EUROMOD
COUNTRY REPORT

CROATIA (HR)
2020-2023

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December 2023

EUROMOD version I6.0+

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

EUROMOD covers the 27 Member States and is yearly updated to cover the most recent changes in countries' policy systems. It uses input databases which are also updated on a yearly basis, coming mainly from the European Union Statistics on Income and Living Conditions (EU-SILC). The model yearly update is supported by the following Directorate-Generals of the European Commission: DG EMPL, DG ECFIN, DG TAXUD, DG REFORM, DG JRC, DG ESTAT.

Originally maintained, developed and managed by the Institute for Social and Economic Research (ISER), since 2021 these responsibilities are taken over by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and 27 national teams from the EU countries.

The EUROMOD governance structure consists of a Steering Committee, allowing partner DGs to monitor the process of the EUROMOD update, and a Scientific Advisory Board to monitor and guide the scientific development of the model.

This report documents the work done in the most recent annual update for Croatia. This work was carried out by the EUROMOD core development team, based at the JRC in Seville, in collaboration with the national team.

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The results presented in this report are derived using EUROMOD version I6.0+. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with earlier or later versions of EUROMOD.

For more information see https://euromod-web.jrc.ec.europa.eu/

The information contained in this document does not 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 (*Hrvatski zavod za mirovinsko osiguranje*; HZMO), the Croatian Employment Service (*Hrvatski zavod za zapošljavanje*; HZZ) and the Croatian Institute for Health Insurance (*Hrvatski zavod za zdravstveno osiguranje*; HZZO).

- The whole revenue from social insurance contributions (SIC; *doprinosi za obvezna osiguranja*) belongs to HZMO, HZZ and HZZO. 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 among RSG units, LSG units and the CG. Several taxes belong exclusively to RSG and LSG units.

- 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 grants for newborn children. Some benefits are also provided by RSG units.

- 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 "current value of pension" is adjusted.

- In 2023 the statutory retirement age is 65 for men and 63.25 for women. For women, the statutory retirement age gradually increases and will reach 65 in 2030.

- In 2002 the Croatian pension system underwent a major reform, which introduced three pillars: (1) pillar 1 – intergenerational solidarity (*međugeneracijska solidarnost*), (2) pillar 2 – mandatory individual savings (*individualna kapitalizirana štednja*), and (3) pillar 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: scheme A, whereby persons participate in pillar 1 only, and scheme B, whereby persons participate both in pillar 1 and pillar 2. Involvement in these schemes is determined according to the age in January 2002. Persons who were aged 50 or more are automatically involved in scheme A. Persons who were aged under 40 are automatically involved in scheme B. Persons who were aged between 40 and 49 could choose whether to become members of scheme A or B. People in scheme A pay contribution to pillar 1 only; this contribution is called Pension contribution A1. Correspondingly, people in scheme A receive pension from pillar 1 only. People in scheme B pay contributions both to pillar 1 (Pension contribution B1) and to pillar 2 (Pension contribution 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 Croatian Defenders from the Homeland War, war veterans from World War II, some groups of government officials, full members of the Croatian academy of sciences and arts, etc.

- Children must remain in 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 26, while child benefit sets the age limit at 19. PIT sets no specific maximum age.

- Large families are not recognised by current tax and benefit regulations; however, child benefit provides a supplement for households with 3 or 4 children. For the purposes of subsistence benefit, a "single parent" is a parent who lives without a spouse; "lone parent" is a single parent whose spouse is dead or unknown. PIT does not recognise single or lone parents.

- PIT system is an individual system, with the spouses being assessed independently.

- In principle, PIT taxes market incomes and pensions, while non-pension social benefits are not taxable. Major taxable income sources are employment earnings, pensions, income from self-employment, income from contractual work, property income and capital incomes. Income from contractual work has both the properties of employment and self-employment income.

- 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 as well as officials hired by CG/RSG/LSG institutions, (b) *self-employed persons* – those who regularly perform market activities as sole-merchants, tradesmen, entrepreneurs (firm owners), producers in agriculture (farmers), professionals (lawyers, dentists), artists, sportsmen, etc., (c) *temporary workers* – persons who are not employed through the standard labour contracts nor are self-employed persons; they earn income from contractual and occasional jobs, (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 from 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. Passed away 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, survivor and social assistance benefits are available to the above mentioned groups or their family members.

- Employed persons receive gross wage (the so-called "gross-I wage"; *bruto-I plaća*). Employers' SIC are paid upon the gross wage. The "gross-II wage" (*bruto-II plaća*) is equal to gross wage *plus* employers' SIC. Employees' SIC are paid out of the gross wage. Net wage is then equal to gross wage minus employees' SIC minus PIT and LSG surtax.

- PIT has a general schedule, which is progressive, with two rates. Additionally, there are several income-source-specific schedules and a lump-sum taxation. The general schedule applies to income in yearly tax files, which is a sum of yearly self-employment income, employment income, pensions and income from contractual work. The monthly-adjusted general tax schedule is derived from the general schedule and applies to employment income 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 and capital income. Lump sum taxation applies to minor groups of taxpayers, such as small entrepreneurs in agriculture and rental activities.

- 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, in the preceding calendar year. 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 2023, at 3,326 HRK (EUR 441.44). PIT brackets are not indexed, but are adjusted sporadically as part of PIT reforms.

- In calculations of some benefits and social insurance 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 (ANWPY), (c) average net wage from January to December of the previous year (ANWPY2), (d) gross minimum wage in the current year (GMW), (e) net minimum wage in the current year (NMW). The amounts of these indicators are presented in section 1.8.

- 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.

- In principle, all residents are covered by the mandatory health insurance. Working groups of the population must pay health SIC, while CG pays the contributions for various non-working groups. 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 15-64, 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.

- Croatia joined the Eurozone on 01/2023. Before that time, the national currency was Croatian Kuna (HRK). The old currency was exchanged into Euro (EUR) using a fixed conversion rate of 1 EUR = 7.53450 HRK.

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 (EUR 365). After that, GMW was adjusted each June 1, using the real GDP growth rate. According to the current law, introduced in 2014, the amount of minimum wage is set by the government, following the recommendation of the minister in charge of labour issues. To determine the GMW for the next year, the minister takes into account the trends in the economy and consults the social partners. New minimum wage is set every January 1, whereby its nominal amount cannot decline. The amount of GMW for 2023 is EUR 700.

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 person from scheme A, who has worked for 40 years, earning average gross wage in each year, and retires in January 2023, receives a pension of EUR 552 from pillar 1. Identical hypothetical worker in scheme B receives the "basic pension" of EUR 414 (¾ of EUR 552) from pillar 1 and the additional pension from pillar 2.

Early-age retirement pension (*prijevremena starosna mirovina*) by a male (female) who retires at most five years before the statutory retirement age and has at least 35 (33) years in service in 2023. For women, the minimum years of service gradually increase, and will reach 35 in 2030. The level of pension is also based on previous wages (or contributions), but a penalising factor is applied, equalling 0.3% for each month of early retirement.

For retirement and early retirement pensions, as well as for survivor 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 hypothetical worker from scheme A, who retires in January 2023 at the statutory age with 40 years of service, the minimum pension amounts to EUR 434. 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.

1.3.2 Survivor benefits

Survivor pensions

Family pension (*obiteljska mirovina*) is received by a widow(er) of the passed-away insured person (PAIP), if the widow(er) 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 that 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 survivor benefits

There exists a range of survivor benefits related to family members of HBDRs, HRVIs, HMVIs, RVIs and CIRs, here referred to as **Special survivor 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. The amount of benefit equals EUR 56 or 80, for beneficiaries with lower and higher level of disability, respectively. Wealth test is applied, while income test is applied only for the group of beneficiaries with lower level of disability.

Personal disability allowance (*osobna invalidnina*) is intended for persons with severe disability or other severe permanent changes in their health condition. Wealth means test is applied. The beneficiary cannot obtain supplement for assistance and care at the same time. The amount of benefit is EUR 232.26.

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 was HRK 350 (EUR 46.45), until it was abolished in 2022.

Benefits for caregivers

Compensation 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 EUR 530.89 or beyond, depending on the case. Additionally, social insurance contributions are paid on behalf of a caregiver.

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 EUR 551.80 (125% of BUB).

Compensation 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 EUR 551.80 (125% 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 base.

Work-related disability benefits

Salary compensation during a professional rehabilitation (*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% (30%) impairment, the benefit amounts to EUR 99.49 (29.84).

Other benefits in this sub-group include the **Cash compensation 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 HBDRs, 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 or more years 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 60% of the base, falling to 30% of the base for the rest of the period; maximum (minimum) levels apply. Since 01/2014, unemployment benefit is available also to self-employed persons.

Allowance and reimbursement of travel expenses for education and training of unemployed (*novčana pomoć i naknada troškova prijevoza tijekom obrazovanja i osposobljavanja*) is received by unemployed persons who are involved in education and training programs organised or initiated by the HZZ. 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 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 received net monthly allowance of HRK 3,000 (EUR 398.17). Additionally, related social insurance contributions and travel expenses are reimbursed to employers. This measure is abolished in 2020.

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 HZZ cannot find employment for these persons in their current place of residence, and if employment lasts for at least one year (except in some cases). **One-time allowance for resettling unemployed person** (*jednokratna novčana pomoć za nezaposlenu osobu*) amounts to HRK 1,200 (EUR 159.27). **Reimbursement of travel expenses** (*naknada putnih troškova*) is available for one-time travel of an unemployed person and her family members, at a maximum amount of HRK 300 (EUR 39.82) per person (if employment last for less than 6 months, the benefit covers only the unemployed person). **Reimbursement of resettling expenses** (*naknada selidbenih troškova*) equals 50% of the cost of resettlement, with a maximum amount of HRK 1,000 (EUR 132.72).

1.3.5   Sickness benefits

Sick-leave benefits are paid to insured employed and self-employed persons and temporary workers 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 SIC 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 temporary workers (*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 income from contractual work in the 6-month period prior to sick-leave; for eligibility, the benefit base must be greater than the floor employer SIC 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

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) temporary workers, 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 maternity and parental allowance, 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. The minimum benefit amount is 125% of BUB (HRK 4,157,50 or EUR 551.80). Maximum amount is not limited if the beneficiary satisfies the insurance period condition. Otherwise, the benefit equals the minimum amount.

Paternity leave benefit (*naknada za očinski dopust*) is received by working fathers who are employed or self-employed persons, during the paternity leave, which lasts 10 (15) days if one child (twins or multiples) is (are) born. The leave must be exhausted within six months after the birth of a child (children). The benefit amount is obtained the same way as for the maternity leave benefit. The benefit was introduced in 08/2022.

Parental leave benefit (*naknada za roditeljski dopust*) is obtained by mothers or fathers 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 one parent uses the parental leave, or up to 8 months, if both parents participate. In cases when twins are born or if the 3rd or each subsequent child is born, the benefit receipt duration can reach 30 months. The benefit base is the same as for the maternity and paternity leave benefits. The amount of benefit in the first 6 (8) months is equal to the benefit base, with maximum set to 225.5% of BUB (HRK 7,500.13 or EUR 995.44). In the remaining period, i.e. after the 6th (8th) month, the benefit amounts to HRK 125% of BUB (HRK 4,157,50 or EUR 551.80).

Maternity and parental allowance (*naknade za rodiljnu i roditeljsku brigu i poštedu od rada*) is available to parents of a newborn child who are temporary workers, 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 benefit amount is 70% of BUB (HRK 2,328.20 or EUR 309.01) 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 the same way as for the case of the 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 benefit amount are assessed the same way 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 temporary workers, workers in agriculture, unemployed persons or inactive persons. The duration and the amount of the benefit are determined as for the maternity and parental allowance, in the case of the 1st or the 2nd child's birth.

Child benefits

Grant for a newborn child (*jednokratna novčana potpora za novorođeno dijete*) is received by all parents of newborn children and amounts to 70% of BUB (HRK 2,328.20 or EUR 309.01).

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 basic benefit amount per child ranges from 6% of BUB (HRK 200 or EUR 26) to 9% of BUB (HRK 300 or EUR 40), depending on household income per member, which cannot be higher than 70% of BUB. 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 (EUR 33 and 66), respectively; this is usually called the "pronatalist supplement" ("*pronatalitetni dodatak*"), but here we call it the "supplement for the 3rd and the 4th child". Means-testing is not applied for two groups of children: (a) children with severe disability, for whom the benefit amount is 25% of BUB (HRK 832 or EUR 110), and (b) children of a killed, captured or missing HBDR, where the benefit amount is 11.25% of BUB (HRK 374 or EUR 50).

Temporary alimony (*privremeno uzdržavanje maloljetnog djeteta*) is obtained by a minor child who lives with a divorced parent. The parent, which does not live with a child, is the alimony tributary. In case that the tributary fails to pay the alimony, the obligation falls on the tributary's parents, i.e., the child's grandfather and grandmother. However, if they cannot pay the alimony, too, the Temporary alimony can be obtained from the government. The maximum duration of compensation is 3 years and ends when the child is 18.

Other benefits

There also exists a "subsystem" of benefits and compensations for foster parents and caregivers, as well as foster children and adults. These include **compensation for accommodation of a child in a foster family** (*naknada za smještaj djeteta u udomiteljsku obitelj*), **foster parent compensation** (*osobna naknada udomitelju djeteta*), **allowance for settlement of an adult person in a foster family** (*naknada za smještaj odrasle osobe u udomiteljsku obitelj*) and **compensation for a person performing adult foster care** (*osobna naknada udomitelju odrasle osobe*).

1.3.7 Social assistance benefits

Subsistence benefit (*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. Since 01/2022 the benefit amount is increased. Moreover, the way how the "means of subsistence" are obtained are significantly changed, in favour of children.

National benefit for the elderly (*nacionalna naknada za starije osobe*) is a means-tested benefit introduced in 01/2021, which can be obtained by persons aged 65+, whose income is below the subsistence level. Non-eligible persons are those who: (a) receive pension income from the national social insurance fund, (b) receive subsistence benefit, (c) have been granted the right to an accommodation service according to the social welfare regulations, (d) have concluded a contract on lifelong maintenance, (e) do not have a long-term permanent residence in Croatia.

One-time assistance for households in need (*jednokratna naknada 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.

Compensation for housing costs (*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 "means of subsistence". 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 **Firewood grant** (*naknada za ogrjev*), at typical amount of HRK 1,050, which is financed by RSG units.

Compensation for energy costs (*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 (EUR 26.54). In 04/2022, this threshold is increased to HRK 400 (EUR 53.09), as one of the measures to combat the consequences of inflation (see section 1.7). Simultaneously, the circle of beneficiaries is extended to several additional groups, including the beneficiaries of the national benefit for the elderly.

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". Since 2018, a similar benefit is reintroduced for non-employed HBDRs and their family members (*naknada za nezaposlene hrvatske branitelje iz Domovinskog rata i članove njihovih obitelji*).

1.3.8   Benefits provided by local and regional self-government units

As mentioned in section 1.3.7, LSG units provide compensation for housing costs, while RSG units deliver Firewood grant. Most LSG units, as well as some RSG units, provide their own lump-sum grants for newborn children. LSG units 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) subsidized pre-school day care programs (kindergartens), (d) lump-sum benefits and

food packages for the poor, (e) various benefits for school children and students (grants, subsidies for school books, school meals, etc.). The City of Zagreb provides **Compensation for parent-at-home**, which is a salary for a person taking care of at least three children, whereby the youngest one is below the primary school age. The scheme was introduced in 2016, but in 2022 its abolishment begun.

1.4   Social insurance contributions

1.4.1   Types of social insurance contributions and payers

The social insurance 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 SIC.

The main types of contributions are:

General health contribution (*doprinos za zdravstveno osiguranje*). Since 01/2019 the rate is 16.5%.

Pensioner health contribution (*dodatni doprinos umirovljenika za zdravstveno osiguranje*). The rates are 1% and 3%.

Pension contribution A1 (*doprinos za prvi stup mirovinskog osiguranja*) is the contribution to pillar 1, paid by persons in contributory scheme A. The rate is 20%.

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

Pension contribution B2 (*doprinos za drugi stup mirovinskog osiguranja*) is the contribution 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 contribution A1, or the sum of Pension contribution B1 and Pension contribution 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 SIC because they are earning certain source of income or performing certain occupational activities.

1.4.2   Wage related social insurance contributions

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

Since 01/2019, employer SIC only includes General health contribution. Employee SIC involve Pension contributions (A1, B1, B2).

1.4.3   Social insurance 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). Since 01/2019, self-employed persons pay General health contribution and Pension contributions (A1, B1, B2).

1.4.4 Social insurance contributions on income from contractual work

SIC are also paid on income from contractual work. 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 receipt", which is an equivalent of "gross wage". General health contribution is paid by the "employer", while the earner of contractual income pays Pension contributions (A1, B1, B2). Before 2017, some types of income from contractual work were exempt from SIC, e.g., honoraria for original works of scientists, journalists, artists, etc. Furthermore, income from contractual work of pensioners was also exempt from SIC. In 01/2017 important changes have been introduced, in order to equalise the treatment of different groups of persons who perform contractual work. All earners have to pay SIC, whose rates are set to one half of regular rates from section 1.4.1.

1.4.5 Pensioner health contribution

Pensioners who receive domestic pensions pay Pensioner health contribution. The contribution base is the monthly gross pension. The contribution was abolished in 04/2023.

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: (a) bread, milk, fresh meat, fish and eggs; edible oils and fats, baby food, (b) medical drugs, equipment and appliances for persons with disability, (c) newspapers (certain types), books (with scientific, educative, cultural content), scientific journals, (d) natural gas and town gas. A reduced rate of 13% applies to a range of commodities and services, including: (a) accommodation services in hotels, camps and tourist boats, (b) certain types of newspapers, concerts tickets, culture and art magazines, (d) child car-seats, baby diapers, (e) water and electricity supply services, collection of municipal waste services, (f) some agricultural products (seedlings and seeds, fertilizers, pesticides).

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. Individual entrepreneurs (self-employed persons) are also subject to taxation in certain cases, or they can voluntarily choose to pay corporate income tax instead of

personal income 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 18%, and 10% for entities whose yearly revenue is below HRK 7.5 million (circa EUR 1 million).

Personal income tax (*porez na dohodak*). Taxpayers are individuals earning income from taxable sources, the main of which are employment earnings, income from self-employment, pensions, property income, capital income and income from contractual work. General schedule has two rates: 20% and 30%. All types of income, except self-employment income, are taxed by withholding during the year; employment income and pensions are taxed using the monthly-adjusted general tax schedule, while other sources are taxed by income specific schedules. For rental and capital incomes the tax withheld is final. In contrast, employment income, pensions, income of self-employed and income from contractual work enter the yearly assessment, whereby the yearly tax obligation is obtained. This assessment is "by default" performed by Tax Administration for most taxpayers; additionally, taxpayers can submit a yearly tax file in order to obtain certain tax reliefs. Self-employed are obliged to submit yearly tax file. In mid-2010 several deductions were abolished, namely for insurance premiums, housing and health expenses; the current system has relatively few deductions, e.g., for given donations and for self-employed persons.

