem07	empl. inc. : 200% to 300% of AGW	6,088	6,099	6,177	6,270	9,274	9,069	9,138	0.66	0.67	0.68
yem08	empl. inc. : above 300% of AGW	2,552	2,557	2,589	2,628	10,643	10,058	10,683	0.24	0.25	0.24
ysenr00	tax exempted income of self-employed	418	419	424	430	N/A	N/A	N/A	N/A	N/A	N/A
ysenr01	non-reported/tax exempted "other income"	1,948	1,951	1,976	2,006	N/A	N/A	N/A	N/A	N/A	N/A
ysere00	reported income of self-employed persons	8,848	8,864	8,978	9,112	6,037	5,828	5,821	1.47	1.52	1.54
ysere01	reported "other income"	2,352	2,357	2,387	2,423	N/A	3,429	3,759	N/A	0.69	0.63
ysv	Severance pay	686	684	696	719	N/A	N/A	N/A	N/A	N/A	N/A
yot	income of children under 16	228	229	232	235	N/A	N/A	N/A	N/A	N/A	N/A
ypp	private pensions	6	6	6	6	N/A	N/A	N/A	N/A	N/A	N/A
yyi	investment income	245	238	211	181	N/A	N/A	N/A	N/A	N/A	N/A
ypt	private transfers received	1,286	1,289	1,305	1,325	N/A	N/A	N/A	N/A	N/A	N/A
xmp	maintenance payments	613	612	609	611	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		
		2013	2013	2014	2015	2013	2014	2015
Benefits								
poa	Old-age pensions	625,895	682,743	714,051	714,051	0.92	0.88	0.88
pdi	Disability pensions	244,837	266,430	262,885	262,885	0.92	0.93	0.93
psu	Survivors pensions	200,223	241,642	246,802	246,802	0.83	0.81	0.81
pen	Total public pensions	1,070,955	1,218,430	1,125,179	1,128,993	0.88	0.95	0.95
pen01	publ. pens. : below 25% of AGW	387,321	534,957	454,193	452,935	0.72	0.85	0.86
pen02	publ. pens. : 25% to 50% of AGW	552,401	519,692	512,840	515,426	1.06	1.08	1.07
pen03	publ. pens. : 50% to 75% of AGW	94,805	117,125	119,101	120,531	0.81	0.80	0.79
pen04	publ. pens. : 75% to 100% of AGW	23,833	32,274	28,889	29,260	0.74	0.83	0.81
pen05	publ. pens. : 100% to 150% of AGW	11,728	12,905	9,078	9,537	0.91	1.29	1.23
pen06	publ. pens. : 150% to 200% of AGW	467	957	766	835	0.49	0.61	0.56
pen07	publ. pens. : 200% to 300% of AGW	399	261	180	293	1.53	2.21	1.36
pen08	publ. pens. : above 300% of AGW		259	132	175			
bho	Housing benefit	27,007	N/A	N/A	N/A	N/A	N/A	N/A
bsaot	Other social assistance benefits	31,871	N/A	N/A	N/A	N/A	N/A	N/A
bunot	Other unemployment benefits	3,594	35,667	44,377	44,377	0.10	0.08	0.08
boa	Old-age benefits	28,850	N/A	N/A	N/A	N/A	N/A	N/A
bsu	Survivors benefits	3,172	N/A	N/A	N/A	N/A	N/A	N/A
bed	Education allowances	21,679	N/A	N/A	N/A	N/A	N/A	N/A
bhl	Sickness benefits	26,011	N/A	N/A	N/A	N/A	N/A	N/A
bdi	Disability benefits	109,114	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and Social Insurance contributions								
tpr	Property tax	388,363	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		
		2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
Benefits											
poa	Old-age pensions	20,656	20,758	20,789	20,915	22,558	23,310	23,344	0.92	0.89	0.89
pdi	Disability pensions	7,863	7,902	7,913	7,961	6,784	6,364	6,373	1.16	1.24	1.24
psu	Survivors pensions	4,925	4,950	4,957	4,987	6,562	6,486	6,496	0.75	0.76	0.76
pen	Total public pensions	33,444	33,610	33,659	33,863	34,128	32,718	32,907	0.98	1.03	1.02
pen01	publ. pens: below 25% of AGW	6,541	6,549	6,668	6,743	7,331	6,678	6,657	0.89	0.98	1.00
pen02	publ. pens: 25%-50% of AGW	18,236	18,351	18,280	18,612	16,633	16,458	16,522	1.10	1.11	1.11
pen03	publ. pens: 50%-75% of AGW	5,286	5,292	5,363	5,239	6,259	6,416	6,510	0.84	0.82	0.82
pen04	publ. pens: 75%-100% of AGW	1,939	1,968	1,913	1,825	2,500	2,218	2,234	0.78	0.89	0.86
pen05	publ. pens: 100%-150% of AGW	1,295	1,301	1,287	1,295	1,275	865	898	1.02	1.51	1.43
pen06	publ. pens: 150%-200% of AGW	70	71	103	149	101	66	64	0.70	1.08	1.62
pen07	publ. pens: 200%-300% of AGW	77	77	45	0	14	8	13	5.55	9.40	3.55
pen08	publ. pens: above 300% of AGW	0	0	0	0	15	9	9	0.00	0.00	0.00
bho	Housing benefit	124	124	124	128	103	120	120	1.21	1.03	1.03
bsaot	Other social assistance benefits	210	210	210	210	198	97	83	1.06	2.17	2.55
bunot	Other unemployment benefits	11	11	16	16	292	483	483	0.04	0.02	0.03
boa	Old-age benefits	88	89	89	90	N/A	N/A	N/A	N/A	N/A	N/A
bsu	Survivors benefits	29	29	29	29	339	321	321	0.09	0.09	0.09
