EUROMOD Country Report – Croatia

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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) and Household Budget Surveys (HBS). 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 J1.0+. 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.

EUROMOD documentation: https://euromod-web.jrc.ec.europa.eu/resources/documentation
Glossary of EUROMOD terms: https://euromod-web.jrc.ec.europa.eu/resources/glossary
Policy parameters used in EUROMOD: https://euromod-web.jrc.ec.europa.eu/resources/parameters

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CONTENTS
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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 2024 the statutory retirement age is 65 for men and 63.5 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 18, 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 several schedules. First, there is a progressive 'yearly tax schedule', with two rates. Additionally, there are several income-source-specific schedules and a lump-sum taxation. The yearly tax schedule applies to income in yearly tax assessment, which is a sum of yearly self-employment income, employment income, pensions and income from contractual work. The monthly-adjusted yearly tax schedule is derived from the yearly 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 for some groups of taxpayers performing trade 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 2024, at EUR 441.44 (HRK 3,326). 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 1.7.

- 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.

- Consumption taxes consist of (1) VAT with four rates (standard rate, two reduced rates, and zero rate), and (2) excises on tobacco, alcohol, non-alcoholic drinks, coffee and energy.

- 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.

- The policy parameters saved as constants in the model and their values for the most recent year are available at https://euromod-web.jrc.ec.europa.eu/resources/parameters.

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 2024 is EUR 840 (see Table 1.1).

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 2024, receives a pension of EUR 623 from pillar 1. Identical hypothetical worker in scheme B receives the "basic pension" of EUR 467 (¾ of EUR 623) 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 (33.5) 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 2024 at the statutory age with 40 years of service, the minimum pension amounts to EUR 490. 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. The benefit is abolished in 01/2024 and replaced by inclusion supplement.

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. The benefit is abolished in 01/2024 and replaced by inclusion supplement.

Inclusion supplement (*inkluzivni dodatak*) is a comprehensive disability benefit introduced in 01/2024, which replaces several existing benefits, such as supplement for assistance and care and personal disability allowance. Persons are divided into five groups according to the level of their disability, and the benefit amount varies accordingly, from EUR 138 for the first category to 720 for the fifth category.

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 increases with dependant's disability level. 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. The benefit can be used until the age of a child is 18 years.

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.

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.

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).

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.

11

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 EUR 30.90 to EUR 61.80, depending on household income per member, which cannot be higher than EUR 618.02. Supplements are given for children without one or both parents. Substantial top-up amounts are given to households with three and four or more children, EUR 66.36 and 132.72, respectively; this is usually called the "pronatalist supplement" ("*pronatalitetni dodatak*"), but here we call it the "supplement for the 3rd and the 4th child".

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 significantly 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 certain 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 EUR 26.54 (HRK 200). As one of the measures to combat the consequences of inflation (see section 0), this threshold is first increased to EUR 53.09 (HRK 400) in 04/2022; additionally, to EUR 66.36 (HRK 500) in 10/2022 and EUR 70 in 04/2023. 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.).

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   Indirect 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 use, (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   Direct 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. 'Yearly tax schedule' has two rates: 20% and 30%. Since 01/2024, these unique tax rates for all taxpayers no longer apply. Instead, they are set by cities and municipalities within the predetermined ranges. 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 yearly tax schedule, while other sources are taxed by income specific schedules. For property 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%). Surtax was abolished in 01/2024.

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   Extraordinary measures

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. The policy also applied in 2021, but the scope of eligible industries and firms was narrowed, resulting in smaller number of recipients.

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 2.8.2).

1.7   Important indicators

In calculations of some benefits, personal income tax and social insurance contributions the following indicators are used: official average gross wage in the current year (AGW), average gross wage from January to August of the previous year (AGWPY), average net wage from January to August of the previous year (ANWPY), average net wage from January to December of the previous year (ANWPY2), gross minimum wage in the current year (GMW), net minimum wage in the current year (NMW), "budgetary base" (BUB), personal allowance base (PAB), social assistance benefit base 1 (SAB1), social assistance benefit base 2 (SAB2), and basic personal allowance (BPA).

Table 1.1 Basic indicators (2021-2024), in HRK or EUR per month

	2021 HRK	2022 HRK	2023 EUR	2024 EUR
AGW	9,599.00	10,400.00	1,551.00	1,627.85
AGWPY	9,181.00	9,537.00	1,367.18	1,551.00
ANWPY	6,724.00	7,086.00	1,006.44	1,367.18
ANWPY2	6,763.00	7,129.00	1,016.00	1,152.60
GMW	4,250.00	4,687.50	700.00	840.00
NMW	3,400.00	3,750.00	560.00	672.00
BUB	3,326.00	3,326.00	441.44	441.44
PAB	2,500.00	2,500.00	331.81	560.00
SAB1	800.00	1,000.00	132.72	150.00
SAB2	500.00	500.00	66.36	66.36
BPA	4,000.00	4,000.00	530.90	560.00

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 [2021-2024]

	Variable name	Treatment in EUROMOD				Comments
		2021	2022	2023	2024	
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	-	-	-	
Top-up payments for unemployed persons	buntu_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	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	S	
Top-up payments for recipients of social assistance benefits	bsatu_s	-	S	S	-	
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 [2021-2024]

	Variable name	Treatment in EUROMOD				Comments
		2021	**2022**	**2023**	**2024**	
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
VAT		S	S	S	S	
Excise taxes		S	S	S	S	
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

This section explains main policy changes in the period 2021-2024. A summary of changes is presented in Table 2.3, whereas the more detailed explanation is given below.

Table 2.3 Main policy changes (2021-2024)

	2020 → 2021	**2021 → 2022**	**2022 → 2023**	**2023 → 2024**
Benefits	Introduction of the national benefit for the elderly	Major changes in subsistence benefit	Changes in parental leave benefit. Introduction of paternity leave benefit	Major changes in child benefit. Changes in subsistence benefit and national benefit for the elderly
Social insurance contributions			Abolishment of pensioner health contribution	

Direct taxes	Changes in PIT		Changes in PIT; abolishment of local surtax
Consumption taxes	Changes in VAT		
Other Policies	Abolishment of Covid-19 policies (wage compensation)	Introduction of policies related to inflation	

- *Main policy changes between 2023 and 2024*

(a) The amounts of subsistence benefit and national benefit for the elderly were increased;

(b) changes in child benefit: (1) increased benefit amounts, (2) the number of income brackets was raised from 3 to 5;

(c) changes in PIT and surtax: (1) local surtax is abolished, (2) unique PIT rates for all taxpayers no longer apply; instead, the rates are set by cities and municipalities within the predetermined ranges; (3) personal tax allowances were raised, (4) the upper limit of the first tax bracket is increased.

- *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 (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.

(c) The maximum amount of the compensation for energy costs was doubled, from HRK 200 to 400.

(d) 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.

(e) For a range of food products, VAT reduced rate of 13% is replaced by reduced rate of 5%. Standard rate is replaced by a reduced rate of 5% for some energy products.

- *Main policy changes between 2020 and 2021*

(a) Changes in personal income tax: (1) marginal tax rates in the yearly tax schedule 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.

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 2021-2024. 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.

The last policy included in the spine is tco_cc (consumption taxes). It is placed at the very end because consumption tax liabilities (VAT and excises) depend on household consumption expenditures, and these are estimated by the model based on the income shares (xs_* variables included in the input data) and simulated disposable income (ils_dispy). This is why before running any consumption tax policy simulation it is required to activate all the other policies intervening in the simulation of disposable income.

Table 2.4 EUROMOD Spine: order of simulations

Policy	2021	2022	2023	2024	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	off	off	off	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	n/a	n/a	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	on	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	n/a	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	on	on	n/a	BEN: Top-up one-off payments for pensioners
bchtu_s	n/a	on	on	n/a	BEN: Top-up payments for child benefit recipients
buntu_hr	n/a	on	on	n/a	BEN: Top-up payments for unemployed persons
bditu_hr	n/a	on	on	n/a	BEN: Top-up payments for recipients of supplement for assistance and care
bsatu_hr	n/a	on	on	n/a	BEN: Top-up payments for recipients of social assistance benefits
tco_hr	off	off	off	off	TAX: Consumption taxes
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 five global extensions.

The **Uprate by Average Adjustments (UAA)** extension 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.

The **Benefit Calibration Adjustments (BCA),** allowing the user to calibrate the receipt of benefits to match the simulated total expenditure of a benefit to real expenditure from external statistics. The extension is implemented for the simulation of the subsistence benefit (bsa_hr). The default for the baseline is off. When the extension is on, a subset of eligible of observations is selected randomly as beneficiaries so that the real expenditure is reached, removing the benefit

from the rest of the eligible observations; when off, all eligible observations are kept as beneficiaries. This extension shares most of its functions with the BTA extension; as a general rule, only one of the extensions should be on, but if both are, the lowest rate between the take-up rate and the calibration rate will be applied. More details on the specific implementation of BCA and BTA extensions are provided in the subsections describing the corresponding benefit.

The **Benefit Take-up Adjustments (BTA)**, allowing the user to apply non-take-up corrections. The extension is used for the simulation of the subsistence benefit (bsa_hr). The default for the baseline is on. When the extension is on, a share of (weighted) eligible observations equal to the take-up rate is selected randomly as beneficiaries, removing the benefit from the rest of the eligible observations; when off, all eligible observations are kept as beneficiaries. This extension shares most of its functions with the BCA extension; as a general rule, only one of the extensions should be on, but if both are, the lowest rate between the take-up rate and the calibration rate will be applied. More details on the specific implementation of BCA and BTA extensions are provided in the subsections describing the corresponding benefit.

The **Minimum Wage Adjustmetns (MWA)** extension 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 2021-2024 are shown in Table 1.1; see item GMW.

Finally, the **HHoT Unemployment (HHoT_un)** extension improves the simulation accuracy of the unemployment insurance benefit when EUROMOD is run with hypothetical data. For instance, in most countries the legislation of this benefit requires information on variables such as individuals' employment history, which are not available in SILC; we can define these variables in HHoT and use them to simulate the policy's rules more precisely when running the model with hypothetical data. This extension is set to on when the model is used with HHoT data.

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;

(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 2.5 Subsistence benefit: amounts of "means of subsistence" per month

(a) 2021

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

(b) 2022-2023

	Percent of SAB1	HRK (2022)	EUR (2023)
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			
Able to work	70	700	92.91
Unable to work	95	950	126.09
Lone parent			
Able to work	120	1,200	159.27

	135	1,350	179.18
Unable to work	135	1,350	179.18
Child			
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 child birth	120	1,200	159.27

(c) 2024

	Percent of SAB1	EUR
Adult in a one-member household		
Able to work	100	150.00
Unable to work	130	150.00
Adult in a multiple-member household		195.00
Able to work	70	
Unable to work	95	105.00
Lone parent		142.50
Able to work	120	
Unable to work	135	180.00
Child		202.50
In a two-parents family	70	
Of a single parent	80	105.00
Of a lone parent	90	120.00
Pregnant women and mother up to 6 months after delivery	120	135.00

"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 EUR 2.654,46. 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.

Non take-up/callibration adjustments

BTA extension is on, so the baseline model adjusts for non-take-up of the benefit; BCA extension is off, so it does not calibrate its receipt according to external statistics, but the user can activate it if necessary. See section 2.4 for technical details on both extensions and their interactions.

Users can enable or disable the necessary extensions in Country Tools/Set Switches. For proper functioning, the extensions require the following inputs:

- BTA: The estimated take-up rate of the benefit should be set as the value of the $bsa_BTA_rate constant in the model. Currently, due to lack of external statistics, the constant's value is equal to 1 (i.e. full benefit take-up).
- BCA: The aggregate benefit expenditure needs to be filled out in the External Statistics table, so that the calibration rate ($bsa_BCA_rate) is computed accordingly. Data are currently available for the years 2018-2022; given the absence of information for 2023-24, the calibration rate is not computed within those systems, but the one computed within the 2022 system is used instead. For the modelling of reforms, the 2023-24 systems should be used in order to allow for variation in the number of beneficiaries (hence expenditure): beneficiaries will change when the eligibility conditions change by applying the share of 2022 to the new pool of eligible units. If previous systems were used for reforms, total expenditure would remain constant irrespective of the reform applied, since the model would always stick to the existing external statistics.

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 2.6 Duration of unemployment benefit

Months spent in work	Basic duration (in months) 2021-2024
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 1.7). The amount of benefit decreases with time. The details are presented in the following table:

Table 2.7 Unemployment benefit rates

	2021-2024
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 2.8 Unemployment benefit: basic information

		2021-2024
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 2.7
	Additional amount	n/a
	Floor	See Table 2.7
	Ceiling	See Table 2.7
Duration	Standard (in months)	3 to 15 months
	Special cases (in months)	n/a
Subject to	Taxes	No
	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 2.6, 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*

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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.

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 (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 125% of the benefit base (EUR 551.80) during the whole period. 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. The maximum amount equals 225.5% of BUB (EUR 995.44). The minimum amount equals 70% of BUB (EUR 309.01). In case (b), the benefit is equal to 125% of BUB (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 2.9 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 (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 2.10 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 140% of BUB (EUR 618.01). 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 percent of budgetary base and in EUR. Before 03/2024, the schedule had three brackets (panels 1a and 1b), and five brackets afterwards (panels 2a and 2b).

Table 2.11 Child benefit income thresholds and basic benefit rates

(1a) Before 03/2024, 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

(1b) Before 03/2024, in 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

(2a) Since 03/2024, in percent of BUB per month

Bracket	Household income per member, x	Basic benefit amount per child
1	$x \leq 20$	14
2	$20 < x \leq 40$	12.5
3	$40 < x \leq 60$	11
4	$60 < x \leq 100$	9
5	$100 < x \leq 140$	7

(2b) Since 03/2024, EUR per month

Bracket	Household income per member, x	Basic benefit amount per child
1	$x \leq 88.29$	61.80
2	$88.29 < x \leq 176.58$	55.18
3	$176.58 < x \leq 264.86$	48.56
4	$264.86 < x \leq 441.44$	39.73
5	$441.44 < x \leq 618.02$	30.90

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'* (since 01/2024, this supplement is abolished).