Surtax (*prirez*) 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

Currently there is no standard property tax in Croatia. Its role is in certain way played by the Communal fee (*komunalna naknada*), which is paid by the owners and users of immovable property. The amount of the fee depends on the city (municipality) zone, the type of the property and the surface area.

There are several taxes on different types of assets held and used by natural and legal persons. Among them, intermittent taxes are Inheritance and gifts tax (*porez na nasljedstva i darove*) and Real estate transfer tax (*porez na promet nekretnina*). Regular taxes are 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*) and Tax on the use of public land (*porez na korištenje javnih površina*).

1.6   Covid-19 related policies

In the period from mid-March till the beginning of April 2020, the Croatian government introduced two packages of economic measures to alleviate negative impacts of the Covid-19 pandemic. There is almost one hundred of these measures, which vary greatly regarding their coverage, budget expense and potential effects on economy.

Wage compensation or *Job preservation grant* (*potpora za očuvanje radnih mjesta*) is obtained by entrepreneurs belonging to one of the following groups: (a) entrepreneurs whose operation was temporarily stopped or significantly impeded by decisions of the relevant authorities; (b) entrepreneurs engaged in accommodation and food and beverage service activities, transportation and storage activities and labour-intensive activities within the manufacturing industry (textiles, clothing, footwear, leather, wood and furniture); and (c) other businesses able to provide evidence of being affected by Covid-19 related circumstances. With certain exceptions, firms established

or owned by CG, RSG and LSG are excluded from the program. The policy is administered by the HZZ. The compensation is intended for employees and for self-employed as well. In this form the program existed during the three-month period, from March to May 2020. The net amount of wage compensation is HRK 3,250 (EUR 431.35) in March, and HRK 4,000 (EUR 530.89) afterwards. The program was continued in the period July-December 2020, whereby the range of eligible industries varied depending on the pandemic situation. Entrepreneurs are exempted from paying social insurance contributions regarding the compensation. Instead, HZZ pays Pension contribution B on behalf of the beneficiaries.

Exemption for payment of taxes and social insurance contributions (*oslobođenje od plaćanja poreza i obveznih doprinosa*) is available to entrepreneurs, whose revenue from March 20 to June 20, 2020, fell by 50% or more in comparison to the same period in 2019. Taxes that can be exempted are corporate income tax, personal income tax and surtax. Exemption is not available for value added tax, excise taxes, customs duties, and for personal income tax and surtax paid on capital and rental income. Exemption of social insurance contributions does not include Pension contribution B2. Full or 100% exemption is available for entrepreneurs whose total revenue (net of value added tax) in 2019 was below HRK 7.5 million (circa EUR 1 million); otherwise, exemption is proportional to the fall of revenue. Specifically, exemption for renters of tourist accommodation units equals one quarter of their lump-sum PIT (see "renters III" in section 2.6.3).

Value added tax deferral (*odgoda plaćanja poreza na dodanu vrijednost*) is available to all entrepreneurs, under following conditions: (1) monthly revenue fell by at least 20% lower in comparison to the same month of 2019; alternatively, it should be proved that the revenue in the next three months will be by at least 20% lower in comparison the same period in 2019; (2) for tax due, it must be proved that the tax obligation arises from issued and incoming invoices that have not been settled (i.e., paid).

Some of **other measures** included:

(a) Stand-still measure, i.e., suspension of execution of all coercive measures against all debtors (legal or natural persons) within three months;

(b) Croatian Bank for Reconstruction and Development (*Hrvatska banka za obnovu i razvoj*) introduced moratorium on existing repayments, enabled loan reprogramming, introduced new loans for liquidity, etc. Similar measures taken by Croatian Agency for SMEs, Innovations and Investments (*Hrvatska agencija za malo gospodarstvo, inovacije i investicije*);

(c) Grants for independent artists to whom contributions are paid from the state budget. Net monthly amount was HRK 1,625 (EUR 215.67) for those with average monthly income in 2019 below HRK 1,625 and HRK 3,250 (EUR 431.35) for those with income above that threshold.

1.7   Policies to alleviate the consequences of rising energy prices

During 2022, the Croatian government introduced several packages of economic measures to alleviate negative impacts of rising energy prices. There is more than a dozen of these measures, which vary greatly regarding their coverage, budget expense and potential effects on economy. Many of these measures are continued in 2023, with the third package that has arrived in March. While the main of these measures are related to price controls and market regulations, from the perspective of the tax-benefit system, the most important measures are as follows:

(a) permanent (and in some cases, temporary) lowering of the VAT rates on certain groups of goods and services;

(b) the maximum amount of the compensation for energy costs is increased from HRK 200 (EUR 26.54) to 400 (EUR 53.09).

(c) Top-up payments are made to various vulnerable groups, such as low-income pensioners, unemployed persons, recipients of child benefit and social assistance benefits (for more details, see section 2.5.11).

1.8   Important indicators

In calculations of some benefits, personal income tax and social insurance contributions the following indicators are used: (a) official average gross wage in the current year (AGW), (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 (ANWPY), (d) average net wage from January to December of the previous year (ANWPY2), (e) gross minimum wage in the current year (GMW), (f) net minimum wage in the current year (NMW), (g) "budgetary base" (BUB), (h) Regular basic personal allowance (RBPA), (i) Personal allowance base (PAB), (j) social assistance benefit base 1 (SAB1), and (k) social assistance benefit base 2 (SAB2).

Table 1.1 Indicators used in calculations of some benefits, personal income tax and social insurance contributions (2020-2023)

(a) In HRK per month

	2020	2021	2022	2023
AGW	9,216	9,599	10,369	11,088
AGWPY	8,742	9,181	9,537	10,301
ANWPY	6,434	6,724	7,086	7,583
ANWPY2	6,457	6,763	7,129	7,655
GMW	4,063	4,250	4,688	5,274
NMW	3,250	3,400	3,750	4,219
BUB	3,326	3,326	3,326	3,326
RBPA	4,000	4,000	4,000	4,000
PAB	2,500	2,500	2,500	2,500
SAB1	800	800	1,000	1,000
SAB2	500	500	500	500

(b) In EUR per month

	2020	2021	2022	2023
AGW	1223.17	1274.01	1376.20	1471.58
AGWPY	1160.26	1218.53	1265.78	1367.18
ANWPY	853.94	892.43	940.47	1006.44
ANWPY2	856.99	897.60	946.18	1016.00
GMW	539.19	564.07	622.14	700.00
NMW	431.35	451.26	497.71	560.00
BUB	441.44	441.44	441.44	441.44
RBPA	530.89	530.89	530.89	530.90
PAB	331.81	331.81	331.81	331.81
SAB1	106.18	106.18	132.72	132.72
SAB2	66.36	66.36	66.36	66.36

Sources: Croatian Bureau of Statistics; Ministry of Finance; Tax administration.

2. SIMULATION OF TAXES, SOCIAL INSURANCE CONTRIBUTIONS 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, social insurance contributions and social benefits. However, not all instruments mentioned in the previous section are simulated in EUROMOD. Some are beyond its scope entirely and are neither included in the EUROMOD database nor in its output income variables (e.g. indirect taxes some wealth and consumption taxes). Others are not possible to simulate accurately with the available data. They are included in the database and may be chosen as components of output variables, but the rules governing them may not be changed by the model. Table 2.1 and Table 2.2 classify each of the main tax-benefit instruments into one of these three groups and provide a brief explanation as to why the instrument is not fully simulated if this is the case. In the following tables we present information on EUROMOD using the most recent dataset of combined EU-SILC and national SILC data. Information on earlier input datasets for the Croatian model can be found in earlier country reports.

Table 2.1 Simulation of benefits in EUROMOD [2020-2023]

	Variable name	Treatment in EUROMOD				Comments
		2020	2021	2022	2023	
Retirement benefits/pensions						
Old age pension	poa	I	I	I	I	1
Survivor 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 unemployment benefits	bunot	I	I	I	I	2
Covid-19 compensation	bwkmc_s	NBS	NBS	-	-	
Top-up payments for unemployed persons	buntu_s	-	-	S	S	
Family benefits						
Child benefit	bch_s	S	S	S	S	
Top-up payments for child benefit recipients	bchtu_s	-	-	S	S	
Sickness – maternity benefits						
Sickness benefits	bhl	I	I	I	I	2
Maternity leave benefit	bfama_s	S	S	S	S	
Paternity leave benefit	bfafh_s	-	-	-	S	
Parental leave benefit	bfapl_s	S	S	S	S	
Maternity and parental allowance	bmanc_s	S	S	S	S	
Grant for a newborn child	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
National benefit for the elderly	boamt_s	-	S	S	S	
Top-up payments for recipients of social assistance benefits	bsatu_s	-	-	S	S	

		2020	2021	2022	2023	
Housing benefits						
Compensation for energy costs	bhout	S	S	S	S	
Compensation for housing costs	bho	I	I	I	I	2
Education allowances	bed	I	I	I	I	2
Disability benefits						
Disability benefits	bdi	I	I	I	I	2
Top-up payments for recipients of supplement for assistance and care	bditu_s	-	-	S	S	
Old-age benefits						
Old age benefits	boa	I	I	I	I	2
Top-up payments for pensioners	boatu_s	-	-	S	S	
Survivor 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;
  NBS: *simulated* but not included in the baseline;
  1:   no data on contribution history;
  2:   data available not sufficient to simulate all eligibility conditions.

Table 2.2 Simulation of taxes and social insurance contributions in EUROMOD [2020-2023]

	Variable name	Treatment in EUROMOD				Comments
		2020	2021	2022	2023	
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	
Income of self-employed and income from contractual work	tscse*_s	S	S	S	S	
Credited SIC	tscct_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.

2.2   Main policy changes

- *Main policy changes between 2022 and 2023*

(a) Changes in family benefits: (1) the maximum amount of parental leave benefit was increased to 225.5% of BUB (HRK 7,500.13 or EUR 995.44); (2) paternity leave benefit was introduced.

(b) Pensioner health contribution was abolished in 04/2023.

See also "Policy changes related to inflation (simulated)" below.

- *Main policy changes between 2021 and 2022*

(a) Changes in subsistence benefit: (1) benefit amount was increased, (2) the contributions of different household member types in the calculation of the "means of subsistence" were significantly changed, in favour of children.

(b) Covid-19 policies: wage compensation was no longer implemented.

See also "Policy changes related to inflation (simulated)" below.

- *Main policy changes between 2020 and 2021*

(a) Changes in personal income tax: (1) marginal tax rates in the monthly and general schedules were lowered from 24% and 36% to 20% and 30%, respectively; (2) marginal tax rate for rental income, dividends, interest income and capital gains was decreased from 12% to 10%.

(b) Covid-19 policies: wage compensation was still implemented, but its scope was narrowed.

(c) National benefit for the elderly was introduced into the tax-benefit system.

- *Main policy changes between 2019 and 2020*

(a) Changes in family benefits: the maximum amount of parental leave benefit was increased to HRK 5,654 (EUR 750) in 04/2020;

(b) Changes in personal income tax: (1) basic personal allowance was increased from HRK 3,800 (EUR 504) to HRK 4,000 (EUR 531); (2) tax relief was introduced for employment income of workers younger than 30.

(c) Covid-19 policies: introduction of wage compensation and other policies.

- *Policy changes related to inflation (simulated)*

(a) In 2022, the maximum amount of the compensation for energy costs was doubled, from HRK 200 (EUR 26.54) to 400 (EUR 53.09).

(b) In 2022 and 2023, various top-up benefits were introduced with the aim to alleviate the consequences of rising energy prices: (a) for recipients of child benefit, (b) for pensioners, (c) for unemployed persons, etc. For more information, see section 2.5.11.

2.2.1 Partially simulated tax-benefit components

The unemployment benefit (bunct_s) is partially simulated; as not all required information (e.g. unemployment history) is available in the SILC data, benefit recipients are imputed using information on the reported receipt of the respective benefit in the SILC data. Therefore, the benefit simulation is conditional on the reported benefit receipt in the micro-data.

2.3 Order of simulation and interdependencies

The following table shows the order of policies' simulation in the Croatian system in 2020-2023. The spine starts by setting default values for some variables. Then there is a policy to uprate all monetary variables up to 2023 (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	2020	2021	2022	2023	Description of policies
SetDefault_hr	on	on	on	on	DEF: Default values for variables
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
ilsUDBdef_hr	on	on	on	on	DEF: UDB-related standardised income lists
ildef_hr	on	on	on	on	DEF: Non-standardised income lists
selfemp_hr	on	on	on	on	DEF: variables defining self-employed persons
random_hr	on	on	on	on	DEF: Random variables
TransLMA_hr	off	off	off	off	DEF: Modelling labour market transitions
tudef_hr	on	on	on	on	DEF: Assessment units
yem_hr	switch	switch	switch	switch	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
covidcomp_hr	on	on	on	on	BEN: Covid-19 wage compensation: amounts
tscer_hr	on	on	on	on	SIC: Employers
tscee_hr	on	on	on	on	SIC: Employees
tscsebs_hr	on	on	on	on	SIC: Self-employed persons
tscsecw_hr	on	on	on	on	SIC: Income from contractual work
tscbesi_hr	on	on	on	on	SIC: Pensioners
tin_hr	on	on	on	on	TAX: Personal income tax
bfaba_hr	on	on	on	on	BEN: Grant for a newborn child
bfama_hr	on	on	on	on	BEN: Maternity leave benefit
bfafh_s	n/a	n/a	n/a	on	BEN: Paternity leave benefit
bfapl_hr	on	on	on	on	BEN: Parental leave benefit
bmanc_hr	on	on	on	on	BEN: Maternity and parental allowance
bunct_hr	on	on	on	on	BEN: Unemployment benefit
Def_hr	on	on	on	on	DEF: Update tax unit used in tin_hr
tin_hr	on	on	on	on	TAX: Personal income tax (repetition of policy with order 20)
tmu_hr	on	on	on	on	TAX: Surtax
tscct_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
boamt_hr	n/a	on	on	on	BEN: National benefit for the elderly
bhout_hr	on	on	on	on	BEN: Compensation for energy costs
boatu_s	n/a	n/a	on	on	BEN: Top-up one-off payments for pensioners
bchtu_s	n/a	n/a	on	on	BEN: Top-up payments for child benefit recipients

buntu_hr	n/a	n/a	on	on	BEN: Top-up payments for unemployed persons
bditu_hr	n/a	n/a	on	on	BEN: Top-up payments for recipients of supplement for assistance and care
bsatu_hr	n/a	n/a	on	on	BEN: Top-up payments for recipients of social assistance benefits
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

2.4 Policy extensions

Policy extensions (or 'switches') are indicated by little coloured symbols in the row-number column of the spine. 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 uses three global extensions. UAA allows choosing between two alternative approaches to pension uprating. By default (i.e., in the baseline), old-age, survivor and disability pensions are uprated according to pension indexation rules. As an alternative, pensions can be uprated according to their average yearly growth. BTA enables two approaches regarding the take-up of subsistence benefit. By default, the amounts below a certain threshold are *not* claimed. Alternatively, the benefit is taken up by *all* beneficiaries with positive benefit amounts. Finally, the MWA extension allows for switching on and off the minimum wage policy (yem_hr). By default, this policy is switched off.

The minimum wage determines the minimum legally allowed gross monthly wage for full-time work. 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. The amounts of gross minimum wage in 2020-2023 are shown in Table 1.1; see item GMW.

2.5 Benefits

2.5.1 Subsistence benefit (*bsa_hr)*

- *Brief description*

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

- *Definitions*

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 under 15 and 65+.

In order to qualify as eligible household members, persons aged 15-64 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;

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(d) taking care of 3 or more children all aged under 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'.

(g) aged 15-24 and involved in regular education;

(h) pregnant, from the beginning of pregnancy, and mothers up to 6 months after delivery.

- *Income test*

Household income is the sum of incomes of all household members, both of eligible and non-eligible ones. Income types included in the test are market and replacement incomes. In contrast, social assistance, disability and survivor benefits are generally exempt. Some family benefits (e.g., child benefit and grant for a newborn child) are also excluded. Household income must be lower than its "means of subsistence". 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 2.4 Subsistence benefit: amounts of "means of subsistence" per month

(a) 2020-2021

	Percent of SAB1	HRK	EUR
Adult in a one-member household			
Able to work	100	800	106.18
Unable to work	115	920	122.10
Adult in a multiple-member household			
Able to work	60	480	63.71
Unable to work	60	480	63.71
Lone parent			0
Able to work	100	800	106.18
Unable to work	100	800	106.18
Child			
In a two-parents family	40	320	42.47
Of a single parent	55	440	58.40
Of a lone parent	55	440	58.40
Pregnant women and mother up to 6 months after delivery	60	480	63.71

(b) 2022-2023

	Percent of SAB1	HRK	EUR
Adult in a one-member household			
Able to work	100	1,000	132.72
Unable to work	130	1,300	172.54
Adult in a multiple-member household	0		
Able to work	70	700	92.91
Unable to work	95	950	126.09
Lone parent	0		
Able to work	120	1,200	159.27
Unable to work	135	1,350	179.18
Child	0		
In a two-parents family	70	700	92.91
Of a single parent	80	800	106.18
Of a lone parent	90	900	119.45
Pregnant women and mother up to 6 months after delivery	120	1,200	159.27

"Unable to work" involve those who cannot perform work due to disabilities but also all persons 65+. Children are persons aged under 18. One-parent families are those in which children live with one parent only. Two cases are distinguished regarding the parent who lives with children: (a) In the case of "single parent", the other parent is known and alive (but is divorced or separated from the first parent), and (b) In the case of "lone parent" (*samohrani roditelj*), the other parent is dead or unknown.

Household income includes all types of taxable income, 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 maternity and parental allowance. 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 be the owner of a registered vehicle whose value exceeds the amount of HRK 40,000 (EUR 5,309). Before 01/2022, a possession of a registered vehicle was not allowed, except for the following households: (a) which have a large number of members (6 or more), (b) in which the vehicle is used for transportation of elderly and disabled members or beneficiaries of disability rights, 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 2014, the amount of benefit was not limited. Between 2014 and 2021, the maximum benefit for any household was set to the level of gross minimum wage in Croatia (GMW) and since 2022 it is set to the threshold at 150% of GMW.