bed	Education allowances	143	143	145	150	N/A	N/A	N/A	N/A	N/A	N/A
bhl	Sickness benefits	294	295	298	303	1,376	1,296	1,345	0.21	0.23	0.22
bdi	Disability benefits	728	728	729	730	1,517	1,498	1,498	0.48	0.49	0.49
Taxes and Social Insurance contributions											
tpr	Property tax	185	185	185	185	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		
		2013	2014	2015	2016	2013	2013	2013	2014	2015	2013	2014	2015
Benefits													
bsa	Subsistence benefit	76,825	74,415	73,891	78,663	20,809	3.69	49,901	49,053	51,267	1.54	1.54	1.47
bunct	Unemployment benefit	79,967	79,967	80,151	80,151	80,151	1.00	125,005	116,933	97,082	0.64	0.68	0.83
bch	Child benefit	227,440	227,709	220,338	218,084	212,962	1.07	204,941	191,658	188,236	1.11	1.19	1.17
bfaba	Lump-sum grant for newborn children	28,705	28,705	28,705	28,705	24,166	1.19	40,311	39,669	37,832	0.71	0.72	0.76
bfama	Maternity leave benefit	30,327	30,327	30,327	30,327	N/A	N/A	N/A	33,684	32,525	N/A	0.90	0.93
bfapl	Parental leave benefit	41,997	41,997	41,997	41,997	N/A	N/A	44,366	44,667	43,463	0.95	0.94	0.97
bfacc	Support during the newborn child care	34,644	34,644	34,644	34,644	N/A	N/A	44,454	46,267	46,179	0.78	0.75	0.75
bfamh	All parental benefits (bfama, bfapl & bfacc)	106,967	106,967	106,967	106,967	66,677	1.60	N/A	124,618	122,167	N/A	0.86	0.88
Taxes and Social Insurance contributions													
tin	Personal income tax	1,373,226	1,378,074	1,217,738	1,243,481	1,245,465	1.10	2,817,181	2,725,915	2,755,765	0.49	0.51	0.44
tmu	Surtax	1,373,226	1,378,074	1,217,583	1,243,262	1,245,465	1.10	2,817,181	2,725,915	2,755,765	0.49	0.51	0.44
tscsicer	Employers: all SIC	1,438,443	1,438,443	1,438,443	1,438,443	N/A	N/A	1,503,833	1,513,838	1,539,874	0.96	0.95	0.93
tscepp	Employees: pension SIC	1,391,891	1,391,891	1,391,891	1,391,891	N/A	N/A	1,503,833	1,513,838	1,539,874	0.93	0.92	0.90
tscsicse00	Self-employed: all SIC	121,985	121,985	121,985	121,985	N/A	N/A	128,843	102,787	111,502	0.95	1.19	1.09
tscsicse01	"Other income" earners: all SIC	73,988	73,988	73,988	73,988	N/A	N/A	N/A	334,305	361,968	N/A	0.22	0.20
tscbesi	Pensioners: health SIC	1,070,955	1,070,955	1,070,955	1,070,955	N/A	N/A	1,218,430	1,125,179	1,128,993	0.88	0.95	0.95
tscsicct	Credited SIC	61,799	61,799	61,799	61,799	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		
		2013	2014	2015	2016	2013	2013	2013	2014	2015	2013	2014	2015
Benefits													
bsa	Subsistence benefit	727	728	727	782	196	3.71	615	645	664	1.18	1.13	1.09
bunct	Unemployment benefit	860	866	874	895	686	1.25	1,402	1,245	1,033	0.61	0.70	0.85
bch	Child benefit	1,815	1,823	1,786	1,769	1,535	1.18	1,689	1,637	1,586	1.07	1.11	1.13
bfaba	Lump-sum grant for newborn children	68	68	68	68	58	1.17	89	89	88	0.76	0.76	0.77
bfama	Maternity leave benefit	514	512	525	531	N/A	N/A	N/A	799	784	N/A	0.64	0.67
bfapl	Parental leave benefit	494	494	495	495	N/A	N/A	500	461	445	0.99	1.07	1.11
bfacc	Support during the newborn child care	403	403	403	403	N/A	N/A	368	383	384	1.10	1.05	1.05
bfamh	All parental benefits (bfama, bfapl & bfacc)	1,412	1,410	1,423	1,430	1,069	1.32	N/A	1,643	1,614	N/A	0.86	0.88
Taxes and Social Insurance contributions													
tin	Personal income tax	7,812	7,816	6,665	6,887	7,671	1.06	11,239	11,449	10,548	0.70	0.68	0.63
tmu	Surtax	912	913	782	808	899	1.04	1,315	1,339	1,234	0.69	0.68	0.63
tscsicer	Employers: all SIC	14,928	16,933	17,145	17,401	N/A	N/A	16,518	17,541	19,047	0.90	0.97	0.90
tscepp	Employees: pension SIC	19,226	19,265	19,505	19,797	N/A	N/A	21,446	21,342	21,818	0.90	0.90	0.89
tscsicse00	Self-employed: all SIC	2,369	2,663	2,664	2,696	N/A	N/A	1,723	1,766	1,758	1.38	1.51	1.52
tscsicse01	"Other income" earners: all SIC	776	825	835	848	N/A	N/A	N/A	457	493	N/A	1.81	1.69
tscbesi	Pensioners: health SIC	412	414	415	414	N/A	N/A	438	408	410	0.94	1.02	1.01
tscsicct	Credited SIC	59	59	59	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4.8A: Personal income tax in detail - Annual amounts (in millions)