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. The amount of the supplement is: (a) EUR 66.36, if a household has 3 dependent children, and (b) EUR 132.72, if a household has 4 or more dependent children.

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. This type of payment is abolished since 01/2024, and replaced by the inclusion supplement (section 1.3.3.) The amount designated to a child of a killed, captured or missing HBDR is 17.5% of BUB (EUR 77.25), irrespectively of household income.

- *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 electricity, with maximum set at EUR 26.54 (HRK 200). This threshold was temporarily increased to EUR 53.09 (HRK 400) in 04/2022. Subsequently, it was increased to EUR 66.36 (HRK 500) in 10/2022 and EUR 70 in 04/2023.

- *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*

Household income is defined the same way as for the child benefit. Monthly household income per member (total household income divided by the number of household members) must be lower than 200% of the monthly benefit amount. Before 01/2024, this percentage was 100%.

- *Benefit amount*

The benefit amount has increased from EUR 106.18 (HRK 800) in 2021 to EUR 150 in 2024.

- *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.

2.6 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 2021-2024 is 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 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* are 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 yearly tax 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 (2021-2024)

	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   Pensioner 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

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 yearly 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) Income of *professionals 1A, professionals 2A, tradesmen A and farmers A* enters yearly assessment; (b2) *tradesmen B* pay tax according to the lump-sum schedule; (b3) 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* is 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* is basically taxed in the same way as capital income. However, persons that are renting accommodation space to tourists and travellers on a small scale are taxed according to a special lump-sum schedule. Under prescribed conditions, persons who perform rental activities may opt to have the status of self-employed persons – tradesmen A or tradesmen B – in which case they are taxed as explained above.

Table 2.16 Taxation by type of income and taxpayer

Type of income	Taxation throughout the year	Yearly assessment
Employment and pension income	monthly-adjusted yearly tax schedule	yes
Self-employment income Professionals 1A Professionals 2A Tradesmen A Farmers A	pre-payments	yes
Tradesmen B	lump-sum schedule; final obligation	no
Farmers C and D	exempted	n/a
Income from contractual work	income specific schedule	yes
Capital income	income specific schedule; final withholding	no
Rental income common rentals of property	income specific schedule; final withholding	yes
rentals to tourists and travellers	lump-sum amounts; final obligation	no

Table 2.16 indicates which types of income enter the yearly assessment. In order to calculate the final yearly tax obligation, the 'automatic' yearly assessment is performed by Tax Administration for most taxpayers. Correspondingly, these taxpayers do not need to submit the yearly tax file (YTF), unless they want to obtain certain tax reliefs. Submission of the YTF is obligatory for self-employed persons.

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

(S1) *Yearly tax schedule*. It is applied for the following types of income: self-employment income (for eligible groups of self-employed persons), 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 yearly 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 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 Tradesmen B and income from rentals to tourists and travellers.

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 yearly tax schedule for all taxpayers to which this schedule applies. These allowances are also available in the yearly 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 EUR 1990.84 in 2021-2022, EUR 3185.40 in 2023, and EUR 5376 in 2024.

- *Amounts of allowances*

Basic personal allowance equals EUR 560 in 2024 (Table 1.1).

The personal allowance for the ith child is obtained as $CA_i = BPA \cdot [0.4 + 0.1 \cdot i \cdot (i + 1)/2]$, where BPA is the basic personal allowance (see section 1.7).[3] For supported other family members the personal allowance is equal to $0.5 \cdot BPA$. For taxpayer and each dependant with disability, the supplement equals $0.3 \cdot PAB$, while it equals $1.0 \cdot BPA$ in the cases of 100% disability.

Monthly personal tax allowances are presented in the following table:

Table 2.17 Personal tax allowances in 2021-2024

	2021-2022	2023	2024
Basic personal allowance	530.89	530.9	560
Personal allowance for supported family members			
(a) each supported other family member	232.26	232.27	280

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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.

[3] This formula is applicable since 2024 and was also valid before 2017. In the 2017-2023 period, the following formula was applied: $CA_i = PAB \cdot [0.5 + 0.05 \cdot i \cdot (i + 3)]$, where PAB represents the 'personal allowance base'.

(b1) the first child	232.26	232.27	280
(b2) the second child	331.81	331.81	392
(b3) the third child	464.53	464.53	560
(b4) etc. (see formulas above)			
(c1) supplement for each taxpayer and supported member with disability	132.72	132.72	168
(c2) supplement for each taxpayer and supported member with 100% disability	497.71	497.71	560

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 tax schedule in 2021-2024.* 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 yearly tax schedules.* For pension and employment incomes, the tax base is the difference between the relevant post-SIC income and 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

- *Yearly tax schedules*

Table 2.18 presents the monthly-adjusted yearly tax schedule in 2021-2024. Since 01/2024, unique tax rates for all taxpayers no longer apply. Instead, they are set by cities and municipalities within the predetermined ranges. The minimum rates for the first and the second band are 15% and 25%, respectively. The maximum rates for the first and the second band are obtained as 20% and 30%, respectively, times $(1 + x)$, where the value x is 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 and (d) 18% in the City of Zagreb. The new system abolishes local surtax (section 2.7.2).

Table 2.18 Personal income tax: monthly-adjusted yearly tax schedule (EUR)

| Years | Tax band | Income bracket | | Tax rate |
		Lower limit	Upper limit	
2021-2023	1	0	3.981.69	20%
	2	3.981.69	-	30%
2024	1	0	4200	15 – 23.6%
	2		-	25 – 35.4%

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 tax schedule is obtained by multiplying the tax band limits by 12 (Table 2.19).

Table 2.19 Personal income tax: yearly tax schedule

| Years | Tax band | Income bracket | | Tax rate |
		Lower limit	Upper limit	
2021-2023	1	0	47,780.28	20%
	2	47,780.28	-	30%
2024	1	0	50,400.00	15 – 23.6%
	2		-	25 – 35.4%

The *gross* yearly tax is obtained using the schedules from Table 2.19. To get the *net* tax 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), and (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 aged 25 or less; $p = 50$ if a taxpayer is aged 25-30; and $p = 0$ otherwise.

- *Income-specific schedules*

There are several income-specific schedules, of which five are described in table below. Tax rates for property and capital income have been raised in 2024 to compensate for the abolishment of surtax.

Table 2.20 Personal income tax: income specific tax schedules

| | | Tax rates | |
Income source	Tax base	**2021-2023**	**2024**
Income from contractual work	"gross receipt" *minus* pension contributions	20%	20%
Rental income	70% of gross income	10%	12%
Dividends	gross income above the amount of personal deduction	10%	12%
Interest income	gross income	10%	12%
Capital gains	gross income	10%	12%

- *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 the above table. Note that, in fact, the lump-sum tax amounts are the products of lump-sum income amounts and a tax rate, which equalled 10% in the 2021-2023 period and 12% since 01/2024.

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

(a) 2021-2022

Total revenue (HRK)	Lump-sum income (HRK)	Lump-sum tax (HRK)
less than 85,000	12,750	1,275.00
85,000 – 115,000	17,250	1,725.00
115,000 – 149,500	22,425	2,242.50
149,500 – 230,000	34,500	3,450.00
230,000 – 300,000	45,000	4,500.00

(a) 2023

Total revenue (EUR)	Lump-sum income (EUR)	Lump-sum tax (EUR)
less than 11,281.44	1,692.22	169.22
11,281.44 – 15,263.13	2,289.47	228.95
15,263.13 – 19,842.06	2,976.31	297.63
19,842.06 – 30,526.25	4,578.94	457.89
30,526.25 – 39,816.84	5,972.53	597.25

(b) 2024

Total revenue (EUR)	Lump-sum income (EUR)	Lump-sum tax (EUR)
less than 11,300	1,695	203.40
11,300 – 15,300	2,295	275.40
15,300 – 19,900	2,985	358.20
19,900 – 30,600	4,590	550.80
30,600 – 40.000	6,000	720.00

- *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 the table above.

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).

Due to lack of information on LSG units, the simulated tax rates in the yearly tax schedule are obtained as follows. The first (second) bracket rate is obtained as 20% (30%) times $(1 + x)$, where x is set to: (a) 14% for people living in densely populated areas, (b) 3% for those living in intermediate populated areas and (c) 1% for people living in thinly populated areas. These rates are based on the calculations using administrative microdata on PIT.

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 yearly 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. Cities and municipalities 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) 18% in the City of Zagreb. The surtax was abolished in 01/2024.

- *EUROMOD modelling*

Due to lack of information on LSG units, the simulated tax rates in EUROMOD were (a) 16.5% for people living in densely populated areas, (b) 8% for those living in intermediate populated areas and (c) 4% for people living in thinly populated areas. These rates are based on the calculations using administrative microdata on PIT and surtax. 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 Extraordinary measures

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 4,000 (EUR 530.89) in 2021. 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 250 (EUR 33.18) in later months. 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. The share of individuals that are in wage

compensation for less or equal than X months varies by activity status. 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 2021, by industry, activity status and gender

Industry (NACE codes)	Employees		Self-employed	
	Female	Male	Female	Male
A, B, C, D, E	0.06	0.12	0.04	0.01
F	0.02	0.14	0.00	0.00
G, H, J, K, L, N	0.06	0.16	0.09	0.01
I	0.70	0.48	0.21	0.41
O, P, Q, R, S, T, U	0.25	0.21	0.00	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 2021, by activity status

Number of months	Employees	Self-employed
1	0.36	0.39
2	0.61	0.66
3	0.73	0.83
4	0.84	0.95
5	0.90	0.96
6	0.97	0.99
7	0.99	0.99
8	0.99	1.00
9	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.[4]

2.8.2 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 2.24).

- *Benefit amount*

Group (a). There were three benefit payments during 2022 and two in 2023. Income thresholds and benefit rates are shown in Table 2.24.

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 payments, 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 2.24 Top-up benefit for pensioners, income thresholds and benefit rates

(a) Payments in 2022

1st payment (March 2022)		
Bracket	Overall pension income (HRK)	Benefit amount (HRK)
1	up to 1,500.00	1,200
2	1,500.01 – 2,000.00	900
3	2,000.01 – 3,000.00	600

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

| 4 | 3,000.01 – 4,000.00 | 400 |

| *2nd and 3rd payment (September and December 2022)* | | |
Bracket	Overall pension income (HRK)	Benefit amount (HRK)
1	up to 1,850.00	1,200
2	1,850.01 – 2,350.00	900
3	2,350.01 – 3,350.00	600
4	3,350.01 – 4,360.00	400

(b) Payments in 2023

| *4th payment (March 2023)* | | |
Bracket	Overall pension income (EUR)	Benefit amount (EUR)
1	up to 260.00	160
2	260.01 – 330.00	120
3	330.01 – 470.00	80
4	470.01 – 610.00	60

| *5th payment (September 2023)* | | |
Bracket	Overall pension income (EUR)	Benefit amount (EUR)
1	up to 300.00	160
2	300.01 – 435.00	120
3	435,01 – 570.00	80
4	570,01 – 700.00	60

6th payment (December 2023)

| (the brackets/amounts 1-5 are identical as in the 5th payment, but the bracket 5 is added…) | | |
Bracket	Overall pension income (EUR)	Benefit amount (EUR)
5	700,01 – 840.00	50

(b) Payments in 2024

| *7th payment (March 2024)* | | |
Bracket	Overall pension income	Benefit amount (EUR)
1	up to 320.00	160
2	320.01 – 460.00	120
3	460.01 – 600.00	80
4	600.01 – 730.00	60
5	730.01 – 880.00	50

| *8th payment (September 2024)* | | |
Bracket	Overall pension income (EUR)	Benefit amount (EUR)
1	up to 350.00	160
2	350.01 – 500.00	120
3	500,01 – 650.00	80
4	650,01 – 840.00	60

| *9th payment (December 2024)* | | |
Bracket	Overall pension income (EUR)	Benefit amount (EUR)
1	any amount	80

- *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. The 9th payment was not simulated because at the time when it occurred, the model and all the calculations prepared for this report have already been finished.

2.9 Consumption taxes

Consumption taxes simulated in EUROMOD can be divided in two groups: VAT (value added tax) and excises (additional duties paid over consumption, typically on energy, alcoholic beverages, and tobacco).

Simulated consumption tax liabilities paid by households depend on the tax rules (e.g. the VAT rate) and on the tax base (consumption expenditures or quantities). This is why, to simulate consumption taxes in EUROMOD, the input data must contain information on household expenditures. The expenditures matched in the EUROMOD input files based on SILC are reported directly by households in the HBS surveys at purchasing prices. Therefore, they already include the consumption taxes paid.

(1) **VAT** (il_tva) is the value-added tax. The model also simulates at high disagregation level the VAT liabilities paid for each consumption category (output variables are tva01111, tva01112, and so on and so forth, corresponding to COICOP codes 01111 and 01112, etc.)

(2) **Excises** (il_tx) are additional duties paid over consumption and can be classified in two groups: ad-valorem excises (il_txv) that depend on producer prices, and of specific or ad-quantum excises (il_txa) that depend on consumed quantities.

Since consumption data from HBS refers to expenditures (price times quantity), for the simulation of specific excises information on consumption prices are needed.

Further information on methodology and specific calculations and the independence of these consumption taxes is common across countries (this is why they are placed in an add-on and not in the policy spine of each country) and can be found in Akoguz et al (2020).