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: (a) at least one year (the rule was valid between 2014 and 2021), (b) at least six months (since 2022). If such a person gets employed, the benefit is not immediately suspended, but gradually decreased. A following 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. Between 2014 and 2021, the monthly benefit amounts in months $i = 0, 1, 2, 3$, were: (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. Since 2022, the monthly benefit amounts are: (a) B_0, (b) $B_i = 0.50 \cdot B_0$, $i = 1, 2, 3$. 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 modelling*

Eligibility

The law requires that working-able subsistence benefit recipients regularly report to HZZ, 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 15-64 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.

Wealth test

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. Since 01/2022, the car condition has changed; since information on the value of the car is not available, we assume that it exceeds the proscribed threshold. Other types of wealth tests are not simulated because no information is available on the possession of secondary houses/apartments, and other assets.

Accounting for non take-up

Benefit non take-up is modelled by assuming that small amounts are not claimed. Based on actual experience, we have set the threshold at 3% of ANWPY.

2.5.2   Unemployment benefit (*bunct_hr*)

- *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. Since 01/2014, self-employed persons who become unemployed are also recipients.

- *Eligibility conditions*

Unemployed persons who were employed 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. Self-employed persons can obtain the benefit if the reason for being unemployed is business insolvency or bankruptcy, serious damage of business property, personal illness, etc.

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 work. 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.

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 2.5 Duration of unemployment benefit

Months spent in work	Basic duration (in months) 2020-2023
9 to 24	3
25 to 36	4
37 to 48	5
49 to 60	6
61 to 72	7
73 to 84	8
85 to 96	9
97 to 108	10
109 to 120	11
121 to 180	12
181 to 240	13
241 to 300	14
301 to 384	15

- *Income test*

No income test applies.

- *Benefit amount*

The unemployment benefit base (UBB) is obtained as the average *earnings* during the three-month period preceding unemployment. For employed persons before 02/2017, the *earnings* are equal to gross employment earnings minus pension contributions (section 2.6.2); since 02/2017, the *earnings* are equal to gross employment earnings. For self-employed persons, the *earnings* are equal to contribution base for social insurance contributions (section 2.6.3).

The amount of benefit is proportional to the UBB, but maximum and minimum values are set, which depend on certain percentages of average net wage and net minimum wage (see section 1.8). The amount of benefit decreases with time. The details are presented in the following table:

Table 2.6 Unemployment benefit rates

	2020-2023
During the first 3 months	
Amount	60% of UBB
Maximum	70% of ANWPY2
Minimum	50% of NMW
In the rest of the period	
Amount	30% of UBB
Maximum	35% of ANWPY2
Minimum	50% of NMW

- *EUROMOD modelling*

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]

Table 2.7 Unemployment benefit: basic information

		2020-2023
Eligibility	Contribution period	At least 9 months during the last 24 months
	Other conditions	The termination of the previous job position should not have been voluntary or caused by worker's violations of working obligations
	Eligibility of self-employed	They can obtain the benefit if the reason for being unemployed is business insolvency or bankruptcy, serious damage of business property, personal illness, etc.
Payment	Contribution base	Average earnings during the three-month period preceding unemployment. For employed persons before 02/2017, the earnings are equal to gross employment earnings minus pension contributions; since 02/2017, the earnings are equal to gross employment earnings
	Basic amount	See Table 2.6
	Additional amount	n/a
	Floor	See Table 2.6
	Ceiling	See Table 2.6
Duration	Standard (in months)	3 to 15 months
	Special cases (in months)	n/a
Subject to	Taxes	No

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

SIC	No

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 2.5, using modelled contribution history, while also controlling for the unemployment duration.

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

2.5.3 Grant for a newborn child (*bfaba_hr*)

- *Brief description*

The grant is received by a parent of a newborn child.

- *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 70% of BUB (HRK 2,328.20 or EUR 309.01).

- *EUROMOD modelling*

The policy can be fully simulated in EUROMOD, without any particular data or modelling limitations.

2.5.4 Maternity leave benefit (*bfama_hr*)

- *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 leave*, 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 leave* can also be used by the father. It lasts from the end of the mandatory leave to the end of the 6th month after birth.

- ***Income test***

This is not a means-tested benefit.

- ***Benefit amount***

The benefit base is the beneficiary's average "netted SIC contribution base", obtained during the six-month period preceding work-leave. For employees, the "netted SIC contribution base" is gross wage minus employee's contributions, PIT and surtax. For self-employed the "netted SIC contribution base" is the base for SIC counterfactually taxed by employees' SIC, PIT and surtax. The "insurance period condition" assumes that preceding the maternity leave, the beneficiary has been insured, either: (a) at least 6 months continuously, or (b) at least 9 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 equals 125% of BUB (HRK 4,157,50 or EUR 551.80) since 08/2022. If the "insurance period condition" is not met, the benefit is equal to the minimum benefit amount.

- ***EUROMOD modelling***

According to administrative data, the number of male recipients during the voluntary leave is insignificant. 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 January receive the benefit for 6 months; mothers of children aged 0 born between February and July receive the benefit for the whole period (i.e., 7 months); mothers of children aged 0 born between August and November receive the benefit for $14 - mb$ months, where mb denotes the month of child's birth ($mb = 8$ for August, etc.). Mothers of children aged 1 born between August and November receive the benefit for $mb - 7$ months.

2.5.5 Paternity leave benefit (*bfafh_hr*)

- ***Brief description***

The benefit, introduced in August 2022, is received by working fathers who are employed or self-employed person, during the paternity leave, which must be used within 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***

Fathers who are employed or self-employed persons are eligible for receiving the benefit. The duration of receipt is 10 days or 15 days, in the case of twins or multiples.

- ***Income test***

This is not a means-tested benefit.

- *Benefit amount*

The benefit base is the beneficiary's average "netted SIC contribution base", obtained as in the case of maternity leave benefit (see section 2.5.4). The benefit is obtained as the equivalent of the 10 day salary, assuming full-time work and 8-hour work day. Thus, for each day of duration, the benefit equals $8/2080 \cdot b$, where b represents the benefit base.

- *EUROMOD modelling*

The policy can be fully simulated in EUROMOD, without any particular data or modelling limitations.

2.5.6 **Parental leave benefit** (*bfapl_hr)*

- *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 one parent, or 8 months if mother and father share the leave. In case (b), the leave lasts 30 months and can be also used by mother only, or equally shared by the parents. There are many options in case (a), but three of them are typical: (a1) only mother uses the leave, up to the maximum of six months, (a2) each parent uses 4 months of the leave, (a3) father concedes 2 months of his leave to mother, thus, mother uses 6 months and father 2 months. In case (b) typically the mother uses the whole leave.

- *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, and is obtained in the same way as in the case of maternity leave benefit (see section 2.5.4). During the months 1 to 6 (or 1 to 8, if parents share the leave), the benefit amount is equal to benefit base, which is the same as in the case of maternity leave benefit. However, maximum and minimum amounts apply. Since 08/2022 the maximum amount equals 225.5% of BUB (HRK 7,500.13 or EUR 995.44). The minimum amount equals 70% of BUB (HRK 2,328.20 or EUR 309.01). In case (b), the benefit is equal to 125% of BUB (HRK 4,157,50 or EUR 551.80).

- *EUROMOD modelling*

Historically, the share of male beneficiaries was very small (less than 3%). However, the increases of benefit amount, especially in 2020, have motivated a strong increase in the number of fathers

using parental leave. Therefore, since EUROMOD version I4.0, the benefit receipt is granted to both mothers and fathers. Data on average duration of benefit receipt are not available. In case (a), we simulate three options mentioned above, namely (a1), (a2) and (a3). In the latter two cases, (a2) and (a3), administrative data on the number of actual male beneficiaries are used to calibrate the corresponding numbers of fathers, which are randomly drawn from the set of eligible ones. 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 is analytically divided into two parts, A and B, which relate to the cases (a) and (b), respectively. The benefit duration (depending on the case and on children's month of birth) is described in the following table:

Table 2.8 Total duration of parental leave benefit (number of months)

	Duration
Part A, for parents of a child…	
aged 0, born between January and June	$7 - mb$
aged 0, born between July and December	0
aged 1, born between January and June	$(mb - 1) + 2fp$
aged 1, born between July and December	$6 + 2fp$
Part B, for mother whose youngest child is…	
aged 1	$13 - mb$
aged 2	12
aged 3	$mb - 1$

Notes: The month of birth (mb) refers to the youngest child in the benefit unit. fp is a dummy variable denoting father's participation (0 = only mother uses the leave; 1 = both parents use the leave). Mothers need to have exhausted maternity leave benefit (provided one month before and six months after the birth of a child) before receiving parental leave benefit.

2.5.7 Maternity and parental allowance (*bmanc_hr*)

- *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: temporary workers, workers in agriculture, unemployed and inactive persons.

The benefit is received from the child's birth and can last 12 months at most if the child is the 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 70% of BUB (HRK 2,328.20 or EUR 309.01).

- *EUROMOD modelling*

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 maternity and parental allowance (number of months)

	Duration
For mother whose youngest child is…	
aged 0	$13 - mb$
For mother of 1 or 2 children, whose youngest child is…	
aged 1	$mb - 1$
For mother of the 3rd (4th, etc.) child or twins (or multiples), whose youngest child is……	
aged 1 or 2	12
aged 3	$mb - 1$

Notes: The month of birth (mb) refers to the youngest child in the benefit unit.

2.5.8 Child benefit (*bch_hr*)

- *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 under 15, (b) persons aged 15-18, if involved in secondary education. Group (a) also includes persons aged 15, if involved in primary education – until the end of the school year in which they turned 15. Group (b) also includes persons aged 19, if involved in four-year programs of secondary education – until the end of the school year in which they turned 19. The latter is applicable to persons aged 20, if involved in five-year programs of secondary education. Special categories of children are further defined: (c1) children with 'impaired health', (c2) children with 'severe disability', and (c3) children of killed, captured or missing HBDR. Children in groups (c1) and (c3) must satisfy age conditions of groups (a) and (b). For children in group (c2), the age limit is 27; since 9/2015, this age limit is removed, under certain conditions. Married person cannot be a dependent child.

- *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 70% of BUB (HRK 2,328.20 or EUR 309.01). 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, in three different ways: in percent of budgetary base, in HRK and in EUR.

Table 2.10 Child benefit income thresholds and basic benefit rates

(a) In percent of BUB per month

Bracket	Household income per member, x	Basic benefit amount per child
1	$x \leq 16.33\%$	9%
2	$16.33\% < x \leq 33.66\%$	7.5%
3	$33.66\% < x \leq 70\%$	6%

(b) In HRK per month

Bracket	Household income per member, x	Basic benefit amount per child
1	$x \leq 543.14$	299.34
2	$543.14 < x \leq 1119.53$	249.45
3	$1119.53 < x \leq 2328.20$	199.56

(c) EUR per month

Bracket	Household income per member, x	Basic benefit amount per child
1	$x \leq 72.09$	39.73
2	$72.09 < x \leq 148.59$	33.11
3	$148.59 < x \leq 309.01$	26.49

The basic 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 25% of BUB (HRK 831.50 or EUR 110.36), irrespectively of household income. Likewise, the amount designated to a child of a killed, captured or missing HBDR is 11.25% of BUB (HRK 374.18 or EUR 49.66), 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 supplement for the 3rd and the 4th child, which is obtained if the household obtains the basic child benefit, i.e., if its income per member is below 70% of BUB (HRK 2,328.20 or EUR 309.01). The amount of the supplement is: (a) HRK 500 (EUR 66.36), if a household has 3 dependent children, and (b) HRK 1,000 (EUR 132.72), if a household has 4 or more dependent children.

- *EUROMOD modelling*

In EUROMOD the state of 'permanent incapability for work and independent living' (for parents) and the state of 'impaired health' is proxied by disability status, whereas the state of 'severe disability' (for children) 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.

Because data do not indicate the duration of secondary education programs, we assume that all persons in secondary education attend four-year programs.

2.5.9 Compensation for energy costs (*bhout_hr*)

- *Brief description*

This means-tested benefit was established in October 2015. It is intended to income-poor households to assist them in covering of the costs of electricity, gas and / or thermal energy (hereinafter: energy).

- *Definitions*

The unit of analysis is a household.

- *Eligibility conditions*

Beneficiary is a household: (a) that receives subsistence benefit, (b) in which one or more household members receive personal disability allowance or national benefit for the elderly, (c) whose members are non-employed HBDRs.

- *Income test*

Income test is indirectly implied through subsistence benefit and personal disability allowance.

- *Benefit amount*

The amount of the benefit for a household is equal to the monthly cost of energy, with maximum set at EUR 70 (HRK 527.42). In the period between 03/2022 and 09/2022 the threshold equalled HRK 400 (EUR 53.09), and HRK 200 (EUR 26.54) before that period.

- *EUROMOD modelling*

The amounts of personal disability allowance are not available in the data. However, persons for whom the average monthly amount of disability benefit exceeds EUR 200 (HRK 1,200 before 2023), are considered beneficiaries of personal disability allowance. Furthermore, data do not contain a separate variable for the cost of energy; instead, the variable "other housing costs" (xhcot) is present, which also includes other types of costs.

2.5.10 National benefit for the elderly (*boamt_hr*)

- *Brief description*

The benefit is received by a person aged 65+ whose income is below the subsistence level. The policy was first introduced in 2021.

- *Definitions*

The unit of analysis is a household with one or more persons aged 65+.

- *Eligibility conditions*

Eligible persons are those aged 65+. Eligible persons are those who: (a) do *not* receive pension income from the national social insurance fund, (b) do *not* receive subsistence benefit, (c) have *not* been granted the right to an accommodation service according to the social welfare

regulations, (d) have *not* concluded a contract on lifelong maintenance, (e) have a long-term permanent residence in Croatia.

- *Income test*

Monthly household income per member (total household income divided by the number of household members) must be lower than the monthly benefit amount. Household income is defined the same way as for the child benefit.

- *Benefit amount*

The benefit amount is being adjusted once per year according to the rise in consumer price index. In 2023 it equaled EUR 120.71 (HRK 909.49).

- *EUROMOD modelling*

Due to lack of data, eligibility conditions (d) and (e) cannot be checked and we assume that they are fulfilled by all persons under consideration.

2.5.11 Top-up benefits (*boatu_hr, bchtu_hr, buntu_hr, bsatu_hr, bditu_hr*)

- *Brief description*

These are occasional top-up benefits intended to help the vulnerable groups of individuals and households, faced with increasing costs of living due to price inflation.

- *Definitions*

The unit of analysis is individual or household, depending on the type of beneficiary.

- *Eligibility conditions*

Eligible persons are: (a) pensioners who are not employed or self-employed; (b) persons registered as unemployed at HZZ, if not receiving subsistence benefit, (c) households receiving child benefit, (d) households receiving compensation for energy costs or subsistence benefit, (e) persons receiving supplement for assistance and care, (f) unemployed HBDRs, (g) CIRs receiving their purposefully designed benefit. Persons from groups (e), (f), and (g) obtain the top-up benefit on account that they belong to these respective groups; however, they cannot obtain the benefit on additional account, e.g., as a head user of subsistence benefit.

- *Income test*

Income test exists in the case of the benefit for pensioners (see Table 2.11).

- *Benefit amount*

Group (a). There were three benefit instalments during 2022 and two in 2023. Income thresholds and benefit rates are shown in Table 2.11.

Group (b). Unemployed persons have received the total of HRK 750 during 2022, EUR 100 in 03/2023 and identical amount in 09/2023.

Group (c). Households with 1;2;3;4;5+ children received HRK 300;500;700;900;1.100 in 09/2022 and identical amounts again in 12/2022. In 2023, there were additional two instalments, with respective amounts of EUR 45;70;100;130;160 in 03/2023, and EUR 50;100;150;200;300 in 09/2023.

Groups (d), (e), (f) and (g). Eligible units received HRK 1.000 in 2022, EUR 150 in 03/2023, and identical amount in 09/2023.

Table 2.11 Top-up benefit for pensioners, income thresholds and benefit rates

Bracket	Overall pension income	Benefit amount (HRK)
First instalment (March 2022)		
1	up to HRK 1,500.00	1,200
2	HRK 1,500.01 – 2,000.00	900
3	HRK 2,000.01 – 3,000.00	600
4	HRK 3,000.01 – 4,000.00	400
Second and third instalment (September and December 2022)		
Bracket	Overall pension income	Benefit amount (HRK)
1	up to HRK 1,850.00	1,200
2	HRK 1,850.01 – 2,350.00	900
3	HRK 2,350.01 – 3,350.00	600
4	HRK 3,350.01 – 4,360.00	400
Fourth instalment (March 2023)		
Bracket	Overall pension income	Benefit amount (EUR)
1	up to EUR 260.00	160
2	EUR 260.01 – 330.00	120
3	EUR 330.01 – 470.00	80
4	EUR 470.01 – 610.00	60
Fifth instalment (September 2023)		
Bracket	Overall pension income	Benefit amount (EUR)
1	up to EUR 300.00	160
2	EUR 300.01 – 435.00	120
3	EUR 435,01 – 570.00	80
4	EUR 570,01 – 700.00	60

- *EUROMOD modelling*

The amounts of supplement for assistance and care are not available in the data. However, all persons for whom the amount of disability benefit is positive, are considered beneficiaries of supplement for assistance and care. Benefits for HBDRs and CIRs are not simulated due to the lack of information in our data.

2.6   Social insurance contributions

2.6.1   Employer social insurance contributions *(tscer_hr)*

- *Liability to contributions*

Employers are required to pay social insurance contributions for each employee. However, there are reliefs for certain groups of employees: (R1) employed for the first time, (R2) newly employed persons, who were previously long-term unemployed or unemployed with less than a year of work experience; (R3) workers aged below 30. Reliefs R1, R2 and R3 were introduced in 2009, 2012 and 2015, respectively. The duration of reliefs R1 and R2 is 1 and 2 years, respectively. The relief R3 can last up to 5 years.

Regarding the relief R3, the employee and the employer must sign a permanent employment contract (PEC). The employee could have been working for the employer in the past, but not under a PEC; however, the employee could have worked under a PEC for another employer. Work must begin before the employee's 30th birthday, which means that the relief can be obtained by workers aged 34.

- *Income base used to calculate contributions*

The contribution base is gross employment income.

The floor base is 38% of AGWPY (see Table 1.1). There is no ceiling base for these contributions.

In 01/2018, a new deduction was introduced for employers of employees whose gross employment earnings are equal to GMW or less. In these cases, the contribution base was reduced by 50% in 2019, and by 25% in 2020.

- *Contribution rates*

The general health contribution (*tscersi00_s*) rate in 2020-2023 was 16.5%.

- *EUROMOD modelling*

The relief R2 is not simulated due to lack of necessary information in the input data. Reliefs R1 and R3 are simulated; administrative data on the number of actual beneficiaries are used to calibrate the corresponding numbers of recipients, which are randomly drawn from the set of eligible ones.