		EUROMOD				External			Ratio		
		2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
tin	Personal income tax	7,812	7,816	6,665	6,887	11,239	11,449	10,548	0.70	0.68	0.63
tinpens	PIT - pensions	456	465	344	353	391	392	343	1.17	1.19	1.00
tinse00	PIT - income of self-employed persons	526	495	422	438	259	278	282	2.03	1.78	1.50
tinprop	PIT - rental of property income	191	190	195	201	247	293	333	0.77	0.65	0.58
tincapt	PIT - capital income	7	6	26	23	330	424	652	0.02	0.02	0.04
tinse01	PIT - "other income"	466	467	474	481	637	647	703	0.73	0.72	0.67
tinempl	PIT - employment income	6,166	6,192	5,204	5,392	9,376	9,414	8,235	0.66	0.66	0.63
tinempl01	PIT - empl. inc. : below 25% of AGW	11	11	12	13	2	9	6	6.53	1.24	2.04
tinempl02	PIT - empl. inc. : 25% to 50% of AGW	155	155	81	89	156	196	96	0.99	0.79	0.85
tinempl03	PIT - empl. inc. : 50% to 75% of AGW	702	707	528	555	604	661	494	1.16	1.07	1.07
tinempl04	PIT - empl. inc. : 75% to 100% of AGW	930	935	745	782	1,094	1,108	914	0.85	0.84	0.82
tinempl05	PIT - empl. inc. : 100% to 150% of AGW	2,066	2,074	1,817	1,881	2,283	2,321	2,071	0.90	0.89	0.88
tinempl06	PIT - empl. inc. : 150% to 200% of AGW	754	757	689	708	1,235	1,218	1,103	0.61	0.62	0.63
tinempl07	PIT - empl. inc. : 200% to 300% of AGW	987	990	836	857	1,466	1,461	1,210	0.67	0.68	0.69
tinempl08	PIT - empl. inc. : above 300% of AGW	562	564	495	507	2,537	2,440	2,342	0.22	0.23	0.21