2.9.1 Value added tax (*il_tva*)

Croatia has the standard VAT rate (25%), two reduced rates (5% and 13%), and a zero rate. As Table 2.25 shows, these rates were constant in the 2021-2024 period.

Table 2.25 VAT rates

Name	2021	2022	2023	2024
Standard rate	25%	25%	25%	25%
Zero rate	13%	13%	13%	13%
Reduced 1 rate	5%	5%	5%	5%
Reduced 2 rate	0%	0%	0%	0%

Historically, the standard rate was 22% since 01/1998, when the VAT was first introduced into the Croatian tax system (Table 2.26). In 08/2009 the rate was increased to 23%, and in 03/2012, to 25%. The VAT started as a single-rate system, but less than two years later, in 11/1999, the zero rate has been introcuded. It existed till 12/2012, and was reintroduced in 10/2022. In the current system, there are two reduced rates, 5% and 13%. The lower reduced rate was introduced in

01/2013 to replace the abolished zero rate. The application of the higher reduced rate has begun in 01/2006. Until 12/2013 it equalled 10% and 13% since then.

Table 2.26 Historical overview of VAT rates

Name	Period	Rate (%)
Standard rate	01/1998 – 07/2009	22
	08/2009 – 02/2012	23
	03/2012 – 12/2024	25
Zero rate	11/1999 – 12/2012	0
	10/2022 – 12/2024	0
Reduced 1 rate	01/2006 – 12/2013: 10%	10
	01/2014 – 12/2024: 13%	13
Reduced 2 rate	01/2013 – 01/2024: 5%	5

The comprehensive list in Table 2.27 presents various goods and services that have been taxed by non-standard rates. The list of goods exempted from VAT is given in Table 2.28.

Table 2.27 Products taxed by non-standard VAT rates

Group 1. Food	VAT rate
T1.1 bread (all kinds of baked bread, e.g., wheat, rye, barley, corn, buckwheat bread, soy bread, sowing bread and potato bread, and other bakery products, e.g., rolls, pretzels, buns, except for all kinds of cakes, burek and other bakery and confectionery products)	01/1998 – 10/1999: SR 11/1999 – 12/2012: ZR 01/2013 – 12/2024: R2 [T1.1, T1.2, T1.7, T3.1, T3.2]
T1.2 milk (all types of milk, e.g., cow, sheep, goat, placed on the market under the same name in liquid condition, fresh, pasteurized, homogenised, condensed, excluding sour milk, yoghurt, kefir, chocolate milk and other milk products)	01/1998 – 10/1999: SR 11/1999 – 12/2012: ZR 01/2013 – 12/2024: R2 [T1.1, T1.2, T1.7, T3.1, T3.2]
T1.3 edible oils and fats, of plant and animal origin	01/1998 – 02/2012: SR 03/2012 – 03/2022: R1 04/2022 – 12/2024: R2 [T1.3, T1.4, T4.1]
T1.4 baby food and processed cereal-based foods for infants and young children	01/1998 – 02/2012: SR 03/2012 – 03/2022: R1 04/2022 – 12/2024: R2 [T1.3, T1.4, T4.1]
T1.5 delivery of live animals, fresh and chilled meat, vegetables and fruits, etc. - delivery of live animals (cattle, pigs, sheep, goats, horses, donkeys, domestic poultry, rabbits and hares), - delivery of fresh or chilled meat and edible slaughter products (from cattle, pigs, sheep, goats, horses, donkeys, domestic poultry, rabbits and hares), - delivery of fresh or chilled sausages and similar products, made from meat, meat slaughterhouse products or blood; - delivery of live fish, fresh or chilled fish, molluscs and other aquatic invertebrates; delivery of fresh or chilled crustaceans (lobsters, clams, shrimps, prawns); - delivery of fresh or chilled vegetables, roots or tubers, including leguminous dry vegetables; - delivery of fresh and dry fruits and nuts; delivery of fresh poultry eggs in shell.	01/1998 – 12/2018: SR 01/2019 – 03/2022: R1 04/2022 – 12/2024: R2 [T1.5, T2.2]
T1.6 white sugar from cane and sugar beet	01/1998 – 02/2012: SR 03/2012 – 12/2016: R1 01/2017 – 12/2024: SR

T1.7 infant food serving as a complete substitute for breast milk (in accordance with special regulations)	01/1998 – 10/1999: SR 11/1999 – 12/2012: ZR 01/2013 – 12/2024: R2 [T1.1, T1.2, T1.7, T3.1, T3.2]
T1.8 butter and margarine	01/1998 – 03/2022: SR 04/2022 – 12/2024: R2
Group 2. Child products	**VAT rate**
T2.1 child car seats	01/1998 – 12/2016: SR 01/2017 – 12/2024: R1
T2.2 baby diapers	01/1998 – 12/2018: SR 01/2019 – 03/2022: R1 04/2022 – 12/2024: R2 [T1.5, T2.2]
Group 3. Health	**VAT rate**
T3.1 all drugs that have the approval of the competent authority for drugs and medical products	01/1998 – 10/1999: SR 11/1999 – 12/2012: ZR 01/2013 – 12/2024: R2 [T1.1, T1.2, T1.7, T3.1, T3.2]
T3.2 orthopedic and other aids for personal use of the disabled prescribed by the general act on orthopedic and other aids	01/1998 – 10/1999: SR 11/1999 – 12/2012: ZR 01/2013 – 12/2024: R2 [T1.1, T1.2, T1.7, T3.1, T3.2]
Group 4. Energy and utilities	**VAT rate**
T4.1 water supply in terms of public water supply and drainage according to a specific regulation (i.e., excluding water marketed in bottles and packages)	01/1998 – 02/2012: SR 03/2012 – 03/2022: R1 04/2022 – 12/2024: R2 [T1.3, T1.4, T4.1]
T4.2 delivery of electric power, including charges related to that delivery	01/1998 – 12/2016: SR 01/2017 – 12/2024: R1 [T4.2, T4.5]
T4.3 supply of natural gas and heating from heating stations, including the charges related to these supplies	01/1998 – 03/2022: SR 04/2022 – 12/2024: R2 [T4.3, T4.4]
T4.4 firewood, pellets, briquettes, and wood chips	01/1998 – 03/2022: SR 04/2022 – 12/2024: R2 [T4.3, T4.4]
T4.5 certain public waste collection services according to a specific regulation	01/1998 – 12/2016: SR 01/2017 – 12/2024: R1 [T4.2, T4.5]
T4.6 the supply and installation of solar panels on private residential buildings, housing units, and public and other buildings used for activities of public interest, and the supply and installation of solar panels near such buildings, spaces, and structures	01/1998 – 09/2022: SR 10/2022 – 12/2024: ZR
Group 5. Publications	**VAT rate**
T5.1 books and textbooks of selected content, except for those that entirely or mostly contain ads or are used for advertising, and except for those that entirely or mostly consist of videos or music content;	01/1998 – 05/2000: SR 06/2000 – 12/2012: ZR 01/2013 – 12/2024: R2 [T5.1, T5.2]
T5.2 scientific journals;	01/1998 – 05/2000: SR 06/2000 – 12/2012: ZR 01/2013 – 12/2024: R2 [T5.1, T5.2]
T5.3 all daily newspapers of a newspaper publisher that has a media statute, except for those that entirely or mostly contain ads or are used for advertising, and except for those that entirely or mostly consist of videos or music content	01/1998 – 07/2007: SR 08/2007 – 06/2013: R1 07/2013 – 12/2024: R2

T5.4 newspapers and magazines from publishers with a media status, and newspapers and magazines from publishers for which there is no requirement to have a media status according to a specific regulation (excluding those taxed at a 5% rate), which are published periodically, except those that entirely or mostly contain advertisements or serve for advertising, and those that are entirely or mostly made up of video content or music content	01/1998 – 07/2007: SR 08/2007 – 06/2013: R1 07/2013 – 12/2013: R2 01/2014 – 12/2024: R1
Group 6. Entertainment, accommodation and catering	**VAT rate**
T6.1 cinema tickets,	01/1998 – 08/2000: SR 09/2000 – 12/2012: ZR 01/2013 – 12/2024: R2
T6.2 tickets for concerts	01/1998 – 06/2013: SR 07/2013 – 03/2022: R1 04/2024 – 12/2024: R2
T6.3 tickets for sports and cultural events	01/1998 – 03/2022: SR 04/2022 – 12/2024: R2
T6.4 accommodation and food in hotels or similar establishments	01/1998 – 12/2005: SR 01/2006 – 12/2024: R1
T6.5 accommodation at designated camping areas	01/1998 – 12/2005: SR 01/2006 – 12/2024: R1 [T6.5, T6.6]
T6.6 accommodation in nautical tourism vessels	01/1998 – 12/2005: SR 01/2006 – 12/2024: R1 [T6.5, T6.6]
T6.7 preparation and serving of meals and desserts in hospitality and catering establishments	01/1998 – 12/2012: SR 01/2013 – 12/2016: R1 01/2017 – 12/2019: SR 01/2020 – 12/2024: R1
T6.8 serving of beverages and drinks in hospitality and catering establishments	01/1998 – 12/2012: SR 01/2013 – 12/2016: R1 01/2017 – 12/2024: SR
Group 7. Other consumption products	**VAT rate**
T7.1 menstrual products	01/1998 – 03/2022: SR 04/2022 – 12/2024: R1
T7.2 urns and coffins	01/1998 – 12/2016: SR 01/2017 – 12/2024: R1
T7.3 services and related copyright of writers, composers, and performing artists	01/1998 – 12/2018: SR 01/2019 – 12/2024: R1
T7.4 services and related copyright of phonogram rights holders who are members of the appropriate organizations for collective rights management, performing these activities according to specific regulations in the field of copyright and related rights, and with prior approval from the governmental body responsible for intellectual property	01/1998 – 12/2019: SR 01/2020 – 12/2024: R1
Group 8. Agricultural intermediate goods	**VAT rate**
T8.1 seedlings and seeds; fertilizers and pesticides and other agrochemical products; products that are mainly used as animal feed (except pet food)	01/1998 – 12/2016: SR 01/2017 – 12/2024: R1

* the coverage and definition of products has changed through time

Table 2.28 Goods excepmted from VAT

Group 1.
E1.1 universal postal service and related deliveries of accompanying goods, except passenger transport and telecommunication services,

E1.2 hospital and medical care and closely related activities performed by bodies with public authority or which, under conditions that are similar in the social sense to the conditions applied to bodies with public authority, are performed by hospitals, centres for treatment or medical diagnostics and other recognized institutions of a similar nature,
E1.3 providing medical care within the scope of practicing medical and auxiliary medical professions,
E1.4 delivery of human organs, blood and breast milk,
E1.5 services performed by dental technicians and the delivery of dental/prosthetic replacements delivered by dental technicians and doctors of dental medicine,
E1.6 services performed for their members by associations of persons who perform VAT-exempt activities or for which they are not taxpayers, if these services are intended directly for the performance of their activities, with the condition that these associations require only compensation from their members for the services performed their part of the total costs and that such exemption does not lead to a violation of the principles of market competition,
E1.7 services and deliveries of goods related to social care, including those performed and delivered by homes for the elderly and infirm, institutions, bodies with public authority or other persons of a similar nature,
E1.8 services and delivery of goods related to the protection of children and youth performed by institutions, bodies with public authority or other persons of a similar nature,
E1.9 education of children and youth, school or university education, professional training and retraining, including closely related services and goods, performed by bodies with public authority or other persons, who have similar goals,
E1.10 teaching that is held privately by teachers and that includes primary, secondary and higher education,
E1.11 assigning the staff of religious or philosophical institutions for the purposes prescribed in points E1.2, E1.7, E1.8 and E1.9, the goal of which is spiritual care,
E1.12 services and closely related deliveries of goods that non-profit legal entities whose goals are political, trade union, religious, patriotic, philosophical, charitable or of other generally beneficial nature provide to their members in their common interest in exchange for a membership fee determined in accordance with the rules of those entities, provided that this exemption does not violate the principles of market competition,
E1.13 services closely related to sports or physical education that are performed by non-profit legal entities for people who practice sports or participate in physical education,
E1.14 services in culture and closely related deliveries of goods, performed by institutions in culture, bodies with public authority or other legal entities in culture,
E1.15 services and deliveries of goods performed by legal entities whose activities are exempt from VAT in accordance with the provisions of points E1.2, E1.7, E1.8, E1.9, E1.12, E1.13 and E1.14 in connection with events organized for collection funds exclusively for their benefit, provided that the exemption does not violate the principles of market competition,
E1.16 transport services of sick or injured persons in vehicles specially made for this purpose, performed by authorized persons,
E1.17 activities of public radio and television, except for commercial ones.
Group 2.
E2.1 insurance and reinsurance transactions, including related services performed by insurance and reinsurance intermediaries and insurance representatives,
E2.2 approving credits and loans, including mediation in these businesses and management of credits or loans when the person approving them does so,
E2.3 contracting of credit guarantees and all other business related to credit guarantees or any other money security and management of credit guarantees when this is done by the person who approves the loan,
E2.4 transactions, including mediation, in connection with savings, current and giro accounts, payments, transfers, debts, checks and other negotiable instruments, except debt collection,
E2.5 transactions, including mediation, in connection with currencies, banknotes and coins that are used as legal tender, except for collector's items, i.e. gold, silver or other metal coins and banknotes that are not normally used as legal tender or coins of numismatic interest,
E2.6 transactions, including intermediation, except for management and storage, in connection with shares, shares in companies or associations, bonds and other securities, with the exception of

documents establishing certain rights over goods and rights or securities establishing certain rights on real estate,
E2.7 investment fund management services,
E2.8 delivery of postage stamps at nominal value for postal services in the country and state and other similar stamps,
E2.9 organizing lottery games, games of chance in casinos, betting games and games of chance on machines,
E2.10 delivery of buildings or their parts and the land on which they are located, except deliveries before the first occupancy or use or deliveries where no more than two years have passed from the date of first occupancy or use to the date of the next delivery. A building in the sense of this Act is considered to be an object attached to the ground or fixed in the ground,
E2.11 delivery of land, except construction land,
E2.12 rent of residential premises.
Group 3.
E3.1 services of international passenger transport, except for road and rail transport.