2.6.2 Employee social insurance contributions *(tscee_hr)*

- *Liability to contributions*

These contributions are paid by private and public sector employees. Persons belonging in contributory scheme A pay Pension contribution A1 only. Persons in contributory scheme B pay both Pension contribution B1 and B2.

- *Income base used to calculate contributions*

The contribution base is gross employment income (section 2.6.1). The floor base is 35% of AGWPY. The floor base equals 38% of AGWPY. For Pension contribution A1 and Pension contribution 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 contribution B2 only monthly ceiling base is determined, equal to 6 times AGWPY.

- *Contribution rates*

Persons in contributory scheme A pay Pension contribution A1 (*tsceepi00_s*). The rate is 20%.

Persons in contributory scheme B pay Pension contribution B1 (*tsceepi01_s*) and Pension contribution B2 (*tsceepi02_s*). The rates are 15% and 5%, respectively.

- *EUROMOD modelling*

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 50+, they had to contribute to pillar 1 only. People aged 40-49 could choose voluntarily to which pillar to contribute. However, as we know from the administrative data that 70% of these

people had chosen to be in pillar 1, all people of this age group were assumed to contribute only to this pillar.

2.6.3 Self-employed social insurance contributions *(tscsebu_hr)*

- *Liability to contributions*

Self-employed persons are obliged to pay social insurance contributions. As defined in section 1.1, self-employed persons are people who regularly perform market activities as sole-merchants, tradesmen, firm owners, farmers, professionals, artists, sportsmen, etc. There exist various taxation schemes for self-employed persons, which depend on their type of activity, yearly revenue, etc. According to the type of activity, self-employed persons are divided into several groups: (a) Farmers, (b) Professionals 1, (c) Professionals 2, and (d) Tradesmen. *Farmers A*re producers of agricultural and forestry products. *Professionals 1A* are physicians, veterinarians, lawyers, notaries, auditors, engineers, architects, tax advisors, etc. *Professionals 2A* capture other professions, specifically, nurses, dental technicians, physiotherapists, film workers and journalists. *Tradesmen* actually include self-employed persons in all other industries, which are not covered by the previous three categories.

According to income taxation scheme, self-employed persons can be divided into those who: (a) pay PIT according to general schedule, (b) pay PIT according to lump-sum schedule, (c) pay CIT, (4) are exempted from income taxation (either PIT or CIT). Option (b) is available to farmers and tradesmen, whereas option (d) is available to farmers only, under certain conditions. Admissible and non-admissible combinations are presented in Table 2.12.

Table 2.12 Classification of self-employed persons

	regular PIT payers	lump-sum PIT payers	exempted from income taxation	CIT payers
Farmers	Yes	Yes	Yes	Yes
Professionals 1	Yes	No	No	Yes
Professionals 2	Yes	No	No	Yes
Tradesmen	Yes	Yes	No	Yes

Based on actual experience, which is evidenced by Tax Administration figures on the number of self-employed in different categories, we divide self-employed persons into eight sub-groups, which are described in Table 2.13. There is one group – Tradesmen E – which pays neither SIC nor income taxes (PIT or CIT). This group is included because survey data indicate the presence of such persons. Observe that neither group includes those paying CIT. This is because the actual number of CIT payers is relatively small (less than 5% of self-employed persons), and it is not possible to conclude from the data which persons could be CIT payers. Also not included is the group of farmers who pay lump-sum PIT, because there exists only a small number of such persons (less than 1% of all farmers).

Table 2.13 Subgroups of self-employed persons

	SIC	**PIT / CIT**
Farmers A	yes	regular PIT
Farmers C	yes	no
Farmers D	yes	no
Professionals 1A	yes	regular PIT
Professionals 2A	yes	regular PIT
Tradesmen A	yes	regular PIT

Tradesmen B	yes	lump-sum PIT
Tradesmen E	no	no

- *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 contribution base is obtained as a product of AGWPY and type-specific coefficients, which are shown in the following table:

Table 2.14 Self-employed social insurance contributions: coefficients for the calculation of base

Type of self-employed person	Coefficient
Farmers A	0.55
Farmers C	0.38
Professionals 1A	1.10
Professionals 2A	0.65
Tradesmen A	0.65
Tradesmen B	0.40

- *Contribution rates*

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

Table 2.15 Self-employed social insurance contributions: contribution rates (2020-2023)

	Other than Farmers C and D	Farmers C	Farmers D
General health contribution	16.5%	7.5%	7.5%
Pension contribution A1	20%	10%	-
Pension contribution B1	15%	5%	-
Pension contribution B2	5%	5%	-

Notes: Persons in contributory scheme A pay Pension contribution A1 (tscsebupi00_s); Persons in contributory scheme B pay Pension contribution B1 (tscsebupi01_s) and Pension contribution B2 (tscsebupi02_s).

- *EUROMOD modelling*

Information on which group a person belongs concerning his/her taxation status is not available in the data. Self-employed persons from the sample are categorised into groups from Table 2.13 using the procedure called *Self-employment persons and income module* (see section 3.3.3).

2.6.4   Contributions on income from contractual work *(tscsecw_hr)*

- *Liability to contributions*

The contributions are paid by earners of income from contractual work.

- *Income base used to calculate contributions*

The contribution base is equal to "gross receipt" from contractual work, which is the equivalent of "gross wage" (1.4.4). There are no floors or ceilings. In case of honoraria for original works of scientists and journalists (artists), the contribution base equals 70% (45%) of "gross receipt".

- *Contribution rates*

(a) General health contribution (*tscsecwsi00_s*): the rate is 7.5%.

(b) Pension contributions

Persons in contributory scheme A pay Pension contribution A1 (*tscsecwpi00_s*): the rate is 20% of the contribution base. The rate is 10%.

Persons in contributory scheme B pay (1) Pension contribution B1 (*tscsecwpi01_s*): the rate is 15% of the contribution base, and (2) Pension contribution B2 (*tscsecwpi02_s*): the rate is 5% of the contribution base. The rate is 7.5% for Pension contribution B1 and 2.5% for Pension contribution B2.

- *EUROMOD modelling*

Because information on the type of contractual work is not available, it is not possible to model taxation of honoraria for original works of scientists, journalists and artists.

2.6.5 Pension*er* health contribution *(tscbesi_hr)*

- *Liability to contributions*

The contribution is paid by pensioners who receive public pensions. Certain types of pensions are exempted, e.g., the pensions of HBDR. The contribution was abolished in 04/2023.

- *Income base used to calculate contributions*

The contribution base is the "gross pension".

- *Contribution rates*

Pensioner health contribution: the rate is 3% of contribution base if the contribution base is above ANWPY. If the contribution base is not greater than ANWPY, the contribution is paid from the CG budget, and this is treated as a credited social insurance contribution (section 2.6.6).

- *EUROMOD modelling*

Since exempted pensions cannot be recognised in the data, the exemption is simulated by random drawing, whereby administrative data on the number of actual beneficiaries are used to calibrate the number of exempt pensions.

2.6.6 Credited social insurance contributions *(tscct_hr)*

- *Eligibility*

There are several different contributions paid by the CG budget on behalf of various social groups:

(a) CSIC1 – for persons performing maternity and parental care,

(b) CSIC2a and CSIC2b – for unemployed persons,

(c) CSIC3 – for pensioners with gross pension not greater than ANWPY,

(d) CSIC4 – for persons on sick-leave,

(e) CSIC5 – for recipients of the Covid-19 related Wage compensation.

Contributions CSIC1, CSIC2a, CSIC4 and CSIC5 are pension contributions paid to the pillar 2 of the pension system. CSIC2b and CSIC3 are special health contributions, paid to HZZO. The contribution CSIC3 was abolished in 04/2023.

- *Contribution base*

The contribution bases are equal to:

(a) for CSIC1, CSIC2a and CSIC2b: 38% of AGWPY;

(b) for CSIC3: the "gross pension";

(c) for CSIC4: the amount of Sickness benefit.

(d) for CSIC5: the amount of Wage compensation divided by 0.8; more precisely: HRK 4,062.5 in March and HRK 5,000 in all the months afterwards.

- *Contribution rates / amounts*

The rate is 5% of the contribution base for CSIC1, CSIC2a, CSIC2b, CSIC4 and CSIC5. For CSIC3 the rate is 1% of the contribution base.

- *EUROMOD modelling*

Contribution CSIC4 is not simulated due to the lack of data on the months spent in sick-leave. Moreover, labour market transitions are switched off in EUROMOD baselines. As a consequence, the simulation of wage compensation schemes does not produce any effect in baseline simulations. Hence, contribution CSIC5 does not produce any effect in the 2020 baseline either.

2.7   Direct taxes

2.7.1   Personal income tax (*tin_hr*)

2.7.1.1   Tax unit

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

2.7.1.2   Exemptions

Non-pension social benefits are generally excluded from personal income tax. Pensions represent a taxable income source, but exemption is made for children who are beneficiaries of survivor pension, under certain conditions: (a) they were aged below 15 at the time of their parent's death; (b) they are aged below 18, or below 26, if in regular education.

- *EUROMOD modelling*

Exemption for children who are beneficiaries of survivor pension (section 2.7.1.2) is simulated under assumption that they were aged below 15 at the time of their parent's death.

2.7.1.3   Types of taxpayers, taxable incomes and tax schedules

For introduction on personal income tax, see section 1.5.2, which explains that taxation differs across types of taxpayers and taxable income sources. More details are provided below.

(a) Pensions and employment income: (1) these incomes are taxed by withholding on a monthly basis, using the monthly-adjusted general tax schedule; (2) in the end of the year, these incomes enter yearly assessment.

(b) Self-employment income: different tax treatment applies to various groups of self-employed persons (section 2.6.3).

(b1) Professionals 1A, Professionals 2A, Tradesmen A and Farmers A: they are obliged to submit a yearly tax file, and their self-employment income enters yearly assessment.

(b2) Farmers C: are exempted from PIT.

(c) Income from contractual work: (a) this type of income is taxed by withholding as income is earned; (b) in the end of the year, this income enters yearly assessment.

(d) Capital income: taxed by withholding as income is earned; the tax paid by withholding is final, i.e., it does not enter yearly assessment.

(e) Rental income: taxpayers who earn income from rental activities have different tax treatment, according to certain conditions:

(e1) they can be taxed as Tradesmen A or Tradesmen B, if they have the status of self-employed persons; *(e2)* they are taxed according to a special lump-sum schedule if they are renting accommodation space to tourists and travellers on a small scale; *(e3)* rental income from common rental of property is taxed similarly as capital incomes.

Table 2.16 Taxation by type of income and taxpayer

Type of income	Taxation throughout the year	Yearly tax file 2020-2023
Employment and pension income	withheld, monthly-adjusted general tax schedule	obligatory

Self-employment income
  Professionals 1A
  Professionals 2A
  Tradesmen A
  Farmers A
	pre-payments	obligatory

Tradesmen B	lump-sum	not allowed
Farmers C and D	exempted	n/a
Income from contractual work	withheld, income specific schedule	obligatory
Capital income	withheld, income specific schedule	not allowed
Rental income type e1	pre-payments	obligatory
type e2	lump-sum	not allowed
type e3	withheld, income specific schedule	not allowed

The discussion above has indicated that there are several schedule types, which apply in the following circumstances:

(S1) *Yearly general tax schedule*. It is applied for the following types of income: self-employment income, pensions, employment income and income from contractual work. Other types of income are not included. Taxpayer may use all types of allowances and deductions (sections 2.7.1.4 and 2.7.1.5). Tax base equals total income minus allowances minus deductions. The schedule has two rates (section 2.7.1.7).

(S2) *Monthly-adjusted general tax schedule* is applied to pensions and employment income. Taxpayer may use regular personal tax allowances (sections 2.7.1.4). Tax base equals total income minus allowances. The schedule is multiple-rate, resembling the yearly general tax schedule, but with bands scaled down to monthly level (section 2.7.1.7).

(S3) *Income-specific schedules* are one-rate schedules applied to income from contractual work, capital incomes and rental income. These schedules do not allow for using any personal tax allowances or deductions (section 2.7.1.7).

(S4) *Lump-sum schedules* do not involve tax rates, but tax amounts are already determined by tax law. They are used in taxation of "farmers III" and "renters III".

2.7.1.4   Tax allowances

- *Eligibility conditions*

Social insurance contributions "effectively" represent tax allowances.[2] For employed persons, this involves Pension contributions (A1, B1, B2); for self-employed persons: all social insurance contributions, i.e., General health contribution, Occupational health contribution and Pension contributions (A1, B1, B2); for income from contractual work: Pension contributions (A1, B1, B2); for pensioners: Pensioner health contribution. For persons who do not obtain health insurance otherwise (i.e., through employment, self-employment, pensioner, unemployed, or any other status), the tax allowance is the amount of mandatory health contributions paid by themselves on their own behalf.

Each tax unit can claim the *basic personal allowance*. Additionally, a tax unit can claim *personal allowance for supported family members* – children and other family members. 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. It is assumed that supported child is not a married person. Other family members include spouses, parents and 'other children' (i.e., not in education or with work experience). Before 2019, the definition of family members was less stringent, and included virtually all relatives (e.g., grandparents, grandchildren, parents in law, siblings).

The above mentioned personal allowances are available in the monthly-adjusted general tax schedule for all taxpayers to which this schedule applies. These allowances are also available in the yearly general tax schedule. Personal allowances are not available in income-specific schedules.

- *Income test*

Total personal income of supported child or other family member (excluding social benefits and children's family pension) may not exceed HRK 15,000 (EUR 1990.84) in 2020-2022 and EUR 3185.40 (HRK 24,000.40) in 2023.

- *Amounts of allowances*

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[2] The PIT law does not treat social insurance contributions as "allowances", but as "outlays" in the computation of taxable income.

Basic personal allowance equals HRK 4,000 (EUR 530.89) in 2020-2022 and EUR 530.90 (HRK 4000.07) in 2023.

The personal allowance for the ith child is obtained as $CA_i = PAB \cdot [0.5 + 0.05 \cdot i \cdot (i + 3)]$, where PAB is the 'personal allowance base' (see section 1.8). For supported other family members the personal allowance is equal to $0.7 \cdot PAB$.

For taxpayer and each dependant with less than 100% disability, the supplement equals $0.4 \cdot PAB$, while it equals $1.0 \cdot PAB$ for persons with 100% disability.

Monthly personal tax allowances are presented in the following table:

Table 2.17 Personal tax allowances

(a) 2020-2022

	HRK per month	EUR per month
Basic personal allowance	4,000	530.89
Personal allowance for supported family members		
(a) each supported other family member	1,750	232.26
(b1) the first child	1,750	232.26
(b2) the second child	2,500	331.81
(b3) the third child	3,500	464.53
(b4) etc. (see formulas above)		
(c1) supplement for each taxpayer and supported member with disability	1,000	132.72
(c2) supplement for each taxpayer and supported member with 100% disability	3,750	497.71

(b) 2023

	HRK per month	EUR per month
Basic personal allowance	4,000.07	530.90
Personal allowance for supported family members		
(a) each supported other family member	1,750.04	232.27
(b1) the first child	1,750.04	232.27
(b2) the second child	2,500.02	331.81
(b3) the third child	3,500.00	464.53
(b4) etc. (see formulas above)		
(c1) supplement for each taxpayer and supported member with disability	999.98	132.72
(c2) supplement for each taxpayer and supported member with 100% disability	3,750.07	497.72

Splitting of the child allowance

Total personal allowance for c children is equal to $TAC = \sum_i^c CA_i$. This amount can be divided among two parents in whatever proportion. Thus, parents 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 tax allowance, i.e. $p = 1$ or $p = 0$; only a minor share of parents split personal allowance for children.

- ***EUROMOD modelling***

We simulate the splitting of a child tax allowance. PIT is calculated for three provisional scenarios, in which a partner with larger income uses 100%, 75% and 50% of personal allowance for children, respectively. A couple "chooses" the option in which the lowest total PIT is obtained. Enlarged personal allowances, which existed till 2016, are not simulated due to lack of data on the place of living.

2.7.1.5 Tax deductions

- *Types of deductions*

Tax deductions are available for: (a) donations for cultural, educational, scientific, medical, humanitarian, sports and religious purposes, (b) expenditures on research and development, (c) outlays for education of young employees, (d) outlays for salaries of first-time employees.

- *Eligibility conditions*

Taxpayer can claim deductions if the relevant outlays can be documented. Deductions (b), (c) and (d) are available for self-employed persons only.

- *EUROMOD modelling*

Due to lack of information, deductions have not been simulated in EUROMOD.

2.7.1.6 Tax bases

Tax base is obtained differently for various types of income schedules. As a general rule, incomes entering tax base are net of any social insurance contributions (i.e. in post-SIC terms).

(S1) *Yearly general tax schedule in 2020-2023.* Tax base is the sum of selected post-SIC incomes (self-employment income, employment income, pensions and income from contractual work) minus the sum of all personal tax allowances and deductions.

(S2) *Monthly-adjusted general tax schedule.* Tax base is the sum of post-SIC pensions and employment income minus personal tax allowances.

(S3) *Income-specific schedules.* Tax bases are post-SIC income from contractual work, rental income and capital incomes (interest income, dividends, capital gains). Standardised deductions (obtained as a percentage of income) are applied in certain cases.

- *EUROMOD modelling*

In EUROMOD investment income (yiy) 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.

2.7.1.7 Tax schedules

- *General tax schedules*

Table 2.18 presents the monthly-adjusted general tax schedule in 2020-2023. In 2021, tax rates for the first and the second band fell from 24% and 36% to 20% and 30%, respectively.

Table 2.18 Personal income tax: monthly-adjusted general tax schedule

| Years | Tax band | Income bracket | | Tax rate |
		Lower limit	Upper limit	
2020	1	0	HRK 30,000	24%
	2	HRK 30,000	-	36%
2021-2022	1	0	HRK 30,000	20%
	2	HRK 30,000	-	30%
2023	1	0	EUR 3.981.69	20%
	2	EUR 3.981.69	-	30%

Taxation of pensions on a monthly basis is performed in two steps: (1) *preliminary* tax amount is obtained using the schedule from Table 2.18; (2) monthly tax on pensions is obtained as 50% of the preliminary tax amount. The same method is used for taxation of employment income of persons who live on "group 1 special areas" (not simulated).

The yearly general tax schedule is obtained by multiplying the tax band limits by 12 (Table 2.19). A provision is made for taxpayers whose total yearly amount of income from contractual work (YCW) is not greater than $5 \cdot PAB$. In such case, the limit of the tax band is augmented by $EXT = YCW$. Otherwise, if YCW is greater than $5 \cdot PAB$, then $EXT = 0$. This provision was abolished in 01/2021.