Table 4.9: Distribution of equivalised disposable income

	EUROMOD				External			Ratio		
	2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
D1	3.14	3.13	3.11	3.11	2.70	N/A	N/A	1.16	N/A	N/A
D2	4.99	4.96	4.89	4.90	4.70	N/A	N/A	1.06	N/A	N/A
D3	6.21	6.22	6.15	6.14	6.10	N/A	N/A	1.02	N/A	N/A
D4	7.37	7.35	7.26	7.28	7.20	N/A	N/A	1.02	N/A	N/A
D5	8.46	8.48	8.42	8.40	8.40	N/A	N/A	1.01	N/A	N/A
D6	9.71	9.65	9.59	9.60	9.70	N/A	N/A	1.00	N/A	N/A
D7	10.90	10.95	10.94	10.93	11.00	N/A	N/A	0.99	N/A	N/A
D8	12.68	12.67	12.71	12.76	12.80	N/A	N/A	0.99	N/A	N/A
D9	15.15	15.15	15.20	15.16	15.30	N/A	N/A	0.99	N/A	N/A
D10	21.39	21.44	21.73	21.73	22.20	N/A	N/A	0.96	N/A	N/A
Median	39,575	39,531	40,097	40,501	39,600	N/A	N/A	1.00	N/A	N/A
Mean	43,783	43,773	44,691	45,211	43,947	N/A	N/A	1.00	N/A	N/A
Gini	28.5	28.6	29.0	29.0	30.2	N/A	N/A	0.94	N/A	N/A
S80/S20	4.5	4.5	4.6	4.6	5.1	N/A	N/A	0.88	N/A	N/A

Table 4.10: Poverty rates by gender and age

	EUROMOD				External			Ratio		
	2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
40% median HDI										
Total	5.97	6.18	6.20	6.26	8.20	N/A	N/A	0.73	N/A	N/A
Males	5.80	5.99	6.00	6.05	8.10	N/A	N/A	0.72	N/A	N/A
Females	6.12	6.36	6.39	6.46	8.20	N/A	N/A	0.75	N/A	N/A
50% median HDI										
Total	11.31	11.99	12.27	12.17	13.40	N/A	N/A	0.84	N/A	N/A
Males	11.09	11.45	11.82	11.72	13.10	N/A	N/A	0.85	N/A	N/A
Females	11.51	12.50	12.70	12.59	13.60	N/A	N/A	0.85	N/A	N/A
60% median HDI										
Total	17.92	18.14	18.34	18.55	19.40	N/A	N/A	0.92	N/A	N/A
Males	16.99	17.28	17.53	17.57	18.70	N/A	N/A	0.91	N/A	N/A
Females	18.78	18.94	19.09	19.46	20.10	N/A	N/A	0.93	N/A	N/A
70% median HDI										
Total	25.87	25.80	26.06	26.01	27.00	N/A	N/A	0.96	N/A	N/A
Males	24.59	24.63	24.84	24.78	25.60	N/A	N/A	0.96	N/A	N/A
Females	27.06	26.90	27.19	27.16	28.20	N/A	N/A	0.96	N/A	N/A
60% median HDI										
0-15 years	16.76	17.41	17.65	17.47	20.80	N/A	N/A	0.81	N/A	N/A
16-24 years	20.46	20.74	20.86	20.65	21.60	N/A	N/A	0.95	N/A	N/A
25-49 years	15.63	15.84	15.96	15.83	17.20	N/A	N/A	0.91	N/A	N/A
50-64 years	17.25	17.27	17.44	17.64	17.80	N/A	N/A	0.97	N/A	N/A
65+ years	22.78	22.81	23.23	24.76	23.10	N/A	N/A	0.99	N/A	N/A

Table 4.11: Minimum wage validation

	Baseline				Min Wage Incl.				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
equivalised disposable income	120,442	120,472	122,969	124,382	120,928	120,980	123,476	124,919	0.996	0.996	0.996	0.996
employment income	95,578	95,752	96,974	98,429	96,135	96,331	97,540	99,037	0.994	0.994	0.994	0.994
Personal income tax	7,812	7,816	6,665	6,887	7,829	7,834	6,674	6,896	0.998	0.998	0.999	0.999
Surtax	912	913	782	808	914	915	783	809	0.998	0.998	0.999	0.999
Employers: all SIC	14,928	16,933	17,145	17,401	14,949	16,958	17,170	17,433	0.999	0.999	0.999	0.998
Employees: pension SIC	19,226	19,265	19,505	19,797	19,254	19,294	19,534	19,833	0.999	0.998	0.999	0.998
Subsistence benefit	727	728	727	782	721	726	725	780	1.008	1.004	1.003	1.002
Child benefit	1,815	1,823	1,786	1,769	1,795	1,804	1,767	1,747	1.011	1.011	1.011	1.013
Median	39,575	39,531	40,097	40,501	40,015	40,128	40,766	41,190	0.989	0.985	0.984	0.983
Poverty rate (60% median HDI)	17.9	18.1	18.3	18.5	18	18	19	19	0.968	0.984	0.961	0.977
Gini coefficient	28.5	28.5	29.0	29.0	28.4	28.5	28.9	28.9	1.003	1.003	1.003	1.003

Notes: In Tables 4.2 – 4.8 no external information is available for 2016; in Table 4.9 no external information is available for 2014-16; in Table 4.10 no external information is available for 2013-16.