- *EUROMOD modelling*

Consumption taxes (tco_hr policy) require extended EUROMOD input data (with imputed income shares of consumption expenditures at the household level) and an add-on to run. The policy is set to off in the baseline. To activate it, the CT_xbase add-on must be run, and the yyyy_x* type of input files should be used (as defined in the database configuration of each country). The other add-ons (CT_*) can be used to undertake reform simulations, under the behavioural assumption of constant quantities (CT_XCQ), constant income shares (CT_XCIS) or constant expenditure shares (CT_XCES). Auxiliary output files are generated by running the first baseline simulation (as either the quantities or expenditures and savings from the baseline are kept constants and enter as inputs in the simulated reform scenarios).

2.9.2   Ad-valorem excises (il_txv)

Ad-valorem excises cover cigarretes only. The rate is 34% is throughout the 2021-2024 period.

- *EUROMOD modelling*

Consumption taxes (tco_hr policy) require extended EUROMOD input data (with imputed income shares of consumption expenditures at the household level) and an add-on to run. The policy is set to off in the baseline. To activate it, the CT_xbase add-on must be run, and the yyyy_x* type of input files should be used (as defined in the database configuration of each country). The other add-ons (CT_*) can be used to undertake reform simulations, under the behavioural assumption of constant quantities (CT_XCQ), constant income shares (CT_XCIS) or constant expenditure shares (CT_XCES). Auxiliary output files are generated by running the first baseline simulation (as either the quantities or expenditures and savings from the baseline are kept constants and enter as inputs in the simulated reform scenarios).

2.9.3   Specific excises (il_txa)

Specific excises apply to energy products, fuels, coffee and tobaco products, alcoholic and non-alcoholic beverages.

In this case, both tax rates and prices are collected, in order to allow the model to estimate the implicit quantities behind the reported household consumption expenditure amounts.

Table 2.29 Specific (ad-quantum) excise rates

(a) Energy products and fuels

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
Petrol leaded (1000 L)	4,500.00	4,500.00	597.25	597.25
Petrol unleaded (1000 L)	3,860.00	3,060.00	406.00	456.00
Gas oil - propellant (1000 L)	3,060.00	2,660.00	353.00	383.00
Gas oil - heating for business use (1000 L)	3,060.00	157.00	21.00	21.00
Gas oil - heating for non-business use (1000 L)	423.00	423.00	21.00	21.00
Kerosene - for business use (1000 L)	2,660.00	2,660.00	353.04	353.04
Kerosene - for non-business use (1000 L)	1,752.00	1,752.00	232.53	232.53
LPG - for business use (1000 L)	100.00	100.00	13.27	13.27
LPG - for non-business use (1000 L)	100.00	100.00	13.27	13.27
Heavy fuel oil - for business use (1000 L)	160.00	160.00	21.24	21.24
Heavy fuel oil - for non-business use (1000 L)	160.00	160.00	21.24	21.24
Natural gas - propellant (1 MWh)	0.00	0.00	0.00	0.00
Natural gas - heating for business use (1 MWh)	4.05	4.05	0.54	0.54
Natural gas - heating for non-business use (1 MWh)	8.10	8.10	1.08	1.08
Coal and coke - for business use (1 GJ of gross heating value)	2.30	2.30	0.31	0.31
Coal and coke - for non-business use (1 GJ of gross heating value)	2.30	2.30	0.31	0.31
Electricity - for business use (1 MWh)	3.75	3.75	0.50	0.50
Electricity - for non-business use (1 MWh)	7.50	7.50	1.00	1.00
Biofuels (pure) (1000 L)	0.00	0.00	0.00	0.00

(b) Tobacco products

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
Cigarettes (1000 pieces)	400.00	400.00	53.10	53.10
Fine-cut tobacco (1 kg)	860.00	860.00	114.15	114.15
Other tobacco for smoking (1 kg)	860.00	860.00	114.15	114.15
Cigars (1000 pieces)	860.00	860.00	114.15	114.15
Cigarillos (1000 pieces)	860.00	860.00	114.15	114.15
E-liquids (1 mL)	0.00	0.00	0.00	0.00
Heated tobacco products (1 kg)	1,400.00	1,400.00	185.82	185.82
"New tobacco products" (1 kg)	860.00	860.00	114.15	114.15

(c) Alcoholic beverages

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
1 Beer (1 percentage of volume share of actual alcohol contained in 1 hL of the product)				
1.1 Standard producer	40.00	40.00	5.31	5.31
1.2 Small brewery, with yearly production of up to 5,000 hL	20.00	20.00	2.65	2.65
1.3 Small brewery, with yearly production of 5,000-25,000 hL	22.00	22.00	2.92	2.92
1.4 Small brewery, with yearly production of 25,000-75,000 hL	24.00	24.00	3.19	3.19
1.5 Small brewery, with yearly production of 75,000-125,000 hL	26.00	26.00	3.45	3.45
2 Other (1 hL)				
2.1 Still and sparkling wine	0.00	0.00	0.00	0.00
2.2 Other beverages obtained by fermentation, excluding beer and wine	0.00	0.00	0.00	0.00
2.3 Intermediate products with alc/vol below 15%	500.00	500.00	66.36	66.36
2.4 Intermediate products with alc/vol above 15%	800.00	800.00	106.18	106.18
2.5 Ethyl alcohol	6,000.00	6,000.00	796.34	796.34

(d) Non-alcoholic beverage products – 'volume tax'

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
1 Non-alcoholic beverages (1 hL of beverage)	20.00	20.00	2.65	2.65
2 Syrups and concentrates intended for the preparation of non-alcoholic beverages (1 hL of beverage)	140.00	140.00	18.58	18.58
3 Powders and granules intended for the preparation of non-alcoholic beverages (1 hL of beverage)	20.00	20.00	2.65	2.65

(e) Non-alcoholic beverage products – 'sweetener tax'

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
1 Non-alcoholic beverages (1 hL of beverage)				
1.a 100 mL of beverage contains up to 2 g of sugar	0.00	0.00	0.00	0.00
1.b 100 mL of beverage contains 2-5 g of sugar	10.00	10.00	1.33	1.33
1.c 100 mL of beverage contains 5-8 g of sugar	30.00	30.00	3.98	3.98

	2021	2022	2023	2024
1.d 100 mL of beverage contains more than 8 g of sugar	60.00	60.00	7.96	7.96
1.e Product contains methyl-xanthine instead of sugar	80.00	80.00	10.62	10.62
1.f Product contains taurine instead of sugar	200.00	200.00	26.54	26.54
2 Syrups and concentrates intended for the preparation of non-alcoholic beverages (1 hL of syrup or concentrate)				
2.a 100 mL of product contains up to 14 g of sugar	0.00	0.00	0.00	0.00
2.b 100 mL of product contains 14-35 g of sugar	70.00	70.00	9.29	9.29
2.c 100 mL of product contains 35-56 g of sugar	210.00	210.00	27.87	27.87
2.d 100 mL of product contains more than 56 g of sugar	420.00	420.00	55.74	55.74
2.e Product contains methyl-xanthine instead of sugar	560.00	560.00	74.32	74.32
2.f Product contains taurine instead of sugar	1,400.00	1,400.00	185.81	185.81
3 Powders and granules intended for the preparation of non-alcoholic beverages				
treated in the same way as 1 Non-alcoholic beverages				

(f) Coffee products

Product (unit)	HRK per unit		EUR per unit	
	2021	2022	2023	2024
Roasted coffee (1 kg of coffee)	6.00	6.00	0.80	0.80
Coffee extracts, essences and concentrates (1 kg of coffee)	20.00	20.00	2.65	2.65
Preparations based on coffee (1 kg of coffee contained in the product)	6.00	6.00	0.80	0.80
Preparations based on coffee extracts, essences or concentrates (1 kg of coffee contained in the product)	20.00	20.00	2.65	2.65
Coffee substitutes containing coffee (1 kg of coffee contained in the product)	6.00	6.00	0.80	0.80

Consumer prices of goods subject to excise duties are nowcasted, similarly to what done with income data from SILC. We combine the latest available data from the following sources:

- Prices per product, usually from last year, but for instance, fuel prices have only 15 days delay.
- Inflation: Harmonised Index of Consumer Prices (HICP, Eurostat) at COICOP 5 digits, usually for the first quarter for beta release and up to third quarter 3 for final release.
- Inflation quarter-on-quarter forecasts (DG ECFIN, confidential) by HICP main groups (Unprocessed food, Processed food including alcohol and tobacco, Non-energy industrial goods, Energy, Services - overall index excluding goods) of quarters 2, 3 and 4, as needed for each release.

- *EUROMOD modelling*

Consumption taxes (tco_hr policy) require extended EUROMOD input data (with imputed income shares of consumption expenditures at the household level) and an add-on to run. The policy is set to off in the baseline. To activate it, the CT__xbase add-on must be run, and the yyyy_x* type of input files should be used (as defined in the database configuration of each country). The other add-ons (CT__*) can be used to undertake reform simulations, under the behavioural assumption of constant quantities (CT__XCQ), constant income shares (CT__XCIS) or constant expenditure shares (CT__XCES). Auxiliary output files are generated by running the first baseline simulation (as either the quantities or expenditures and savings from the baseline are kept constants and enter as inputs in the simulated reform scenarios).

3. DATA

3.1 General description

The Croatian dataset for EUROMOD 2021-2024 simulations is derived from the EU-SILC standard UDB 2022 (income reference year 2021). It contains the data from wave 2022 of the Croatian SILC survey which is implemented as a 4-year rotating household panel survey.

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

Table 3.1 EUROMOD database description

EUROMOD database	HR_2022_b2
Original name	EMSD (i.e. UDB (C22_release_23_09)
Provider	Eurostat, HR NSI
Year of collection	2022
Income reference period	2021
Sample size	Indiv: 19,057; HH: 8,168

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 2022 (14 cases) were excluded from EUROMOD's database, as they were not born in SILC's income reference period.

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.[5]

The SEPIM functions as follows. In the first step, all persons with 'py050g ≠ 0' and 'lsemy > 0' are designated as 'potential' self-employed persons. These persons are then divided into potential farmers, professionals and tradesmen, using the variable 'lindi' (industry according to NACE).[6] 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 yearly 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.

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[5] Namely: HR_2012_a8, HR_2014_a6, HR_2015_a4, HR_2016_a4, HR_2017_a3 and HR_2018_a3.
[6] (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.

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.

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.

3.5 Extended input data (with household expenditures for the simulation of consumption taxes)

For the simulation of consumption taxes, the model needs to be run with extended EUROMOD input files. They consist of the core EUROMOD input files based on EU-SILC or National SILC, extended with new variables (household-level income shares of expenditures by product) imputed from EU/National-HBS. The semi-parametric method implemented for the imputation follows the methodology developed by Akoğuz et al (2020).

Table 3.4 summarizes the major features of the most recent database used to be run with the policy systems of 2021-2024.

Table 3.4 Extended EUROMOD database description

Extended EUROMOD database for the simulation of consumption taxes	**SILC 2022 – Income year 2021 – Expenditures from HBS 2015**
EUROMOD database	HR_2022_b2_2015_03_e2
Year of collection (HBS) and source	HBS 2015 – EU
Year of collection (SILC) and source	SILC 2022 – EU
Coverage and sample size	Same as HR_2022_b2
Share of households with negative incomes excluded from the matching procedure	0.09% (7 households)

These extended EUROMOD files contain all the variables included in the standard EUROMOD input files plus the income shares of each consumption category included in HBS. For example, for countries with consumption disaggregation at 4 COICOP level (5 digits), there will be close to 200 additional variables, each one with the income shares of expenditure (household level) for that particular consumption category (e.g. starting from the income share of rice consumption: xs_01111; bread: xs_01112, and so on and so forth). The number of additional variables depends on the granularity available in HBS, and it varies across countries).

For the case of HR, data HR_2022_b2_2015_03_e2, the number of variables included (income shares of expenditures, xs_c*) are 193, corresponding to the harmonized consumption categories defined at COICOP [2003] level 4 (five digits). Please note that, due to the lack of information in the HBS files distributed by Eurostat, there is no consumption reported at 5-digit COICOP

level for the 3-digit code CP103. Positive consumption might exist for 3-digit or 4-digit levels, but EUROMOD only uses 5-digit values.

This database is an extension of the core EUROMOD input database, and so it is based on the same sample (i.e., same identifiers "idperson" and "idhh" to identify persons and households, respectively) and contains the same variables plus the income shares of expenditure (xs_* variables).

In Table 3.5 we present the share of households' consumption expenditures by product (and total) captured in our matched databases (extended EM input files) with respect to the original reported expenditures in HBS. The column that refers to the same year (in this case, HBS 2015 with Extended EM Input 2015) directly depends on the quality of the imputation procedure, while the comparison across different years is influenced not only by the matching noise but also by the changes in population characteristics and in the underlining distribution of income. Therefore, the coverage displayed in the second column is just informative but is not and should not be used to evaluate nor validate the imputation procedure.

Information on the coverage of these simulated expenditures (coming from the imputation of HBS 2015 to more recent SILC-based data) with respect to the expenditures reported by National Accounts is included in section 4 of this report, together with the other macro-validation results.