Table 2.19 Personal income tax: yearly general tax schedule

| Years | Tax band | Income bracket | | Tax rate |
		Lower limit	Upper limit	
2020	1	0	HRK 360,000 + EXT	24%
	2	HRK 360,000 + EXT	-	36%
2021-2022	1	0	HRK 360,000	20%
	2	HRK 360,000	-	30%
2023	1	0	EUR 47,780.28	20%
	2	EUR 47,780.28	-	30%

The *preliminary* yearly tax is obtained using the schedules from Table 2.19. To get the final amount, the amounts of "tax credits" must be deducted: (a) for pension income, (b) for employment income of persons who live on "group 1 special areas" (not simulated). In 2020 another tax credit was introduced: (c) for employment income of young workers. Thus, the purpose of these tax credits is to decrease effective tax burden on some income sources and for certain groups of taxpayers. Tax credit (a) is obtained as the preliminary yearly tax multiplied by the share of pension income in total taxable income and by 50%. Tax credit (c) is obtained as the product of: (1) the part of preliminary yearly tax that arrives from taxation of income in the band 1, (2) the share of employment income in total taxable income, and (3) factor p%, where $p = 100$ if a taxpayer is below 26; $p = 50$ if a taxpayer is aged 25-30; and $p = 0$ otherwise.

- *Income-specific schedules*

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

Table 2.20 Personal income tax: income specific tax schedules

Income source	Tax base	Tax rates			
		2020	**2021**	**2022**	**2023**
Income from contractual work	"gross receipt" *minus* pension contributions	24%	20%	20%	20%
Rental income	70% of gross income	12%	10%	10%	10%
Dividends	gross income above the amount of personal deduction	12%	10%	10%	10%
Interest income	gross income	12%	10%	10%	10%
Capital gains	gross income	12%	10%	10%	10%

- *Lump-sum schedules*

Tradesmen B are self-employed persons whose yearly revenue from the business activity does not exceed HRK 300.000 (EUR 39,816.84). They pay PIT according to lump-sum schedule, shown in Table 2.21. Note that, in fact, the lump-sum tax amounts are the products of lump-sum income amounts and a marginal tax rate, which equals 12% until 2020, and 10% since 2021.

Table 2.21 Personal income tax: lump-sum schedule for Tradesmen B

(a) In HRK

Yearly revenue	Lump-sum income	Lump-sum tax	
		2020	2021-2023
less than 85,000	12,750	1,530.00	1,275.00
85,000 – 115,000	17,250	2,070.00	1,725.00
115,000 – 149,500	22,425	2,691.00	2,242.50
149,500 – 230,000	34,500	4,140.00	3,450.00
230,000 – 300,000	45,000	5,400.00	4,500.00

(b) In EUR

Yearly revenue	Lump-sum income	Lump-sum tax	
		2020	2021-2023
less than 11,281.44	1,692.22	203.07	169.22
11,281.44 – 15,263.13	2,289.47	274.74	228.95
15,263.13 – 19,842.06	2,976.31	357.16	297.63
19,842.06 – 30,526.25	4,578.94	549.47	457.89
30,526.25 – 39,816.84	5,972.53	716.70	597.25

- *EUROMOD modelling*

No information is available on the yearly revenue of Tradesmen B. We assume that all of them belong to the first bracket from Table 2.21.

As noted in section 2.6.3, data available do not make possible to distinguish between various types of renters. Therefore, we assume that all rental income (represented by ypt) is taxed using income specific schedule (Table 2.20).

2.7.1.8   Final yearly tax

Taxation of income can be divided in two stages: throughout the year and at the end of the year. We have seen above that taxation throughout the year differs by income groups: (a) Pensions and employment income are taxed each month, using the monthly-adjusted general tax schedule; (b) Income from contractual work is usually taxed at the moment when the income transfer is made between the parties (buyer and seller of the service); income-specific schedule is applied; (c) Analogous procedure applies for capital and rental incomes; (d) Self-employed persons make tax pre-payments each month; (e) Some groups of self-employed persons (Tradesmen B) pay monthly lump-sum amounts.

For incomes from groups (c) and (e) tax payments are final. Incomes from groups (a), (b) and (d) enter yearly assessment, whereby the yearly tax obligation is obtained. This assessment and calculation is performed "automatically" by Tax Administration for most taxpayers; additionally, taxpayers may submit yearly tax file in order to acquire certain tax reliefs. Self-employed are obliged to submit yearly tax file. The major reason for submitting it is to exploit the full yearly amount of personal allowances and deductions (for more details, see earlier EUROMOD Country Reports for Croatia). A different system was adopted before 01/2017: persons from groups (a), (b) and (c) could voluntarily submit yearly tax file.

- *EUROMOD modelling*

Final yearly tax can be fully simulated in EUROMOD, without any particular data or modelling limitations.

2.7.2   Surtax (tmu_hr)

- *Tax unit*

The unit of analysis is the 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 modelling*

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.

2.8   Covid-19 related policies

2.8.1   Wage compensation *(bwkmc_hr)*

- *Brief description*

Wage subsidy is received by selected employed and self-employed persons during the Covid-19 related "lockdown" period (March – May 2020). The policy was continued in 2020 and 2021, but the scope of eligible industries and firms was narrowed, resulting in smaller number of recipients.

- *Definitions*

The subsidy is received by employed and self-employed persons.

- *Eligibility conditions*

Employed persons (self-employed persons) receive the subsidy if their employers (they themselves) belong to one of the selected groups, whose business is harmed by the Covid-19 epidemics; for more details, see section 1.6.

- *Income test*

No income test applies.

- *Benefit amount*

The beneficiary obtains the net amount of HRK 3,250 (EUR 431.35) in March 2020, and HRK 4,000 (EUR 530.89) afterwards. The subsidy is exempted from social insurance contributions and PIT. On behalf of each beneficiary, the HZZ pays the relevant amount of Pension contribution B2, which amounts to HRK 203.13 (EUR 26.96) in March, and HRK 250 (EUR 33.18) in later months (for simulation of this instrument, see section 2.6.6). In addition to the wage subsidy, employers may pay the top-up salary to their employees, if they have resources.

- *EUROMOD modelling*

It is assumed that the top-up salary for employees receiving the Wage compensation equals zero, i.e., that the beneficiaries only obtain income from the government during the period of eligibility. Beneficiaries are randomly chosen with probabilities that vary by industry, gender and activity status, i.e., separately for employees and self-employed (Table 2.22). The share of individuals that are in wage compensation for less or equal than X months varies by activity status (Table 2.23). The model also accounts for differences in probability regarding the number of hours worked per week.

Table 2.22 Probabilities to obtain the wage compensation in 2020-2021, by industry, activity status and gender

| Industry (NACE codes) | Employees | | | | Self-employed | | | |
| | Female | | Male | | Female | | Male | |
	2020	2021	2020	2021	2020	2021	2020	2021
A, B, C, D, E	0.44	0.06	0.25	0.12	0.06	0.04	0.17	0.01
F	0.65	0.02	0.30	0.14	0.00	0.00	0.20	0.00
G, H, J, K, L, N	0.32	0.06	0.48	0.16	0.50	0.09	0.21	0.01
I	0.85	0.70	0.68	0.48	0.50	0.21	0.42	0.41
O, P, Q, R, S, T, U	0.50	0.25	0.30	0.21	0.33	0.00	0.46	0.00

* Note: for the list of codes, see https://nacev2.com/en.

Table 2.23 Cumulative share of individuals being in wage compensation for less or equal than X months in 2020-2021, by activity status

Number of months	Employees		Self-employed	
	2020	2021	2020	2021
1	0.08	0.36	0.34	0.39
2	0.48	0.61	0.48	0.66
3	0.77	0.73	0.68	0.83
4	0.87	0.84	0.78	0.95
5	0.89	0.90	0.85	0.96
6	0.92	0.97	0.92	0.99
7	0.97	0.99	0.93	0.99
8	0.98	0.99	0.99	1.00
9	1.00	1.00	1.00	1.00

This policy *can only produce results if the model is run in combination with the LMA add-on, and with input data that do not already contain those compensations*. The individuals that are selected to undergo transitions to the monetary compensation scheme are defined in the TransLMA_hr policy, which is switched on automatically by the add-on. For more information about the modelling of labour market transitions please consult the *Simulating labour market transitions in EUROMOD* document (Christl et al, 2020).

Employees and self-employed are randomly allocated to Wage/Monetary compensation schemes based on labour market transitions statistics by sector and gender produced by Eurostat. In the previous EUROMOD release (I3.0+) these transitions were based on national statistics. From the current release (I4.0+) the HR model adopts the statistics on labour market transitions produced by ESTAT, to improve cross-country comparability.

Moreover, TransLMA_hr enables the user to consider not only transitions to Wage/Monetary compensation but also other type of labour market transitions: e.g. from employment to unemployment, and from unemployment to employment. The statistics included in the current release cover transitions by levels of education and gender. For more information about the modelling of labour market transitions please consult the 'Simulating labour market transitions in EUROMOD' document.

Labour transition model-based data included in the policy systems 2020 and 2021 are produced by Eurostat, using detailed distributional information on the loss of jobs and short-term work schemes from the Labour Force Survey and administrative data. The impact across different categories of individuals, the duration of unemployment/absence and percentage of hours worked are modelled using the EU-LFS longitudinal and quarterly transitions as target.[3]

3. DATA

3.1 General description

The Croatian dataset for EUROMOD 2020-2023 simulations is derived from the EU-SILC standard UDB 2021 (income reference year 2020). It contains the data from wave 2021 of the Croatian SILC survey which is implemented as a 4-year rotating household panel survey.

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[3] For more information about the data, please consult the EUROSTAT's methodological note (EUROSTAT, 2021).

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_2021_b2
Original name	EMSD (i.e. UDB (C21_release_22_09) + National SILC)
Provider	Eurostat, HR NSI
Year of collection	2021
Income reference period	2020
Sample size	Indiv: 19,308; HH: 8,088

3.2   Data adjustment

In order to guarantee consistency between demographic variables and income variables which refer to the year before data was collected (and on which EUROMOD simulation are based), all children born between the end of the income reference period and the date of interview have been dropped from the sample.

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 2020 (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

Persons with year of birth equal to 2021 (23 cases) were excluded from EUROMOD's database, as they were not born in SILC's income reference period. There were 2 non-respondent individuals in 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 (*Državni zavod za statistiku*, DZS). 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 EUROMOD 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 DZS staff has used an algorithm that treats all these persons as if they are obtaining employment income. Thus, it is assumed that the amount of SIC is proportional with income. However, self-employed pay SIC in lump-sum amounts (section 2.6.3). Therefore, the estimates of imputed SIC, PIT and gross income for majority of these persons are inaccurate. To cure the problem, the *Self-employment persons and income module* was created, which is described in the following section.

As explained in section 2.6.5, public pensions exceeding ANWPY are subject to 3% Pensioner health contribution. SILC data on pensions do not include this contribution within the gross pension amounts. Therefore, we "inflate" the existing gross pension values by the corresponding factor, in order to obtain the true gross values of pensions.

3.3.4   Self-employment persons and income module (SEPIM)

Self-employment income in Croatia can be divided into two broad categories: income of self-employed persons (section 2.6.3) and contractual work income (section 2.6.4). Furthermore, from the taxation perspective, there are different types of self-employed persons, which are treated differently by the tax system. Therefore, for proper net-to-gross income conversion (and subsequently, for simulation of SIC and PIT in EUROMOD), we require information about the type of a taxpayer, e.g., whether it belongs to Farmers A, Tradesmen B, etc.

Standard EU-SILC data on self-employment income are highly aggregated, as there are only two income variables (gross income, 'py050g', and net income, 'py050n'), and two variables showing how many months was spent in self-employment (full-time, 'pl075', and part-time, 'pl076'). These data were used in the construction of EUROMOD databases HR_2012* to HR_2018*. However, the database HR_2021* is based on the "EUROMOD SILC database" (EMSD). Additional input variables are available in EMSD, which are provided by the NSI. In this context, these variables help us to enable more precise separation between income from contractual work and income of self-employed persons. They also enable a better classification of self-employed persons in various subgroups.

Two tasks must be performed: (a) categorise persons and self-employment income according to different types; (b) impute the amounts of PIT, SIC and gross income. In previous rounds of research (2015-2020), these goals were attained by the *Net-to-Gross-Income-Conversion-Model* (NGICM), which is a Stata code within a do file '06b_Income.do'. In 2021, we replace NGICM with a similar code, which is called *Self-employment persons and income module* (SEPIM); it is prepared as a separate do file '21a_SEPIM*.do', and is called up from '06b_Income.do'. SEPIM works both with standard EU-SILC UDBs and EMSDs. Thus, it helps to produces input datasets for all years covered by research. In comparison to NGICM, SEPIM introduces certain modifications in categorisation of self-employed persons, which aim to better reflect the structure of taxpayers according to different types (see section 2.6.3 vis-à-vis previous editions of the Country Report). Furthermore, SEPIM introduces the treatment of tax evasion. Novelties are introduced not only to 2019 input data, but also to all previous datasets (based on EU-SILC UDBs 2012-2018). In order to use older data in EUROMOD, new versions of these datasets are required.[4]

The SEPIM functions as follows. In the first step, all persons with 'py050g $\neq$ 0' and 'lsemy > 0' are designated as 'potential' self-employed persons. These persons are then divided into potential

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[4] Namely: HR_2012_a8, HR_2014_a6, HR_2015_a4, HR_2016_a4, HR_2017_a3 and HR_2018_a3.

farmers, professionals and tradesmen, using the variable 'lindi' (industry according to NACE).[5] From the group of potential professionals, Professionals 1A are chosen as those with 'loc=1' or 'loc=2' (i.e., those whose occupation is "senior officials and managers" or "professionals"), under condition that 'py050n' exceeds certain threshold. Professionals 2A are those with 'loc = 3' (i.e., persons whose occupation is "technicians and associate professionals"); income condition also applies. Remaining potential professionals are transferred to the group of tradesmen. Potential tradesmen are divided into three groups (A, B and F), using two income thresholds. Similar applies to potential farmers (groups A, C and D). Procedures using income thresholds assume that persons with highest incomes belong to group A, i.e., to those who pay PIT according to the general tax schedule, which also pay highest amounts of SIC. Those with lower incomes belong to other subgroups, which pay PIT and SIC according to milder schedules (groups B, C and D), or do not pay taxes at all. Income thresholds are used for calibration, in such a way that the numbers of self-employed persons in different subgroups roughly correspond to those reported by Tax Administration.

Total net self-employment income is first divided into two parts: income of self-employed persons and income from contractual work. The former is ascribed to self-employed persons, as defined above. The latter is practically the residual, i.e., the part of total income not belonging to self-employed persons. Each of two parts is further divided in two components: reported and non-reported. Reported (non-reported) income is taxable (non-taxable). In case of self-employed persons, non-reported income is obtained as a certain percentage of total net income, which varies between 10 and 40% for different years; the percentage is used for calibration, in order to achieve that PIT revenue corresponds to administrative figures.

Table 3.2 shows main variables created by SEPIM and entered into EUROMOD databases. The variable 'lesse' is a categorical variable, which indicates the type of self-employed person.

Table 3.2 Main variables obtained by SEPIM

ysebsre	reported income of self-employed persons
ysebsnr	non-reported income of self-employed persons
ysecwre	reported income from contractual work
ysecwnr	non-reported income from contractual work
lesse	type of self-employed person (1. farmers A, 2. farmers C, 3. farmers D, 4. professionals 1A, 5. professionals 2A, 6. tradesmen A, 7. tradesmen B, 8. tradesmen E, 9. recipients of income from contractual work)

3.3.5 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.

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[5] (a) *Farmers*: Agriculture and Fishing; (b) *Professionals*: Real estate and business activities, Public administration and defence, Education, Health and social work, Other; (c) *Tradesmen*: Mining, Manufacturing and Utilities, Construction, Wholesale and retail trade, Hotels and restaurants, Transport and communication, Financial intermediation.

However, starting with its 2014 release, 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.

The following table contains the main variables that are derived for the Croatian part of EUROMOD dataset by imputations.

Table 3.3 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 grant for newborn children	HY054G
bfaot	other family benefits	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	survivor pensions	PY112G
bsu	survivor 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, 2018 (and following) 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 2.5.2). 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 * NMW (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 2019 (and following) 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).

Survivor pensions (psu) and survivor 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 2.5.1. For households in which bsa00 > hy060g, the value of subsistence benefit was reduced to bsa00 = hy060g. For households in which bsa00 < hy060g, the value of subsistence benefit was kept the same, and furthermore, the value of Other social assistance benefits is obtained as bsaot = hy060g – bsa00. However, beginning with the 2019 database, three new original variables are provided by the NSI within the EMSD, which respectively represent the subsistence benefit, One-time assistance for households in need, and other social assistance benefits. Therefore, there is no need for disaggregation of HY060G.

The variable HY050G contains family benefits and is separated into four components: HY052G, HY053G and HY054G. From HY052G, maternity and parental benefits (bfamh) are obtained. HY053G contains child benefit (bch). HY054G is disaggregated in the grant for a newborn child (bfaba) and other family benefits (bfaot). The latter may include grants for newborn children paid by LSG and RSG units, and the Temporary alimony. Beginning with the 2019 database, which is based on the EMSD, we obtain separate variables, which are related to maternity and parental benefits, child benefit, grants for newborn children, and Temporary alimony.

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 A1 Annex 1.

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 3. Both market incomes and non-simulated taxes and benefits in the input dataset as well as simulated taxes and benefits are validated against external official data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

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 2020	EU-SILC 2021
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
Company car	0	+
Contributions to individual private pension plans	0	0
Cash benefits or losses from self-employment	+	+
Pension from individual private plans	+	0
Unemployment benefits	+	+
Old-age benefits	+	+
Survivor benefits	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
Family/children related allowances	+	+
Social exclusion not elsewhere classified	+	+
Housing allowances	+	+
Regular inter-household cash transfer received	+	+
Interests, dividends, etc.	+	+
Income received by people aged under 16	+	+
Regular taxes on wealth	-	-
Regular inter-household cash transfer paid	-	-
Tax on income and social insurance contributions	-	-
Repayments/receipts for tax adjustment	0	+

4.1.2 Validation of market incomes

Table A3.1 in Annex 3 shows the differences between the number of recipients of various types of market income in the input dataset and external statistics. Table A3.2 presents the differences in aggregate annual amounts. The input dataset is based on 2021 SILC data, while external statistics come from Tax Administration and Croatian Bureau of Statistics (ESSPROS).

Taxable cash and non-cash employment income. EUROMOD figures for the number of recipients of this type of income in the period 2020-2022 are by about one eighth lower than the administrative ones. However, the total amount of this type of income in EUROMOD stands about 100% of the administrative figures during the same period.