Table 3.5 Expenditure coverage of Extended EM Input files

COICOP group	HBS 2015 – Extended EM Input 2015	HBS 2015 – Extended EM Input 2022
1	98.2	92.1
2	104.4	93.0
3	101.1	93.3
4	101.2	94.0
5	99.2	92.6
6	105.2	94.8
7	101.6	93.5
8	101.7	95.4
9	99.4	92.8
10	93.2	111.7
11	111.5	100.0
12	107.2	101.6
Total	102.8	96.2

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. Validation of consumption taxes is described in section 4.3.

The sources of external data are described in section 5.3.

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   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 2022 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 2021-2023 are by about 1/6 lower than the administrative ones. However, the total amount of this type of income in EUROMOD stands about 95% of the administrative figures during the same period.

Non-taxable cash and non-cash employment income. EUROMOD data cover about 3/4 of the administrative amount in 2021, but the ratio falls to 54% in 2023. This is because non-taxable part of employment income grew faster than the overall wage. 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 2021-2023 is on average 15% lower than according to administrative sources. In contrast, EUROMOD figures for the total amount of reported income of self-employed persons in 2021 6% higher than the administrative ones, and by 7% lower in 2023.

Reported income from contractual work. EUROMOD data represent only 1/3 of total number of recipients according to administrative sources. The total amount in EUROMOD stands at about 3/4 of the administrative figure.

Investment and property income. During the period 2021-2023, 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   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 about 1/5 in different years. In contrast, the underestimation of the total amount of employer social insurance contributions in comparison to administrative figures is only 3% on average in the period 2021-2023.

Employee social insurance contributions. EUROMOD captures, on average, about 4/5 of the administrative number of payers in the period 2021-2023. Regarding the total amount, the ratio between EUROMOD and administrative figures is between 93% in 2023 and 97% in 2021 and 2022.

Self-employed social insurance contributions. EUROMOD overstates the total amount of SIC for self-employed persons in comparison to administrative figures by 11% to 15% in the period 2021-2023.

Personal income tax and surtax. The ratio between EUROMOD output and administrative data for annual amount of personal income tax is relatively high, between 76% and 80% in the 2021-2023 period. The main reasons of underestimation lie in the underrepresentation of investment, property and contractual work incomes. However, the picture has improved in comparison to previous rounds of research (see Country Reports from earlier years). Surtax records similar trends regarding aggregate amounts.

4.1.4   Pensions and benefits

Table A3.5 in Annex 3 presents the numbers of recipients of pensions and 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.

Pensions

In comparison to administrative data, which come from HZMO, EUROMOD data underestimate the total number of pensioners by about 15% in the period 2021-2024. In contrast, EUROMOD data overestimate, by about 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.

Means-tested benefits

Subsistence benefit. EUROMOD obtains 12% less beneficiaries in 2021 than administrative figures. The aggregate amount is also underestimated, by 28%. 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 57%) and total amount (rise of 95%), between 2021 and 2022. However, in reality the number of beneficiaries has slightly fallen between 2021 and 2022, whereas the total amount of benefit increased by 12% only.

Housing benefits. The total amount of housing benefits in EUROMOD underestimates the administrative figures by 22% 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 number of beneficiaries by 4% in 2021, and underestimates it by 3% and 13% in 2022 and 2023, respectively. However, in 2024, the number of beneficiaries according to EUROMOD steeply rises as a consequence of an important change in benefit schedule and large increase in benefit amounts (section 2.5.8), which is not followed by a comparable increase in administrative data. Therefore, EUROMOD overestimates the number of beneficiaries by 70% in 2024, while the total amount is overestimated by 30%.

Non-means-tested benefits

Sickness benefits. In 2021 and 2022, EUROMOD data represent only 28% and 30% 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. EUROMOD data capture about 40% 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; EUROMOD represents about one half of total amount of disability benefits in adminstrative sources, 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. EUROMOD underestimates the total number of beneficiaries and the amount of grant for a newborn child by about 40% in 2021 and 2022, and by about 30% in 2023. This is because input data contain far less children of age 0 than shown in the official statistics. The official statistics says that 36 thousand children have been born and received the benefit in 2020. However, input data contain only 22 thousand children of age 0.

Maternity leave benefit. During the 2021-2023 period, EUROMOD captures about three quarters of beneficiaries from the administrative source, and similar percentage 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 one fifth in 2021 and 2022, and by 38% in 2023, as the input data underrepresent not only children aged 0, but also children of age 1 and 2. In contrast, the total amount of benefit in 2021 and 2022 in EUROMOD and administrative data is roughly equal. In 2023, EUROMOD underestimates the total amount by 26%.

Maternity and parental allowance. EUROMOD underestimates the number of beneficiaries by one half in 2021 and 2022, and by about 40% in 2023. The total amount of benefit in 2021 and 2022 in EUROMOD is underestimated by one third in comparison to administrative data, and by 14% in 2023. The model assumes that each beneficiary receives the benefit in the maximum duration, but in reality, this may not be the case.

Unemployment benefit. EUROMOD data seriously underestimate the number of recipients and the total amount of unemployment benefit. According to EUROMOD input data, 23 thousand people received unemployment benefits in 2021, whereas the administrative figure for unemployment benefit is 76 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 lies between 40% and 50% in the 2021-2023 period.

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 2021 and 2022. Recall that EUROMOD uses the SILC data for income year 2021 (section 3.1).

Median and mean income. In 2021 (2022), the mean income in EUROMOD is 2.2% (4.8%) lower than in external statistics, while the median income in EUROMOD is 3.7% (1.0%) higher than in external statistics.

Gini coefficient. According to EUROMOD, the Gini coefficient remained at the same value of 28.5 during the whole period 2021-2023, and slightly fell in 2024, to 28.0. However, external statistics indicate the increase of the Gini coefficient from 28.5 in 2021 to 29.7 in 2022.

Income distribution by decile groups. Income decile distribution in 2021 is very similar in EUROMOD and external statistics. However, significant differences emerge in 2022, whereby EUROMOD overestimates the shares of the bottom four groups and underestimates the shares of the top two decile groups.

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 2021, EUROMOD over-appreciates poverty rates for all age groups, by 5 percent on average. In 2022, EUROMOD shows higher poverty rate for the youngest age group (below 15 years) than the external source, while it is the opposite for older age groups.

Poverty rates for different poverty lines. In 2021, EUROMOD over-appreciates poverty rates for all poverty lines (from 40% to 70% median HDI), for both men and women, by 4 percentage

points on average. The reverse is true in 2022, where EUROMOD under-appreciates poverty rates, also by 4 percentage points.

4.3 Consumption taxes

Table A3.9 in Annex 3 shows the differences in aggregate annual amounts of consumption and consumption taxes in the input dataset and external statistics. The input dataset is based on the 2022 extended EUROMOD input files, while external statistics come from DG TAXUD.

Consumption

For some categories of consumption, EUROMOD modestly underappreciates the total amount of consumption based on external statistics. These categories include 'Food and non-alcoholic beverages', 'Clothing and footwear', 'Transport' and 'Communications', for which the average ratio between simulated and external data in the period 2021-2024 is between 64% and 99%. In contrast, some of the consumption categories are very poorly represented, such as 'Alcoholic beverages, tobacco, etc.', 'Furnishings, household equipment, etc.', 'Recreation and culture', and 'Hotels and restaurants', where the average coverage ratio lies between 20% and 31%.

VAT

In 2021 EUROMOD succeeds to simulate 47% of total aggregate VAT according to external sources and only 40% in 2022. The main reason is underestimation of consumption in EUROMOD data.

Excise taxes

Total amount of excise taxes simulated by EUROMOD in 2021 represents 38% of the aggregate amount from external statistics. As in the case of VAT, the reasons for underestimation lie in underrepresented consumption data in EUROMOD, especially in the categories of alcoholic drinks and tobacco products.

4.4 Summary of "health warnings"

The analysis in section 4.1 has shown that SILC data, which serve as input for EUROMOD, have certain deficiencies in terms of representativeness and coverage. Higher income earners are underrepresented in the SILC sample, which may particularly influence the analysis of PIT and employee/employer 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.

The simulation of consumption taxes sensitively depends on the quality of the match of the extended EUROMOD files, as well as on the frequency of this data and the gaps between the input data files and the policy systems. At this point, the most recent HBS data available for all countries (EU-HBS) is 2015.

When the user runs a policy system year (e.g., 2024) that does not coincide with the incomes reported in the SILC-data used (e.g., 2022, with reported incomes from 2021), expenditures in EUROMOD are simulated under the constant income shares assumption (by default). This is because the income shares of expenditure included in the extended input files are not updated and remain constant regardless of the policy system that is used for the simulation. This means that a household that spends 10% of its income in food (e.g. the sum of all the xs_1* variables, i.e. xs01111, xs01112, and so on and so forth, is 0.10) will still spend 10% of their income in 2024, regardless of the change in incomes driven by the uprating factors and tax-benefit changes. This implicitly assumes an income elasticity of one.

5. REFERENCES AND SOURCES

5.1 References

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.

Akoğuz, E. C., Capéau, B., Decoster, A., De Sadeleer, L., Güner, D., Manios, K, Alari Paulus, and Toon Vanheukelom (2020). A new indirect tax tool for EUROMOD: final report. Available here.

All EUROMOD Country Reports are available here.

5.2 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/

Ministarstvo demografije i useljeništva (Ministry of Demography and Immigration), https://mdu.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)

5.3   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)

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	Notes
		2021	**2022**	**2023**	**2024**	**the index**	
Harmonised CPI	$HICP	105.82	117.11	126.94	131.42	PET analysis	N1
GDP	$f_gdp	128.04	148.7	166.3	181.3	bed, xhcrt, ysv, ypr, xed00, xhl00	N2
employment income	$f_yem	126.14	136.66	153.56	168.01	n/a	N3
one	$f_one	1	1	1	1	tis, tscer, tscee, tad, tpr, ydses_o, yds, tscse, tin, tmu, yiytx, yiynt	
old-age pensions	$f_poa_av	114.83	120.39	137.04	156.83	poatx, poant	N4
disability pensions	$f_pdi_av	125.33	133.15	150.29	179.88	pditx, pdint	N5
survivor pensions	$f_psu_av	112.89	117.78	141.25	162.9	psutx, psunt	N6
leaded index of average earnings	$f_yemLead	9.555	10.6339	11.6347	11.6347	ymwdt	leaded values of $f_hourly_wage
average hourly wage, Agriculture and Fishing (lindi = 1)	$f_hourly_wage_lindi_1	5.2013	5.7956	6.45	7.057	yemtx, yemnt	N7
average hourly wage, Mining, Manufact. and Utilities (lindi = 2)	$f_hourly_wage_lindi_2	7.7165	8.5982	9.569	10.4696	yemtx, yemnt	N7
average hourly wage, Construction (lindi = 3)	$f_hourly_wage_lindi_3	6.5627	7.3126	8.1382	8.9042	yemtx, yemnt	N7
average hourly wage, Wholesale and retail (lindi = 4)	$f_hourly_wage_lindi_4	8.9502	9.9728	11.0988	12.1434	yemtx, yemnt	N7
average hourly wage, Hotels and restaurants (lindi = 5)	$f_hourly_wage_lindi_5	6.9175	7.7079	8.5782	9.3855	yemtx, yemnt	N7
average hourly wage, Transport and communication (lindi = 6)	$f_hourly_wage_lindi_6	8.7441	9.7432	10.8433	11.8638	yemtx, yemnt	N7
average hourly wage, Financial intermediation (lindi = 7)	$f_hourly_wage_lindi_7	13.7554	15.327	17.0576	18.663	yemtx, yemnt	N7
average hourly wage, Real estate and business (lindi = 8)	$f_hourly_wage_lindi_8	12.1253	13.5107	15.0362	16.4514	yemtx, yemnt	N7

average hourly wage, Public administ. and defence (lindi = 9)	$f_hourly_wage_lindi_9	9.1114	10.1525	11.2988	12.3622	yemtx, yemnt	N7
average hourly wage, Education (lindi = 10)	$f_hourly_wage_lindi_10	7.8977	8.8001	9.7937	10.7155	yemtx, yemnt	N7
average hourly wage, Health and social work (lindi = 11)	$f_hourly_wage_lindi_11	9.6015	10.6985	11.9065	13.0271	yemtx, yemnt	N7
average hourly wage, Other (lindi = 12)	$f_hourly_wage_lindi_12	10.604	11.8155	13.1496	14.3872	yemtx, yemnt	N7
average hourly wage, all activity sectors	$f_hourly_wage	8.5753	9.555	10.6339	11.6347	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	115.83	123.57	139.74	157.03	boa, pditx, pdint, poatx, poant, psutx, psunt	N8
budgetary base	$f_bub	100	100	100	100	bsu, bch, bfaba, bfa, bfaot	N9
social assistance benefit base 1	$f_sab1	100	125	125	141	bsa00	N10
social assistance benefit base 2	$f_sab2	100	100	100	100	bsaot, bho, bdi	N11
national HICP	$f_hicp_nat	105.82	117.11	126.94	131.32	afc, xhcmomi, xpp, xhcot, xmp00, xmpam	N12

Notes:

N1: EUROSTAT; 2024 forecasts for 2024 values (AMECO online).	N7: Tables nama_10_a64 (wages) and nama_10_a64_e (hours worked) (EUROSTAT); forecast for nominal compensation per employee, total economy (AMECO online)
N2: GDP, at current prices (UVGD), Mrd EURO-HRK (AMECO online).	N8: Statutory indexation: "current value of pension" (HZMO)
N3: Nominal gross wage index (DZS: Statistics in Line).	N9: "Budgetary base" (Ministry of Finance)
N4: Mean monthly old-age pension (HZMO: Statistical Information)	N10: Evolution of social assistance benefit base 1 (MRMSOSP)
N5: Mean monthly disability pension (HZMO: Statistical Information)	N11: Evolution of social assistance benefit base 2 (MRMSOSP)
N6: Mean monthly survivor pension (HZMO: Statistical Information)	N12: Prices (DZS: Statistics in Line).