Non-taxable cash and non-cash employment income. EUROMOD data cover about three quarters of the administrative amount in 2020 and 2021, but only 60% in 2022. The number of recipients is not available from administrative sources.

Reported income of self-employed persons. In EUROMOD data, the number of recipients in the period 2020-2022 is 10% to 20% lower than according to administrative sources. In contrast, EUROMOD figures for the total amount of reported income of self-employed persons in 2020 and 2021 are 4% and 8% higher than the administrative ones, and by 5% lower in 2022.

Reported income from contractual work. EUROMOD data represent only a third of total number of recipients according to administrative sources. The total amount in EUROMOD stands at about 80% of the administrative figure.

Investment and property income. During the period 2020-2022, the total amount of investment income in EUROMOD captures, on average, only 3% of total amount according to administrative sources. In contrast, the total amount of property income in EUROMOD represents about 40% of total amount as stated by administrative sources. The number of recipients is not available from administrative sources.

4.1.3   Validation of taxes and social insurance contributions

Table A3.3 in Annex 3 presents the differences between the number of payers of various types of taxes and social insurance contributions in the input dataset and external statistics. Table A3.4 shows the differences in aggregate yearly amounts of taxes and social insurance contributions.

Employer social insurance contributions. EUROMOD underestimates the total number of payers in comparison to administrative figures by 12% to 18% in different years. EUROMOD overestimates the total amount of employer social insurance contributions in comparison to administrative figures by 5% in 2021 and 2% in 2022, while in 2020 the EUROMOD figure is equal to the administrative one.

Employee social insurance contributions. EUROMOD captures, on average, about 86% of the administrative number of payers in the period 2020-2022. Regarding the total amount, the ratio between EUROMOD and administrative figures is between 99% and 103%.

Self-employed social insurance contributions. EUROMOD overstates the total amount of SIC for self-employed persons in comparison to administrative figures by 9% to 11% in the period 2020-2022.

Personal income tax and surtax. The ratio between EUROMOD output and administrative data for annual amount of personal income tax is relatively high, between 78% and 88% in the 2020-2022 period. The main reasons of underestimation lie in the underrepresentation of investment, property and contractual work incomes. However, the picture has much improved in comparison to previous rounds of research (see Country Reports from earlier years). Surtax records similar trends regarding aggregate amounts.

4.1.4   Validation of benefits

Table A3.5 in Annex 3 presents the numbers of recipients of various types of means-tested and non-means-tested benefits in EUROMOD and external statistics. Table A3.6 shows the same for aggregate yearly amounts.

Means-tested benefits

Subsistence benefit. EUROMOD obtains 10% to 20% less beneficiaries in the period 2020-2021 than administrative figures. The aggregate amount is also underestimated, by 25% in 2020 and by 21% in 2021. In 2022 there was a significant increase in benefit amounts (section 2.5.1) and EUROMOD results reflect this change through the increase in both the number of beneficiaries (rise of 44%) and total amount (rise of 100%). However, in reality the number of beneficiaries has slightly fallen between 2022 and 2021, whereas the total amount of benefit increased by 12% only, which led to a serious discrepancy between model and administrative figures in 2022.

Housing benefits. The total amount of housing benefits in EUROMOD overestimates the administrative figures by 26% and 39% in 2020 and 2021, respectively. The number of beneficiaries is not available from administrative sources.

Child benefit. The comparison of EUROMOD results with the administrative data (HZMO) shows that the model overestimates the total amount by 12% in 2020 and about 1% in 2021 and 2022. The picture regarding the number of beneficiaries is similar, with underestimation of 2% in 2022.

Non-means-tested benefits

Pensions. In comparison to administrative data, which come from HZMO, EUROMOD data underestimate the total number of pensioners by about 16% in the period 2020-2022. In contrast, EUROMOD data overestimate, by 6% to 10%, the total amount of pensions. This discrepancy probably comes from the difference in coverage, whereby HZMO data do not include all pensions from abroad. Also, some respondents in EUROMOD may report old age, disability and survivor benefits as pensions, which then exaggerates the total amount of pension income.

Sickness benefits. In 2020 and 2021, EUROMOD data represent only about 22% of total amount according to administrative sources. One reason for this might be that surveyed persons treat sickness benefits as employment income.

Survivor benefits. As shown in section 1.3.2, these benefits cover a range of survivor benefits, and their total amount according to administrative sources is about EUR 45 million in the observed period. However, EUROMOD data capture only 4% of that amount. The reason may be that survey respondents report these benefits under survivor pensions.

Disability benefits. Another traditionally underestimated benefit category are disability benefits; the ratio between SILC and administrative total amount of disability benefit is 43% in the 2020-2021 period. As in the case of survivor benefits, a part of disability benefits may be reported as disability pensions.

Grant for a newborn child. In the 2020-2022 period, EUROMOD underestimates the total number of beneficiaries and the amount of grant for a newborn child by about 30%. The official statistics says that 36 thousand children have been born and received the benefit in 2020. However, input data contain only 25 thousand children of age 0.

Maternity leave benefit. During the 2020-2022 period, EUROMOD captures 81% of the administrative number of beneficiaries, and 82% to 88% of the total amount. One of the reasons for underestimation is the same as for the grant for a newborn child, as explained above. The

second reason can be found in underrepresentation of higher employment incomes in input data, and the benefit is related to employment income (see section 2.5.4).

Parental leave benefit. The number of beneficiaries is underestimated in EUROMOD by 23% in 2020 and 29% in 2023, as the input data underrepresent not only children aged 0, but also children of age 1 and 2. In contrast, the underestimation of the total amount equals 3% in 2020 and 16% in 2022.

Maternity and parental allowance. EUROMOD underestimates the number of beneficiaries by 42% in 2020 and 32% in 2022. In contrast, the total amount of benefit is underestimated by only 3% and 16% in 2020 and 2022, respectively. The model assumes that each beneficiary receives the benefit in the maximum duration, but in reality, this may not be the case.

Unemployment benefit. SILC data seriously underestimate the number of recipients and the total amount of unemployment benefit. According to SILC, 31 thousand people received unemployment benefits in 2020, whereas the administrative figure for unemployment benefit is 116 thousand. EUROMOD uses SILC data to determine which persons are receiving unemployment benefit and 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 36% in 2020. This ratio increased to 59% in 2022, following economic recovery.

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: 1 for the first adult; 0.5 for additional people aged 14+; 0.3 for additional people aged under 14.

4.2.1   Income inequality

Table A3.7 in Annex 3 presents income distribution indicators in EUROMOD and external statistics. External statistics on income distribution come from EUROSTAT, and are based on SILC for income years 2020 and 2021. Recall that EUROMOD uses the SILC data for income year 2020 (section 3.1).

Median and mean income. In 2020 (2021), the mean income in EUROMOD is 2.6% (1.7%) lower than in external statistics, while the median income in EUROMOD is 3.5% (3.8%) higher than in external statistics.

Gini coefficient. The 2020 Gini coefficients in EUROMOD and external statistics are 29.1 and 29.2, respectively. In 2021, the Gini coefficient according to external source has declined by 0.7 percentage points, but increased by 0.9 percentage points in EUROMOD.

Income distribution by decile groups. EUROMOD and external statistics show similar values of the Gini coefficient, but there are some important differences. In 2020, EUROMOD underestimates the share of the top decile group, and overestimates the share of the bottom group. The opposite is true in 2021.

4.2.2   Poverty rates

Table A3.8 in Annex 3 presents poverty rates in EUROMOD and external statistics, which come from EUROSTAT and are based on SILC surveys.

Poverty rates by age groups. In both 2020 and 2021, EUROMOD shows lower poverty rate for the youngest age group (below 15 years) than the external source, while it is the opposite for older age groups. The discrepancy is stronger in the latter year.

Poverty rates for different poverty lines. In 2020, EUROMOD over-appreciates poverty rates for all poverty lines (from 40% to 70% median HDI), for both men and women. The same is true in 2021, but the effect of overestimation is even stronger.

4.3   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 SICs. 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 tax reliefs for people who live on special 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 insurance 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.

Wage compensation. The simulation of bwkmc_s is triggered by the simulation of labour market transitions defined in policy TransLMA_hr. This policy becomes operational if the model is run in conjunction with the LMA add-on (and with EUROMOD data based on SILC 2020). Users are encouraged to refer to the *'Simulating labour market transitions in EUROMOD'* document prior to its use.

Labour market transitions. Labour market transitions (TransLMA_hr policy) are switched OFF in EUROMOD baselines. As a consequence, the simulation of monetary compensation schemes does not produce any effect in baseline simulations. Since all policies not linked to labour market transitions are fully functional, it is possible for disposable income in 2021 to be higher than disposable income in previous years.

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 115/16, 106/18, 121/19, 32/20, 138/20)

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, 115/16, 106/18)

- *Pensions*

Institutions:

Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (MRMSOSP) (Ministry of Labour, Pension System, Family and Social Policy), https://mrosp.gov.hr/

Hrvatski zavod za mirovinsko osiguranje (HZMO) (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, 120/16, 18/18, 62/18, 115/18, 102/19, 84/21)

- *Labour*

Institutions:

Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (Ministry of Labour, Pension System, Family and Social Policy), https://mrosp.gov.hr/

Hrvatski zavod za zapošljavanje (HZZ) (Croatian Employment Service), http://www.hzz.hr/

Legal framework:

Zakon o tržištu rada (Act on the labour market) (NN 118/18, 32/20, 18/22)

- *Health*

Institutions:

Ministarstvo zdravstva (Ministry of Health), https://zdravlje.gov.hr

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

Legal framework:

Zakon o zdravstvenoj zaštiti (Act on health protection) (NN 100/18, 125/19, 147/20)

Zakon o obveznom zdravstvenom osiguranju (Act on mandatory health insurance) (NN 80/13, 137/13, 98/19)

- *Family*

Institutions:

Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (MRMSOSP) (Ministry of Labour, Pension System, Family and Social Policy), https://mrosp.gov.hr/

Središnji državni ured za demografiju i mlade (SDUDM) (Central State Office of Demography and Youth), https://demografijaimladi.gov.hr

Legal framework:

Zakon o doplatku za djecu (Act on child benefit) (NN 94/01, 138/06, 107/07, 37/08, 61/11, 112/12, 82/15, 58/18)

Zakon o rodiljnim i roditeljskim potporama (Act on maternity and parental benefits) (NN 85/08, 110/08, 34/11, 54/13, 152/14, 59/17, 37/20)

- *Social assistance*

Institutions:

Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (Ministry of Labour, Pension System, Family and Social Policy), https://mrosp.gov.hr/

Legal framework:

Zakon o socijalnoj skrbi (Act on social assistance) (NN 18/22)

Uredba o mjesečnom iznosu naknade za ugroženog kupca energenata (Regulation on the monthly amount of compensation for energy costs) (NN 31/22)

- *Disability*

Institutions:

Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (Ministry of Labour, Pension System, Family and Social Policy), https://mrosp.gov.hr/

Legal framework:

Zakon o zdravstvenoj zaštiti (Act on health protection) (100/18, 125/19, 147/20)

Zakon o profesionalnoj rehabilitaciji i zapošljavanju osoba s invaliditetom (Act on rehabilitation and employment of persons with disability) (NN 157/13, 152/14, 39/18, 32/20)

- *War veterans*

Institutions:

Ministarstvo hrvatskih branitelja (Ministry of Croatian Veterans), https://branitelji.gov.hr

Legal framework:

Zakon o hrvatskim braniteljima iz Domovinskog rata i članovima njihovih obitelji (Act on the Croatian Defenders of the Homeland War and their family members) (NN 121/17, 98/19, 84/21)

Zakon o zaštiti vojnih i civilnih invalida rata (Act on the protection of military and civil invalids of war) (NN 33/92, 77/92, 27/93, 58/93, 2/94, 76/94, 108/95, 108/96, 82/01,103/03, 148/13, 98/19)

Zakon o civilnim stradalnicima iz Domovinskog rata (NN 84/21)

5.2 Sources for external data

DZS provides statistical data in all areas. Particularly useful is DZS's "Statistics in line" – a constantly updated set of Excel tables with data series from various fields (available here). One of these tables presents social protection data according to ESSPROS methodology by schemes and programs. These data represent the main source for external validation of social benefits. Other administrative data are available from various government institutions, as follows:

- *Taxation*

Data on social insurance contributions and personal income tax are obtained from Tax Administration by request.

- *Pensions*

Data on pensions, child benefit and national benefit for the elderly can be found in HZMO's publication Statistical Information (Statističke informacije Hrvatskog zavoda za mirovinsko osiguranje, available here)

- *Labour*

Data on unemployment benefits and wage compensation schemes are available from HZZ's yearly publication "Godišnjak" (available here)

- *Family, Social assistance and Disability*

MRMSOSP makes available the data on social assistance and disability in their yearly statistical report (available here)

5.3 Other

EUROSTAT (2021). Nowcasting income indicators during the pandemic (FE 2020): Methodological developments. EUROSTAT. Available here.

Christl, M., De Poli, S., Hufkens, T., Ivaškaitė-Tamošiūnė, V., Leventi, C., Papini, A., & Tumino, A. (2020). Simulating labour market transitions in EUROMOD: EUROMOD LMA Add-on and COVID-related policies. Joint Research Centre. Available here.

Urban, I., Bezeredi, S., & Pezer, M. (2020). *EUROMOD Country Report: Croatia, 2017-2020*, Institute for Social and Economic Research.

Urban, I., & Pezer, M. (2019). About child benefit. *Newsletter* 118. Institute of Public Finance (Zagreb).

All EUROMOD Country Reports are available here.

ANNEX 1. UPRATING FACTORS

Table A1. Raw indices for deriving EUROMOD uprating factors

Index	Constant name	Values of the raw indices				Income components uprated by the index	Notes
		2020	2021	2022	2023		
Harmonised CPI	$HICP	103.0600	105.8200	116.4700	124.1000	afc, xhcmomi, xpp, xhcot, xmp00, xmpam	N1
GDP	$f_gdp	110.3148	127.2737	134.9101	140.4414	bed, xhcrt, ysv, ypr, xed00, xhl00	N2
employment income	$f_yem	121.1038	126.1367	136.6623	153.5612	n/a	N3
one	$f_one	1	1	1	1	tis, tscer, tscee, tad, tpr, ydses_o, yds, tscse, tin, tmu, yiytx, yiynt	one
old-age pensions	$f_poa_av	112.2786	114.8330	120.3867	137.0415	poatx, poant	N4
disability pensions	$f_pdi_av	121.9358	125.3324	133.1492	150.2871	pditx, pdint	N5
survivor pensions	$f_psu_av	111.0029	112.8939	117.7797	141.2523	psutx, psunt	N6
leaded index of average earnings	$f_yemLead	8.9992	9.7210	9.7210	10.7210	ymwdt	leaded values of $f_hourly_wage
average hourly wage, Agriculture and Fishing (lindi = 1)	$f_hourly_wage_lindi_1	4.8885	5.3968	5.8144	6.2174	yemtx, yemnt	N7
average hourly wage, Mining, Manufact. and Utilities (lindi = 2)	$f_hourly_wage_lindi_2	7.2524	8.0066	8.6261	9.2239	yemtx, yemnt	N7
average hourly wage, Construction (lindi = 3)	$f_hourly_wage_lindi_3	6.1680	6.8094	7.3363	7.8448	yemtx, yemnt	N7
average hourly wage, Wholesale and retail (lindi = 4)	$f_hourly_wage_lindi_4	8.4118	9.2866	10.0052	10.6986	yemtx, yemnt	N7
average hourly wage, Hotels and restaurants (lindi = 5)	$f_hourly_wage_lindi_5	6.5014	7.1775	7.7329	8.2688	yemtx, yemnt	N7
average hourly wage, Transport and communication (lindi = 6)	$f_hourly_wage_lindi_6	8.2182	9.0728	9.7748	10.4523	yemtx, yemnt	N7
average hourly wage, Financial intermediation (lindi = 7)	$f_hourly_wage_lindi_7	12.9280	14.2724	15.3768	16.4425	yemtx, yemnt	N7

average hourly wage, Real estate and business (lindi = 8)	$f_hourly_wage_lindi_8	11.3960	12.5811	13.5546	14.4940	yemtx, yemnt	N7
average hourly wage, Public administ. and defence (lindi = 9)	$f_hourly_wage_lindi_9	8.5629	9.4534	10.1849	10.8908	yemtx, yemnt	N7
average hourly wage, Education (lindi = 10)	$f_hourly_wage_lindi_10	7.4231	8.1951	8.8292	9.4411	yemtx, yemnt	N7
average hourly wage, Health and social work (lindi = 11)	$f_hourly_wage_lindi_11	9.0240	9.9624	10.7332	11.4771	yemtx, yemnt	N7
average hourly wage, Other (lindi = 12)	$f_hourly_wage_lindi_12	9.9661	11.0026	11.8539	12.6755	yemtx, yemnt	N7
average hourly wage, all activity sectors	$f_hourly_wage	8.0595	8.8977	9.5861	10.2505	kivho, kfbcc, bunot, bunct, bhl, ypp, yem_a, yivwg, yot, ysebsnr, ysecwre00, ysebsre, ysecwnr, yempv, yse, bfamh, ypt00, yptmp, kfbtx, yst, kfbnt, ysecwre01, ysecwre02, ymc00, ymc01	N7
pensions and old-age benefits	$f_pens	68.9350	70.6700	75.3900	85.2500	boa, pditx, pdint, poatx, poant, psutx, psunt	N8
budgetary base	$f_bub	100.00	100.00	100.00	100.00	bsu, bch, bfaba, bfa, bfaot	N9
social assistance benefit base 1	$f_sab1	100.00	100.00	125.00	125.00	bsa00	N10
social assistance benefit base 2	$f_sab2	100.00	100.00	100.00	100.00	bsaot, bho, bdi	N11

Notes:

N1: AMECO 2023 autumn forecasts for 2023 values (EUROSTAT).
N2: Nominal GDP index (DZS: Statistics in Line)
N3: Nominal gross wage index (DZS: Statistics in Line).
N4: Mean monthly old-age pension (HZMO: Statistical Information)
N5: Mean monthly disability pension (HZMO: Statistical Information)
N6: Mean monthly survivor pension (HZMO: Statistical Information)
N7: Computed from ESTAT tables nama_10_a64 (wages) and nama_10_a64_e (hours worked). The value for the latest year (t) is computed by multiplying the value of year t-1 by the AMECO forecast for nominal compensation per employee, total economy.
N8: Statutory indexation: "current value of pension" (HZMO)
N9: "Budgetary base" (Ministry of Finance)
N10: Evolution of social assistance benefit base 1 (MRMSOSP)
N11: Evolution of social assistance benefit base 2 (MRMSOSP)

ANNEX 2. POLICY EFFECTS IN 2022-2023

In this section we analyse the direct tax-benefit policy effect on household disposable income in Croatia between 2022 and 2023. 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 A2.1 and Figure A2.1 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 2023 tax-benefit policies (deflating the tax-benefit monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2022 policies, as a percentage of mean equivalised household disposable income (MEHDI) in 2022. Households are ranked based on their equivalised household disposable income. The total policy effect on household incomes is decomposed into the following components: public pensions, means-tested benefits (MTB), non-means-tested benefits (non MTB), employee social insurance contributions (EE SIC), pensioners SIC (other SIC), self-employed SIC (SE 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.