ANNEX 2. POLICY EFFECTS IN 2023-2024

In this section we analyse the direct tax-benefit policy effect on household disposable income in Croatia between 2023 and 2024. 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 2024 tax-benefit policies (deflating the tax-benefit monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2023 policies, as a percentage of mean equivalised household disposable income (MEHDI) in 2023. 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 2023 tax-benefit policies are *not* deflated by HICP, but are left unchanged. The HICP is projected to rise by 3.5% between 2023 and 2024. Because of such a relatively 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 4.3% of MEHDI (see Table A2.2), and is driven by three forces. First, the nominal value of pensions has increased due to the adjustments of the "current value of pension". Pension income increases in nominal terms for all groups: between 2.6% of MEHDI in the top decile group and 6.8% of MEHDI for the bottom decile group. Second, there was a significant increase in means-tested benefits – subsistence benefit, national benefit for the elderly and child benefit. Means-tested benefit income rises by 6.77% of MEHDI for the bottom decile group, and by about 2% of MEHDI for the next four decile groups. Third, changes in PIT decreased the tax burden, which increased income of middle and top decile groups by about 0.5 of MEHDI.

Table A2.1 and Figure A2.1 show the situation when price changes are considered. We know from other data that he "current value of pension" increases by 12.4% (see section 3.4), which is about 8 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 1.06% of MEHDI in the top decile group and 4.7% of MEHDI for the bottom decile groups. Overall, the contribution of public pensions to the rise of real income is 1.79% of MEHDI. Similarly, when price increases are taken into account, the impact of means-tested benefits and direct taxes falls from 0.82 to 0.7% of MEHDI.

A negative contribution of non means-tested benefits for the first decile group is due to the fact that the top-up benefit for recipients of child benefit, subsistence benefit and unemployed persons were not paid in 2024.

Overall, disposable income increases by 3.11% on average in real terms. The bottom decile groups gained relatively more than the upper groups, with the bottom decile group gaining significantly more than the others.

Table A2.1: Policy effects in 2023-2024 in real terms (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	4.70	5.99	-2.07	0.73	-0.05	0.00	-0.02	9.28
2	0.00	3.76	2.01	-1.05	1.21	-0.06	0.00	-0.02	5.86
3	0.00	2.82	1.84	-0.42	1.25	-0.09	0.00	-0.06	5.35
4	0.00	2.17	1.79	-0.33	1.24	-0.11	0.00	0.13	4.88
5	0.00	1.87	1.52	-0.17	1.03	-0.12	0.00	0.23	4.36
6	0.00	1.74	0.70	-0.12	0.93	-0.10	0.00	0.32	3.47
7	0.00	1.42	0.58	-0.12	0.65	-0.15	0.00	0.41	2.81
8	0.00	1.52	-0.07	-0.05	0.47	-0.12	0.00	0.46	2.21
9	0.00	1.48	-0.31	-0.05	0.36	-0.12	0.00	0.39	1.75
10	0.00	1.06	-0.20	-0.03	0.03	-0.12	0.00	0.54	1.29
Total	**0.00**	**1.79**	**0.70**	**-0.23**	**0.62**	**-0.11**	**0.00**	**0.33**	**3.11**

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 2023, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2024 policies by Eurostat's Harmonized Index of Consumer Prices (HICP). 'Other SIC' includes pensioners' health contribution.

Figure A2.1: Policy effects in 2023-2024 in real terms (using the CPI-indexation), %
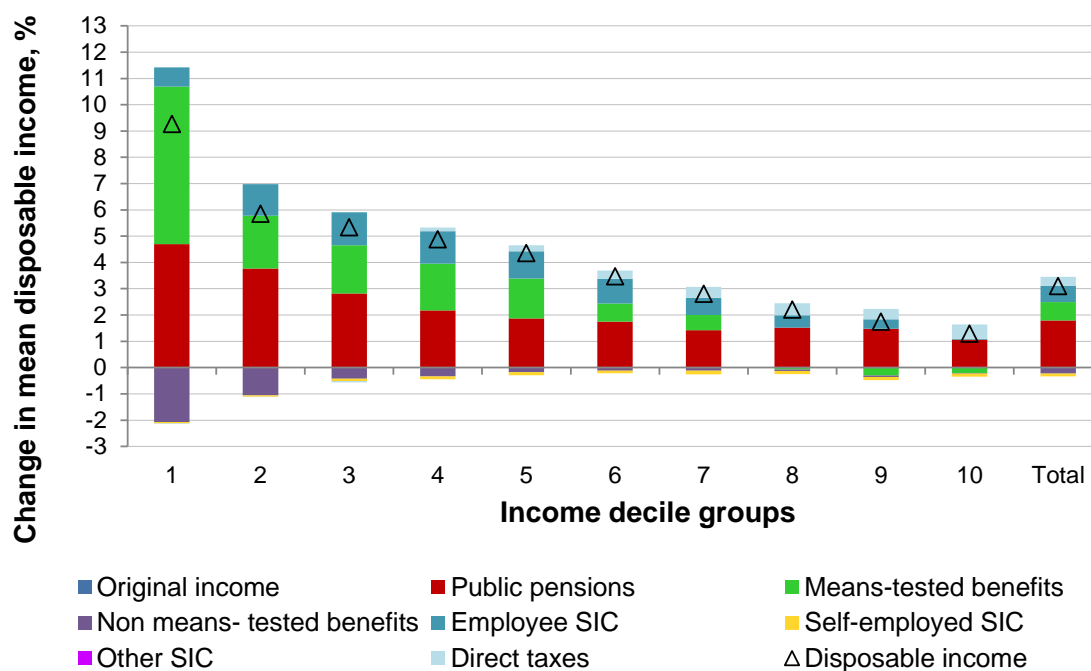
Table A2.2: Policy effects in 2023-2024 in nominal terms (without the CPI-indexation), %

Dec.	Original income	Public pensions	MTB	Non MTB	EE SIC	SE SIC	Other SIC	Direct taxes	Disp. income
1	0.00	6.80	6.77	-1.85	0.77	-0.07	0.00	-0.02	12.40
2	0.00	5.45	2.26	-0.88	1.31	-0.08	0.00	-0.01	8.06
3	0.00	4.08	2.02	-0.30	1.38	-0.13	0.00	-0.02	7.04
4	0.00	3.14	1.95	-0.25	1.37	-0.16	0.00	0.25	6.31
5	0.00	2.71	1.64	-0.08	1.16	-0.17	0.00	0.40	5.65
6	0.00	2.53	0.81	-0.06	1.05	-0.14	0.00	0.55	4.75
7	0.00	2.06	0.68	-0.06	0.74	-0.20	0.00	0.64	3.85
8	0.00	2.21	0.11	0.00	0.54	-0.17	0.00	0.71	3.39
9	0.00	2.14	-0.28	-0.03	0.41	-0.17	0.00	0.59	2.67
10	0.00	1.54	-0.18	0.01	0.02	-0.16	0.00	0.73	1.95
Total	**0.00**	**2.60**	**0.82**	**-0.16**	**0.69**	**-0.16**	**0.00**	**0.51**	**4.30**

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 2023, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, but without deflating monetary parameters of 2024 policies. 'Other SIC' includes pensioners' health contribution.

Figure A2.2: Policy effects in 2023-2024 in nominal terms (without the CPI-indexation), %
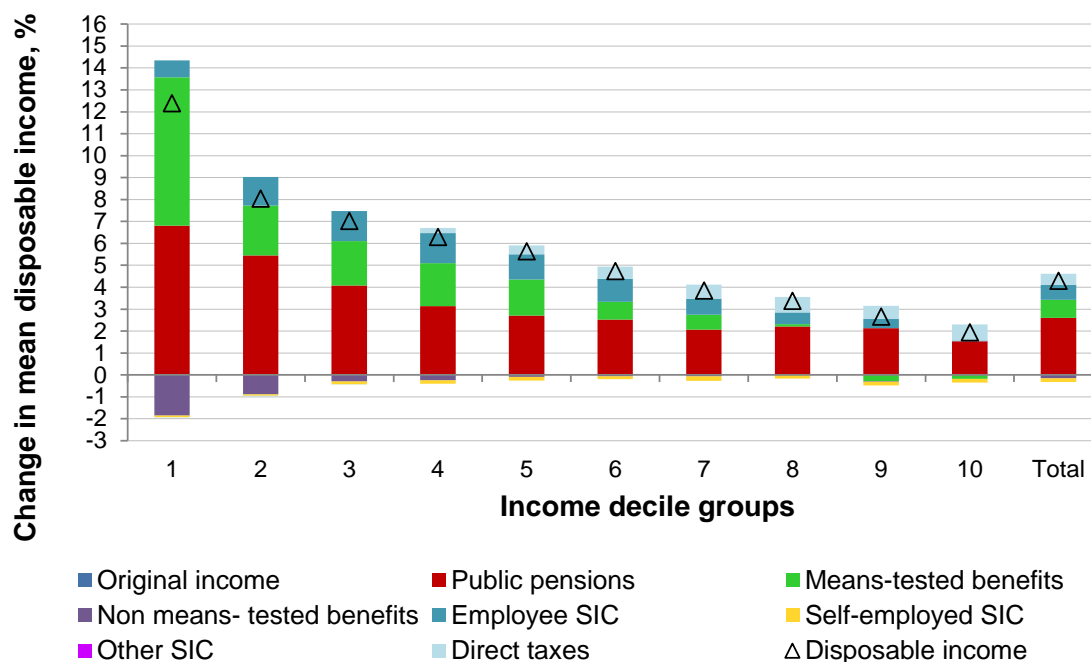
ANNEX 3. VALIDATION TABLES

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

	Simulated (Y / N)	EUROMOD				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Earnings (ils_earns)													
taxable cash employment income (yemtx)	N	1,402	1,402	1,402	1,402	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
non-taxable cash employment income (yemnt)	N	1,072	1,072	1,072	1,072	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income of self-employed persons (ysebsre)	N	118	118	118	118	127	139	149	NaN	0.93	0.85	0.79	NaN
non-reported income of self-employed persons (ysebsnr)	N	135	135	135	135	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income from contractual work (ysecwre)	N	94	94	94	94	310	245	310	NaN	0.30	0.38	0.30	NaN
non-reported income from contractual work (ysecwnr)	N	152	152	152	152	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)													
income of children under 16 (yot)	N	176	176	176	176	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
private pension (ypp)	N	4	4	4	4	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property income (ypr)	N	123	123	123	123	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
investment income (yiy)	N	75	75	75	75	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
private transfers received (ypt)	N	73	73	73	73	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	11	11	11	11	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: main/basic (xmp00)	N	39	39	39	39	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: alimony (xmpam)	N	10	10	10	10	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	1,403	1,403	1,403	1,403	1,662	1,718	1,767	NaN	0.84	0.82	0.79	NaN

	Simulated	EUROMOD				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
non-taxable cash and non-cash employment income (i_yemkfbnt)	N	1,087	1,087	1,087	1,087	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)		
income of children under 16 (yot)	-	-
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)	-	-
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)		
taxable cash and non-cash employment income (i_yemkfbtx)	TaxAdm	-

Continued...

	Source	Comments
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			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Earnings (ils_earns)													
taxable cash employment income (yemtx)	N	18,927	20,979	23,349	25,544	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
non-taxable cash employment income (yemnt)	N	930	1,031	1,147	1,255	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income of self-employed persons (ysebsre)	N	1,249	1,385	1,541	1,685	1,174	1,386	1,664	NaN	1.06	1.00	0.93	NaN
non-reported income of self-employed persons (ysebsnr)	N	801	888	988	1,081	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
reported income from contractual work (ysecwre)	N	369	409	455	498	515	545	583	NaN	0.72	0.75	0.78	NaN
non-reported income from contractual work (ysecwnr)	N	231	257	285	312	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
income from student work (yst)	N	58	64	72	78	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other original income (ils_origy - ils_earns)													
income of children under 16 (yot)	N	31	34	38	41	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
private pension (ypp)	N	8	9	10	11	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property income (ypr)	N	360	416	465	507	848	956	1,132	NaN	0.42	0.44	0.41	NaN
investment income (yiy)	N	58	58	58	58	1,434	1,930	2,543	NaN	0.04	0.03	0.02	NaN
private transfers received (ypt)	N	137	152	169	185	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	35	39	43	47	106	112	NaN	NaN	0.33	0.35	NaN	NaN
maintenance payments: main/basic (xmp00)	N	62	69	74	77	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
maintenance payments: alimony (xmpam)	N	27	30	32	33	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	19,056	21,122	23,508	25,718	19,865	21,921	25,280	NaN	0.96	0.96	0.93	NaN

	Simulated	EUROMOD				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
non-taxable cash and non-cash employment income (i_yemkfbnt)	N	965	1,069	1,190	1,302	1,267	1,730	2,217	NaN	0.76	0.62	0.54	NaN