For comparison, Table A2.2 and Figure A2.2 show the policy effect in nominal terms, whereby the 2022 tax-benefit policies are *not* deflated by HICP, but are left unchanged. The HICP is projected to rise by almost 7% between 2022 and 2023. Because of such an unusually high inflation rate, it is instructive first to analyse the nominal policy effect, which reflects a hypothetical situation without price increases. In such a scenario, the overall increase in disposable income is 2.53% of MEHDI, and is primarily driven by increases in the nominal value of pensions, due to the adjustments of the "current value of pension" (see Table A2.2). Pension income increases in nominal terms for all groups: between 1.30% of MEHDI in the top decile group and 7.34% of MEHDI for the bottom decile group.

Table A2.1 and Figure A2.1 show the situation when price changes are considered. The "current value of pension" increases by 13%, which is about 6 percentage points more than the increase of HICP. Therefore, pension income also increases in real terms for all groups, but at a slower pace than nominally: between 0.58% of MEHDI in the top decile group and 3.29% of MEHDI for the bottom decile groups. Overall, the contribution of public pensions to the rise of real income is 1.18% of MEHDI.

In contrast, means-tested benefits (child benefit and subsistence benefit) are not inflation-adjusted, and their real value falls due to the increase in the price level for all decile groups beyond the first one. Further cause of negative contribution of means-tested benefits is due to the fact that the top-up benefit for pensioners was paid thrice in 2022 and only twice in 2023.[6]

In the year 2023 there were no changes in tax system. Correspondingly, the policy effect of direct taxes in nominal terms is negligible (Table A2.2 and Figure A2.2). However, if the real effect is considered (Table A2.1 and Figure A2.1), it can be noticed that direct taxes have a significantly negative impact on disposable income. Overall, they contribute to the fall of real disposable income by 0.55% of MEHDI. In the real terms scenario, the tax parameters, such as tax allowances, are deflated in 2023 by the change in HICP. Because HICP increases between 2022 and 2023, the real value of tax allowances in the latter year is smaller than in the former year;

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[6] That is, till November 2023, when this report was concluded. It is likely that additional (6th) instalment will be paid in December 2023 (see section 2.5.11).

consequently, the PIT tax base increases, which leads to greater tax payments and lower disposable income.

Overall, disposable income increases by 0.53% on average in real terms. The bottom decile groups gained relatively more than the upper groups.

Table A2.1: Policy effects in 2022-2023, using the CPI-indexation, %

Dec.	Original income	Public pensions	MTB	Non MTB	EE SIC	SE SIC	Other SIC	Direct taxes	Disp. income
1	0.00	3.29	-1.55	0.63	0.00	0.00	0.00	0.00	2.36
2	0.00	2.79	-0.58	0.22	-0.01	0.00	0.00	-0.02	2.40
3	0.00	1.93	-0.20	0.11	0.00	-0.01	0.00	-0.22	1.61
4	0.00	1.48	-0.33	0.13	0.00	-0.01	0.01	-0.37	0.90
5	0.00	1.26	-0.20	0.18	0.00	-0.01	0.01	-0.56	0.68
6	0.00	1.08	-0.19	0.12	0.00	-0.01	0.02	-0.69	0.32
7	0.00	1.09	-0.27	0.06	0.00	-0.01	0.07	-0.71	0.23
8	0.00	1.00	-0.33	0.08	0.00	-0.02	0.07	-0.71	0.09
9	0.00	0.97	-0.33	0.13	0.00	-0.01	0.07	-0.67	0.16
10	0.00	0.58	-0.19	0.24	-0.01	-0.01	0.09	-0.55	0.17
Total	**0.00**	**1.18**	**-0.31**	**0.16**	**0.00**	**-0.01**	**0.05**	**-0.55**	**0.53**

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 2022, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2023 policies by Eurostat's Harmonized Index of Consumer Prices (HICP). 'Other SIC' includes pensioners' health contribution.

Figure A2.1: Policy effects in 2022-2023, using the CPI-indexation, %
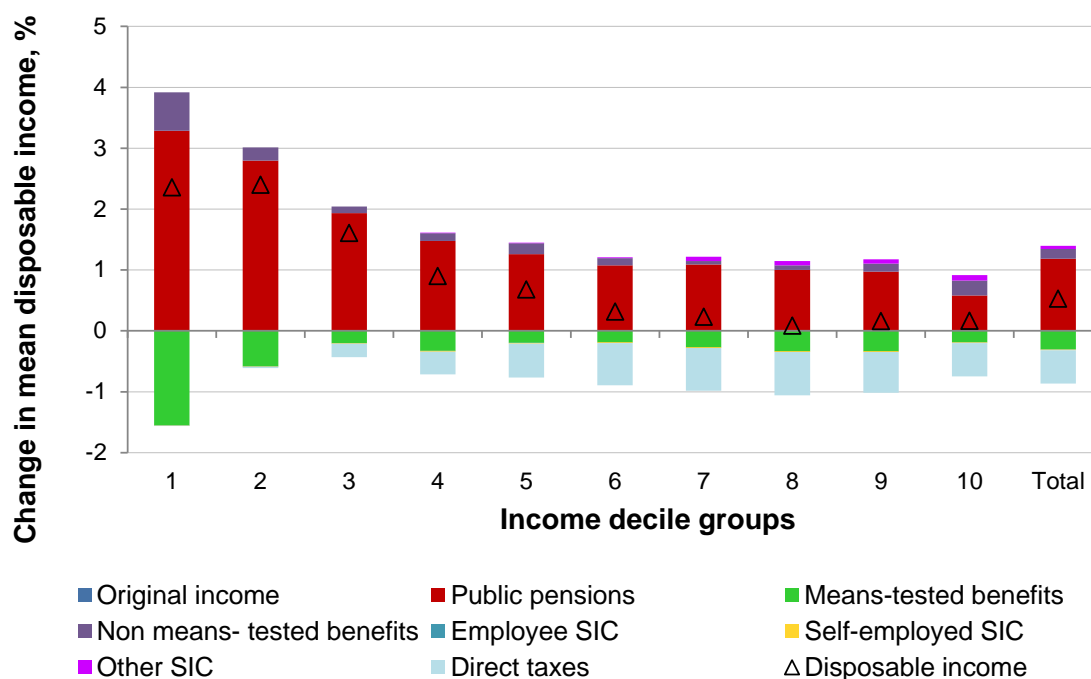
Table A2.2: Policy effects in 2022-2023, without the CPI-indexation, %

Dec.	Original income	Public pensions	MTB	Non MTB	EE SIC	SE SIC	Other SIC	Direct taxes	Disp. income
1	0.00	7.34	-0.61	1.08	-0.03	-0.02	0.00	-0.01	7.75
2	0.00	6.24	-0.14	0.55	-0.04	-0.03	0.00	-0.02	6.56
3	0.00	4.32	0.18	0.45	-0.02	-0.07	0.00	-0.15	4.70
4	0.00	3.30	-0.06	0.35	-0.03	-0.10	0.01	-0.16	3.30
5	0.00	2.82	-0.10	0.34	-0.03	-0.07	0.01	-0.18	2.79
6	0.00	2.40	-0.10	0.23	-0.03	-0.09	0.02	-0.18	2.24
7	0.00	2.43	-0.21	0.13	-0.02	-0.09	0.07	-0.20	2.11
8	0.00	2.24	-0.28	0.16	-0.01	-0.12	0.07	-0.19	1.86
9	0.00	2.17	-0.28	0.21	-0.01	-0.11	0.07	-0.23	1.82
10	0.00	1.30	-0.16	0.31	-0.05	-0.08	0.09	-0.14	1.27
Total	**0.00**	**2.64**	**-0.17**	**0.30**	**-0.03**	**-0.09**	**0.05**	**-0.17**	**2.53**

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 2022, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, but without deflating monetary parameters of 2023 policies. 'Other SIC' includes pensioners' health contribution.

Figure A2.2: Policy effects in 2022-2023, without the CPI-indexation, %

ANNEX 3. VALIDATION TABLES

Table A3.1. Original income in EUROMOD - Number of recipients (thousands)

	Simulated (Y / N)	EUROMOD 2020	2021	2022	2023	External 2020	2021	2022	2023	Ratio 2020	2021	2022	2023
Earnings (ils_earns)													
taxable cash employment income (yemtx)	N	1,438	1,438	1,438	1,438	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
non-taxable cash employment income (yemnt)	N	1,056	1,056	1,056	1,056	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income of self-employed persons (ysebsre)	N	109	109	109	109	121	127	139	NaN	0.90	0.86	0.78	NaN
non-reported income of self-employed persons (ysebsnr)	N	139	139	139	139	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income from contractual work (ysecwre)	N	89	89	89	89	309	310	245	NaN	0.29	0.29	0.36	NaN
non-reported income from contractual work (ysecwnr)	N	127	127	127	127	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
income from student work (yst)	N	53	53	53	53	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other original income (ils_origy - ils_earns)													
private pension (ypp)	N	8	8	8	8	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property income (ypr)	N	132	132	132	132	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
investment income (yiy)	N	98	98	98	98	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
private transfers received (ypt)	N	82	82	82	82	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	12	12	12	12	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: main/basic (xmp00)	N	53	53	53	53	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: alimony (xmpam)	N	14	14	14	14	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
income of children under 16 (yot)	N	173	173	173	173	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)													
taxable cash and non-cash employment income (i_yemkfbtx)	N	1,438	1,438	1,438	1,438	1,629	1,662	1,718	NaN	0.88	0.87	0.84	NaN
non-taxable cash and non-cash employment income (i_yemkfbnt)	N	1,070	1,070	1,070	1,070	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Continued...

	Source	Comments
Earnings (ils_earns)		
taxable cash employment income (yemtx)	-	-
non-taxable cash employment income (yemnt)	-	-
reported income of self-employed persons (ysebsre)	TaxAdm	-
non-reported income of self-employed persons (ysebsnr)	-	-
reported income from contractual work (ysecwre)	TaxAdm	-
non-reported income from contractual work (ysecwnr)	-	-
income from student work (yst)	-	-
Other original income (ils_origy - ils_earns)		
private pension (ypp)	-	-
property income (ypr)	TaxAdm	-
investment income (yiy)	TaxAdm	-
private transfers received (ypt)	-	-
compensations for caregiver and parent-at-home (ymc)	ESSPROS	-
maintenance payments: main/basic (xmp00)	-	-
maintenance payments: alimony (xmpam)	-	-
income of children under 16 (yot)	-	-
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)		
taxable cash and non-cash employment income (i_yemkfbtx)	TaxAdm	-
non-taxable cash and non-cash employment income (i_yemkfbnt)	TaxAdm	-

Table A3.2. Original income in EUROMOD - Annual amounts (millions)

	Simulated (Y / N)	EUROMOD				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Earnings (ils_earns)													
taxable cash employment income (yemtx)	N	18,189	20,294	21,750	23,257	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
non-taxable cash employment income (yemnt)	N	830	926	993	1,062	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income of self-employed persons (ysebsre)	N	1,097	1,224	1,312	1,403	1,012	1,174	1,386	NaN	1.08	1.04	0.95	NaN
non-reported income of self-employed persons (ysebsnr)	N	701	782	838	896	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income from contractual work (ysecwre)	N	366	408	438	468	475	515	545	NaN	0.77	0.79	0.80	NaN
non-reported income from contractual work (ysecwnr)	N	241	269	289	309	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
income from student work (yst)	N	56	62	67	71	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other original income (ils_origy - ils_earns)													
private pension (ypp)	N	31	35	37	40	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property income (ypr)	N	290	339	357	372	770	848	956	NaN	0.38	0.40	0.37	NaN
investment income (yiy)	N	37	37	37	37	1,049	1,434	1,930	NaN	0.04	0.03	0.02	NaN
private transfers received (ypt)	N	144	161	172	184	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	33	37	40	43	89	106	NaN	NaN	0.38	0.35	NaN	NaN
maintenance payments: main/basic (xmp00)	N	90	94	103	110	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: alimony (xmpam)	N	28	29	32	35	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
income of children under 16 (yot)	N	29	32	34	37	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)													
taxable cash and non-cash employment income (i_yemkfbtx)	N	18,339	20,461	21,929	23,448	18,636	19,865	21,921	NaN	0.98	1.03	1.00	NaN
non-taxable cash and non-cash employment income (i_yemkfbnt)	N	865	966	1,035	1,107	1,078	1,267	1,730	NaN	0.80	0.76	0.60	NaN

Table A3.3. Taxes and SIC - Number of payers (thousands)

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Taxes (ils_tax)																					
personal income tax (tin_s)	Y	1,130	1,264	1,362	1,490	1,133	1,133	1,133	1,133	1.00	1.12	1.20	1.32	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
surtax (prirez) (tmu_s)	Y	1,130	1,263	1,362	1,489	1,133	1,133	1,133	1,133	1.00	1.11	1.20	1.31	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property taxes (tpr)	N	349	349	349	349	349	349	349	349	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Employee Social Insurance Contributions (ils_sicee)		1,438	1,438	1,438	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,632	1,663	1,719	NaN	0.88	0.86	0.84	NaN
employment: pension contribution A1 (tsceepi00_s)	Y	112	83	64	46	0	0	0	0	0.00	0.00	0.00	0.00	194	183	183	NaN	0.58	0.46	0.35	NaN
employment: pension contribution B1 (tsceepi01_s)	Y	1,326	1,354	1,374	1,392	0	0	0	0	0.00	0.00	0.00	0.00	1,438	1,480	1,537	NaN	0.92	0.92	0.89	NaN
employment: pension contribution B2 (tsceepi02_s)	Y	1,326	1,354	1,374	1,392	0	0	0	0	0.00	0.00	0.00	0.00	1,438	1,480	1,537	NaN	0.92	0.92	0.89	NaN
Self-employed Social Insurance Contributions (ils_sicse)																					
contractual work: pension contribution B2 (tscsecwpi02_s)	Y	53	56	57	60	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: general health contribution (tscsebusi00_s)	Y	108	108	108	108	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: pension contribution A1 (tscsebupi00_s)	Y	11	9	7	6	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: pension contribution B1 (tscsebupi01_s)	Y	87	90	91	93	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: pension contribution B2 (tscsebupi02_s)	Y	87	90	91	93	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
contractual work: pension contribution A1 (tscsecwpi00_s)	Y	36	34	32	29	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
contractual work: pension contribution B1 (tscsecwpi01_s)	Y	53	56	57	60	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Employer Social Insurance Contributions (ils_sicer)		1,338	1,329	1,318	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,513	1,541	1,598	NaN	0.88	0.86	0.82	NaN
employment: general health contribution (tscersi00_s)	Y	1,284	1,275	1,263	1,263	0	0	0	0	0.00	0.00	0.00	0.00	1,513	1,541	1,598	NaN	0.85	0.83	0.79	NaN
contractual work: general health contribution (tscsecwsi00_s)	Y	89	89	89	89	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Credited Contributions (ils_sicct)																					
credited SIC (tscct_s)	Y	980	980	980	967	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Other Contributions (ils_sicot)																					
Pensioner health contribution (tscbesi_s)	Y	35	35	35	NaN	0	0	0	NaN	0.00	0.00	0.00	NaN	33	32	35	NaN	1.07	1.10	1.01	NaN
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)																					
SICER relief for "first time" workers (i_sicerrelam1)	N	16	16	14	14	16	16	16	16	1.00	0.97	0.89	0.89	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
SICER relief for young workers (i_sicerrelam2)	N	138	147	161	161	138	138	138	138	1.00	1.07	1.17	1.17	137	149	161	NaN	1.01	0.99	1.00	NaN

Continued...

	Source	Comments
Taxes (ils_tax)		
personal income tax (tin_s)	TaxAdm	-
surtax (prirez) (tmu_s)	TaxAdm	-
property taxes (tpr)	-	-
Employee Social Insurance Contributions (ils_sicee)		
employment: pension contribution A1 (tsceepi00_s)	TaxAdm	-
employment: pension contribution B1 (tsceepi01_s)	TaxAdm	-
employment: pension contribution B2 (tsceepi02_s)	TaxAdm	-
Self-employed Social Insurance Contributions (ils_sicse)		
contractual work: pension contribution B2 (tscsecwpi02_s)	TaxAdm	-
self-employed persons: general health contribution (tscsebusi00_s)	TaxAdm	-
self-employed persons: pension contribution A1 (tscsebupi00_s)	TaxAdm	-
self-employed persons: pension contribution B1 (tscsebupi01_s)	TaxAdm	-
self-employed persons: pension contribution B2 (tscsebupi02_s)	TaxAdm	-
contractual work: pension contribution A1 (tscsecwpi00_s)	TaxAdm	-
contractual work: pension contribution B1 (tscsecwpi01_s)	TaxAdm	-

Continued...