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

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Direct taxes (ils_tax)																					
personal income tax (tin_s)	Y	1,203	1,369	1,495	1,546	1,240	1,240	1,240	1,240	0.97	1.10	1.21	1.25	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
surtax (prirez) (tmu_s)	Y	1,201	1,365	1,493	0	1,239	1,239	1,239	1,239	0.97	1.10	1.20	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
property taxes (tpr)	N	322	322	322	322	322	322	322	322	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Employee Social Insurance Contributions (ils_sicee)		1,402	1,402	1,402	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,663	1,719	1,769	NaN	0.84	0.82	0.79	NaN
employment: pension contribution A1 (tsceepi00_s)	Y	99	72	54	37	0	0	0	0	0.00	0.00	0.00	0.00	183	183	181	NaN	0.54	0.39	0.30	NaN
employment: pension contribution B1 (tsceepi01_s)	Y	1,303	1,330	1,348	1,365	0	0	0	0	0.00	0.00	0.00	0.00	1,480	1,537	1,588	NaN	0.88	0.87	0.85	NaN
employment: pension contribution B2 (tsceepi02_s)	Y	1,303	1,330	1,348	1,366	0	0	0	0	0.00	0.00	0.00	0.00	1,480	1,537	1,588	NaN	0.88	0.87	0.85	NaN
Self-employed Social Insurance Contributions (ils_sicse)																					
self-employed persons: general health contribution (tscsebusi00_s)	Y	118	118	118	118	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: occupational health contribution (tscsebusi01_s)	Y	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
self-employed persons: employment contribution (tscseui_s)	Y	0	0	0	0	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	14	10	7	5	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	97	102	104	106	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	97	102	104	106	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	27	26	23	20	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	67	68	71	74	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
contractual work: pension contribution B2 (tscsecwpi02_s)	Y	67	68	71	74	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)		1,306	1,297	1,297	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,541	1,598	1,647	NaN	0.85	0.81	0.79	NaN
employment: general health contribution (tscrsi00_s)	Y	1,253	1,244	1,244	1,244	0	0	0	0	0.00	0.00	0.00	0.00	1,541	1,598	1,647	NaN	0.81	0.78	0.76	NaN
employment: employment contribution (tscerui_s)	Y	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	4	6	1	NaN	0.00	0.00	0.00	NaN

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
employment: occupational health contribution (tscersi01_s)	Y	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	4	6	1	NaN	0.00	0.00	0.00	NaN
contractual work: general health contribution (tscsecwsi00_s)	Y	94	94	94	94	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	987	984	954	1,005	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Other Contributions (ils_sicot)																					
Pensioner health contribution (tscbesi_s)	Y	33	34	0	0	0	0	0	0	0.00	0.00	0.00	0.00	32	35	35	NaN	1.04	0.97	0.00	NaN
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)																					
SICER relief for "first time" workers (i_sicerrelam1)	N	14	12	12	12	14	14	14	14	1.00	0.87	0.87	0.87	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
SICER relief for young workers (i_sicerrelam2)	N	135	146	146	146	135	135	135	135	1.00	1.08	1.08	1.08	149	161	190	NaN	0.90	0.90	0.77	NaN

Continued...

	Source	Comments
Direct 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)		
self-employed persons: general health contribution (tscsebusi00_s)	TaxAdm	-
self-employed persons: occupational health contribution (tscsebusi01_s)	TaxAdm	-
self-employed persons: employment contribution (tscseui_s)	TaxAdm	-
self-employed persons: pension contribution A1 (tscsebupi00_s)	TaxAdm	-

Continued...

	Source	Comments
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	-
contractual work: pension contribution B2 (tscsecwpi02_s)	TaxAdm	-
Employer Social Insurance Contributions (ils_sicer)		
employment: general health contribution (tscersi00_s)	TaxAdm	-
employment: employment contribution (tscerui_s)	TaxAdm	-
employment: occupational health contribution (tscersi01_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. Direct taxes and SIC - Annual amounts (millions)

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Direct taxes (ils_tax)																					
personal income tax (tin_s)	Y	1,181	1,483	1,839	2,231	1,423	1,423	1,423	1,423	0.83	1.04	1.29	1.57	1,520	1,856	2,409	NaN	0.78	0.80	0.76	NaN
surtax (prirez) (tmu_s)	Y	135	168	207	NaN	177	177	177	177	0.76	0.95	1.17	NaN	178	217	282	NaN	0.76	0.77	0.73	NaN
property taxes (tpr)	N	29	29	29	29	29	29	29	29	1.00	0.99	0.99	0.99	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Employee Social Insurance Contributions (ils_sicee)		3,812	4,219	4,693	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	3,948	4,352	5,021	NaN	0.97	0.97	0.93	NaN
employment: pension contribution A1 (tsceepi00_s)	Y	285	230	201	145	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	359	353	383	NaN	0.79	0.65	0.53	NaN
employment: pension contribution B1 (tsceepi01_s)	Y	2,645	2,992	3,369	3,575	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,692	2,999	3,479	NaN	0.98	1.00	0.97	NaN
employment: pension contribution B2 (tsceepi02_s)	Y	882	997	1,123	1,247	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	897	1,000	1,160	NaN	0.98	1.00	0.97	NaN
Self-employed Social Insurance Contributions (ils_sicse)		338	352	381	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	294	310	342	NaN	1.15	1.14	1.11	NaN
self-employed persons: general health contribution (tscsebusi00_s)	Y	137	142	153	173	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	132	140	154	NaN	1.04	1.01	0.99	NaN
self-employed persons: occupational health contribution (tscsebusi01_s)	Y	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0	0	0	NaN	NaN	NaN	NaN	NaN
self-employed persons: employment contribution (tscseui_s)	Y	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0	0	0	NaN	NaN	NaN	NaN	NaN
self-employed persons: pension contribution A1 (tscsebupi00_s)	Y	19	14	12	12	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	20	19	17	NaN	0.97	0.76	0.72	NaN
self-employed persons: pension contribution B1 (tscsebupi01_s)	Y	107	114	126	144	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	106	114	128	NaN	1.01	1.00	0.98	NaN
self-employed persons: pension contribution B2 (tscsebupi02_s)	Y	38	41	45	52	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	35	38	43	NaN	1.08	1.07	1.05	NaN
contractual work: pension contribution A1 (tscsecwpi00_s)	Y	12	12	13	13	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	17	17	17	NaN	0.71	0.72	0.74	NaN
contractual work: pension contribution B1 (tscsecwpi01_s)	Y	19	22	25	28	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	23	25	26	NaN	0.81	0.86	0.95	NaN
contractual work: pension contribution B2 (tscsecwpi02_s)	Y	6	7	8	9	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	8	8	9	NaN	0.78	0.90	0.92	NaN
Employer Social Insurance Contributions (ils_sicer)		2,927	3,223	3,587	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,974	3,270	3,760	NaN	0.98	0.99	0.95	NaN
employment: general health contribution (tscersi00_s)	Y	2,899	3,193	3,553	3,888	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2,974	3,270	3,760	NaN	0.97	0.98	0.94	NaN
employment: employment contribution (tscerui_s)	Y	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0	0	0	NaN	NaN	NaN	NaN	NaN

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
employment: occupational health contribution (tscersi01_s)	Y	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0	0	0	NaN	NaN	NaN	NaN	NaN
contractual work: general health contribution (tscsecwsi00_s)	Y	28	31	34	37	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	30	31	32	NaN	0.92	0.99	1.07	NaN
Credited Contributions (ils_sicct)																					
credited SIC (tscct_s)	Y	53	56	59	74	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	16	17	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	11	12	4	NaN	1.42	1.41	NaN	NaN
Other external statistics (ils_extstat_other) (NOTE: some components are hidden!)																					
SICER relief for "first time" workers (i_sicerrelam1)	N	15	14	16	17	15	15	15	15	1.00	0.96	1.07	1.17	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
SICER relief for young workers (i_sicerrelam2)	N	236	283	315	344	236	236	236	236	1.00	1.20	1.33	1.46	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

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

	Simulated	EUROMOD				SILC				Ratio				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Pensions (ils_pen)		1,037	1,037	1,037	1,037	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1,237	1,230	1,225	1,226	0.84	0.84	0.85	0.85
old age pension (starosna mirovina) (poa)	N	802	802	802	802	802	802	802	802	1.00	1.00	1.00	1.00	833	834	849	858	0.96	0.96	0.94	0.93
disability pension (invalidska mirovina) (pdi)	N	75	75	75	75	75	75	75	75	1.00	1.00	1.00	1.00	172	166	161	158	0.44	0.45	0.47	0.48
survivor pension (obiteljska mirovina) (psu)	N	160	160	160	160	160	160	160	160	1.00	1.00	1.00	1.00	232	230	216	210	0.69	0.69	0.74	0.76
Means-tested benefits (ils_benmt)																					
housing benefits (bho)	N	20	20	28	28	28	28	28	28	0.74	0.74	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
subsistence benefit (zajamčena minimalna naknada) (bsa_s)	Y	27	43	34	34	56	56	56	56	0.49	0.76	0.62	0.62	31	29	NaN	NaN	0.88	1.47	NaN	NaN
child benefit (doplatak za djecu) (bch_s)	Y	139	120	95	245	112	112	112	112	1.24	1.07	0.85	2.18	134	123	109	144	1.04	0.97	0.87	1.70
other social assistance benefits (bsaot)	N	32	32	33	33	33	33	33	33	0.97	0.97	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensation for energy costs (naknada za ugroženog kupca energenata) (bhout_s)	Y	58	72	46	62	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	4	1	1	18	0	0	0	0	0.00	0.00	0.00	0.00	5	6	7	NaN	0.87	0.20	0.20	NaN
top-up one-off payments for pensioners (boatu_s)	Y	0	265	340	383	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Non-means-tested benefits (ils_bennt)																					
unemployment benefit (novčana naknada za vrijeme nezaposlenosti) (bunct_s)	Y	23	23	23	23	23	23	23	23	1.00	1.00	1.00	1.00	76	78	NaN	NaN	0.30	0.30	NaN	NaN
other unemployment benefits (bunot)	N	4	4	4	4	4	4	4	4	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	27	27	27	27	0	0	0	0	0.00	0.00	0.00	0.00	35	35	33	NaN	0.76	0.76	0.81	NaN
parental leave benefit (naknada za roditeljski dopust) (bfapl_s)	Y	36	36	36	36	0	0	0	0	0.00	0.00	0.00	0.00	44	46	59	NaN	0.83	0.79	0.62	NaN
maternity and parental allowance (naknade za rodiljnu i roditeljsku brigu i poštedu od rada) (bmanc_s)	Y	15	15	15	15	0	0	0	0	0.00	0.00	0.00	0.00	32	29	25	NaN	0.46	0.51	0.59	NaN
grant for a newborn child (jednokratna novčana potpora za novorođeno dijete) (bfaba_s)	Y	21	21	21	21	27	27	27	27	0.81	0.81	0.81	0.81	35	35	31	NaN	0.61	0.61	0.69	NaN

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
paternity leave benefit (bfafh_s)	Y	0	0	17	17	0	0	0	0	0.00	0.00	0.00	0.00	NaN	7	16	NaN	NaN	0.00	1.07	NaN
education allowances (bed)	N	31	31	31	31	31	31	31	31	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
sickness benefits (bhl)	N	59	59	59	59	59	59	59	59	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
disability benefits (bdi)	N	140	140	140	140	140	140	140	140	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
old-age benefits (boa)	N	653	653	653	653	653	653	653	653	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
survivor benefits (bsu)	N	143	143	143	143	143	143	143	143	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	11	11	11	11	11	11	11	11	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
other family benefits (bfaot)	N	0	0	0	0	0	0	0	0	1.00	1.00	1.00	1.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Covid-19 compensation (bwkmc_s)	Y	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for unemployed persons (buntu_s)	Y	0	25	25	0	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for child benefit recipients (bchtu_s)	Y	0	120	95	0	0	0	0	0	0.00	0.00	0.00	0.00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top-up payments for recipients of social assistance benefits (bsatu_s)	Y	0	67	42	0	0	0	0	0	0.00	0.00	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	0	140	140	0	0	0	0	0	0.00	0.00	0.00	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	-

	Source	Comments
national benefit for the elderly (nacionalna naknada za starije osobe) (boamt_s)	HZMO	-
top-up one-off payments for pensioners (boatu_s)	-	-
Non-means-tested benefits (ils_bennt)		
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	-
paternity leave benefit (bfafh_s)	-	-
education allowances (bed)	-	-
sickness benefits (bhl)	ESSPROS	-
disability benefits (bdi)	ESSPROS	-
old-age benefits (boa)	ESSPROS	-
survivor benefits (bsu)	ESSPROS	-
compensations for caregiver and parent-at-home (ymc)	-	-
other family benefits (bfaot)	SDUDM	-
Covid-19 compensation (bwkmc_s)	HZZ	-
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)	-	-

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

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Pensions (ils_pen)		6,004	6,372	7,206	8,097	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	5,527	5,758	6,580	7,599	1.09	1.11	1.10	1.07
old age pension (starosna mirovina) (poa)	N	4,844	5,140	5,813	6,532	4,844	4,844	4,844	4,844	1.00	1.06	1.20	1.35	3,702	3,883	4,496	5,202	1.31	1.32	1.29	1.26
disability pension (invalidska mirovina) (pdi)	N	502	532	602	676	502	502	502	502	1.00	1.06	1.20	1.35	931	952	1,046	1,229	0.54	0.56	0.58	0.55
survivor pension (obiteljska mirovina) (psu)	N	659	699	791	889	659	659	659	659	1.00	1.06	1.20	1.35	894	923	1,038	1,167	0.74	0.76	0.76	0.76
Means-tested benefits (ils_benmt)																					
housing benefits (bho)	N	9	9	9	9	9	9	9	9	1.00	0.99	0.99	0.99	11	11	NaN	NaN	0.78	0.78	NaN	NaN
subsistence benefit (zajamčena minimalna naknada) (bsa_s)	Y	35	69	63	72	72	72	72	72	0.49	0.96	0.88	1.00	49	55	NaN	NaN	0.72	1.25	NaN	NaN
child benefit (doplatak za djecu) (bch_s)	Y	159	142	116	303	148	148	148	148	1.08	0.96	0.78	2.05	150	132	167	233	1.06	1.08	0.69	1.30
other social assistance benefits (bsaot)	N	27	27	27	27	27	27	27	27	1.00	0.99	0.99	0.99	48	53	NaN	NaN	0.56	0.51	NaN	NaN
compensation for energy costs (naknada za ugroženog kupca energenata) (bhout_s)	Y	18	45	35	51	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	15	28	NaN	NaN	1.22	1.61	NaN	NaN
national benefit for the elderly (nacionalna naknada za starije osobe) (boamt_s)	Y	6	2	2	32	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	7	60	NaN	NaN	0.22	0.03	NaN
top-up one-off payments for pensioners (boatu_s)	Y	NaN	221	270	197	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Non-means-tested benefits (ils_bennt)																					
unemployment benefit (novčana naknada za vrijeme nezaposlenosti) (bunct_s)	Y	46	50	55	64	40	40	40	40	1.14	1.24	1.37	1.58	112	108	116	NaN	0.41	0.46	0.48	NaN
other unemployment benefits (bunot)	N	10	11	12	13	10	10	10	10	1.00	1.11	1.23	1.35	8	12	NaN	NaN	1.21	0.89	NaN	NaN
maternity leave benefit (naknada za rodiljni dopust) (bfama_s)	Y	101	110	124	135	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	150	155	162	NaN	0.67	0.71	0.77	NaN
parental leave benefit (naknada za roditeljski dopust) (bfapl_s)	Y	102	104	120	124	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	99	111	162	NaN	1.03	0.94	0.74	NaN
maternity and parental allowance (naknade za rodiljnu i roditeljsku brigu i poštedu od rada) (bmanc_s)	Y	34	34	34	34	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	53	49	40	NaN	0.65	0.70	0.86	NaN
grant for a newborn child (jednokratna novčana potpora za novorođeno dijete) (bfaba_s)	Y	7	7	7	7	8	8	8	8	0.83	0.82	0.82	0.82	11	11	11	NaN	0.62	0.62	0.62	NaN
paternity leave benefit (bfafh_s)	Y	NaN	NaN	9	10	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	3	8	NaN	NaN	NaN	1.08	NaN
education allowances (bed)	N	35	40	45	49	35	35	35	35	1.00	1.16	1.29	1.41	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