	Source	Comments
Employer Social Insurance Contributions (ils_sicer)		
employment: general health contribution (tscersi00_s)	TaxAdm	-
contractual work: general health contribution (tscsecwsi00_s)	TaxAdm	-
Credited Contributions (ils_sicct)		
credited SIC (tscct_s)	-	-
Other Contributions (ils_sicot)		
Pensioner health contribution (tscbesi_s)	TaxAdm	-
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)		
SICER relief for "first time" workers (i_sicerrelam1)	HZMO	-
SICER relief for young workers (i_sicerrelam2)	HZMO	-

Table A3.4. Taxes and SIC - Annual amounts (millions)

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Taxes (ils_tax)																					
personal income tax (tin_s)	Y	1,283	1,331	1,549	1,801	1,185	1,185	1,185	1,185	1.08	1.12	1.31	1.52	1,651	1,520	1,856	NaN	0.78	0.88	0.83	NaN
surtax (prirez) (tmu_s)	Y	163	168	195	226	149	149	149	149	1.10	1.13	1.31	1.52	193	178	217	NaN	0.85	0.95	0.90	NaN
property taxes (tpr)	N	29	29	29	29	29	29	29	29	1.00	1.01	1.01	1.01	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Employee Social Insurance Contributions (ils_sicee)		3,664	4,085	4,375	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	3,704	3,948	4,352	NaN	0.99	1.03	1.01	NaN
employment: pension contribution A1 (tsceepi00_s)	Y	307	253	211	163	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	376	359	353	NaN	0.82	0.70	0.60	NaN
employment: pension contribution B1 (tsceepi01_s)	Y	2,518	2,874	3,123	3,387	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,496	2,692	2,999	NaN	1.01	1.07	1.04	NaN
employment: pension contribution B2 (tsceepi02_s)	Y	839	958	1,041	1,129	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	832	897	1,000	NaN	1.01	1.07	1.04	NaN
Self-employed Social Insurance Contributions (ils_sicse)		305	326	338	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	275	294	310	NaN	1.11	1.11	1.09	NaN
contractual work: pension contribution B2 (tscsecwpi02_s)	Y	5	6	7	7	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	7	8	8	NaN	0.66	0.71	0.82	NaN
self-employed persons: general health contribution (tscsebusi00_s)	Y	123	131	135	146	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	124	132	140	NaN	0.99	0.99	0.96	NaN
self-employed persons: pension contribution A1 (tscsebupi00_s)	Y	16	13	11	9	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	22	20	19	NaN	0.71	0.67	0.56	NaN
self-employed persons: pension contribution B1 (tscsebupi01_s)	Y	96	104	110	121	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	97	106	114	NaN	0.99	0.98	0.96	NaN
self-employed persons: pension contribution B2 (tscsebupi02_s)	Y	34	37	39	43	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	32	35	38	NaN	1.05	1.05	1.02	NaN
contractual work: pension contribution A1 (tscsecwpi00_s)	Y	18	18	17	18	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	16	17	17	NaN	1.14	1.07	1.02	NaN
contractual work: pension contribution B1 (tscsecwpi01_s)	Y	14	17	20	22	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	21	23	25	NaN	0.66	0.74	0.79	NaN
Employer Social Insurance Contributions (ils_sicer)		2,808	3,134	3,333	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,794	2,974	3,270	NaN	1.00	1.05	1.02	NaN
employment: general health contribution (tscersi00_s)	Y	2,780	3,103	3,301	3,530	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,793	2,974	3,270	NaN	1.00	1.04	1.01	NaN
contractual work: general health contribution (tscsecwsi00_s)	Y	27	31	33	35	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	28	30	31	NaN	0.98	1.02	1.06	NaN
Credited Contributions (ils_sicct)																					
credited SIC (tscct_s)	Y	49	51	54	58	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other Contributions (ils_sicot)																					
Pensioner health contribution (tscbesi_s)	Y	17	17	18	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	11	11	12	NaN	1.50	1.56	1.52	NaN

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)																					
SICER relief for "first time" workers (i_sicerrelam1)	N	14	15	14	15	14	14	14	14	1.00	1.10	1.04	1.12	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
SICER relief for young workers (i_sicerrelam2)	N	216	263	307	329	216	216	216	216	1.00	1.22	1.43	1.52	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Table A3.5. Benefits - Number of recipients (thousands)

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Pensions (ils_pen)		1,043	1,043	1,043	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,243	1,237	1,230	NaN	0.84	0.84	0.85	NaN
old age pension (starosna mirovina) (poa)	N	796	796	796	796	796	796	796	796	1.00	1.00	1.00	1.00	829	833	834	NaN	0.96	0.96	0.95	NaN
disability pension (invalidska mirovina) (pdi)	N	87	87	87	87	87	87	87	87	1.00	1.00	1.00	1.00	178	172	166	NaN	0.49	0.51	0.52	NaN
survivor pension (obiteljska mirovina) (psu)	N	160	160	160	160	160	160	160	160	1.00	1.00	1.00	1.00	235	232	230	NaN	0.68	0.69	0.69	NaN
Means-tested benefits (ils_benmt)																					
housing benefits (bho)	N	26	26	26	33	33	33	33	33	0.78	0.78	0.78	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
subsistence benefit (zajamčena minimalna naknada) (bsa_s)	Y	28	27	39	35	51	51	51	51	0.55	0.54	0.77	0.69	34	31	29	NaN	0.82	0.89	1.35	NaN
child benefit (doplatak za djecu) (bch_s)	Y	162	139	120	108	123	123	123	123	1.32	1.13	0.98	0.88	141	134	123	NaN	1.15	1.04	0.98	NaN
other social assistance benefits (bsaot)	N	25	25	25	26	26	26	26	26	0.97	0.97	0.97	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensation for energy costs (naknada za ugroženog kupca energenata) (bhout_s)	Y	52	51	64	45	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
national benefit for the elderly (nacionalna naknada za starije osobe) (boamt_s)	Y	NaN	5	2	3	NaN	0	0	0	NaN	0.00	0.00	0.00	NaN	5	6	NaN	NaN	1.00	0.41	NaN
top-up one-off payments for pensioners (boatu_s)	Y	NaN	NaN	250	327	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Non-means-tested benefits (ils_bennt)																					
disability benefits (bdi)	N	96	96	96	96	96	96	96	96	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
old-age benefits (boa)	N	133	133	133	133	133	133	133	133	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
survivor benefits (bsu)	N	2	2	2	2	2	2	2	2	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
other family benefits (bfaot)	N	1	1	1	1	1	1	1	1	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Covid-19 compensation (bwkmc_s)	Y	0	0	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
unemployment benefit (novčana naknada za vrijeme nezaposlenosti) (bunct_s)	Y	31	31	31	31	31	31	31	31	1.00	1.00	1.00	1.00	116	76	78	NaN	0.26	0.40	0.39	NaN
other unemployment benefits (bunot)	N	7	7	7	7	7	7	7	7	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maternity leave benefit (naknada za rodiljni dopust) (bfama_s)	Y	28	28	28	28	0	0	0	0	0.00	0.00	0.00	0.00	35	35	35	NaN	0.81	0.81	0.81	NaN
parental leave benefit (naknada za roditeljski dopust) (bfapl_s)	Y	40	40	40	40	0	0	0	0	0.00	0.00	0.00	0.00	52	54	56	NaN	0.77	0.74	0.71	NaN

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
maternity and parental allowance (naknade za rodiljnu i roditeljsku brigu i poštedu od rada) (bmanc_s)	Y	20	20	20	20	0	0	0	0	0.00	0.00	0.00	0.00	34	32	29	NaN	0.58	0.62	0.68	NaN
grant for a newborn child (jednokratna novčana potpora za novorođeno dijete) (bfaba_s)	Y	25	25	25	25	21	21	21	21	1.15	1.15	1.15	1.15	36	35	35	NaN	0.68	0.70	0.70	NaN
education allowances (bed)	N	39	39	39	39	39	39	39	39	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
sickness benefits (bhl)	N	47	47	47	47	47	47	47	47	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for unemployed persons (buntu_s)	Y	NaN	NaN	35	35	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for child benefit recipients (bchtu_s)	Y	NaN	NaN	120	108	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for recipients of social assistance benefits (bsatu_s)	Y	NaN	NaN	60	44	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for recipients of supplement for assistance and care (bditu_s)	Y	NaN	NaN	96	96	NaN	NaN	0	0	NaN	NaN	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
paternity leave benefit (bfafh_s)	Y	NaN	NaN	NaN	23	NaN	NaN	NaN	0	NaN	NaN	NaN	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Continued...

	Source	Comments
Pensions (ils_pen)		
old age pension (starosna mirovina) (poa)	HZMO	-
disability pension (invalidska mirovina) (pdi)	HZMO	-
survivor pension (obiteljska mirovina) (psu)	HZMO	-
Means-tested benefits (ils_benmt)		
housing benefits (bho)	ESSPROS	-
subsistence benefit (zajamčena minimalna naknada) (bsa_s)	MROSP	-
child benefit (doplatak za djecu) (bch_s)	HZMO	-
other social assistance benefits (bsaot)	MROSP	-
compensation for energy costs (naknada za ugroženog kupca energenata) (bhout_s)	ESSPROS	-
national benefit for the elderly (nacionalna naknada za starije osobe) (boamt_s)	HZMO	-

Continued...

	Source	Comments
top-up one-off payments for pensioners (boatu_s)	-	-
Non-means-tested benefits (ils_bennt)		
disability benefits (bdi)	ESSPROS	-
old-age benefits (boa)	ESSPROS	-
survivor benefits (bsu)	ESSPROS	-
other family benefits (bfaot)	SDUDM	-
Covid-19 compensation (bwkmc_s)	HZZ	-
unemployment benefit (novčana naknada za vrijeme nezaposlenosti) (bunct_s)	HZZ	-
other unemployment benefits (bunot)	ESSPROS	-
maternity leave benefit (naknada za rodiljni dopust) (bfama_s)	SDUDM	-
parental leave benefit (naknada za roditeljski dopust) (bfapl_s)	SDUDM	-
maternity and parental allowance (naknade za rodiljnu i roditeljsku brigu i poštedu od rada) (bmanc_s)	SDUDM	-
grant for a newborn child (jednokratna novčana potpora za novorođeno dijete) (bfaba_s)	HZZO	-
education allowances (bed)	-	-
sickness benefits (bhl)	ESSPROS	-
top-up payments for unemployed persons (buntu_s)	-	-
top-up payments for child benefit recipients (bchtu_s)	-	-
top-up payments for recipients of social assistance benefits (bsatu_s)	-	-
top-up payments for recipients of supplement for assistance and care (bditu_s)	-	-
paternity leave benefit (bfafh_s)	-	-

Table A3.6. Benefits - Annual amounts (million)

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Pensions (ils_pen)		5,740	5,947	6,311	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	5,426	5,527	5,758	NaN	1.06	1.08	1.10	NaN
old age pension (starosna mirovina) (poa)	N	4,561	4,726	5,015	5,671	4,561	4,561	4,561	4,561	1.00	1.04	1.10	1.24	3,599	3,702	3,883	NaN	1.27	1.28	1.29	NaN
disability pension (invalidska mirovina) (pdi)	N	530	549	582	659	530	530	530	530	1.00	1.04	1.10	1.24	939	931	952	NaN	0.56	0.59	0.61	NaN
survivor pension (obiteljska mirovina) (psu)	N	649	672	713	806	649	649	649	649	1.00	1.04	1.10	1.24	888	894	923	NaN	0.73	0.75	0.77	NaN
Means-tested benefits (ils_benmt)																					
housing benefits (bho)	N	15	15	15	15	15	15	15	15	1.00	1.01	1.01	1.01	12	11	NaN	NaN	1.26	1.39	NaN	NaN
subsistence benefit (zajamčena minimalna naknada) (bsa_s)	Y	39	38	76	71	54	54	54	54	0.72	0.72	1.41	1.32	52	49	55	NaN	0.75	0.79	1.37	NaN
child benefit (doplatak za djecu) (bch_s)	Y	170	151	133	125	146	146	146	146	1.16	1.04	0.91	0.86	152	150	132	NaN	1.12	1.01	1.01	NaN
other social assistance benefits (bsaot)	N	21	21	21	21	21	21	21	21	1.00	1.01	1.01	1.01	29	48	NaN	NaN	0.71	0.43	NaN	NaN
compensation for energy costs (naknada za ugroženog kupca energenata) (bhout_s)	Y	16	16	40	28	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	15	15	NaN	NaN	1.08	1.09	NaN	NaN
national benefit for the elderly (nacionalna naknada za starije osobe) (boamt_s)	Y	NaN	7	3	4	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	7	8	NaN	NaN	0.94	0.40	NaN
top-up one-off payments for pensioners (boatu_s)	Y	NaN	NaN	211	175	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Non-means-tested benefits (ils_bennt)																					
disability benefits (bdi)	N	103	104	103	103	103	103	103	103	1.00	1.01	1.01	1.01	237	244	NaN	NaN	0.43	0.43	NaN	NaN
old-age benefits (boa)	N	9	9	9	11	9	9	9	9	1.00	1.04	1.10	1.24	28	26	NaN	NaN	0.31	0.34	NaN	NaN
survivor benefits (bsu)	N	2	2	2	2	2	2	2	2	1.00	1.01	1.01	1.01	47	45	NaN	NaN	0.04	0.04	NaN	NaN
other family benefits (bfaot)	N	2	2	2	2	2	2	2	2	1.00	1.01	1.01	1.01	102	108	NaN	NaN	0.02	0.02	NaN	NaN
Covid-19 compensation (bwkmc_s)	Y	0	0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,022	641	NaN	NaN	0.00	0.00	NaN	NaN
unemployment benefit (novčana naknada za vrijeme nezaposlenosti) (bunct_s)	Y	55	59	64	70	46	46	46	46	1.21	1.30	1.41	1.54	154	112	108	NaN	0.36	0.53	0.59	NaN
other unemployment benefits (bunot)	N	7	8	8	9	7	7	7	7	1.00	1.12	1.20	1.28	24	8	NaN	NaN	0.29	0.96	NaN	NaN
maternity leave benefit (naknada za rodiljni dopust) (bfama_s)	Y	114	128	136	146	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	139	150	155	NaN	0.82	0.86	0.88	NaN
parental leave benefit (naknada za roditeljski dopust) (bfapl_s)	Y	106	110	110	131	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	110	120	131	NaN	0.97	0.91	0.84	NaN
maternity and parental allowance (naknade za rodiljnu i roditeljsku brigu i poštedu od rada) (bmanc_s)	Y	47	48	47	47	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	56	53	49	NaN	0.84	0.90	0.97	NaN

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
grant for a newborn child (jednokratna novčana potpora za novorođeno dijete) (bfaba_s)	Y	8	8	8	8	7	7	7	7	1.14	1.15	1.14	1.14	11	11	11	NaN	0.69	0.70	0.69	NaN
education allowances (bed)	N	45	53	56	58	45	45	45	45	1.00	1.17	1.23	1.28	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
sickness benefits (bhl)	N	52	58	63	67	52	52	52	52	1.00	1.12	1.20	1.28	237	260	NaN	NaN	0.22	0.22	NaN	NaN
top-up payments for unemployed persons (buntu_s)	Y	NaN	NaN	3	7	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for child benefit recipients (bchtu_s)	Y	NaN	NaN	17	20	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for recipients of social assistance benefits (bsatu_s)	Y	NaN	NaN	8	13	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for recipients of supplement for assistance and care (bditu_s)	Y	NaN	NaN	13	29	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
paternity leave benefit (bfafh_s)	Y	NaN	NaN	NaN	15	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Table A3.7. Distribution of equivalised disposable income

	EUROMOD				External				Ratio			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Decile 1	2.91	2.83	2.93	2.97	2.80	3.00	NaN	NaN	1.04	0.94	NaN	NaN
Decile 2	4.78	4.62	4.66	4.76	4.90	5.00	NaN	NaN	0.97	0.92	NaN	NaN
Decile 3	6.15	6.01	6.00	6.04	6.20	6.30	NaN	NaN	0.99	0.95	NaN	NaN
Decile 4	7.34	7.26	7.26	7.27	7.40	7.50	NaN	NaN	0.99	0.97	NaN	NaN
Decile 5	8.58	8.48	8.40	8.44	8.50	8.50	NaN	NaN	1.01	1.00	NaN	NaN
Decile 6	9.73	9.67	9.67	9.64	9.70	9.70	NaN	NaN	1.00	1.00	NaN	NaN
Decile 7	11.02	10.98	10.99	10.96	11.00	11.00	NaN	NaN	1.00	1.00	NaN	NaN
Decile 8	12.74	12.77	12.76	12.73	12.70	12.50	NaN	NaN	1.00	1.02	NaN	NaN
Decile 9	15.20	15.23	15.25	15.20	14.90	14.70	NaN	NaN	1.02	1.04	NaN	NaN
Decile 10	21.55	22.15	22.08	21.98	22.00	21.80	NaN	NaN	0.98	1.02	NaN	NaN
Median	8,341	9,096	9,708	10,460	8,061	8,760	NaN	NaN	1.03	1.04	NaN	NaN
Mean	8,631	9,463	10,185	10,991	8,860	9,629	NaN	NaN	0.97	0.98	NaN	NaN
Gini	29.15	30.00	29.82	29.54	29.20	28.50	NaN	NaN	1.00	1.05	NaN	NaN
S80/20	4.78	5.01	4.92	4.81	4.80	4.60	NaN	NaN	1.00	1.09	NaN	NaN

Table A3.8. At-risk-of-poverty rates (%) by gender and age

	EUROMOD				External				Ratio			
	2020	**2021**	**2022**	**2023**	**2020**	**2021**	**2022**	**2023**	**2020**	**2021**	**2022**	**2023**
40% median HDI by gender												
Total	7.84	8.47	8.08	7.67	7.60	6.90	NaN	NaN	1.03	1.23	NaN	NaN
Males	7.07	7.45	7.13	6.94	7.00	6.30	NaN	NaN	1.01	1.18	NaN	NaN
Females	8.57	9.43	8.98	8.36	8.10	7.50	NaN	NaN	1.06	1.26	NaN	NaN
50% median HDI by gender												
Total	13.67	14.32	13.97	13.50	12.70	12.20	NaN	NaN	1.08	1.17	NaN	NaN
Males	12.15	12.71	12.31	11.86	11.40	10.90	NaN	NaN	1.07	1.17	NaN	NaN
Females	15.11	15.85	15.54	15.05	14.00	13.50	NaN	NaN	1.08	1.17	NaN	NaN
60% median HDI by gender												
Total	20.23	20.62	20.54	20.28	19.20	18.00	NaN	NaN	1.05	1.15	NaN	NaN
Males	18.33	18.55	18.46	18.34	17.20	16.00	NaN	NaN	1.07	1.16	NaN	NaN
Females	22.03	22.57	22.50	22.11	21.10	20.00	NaN	NaN	1.04	1.13	NaN	NaN
70% median HDI by gender												
Total	27.46	27.92	27.53	27.11	26.40	25.30	NaN	NaN	1.04	1.10	NaN	NaN
Males	25.27	25.67	25.30	24.94	24.20	23.10	NaN	NaN	1.04	1.11	NaN	NaN
Females	29.55	30.06	29.65	29.16	28.50	27.40	NaN	NaN	1.04	1.10	NaN	NaN
60% median HDI by age group												
0-15 years	17.55	17.34	16.90	18.12	18.60	19.60	NaN	NaN	0.94	0.88	NaN	NaN
16-24 years	18.35	17.40	17.35	17.68	16.80	14.70	NaN	NaN	1.09	1.18	NaN	NaN
25-49 years	13.59	13.35	13.19	13.61	13.00	11.30	NaN	NaN	1.05	1.18	NaN	NaN
50-64 years	19.82	20.14	20.08	19.75	19.20	16.50	NaN	NaN	1.03	1.22	NaN	NaN
65+ years	33.94	36.43	36.72	34.09	32.40	32.40	NaN	NaN	1.05	1.12	NaN	NaN