	Simulated (Y / N)	EUROMOD				SILC				Ratio				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
sickness benefits (bhl)	N	73	81	91	99	73	73	73	73	1.00	1.11	1.23	1.35	260	267	NaN	NaN	0.28	0.30	NaN	NaN
disability benefits (bdi)	N	128	127	127	127	128	128	128	128	1.00	0.99	0.99	0.99	244	268	NaN	NaN	0.53	0.48	NaN	NaN
old-age benefits (boa)	N	66	70	79	89	66	66	66	66	1.00	1.06	1.20	1.35	26	26	110	NaN	2.54	2.70	0.72	NaN
survivor benefits (bsu)	N	17	17	17	17	17	17	17	17	1.00	1.00	1.00	1.00	45	43	NaN	NaN	0.39	0.40	NaN	NaN
compensations for caregiver and parent-at-home (ymc)	N	35	39	43	47	35	35	35	35	1.00	1.11	1.23	1.35	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
other family benefits (bfaot)	N	0	0	0	0	0	0	0	0	1.00	0.99	0.99	0.99	119	117	51	NaN	0.00	0.00	0.01	NaN
Covid-19 compensation (bwkmc_s)	Y	0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	641	35	NaN	NaN	0.00	NaN	NaN	NaN
top-up payments for unemployed persons (buntu_s)	Y	NaN	2	5	NaN	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	17	18	NaN	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	9	13	NaN	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	19	42	NaN	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			
	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Decile 1	3.02	3.11	3.13	3.18	3.00	2.80	NaN	NaN	1.01	1.11	NaN	NaN
Decile 2	4.92	4.88	4.88	4.98	5.00	4.80	NaN	NaN	0.98	1.02	NaN	NaN
Decile 3	6.27	6.26	6.25	6.36	6.30	6.10	NaN	NaN	1.00	1.03	NaN	NaN
Decile 4	7.50	7.45	7.45	7.51	7.50	7.30	NaN	NaN	1.00	1.02	NaN	NaN
Decile 5	8.55	8.53	8.54	8.62	8.50	8.50	NaN	NaN	1.01	1.00	NaN	NaN
Decile 6	9.73	9.71	9.73	9.76	9.70	9.70	NaN	NaN	1.00	1.00	NaN	NaN
Decile 7	11.06	11.07	11.09	11.08	11.00	10.90	NaN	NaN	1.01	1.02	NaN	NaN
Decile 8	12.66	12.54	12.47	12.38	12.50	12.50	NaN	NaN	1.01	1.00	NaN	NaN
Decile 9	14.67	14.80	14.86	14.76	14.70	14.90	NaN	NaN	1.00	0.99	NaN	NaN
Decile 10	21.61	21.63	21.61	21.36	21.80	22.50	NaN	NaN	0.99	0.96	NaN	NaN
Median	9,087	9,970	11,054	12,304	8,760	9,873	NaN	NaN	1.04	1.01	NaN	NaN
Mean	9,415	10,371	11,528	12,746	9,629	10,891	NaN	NaN	0.98	0.95	NaN	NaN
Gini	28.50	28.52	28.50	27.95	28.50	29.70	NaN	NaN	1.00	0.96	NaN	NaN
S80/20	4.57	4.55	4.55	4.43	4.57	4.91	NaN	NaN	1.00	0.93	NaN	NaN

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

	EUROMOD				External				Ratio			
	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
40% median HDI by sex												
Total	7.27	7.19	7.07	6.61	6.90	8.00	NaN	NaN	1.05	0.90	NaN	NaN
Males	6.50	6.35	6.22	5.80	6.30	6.90	NaN	NaN	1.03	0.92	NaN	NaN
Females	7.98	7.97	7.86	7.36	7.50	9.10	NaN	NaN	1.06	0.88	NaN	NaN
50% median HDI by sex												
Total	12.50	12.56	12.57	12.19	12.20	13.00	NaN	NaN	1.02	0.97	NaN	NaN
Males	10.94	10.92	10.98	10.62	10.90	11.30	NaN	NaN	1.00	0.97	NaN	NaN
Females	13.96	14.09	14.05	13.65	13.50	14.70	NaN	NaN	1.03	0.96	NaN	NaN
60% median HDI by sex												
Total	18.77	19.02	18.77	18.36	18.00	19.30	NaN	NaN	1.04	0.99	NaN	NaN
Males	16.69	16.84	16.71	16.24	16.00	17.20	NaN	NaN	1.04	0.98	NaN	NaN
Females	20.71	21.04	20.70	20.34	20.00	21.20	NaN	NaN	1.04	0.99	NaN	NaN
70% median HDI by sex												
Total	26.08	25.88	25.92	25.42	25.30	26.70	NaN	NaN	1.03	0.97	NaN	NaN
Males	23.84	23.66	23.70	23.19	23.10	24.40	NaN	NaN	1.03	0.97	NaN	NaN
Females	28.17	27.95	27.99	27.49	27.40	28.90	NaN	NaN	1.03	0.97	NaN	NaN
60% median HDI by age group												
0-15 years	15.85	15.94	16.07	15.56	15.20	15.50	NaN	NaN	1.04	1.03	NaN	NaN
16-24 years	15.66	15.51	15.58	14.92	15.00	16.50	NaN	NaN	1.04	0.94	NaN	NaN
25-49 years	12.01	11.92	11.99	11.53	11.30	12.70	NaN	NaN	1.06	0.94	NaN	NaN
50-64 years	16.92	16.99	16.72	16.67	16.50	17.10	NaN	NaN	1.03	0.99	NaN	NaN
65+ years	33.41	34.58	33.53	33.01	32.40	34.80	NaN	NaN	1.03	0.99	NaN	NaN

Table A3.9. Consumption taxes (non-calibrated) - Annual amounts (millions)

	Simulated	EUROMOD				External				Ratio			
	(Y / N)	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Consumption-tax-related statistics non-calibrated (ils_extstat_ittncal)													
Aggregate expenditures non-calibrated (ils_extstat_ittncal_il_itt_expnc)													
01 Food and non-alcoholic beverages (il_x01)	Y	6,737	7,436	8,255	9,164	10,832	11,731	13,490	13,490	0.62	0.63	0.61	0.68
02 Alcoholic beverages, tobacco, etc. (il_x02)	Y	762	843	935	1,035	2,527	2,846	3,019	3,019	0.30	0.30	0.31	0.34
03 Clothing and footwear (il_x03)	Y	1,548	1,705	1,886	2,090	2,378	2,608	2,643	2,643	0.65	0.65	0.71	0.79
04 Housing, water and fuel (exc. imputed rent) (il_x04)	Y	3,774	4,159	4,618	5,128	7,225	8,115	8,868	8,868	0.52	0.51	0.52	0.58
05 Furnishings, household equipment, etc. (il_x05)	Y	1,030	1,135	1,258	1,394	3,518	4,540	4,514	4,514	0.29	0.25	0.28	0.31
06 Health (il_x06)	Y	686	757	841	932	1,557	1,678	1,871	1,871	0.44	0.45	0.45	0.50
07 Transport (il_x07)	Y	2,992	3,298	3,650	4,045	2,872	3,592	3,836	3,836	1.04	0.92	0.95	1.05
08 Communications (il_x08)	Y	1,304	1,437	1,594	1,767	1,721	1,814	1,960	1,960	0.76	0.79	0.81	0.90
09 Recreation and culture (il_x09)	Y	1,312	1,445	1,602	1,774	4,453	5,976	6,174	6,174	0.29	0.24	0.26	0.29
10 Education (il_x10)	Y	287	317	350	387	730	841	942	942	0.39	0.38	0.37	0.41
11 Hotels and restaurants (il_x11)	Y	659	726	804	888	2,844	3,918	4,434	4,434	0.23	0.19	0.18	0.20
12 Miscellaneous good and services (il_x12)	Y	2,146	2,366	2,624	2,908	4,821	5,573	5,428	5,428	0.45	0.42	0.48	0.54
Revenue from indirect taxes (non calibrated) (ils_extstat_ittncal_il_itt_revnc)													
VAT Total Revenue (il_tva)	Y	3,534	3,514	3,896	4,320	7,494	8,441	9,848	NaN	0.47	0.42	0.40	NaN
Excises Total Revenue (il_tx)	Y	910	802	914	1,044	2,377	NaN	NaN	NaN	0.38	NaN	NaN	NaN
Total excises (non calibrated) (ils_extstat_ittncal_il_itt_excnc)													
Revenues Excises 0211 - Spirits (il_tx0211)	Y	4	4	4	4	216	NaN	NaN	NaN	0.02	NaN	NaN	NaN
Revenues Excises 02121 - Still Wine (il_tx02121)	Y	1	1	1	1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

	Simulated (Y / N)	EUROMOD				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Revenues Excises 02122 - Sparkling Wine (il_tx02122)	Y	0	0	0	0	5	NaN	NaN	NaN	0.00	NaN	NaN	NaN
Revenues Excises 0213 - Beer (il_tx0213)	Y	15	17	18	19	55	NaN	NaN	NaN	0.27	NaN	NaN	NaN
Revenues Excises 022 - Tobacco (il_tx022)	Y	289	310	340	368	829	NaN	NaN	NaN	0.35	NaN	NaN	NaN
Revenues Excises 045 - Energy (electricity, natural gas, coal-coke) (il_tx045)	Y	87	86	85	97	35	NaN	NaN	NaN	2.49	NaN	NaN	NaN
Revenues Excises 0451 - Electricity (il_tx0451)	Y	9	9	9	10	10	NaN	NaN	NaN	0.88	NaN	NaN	NaN
Revenues Excises 04521 - Natural Gas (il_tx04521)	Y	58	58	61	70	25	NaN	NaN	NaN	2.35	NaN	NaN	NaN
Revenues Excises All Energy (il_tx045_072)	Y	601	470	551	651	1,272	NaN	NaN	NaN	0.47	NaN	NaN	NaN

Table A3.10. Consumption taxes (calibrated) - Annual amounts (millions)

	Simulated (Y / N)	EUROMOD				External				Ratio			
		2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
Consumption-tax-related statistics calibrated (ils_extstat_ittcal)													
Revenue from indirect taxes (calibrated) (il_itt_revc)													
VAT Total Revenue (il_tva_na)	Y	6,774	7,317	7,800	8,752	7,494	8,441	9,848	NaN	0.90	0.87	0.79	NaN
Excises Total Revenue (il_tx_na)	Y	1,683	1,706	1,823	2,063	2,377	NaN	NaN	NaN	0.71	NaN	NaN	NaN
Total excises (calibrated) (il_itt_excc)													
Revenues Excises 0211 - Spirits (il_tx0211_na)	Y	12	13	13	13	216	NaN	NaN	NaN	0.06	NaN	NaN	NaN
Revenues Excises 02121 - Still Wine (il_tx02121_na)	Y	2	2	2	2	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Revenues Excises 02122 - Sparkling Wine (il_tx02122_na)	Y	0	0	0	0	5	NaN	NaN	NaN	0.00	NaN	NaN	NaN
Revenues Excises 0213 - Beer (il_tx0213_na)	Y	49	57	58	63	55	NaN	NaN	NaN	0.90	NaN	NaN	NaN
Revenues Excises 022 - Tobacco (il_tx022_na)	Y	959	1,048	1,096	1,206	829	NaN	NaN	NaN	1.16	NaN	NaN	NaN
Revenues Excises 045 - Energy (electricity, natural gas, coal-coke) (il_tx045_na)	Y	167	167	163	189	35	NaN	NaN	NaN	4.77	NaN	NaN	NaN
Revenues Excises 0451 - Electricity (il_tx0451_na)	Y	17	17	18	20	10	NaN	NaN	NaN	1.69	NaN	NaN	NaN
Revenues Excises 04521 - Natural Gas (il_tx04521_na)	Y	111	113	118	135	25	NaN	NaN	NaN	4.50	NaN	NaN	NaN
Revenues Excises All Energy (il_tx045_072_na)	Y	660	586	653	779	1,272	NaN	NaN	NaN	0.52	NaN	NaN	NaN

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