

EUROMOD

COUNTRY REPORT



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Carlos Farinha Rodrigues, Joana Andrade Vicente and David Leite Neves

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

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

The European Commission is in the process of taking over responsibility for carrying out the annual update and release of EUROMOD. The transfer of responsibility is expected to be complete by the end of 2020 and the transition is being facilitated by close cooperation between the University of Essex and the Joint Research Centre (JRC) of the European Commission as well as Eurostat.

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

EUROMOD director: Matteo Richiardi

EUROMOD executive director: Jack Kneeshaw

EUROMOD coordination assistant: Cara McGenn

EUROMOD developer responsible for Portugal: Adrián Hernández Martín (JRC)

National team for Portugal: Carlos Farinha Rodrigues, Joana Andrade Vicente, David Leite Neves.

The results presented in this report are derived using EUROMOD version I3.0. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD.

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

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1. BASIC INFORMATION

1.1 Basic information regarding the tax-benefit system

- The Portuguese tax-benefit system is a **single national system**. However, the autonomous regions (Azores and Madeira) have lower income tax rates.
- **Fiscal year** matches the calendar year (*i.e.*, January 1st to December 31st). Changes to the tax system generally take place in January, whereas changes in benefits can occur throughout the year.
- Since 2016, the **legal retirement age** started to vary according to the evolution of life expectancy at the age at 65, during the 2nd and 3rd years prior to the date of the pension. It is given the option of retiring later with a pension bonus to workers that are already in the legal retirement age or have already exceeded it.
- For tax purposes, **dependent children** are children with 18 years old or less, or those under 25 years old that have a monthly income below the national minimum wage and attend – or successfully completed – 11th or 12th school year during the relevant fiscal year.
- For benefits and tax credit purposes, **single parents** are parents of resident dependent children who are not cohabiting with a partner of the opposite sex. For tax purposes, single parents are parents of resident dependent children who are not married.
- To compute the **income tax base**, the tax rate is applied to the half of the aggregate income, and then the resulting tax liability is multiplied by two to obtain couple's total tax liability. Some income components, like capital income, are taxed at source and may be left out of the final tax calculations.
- Taxpayers need to fill an **annual tax return**, since some differences between the withholdings at source and the exact tax liability can exist.
- The **means-tested component** relies on different time scales to assess income: entitlement to a means-tested benefit can depend on the income of the previous year, the previous month or even the current income, depending on the specific benefit.
- Most benefits and pensions are indexed to the **Social Support Index (SSI)**, which is updated every year according to the real GDP growth and CPI variation. In 2020, SSI was €438.81.

1.2 Social benefits

National minimum wage (*'retribuição mínima mensal garantida'*): although not truly a social benefit, minimum wage guarantees, by law, a minimum remuneration to full-time workers. In 2020, the amount was €635.

Unemployment benefits (*'subsídio de desemprego'*): insurance/contributory unemployment benefit and assistance/social/non-contributory unemployment benefit are the two main policies that provide financial compensation to the unemployed. The assistance benefit acts as an extension of the first one or as the only benefit for shorter warranty periods. Both benefits are means-tested and restricted to participants in the employees' social insurance scheme. The insurance benefit is related to earnings.

A new benefit for long-term unemployed was implemented in 2016.

Old age contributory pension (*'pensão de velhice'*): pension to all the elderly (people at and over the legal age of retirement) that contributed to the compulsory social insurance scheme (both employees and self-employed workers). The amount is a function of the average monthly earnings adjusted over the person's entire insurance life, up to a maximum of 40 years.

Minimum pension (*'pensão mínima'*): new pensioners entitled to an old age or disability pension who have contributed to the compulsory social insurance scheme are entitled to a minimum pension, of

different amounts according to the career length. In the case of old age pensions, this safety net is only provided for those who retire at the legal age of retirement or later.

Old age social pension (*‘pensão social de velhice’*): non-contributory means-tested pension that provides a minimum pension to low-income elderly individuals at the legal age of retirement (66 years and 5 months in 2020).

Survivors’ pension (*‘pensão de sobrevivência’*): granted to the surviving spouse (with at least 35 years old) of a deceased insured person, or to the divorced surviving spouse if the latter was receiving alimony payments. It can also be granted to children until they have 18 years old (25 or 27 if they are studying – higher education) or, when there are no surviving children or spouses, to the dependent parents. There is also a non-earnings-related survivors’ pension (*‘pensão de viuvez’* for widows and *‘pensão de orfandade’* for orphans).

Disability benefit/pension (*‘pensão de invalidez’*): any worker under the legal retirement age who becomes unable to earn more than one third of his standard wage due to illness or a work-related accident not covered by health and safety legislation is entitled to this benefit. There is also a non-earnings-related disability benefit (*‘pensão social de invalidez’*) for pensioners who were not able to fulfil the minimum career for the main benefit (but only until September 2017, after that it was replaced by the new disability benefit – the Social Benefit for the Inclusion).

Social benefit for the inclusion (*‘prestação social para a inclusão’*): benefit created in October 2017 for disabled and handicapped people. Replaced the non-earnings-related disability benefit and *‘subsídio mensal vitalício’* (another handicapped/disability related benefit). Covers recipients with at least a 60% of disability. Since October 2018, it includes a supplement (means-tested) for poor handicapped people, and since 2019 includes a bonus to support certain expenses.

Sickness cash benefit (*‘subsídio de doença’*): available to all insured employees as part of the compulsory social insurance scheme. Benefits are earnings-related.

Solidarity supplement for the elderly (*‘complemento solidário para idosos’*): non-contributory means-tested benefit to help pensioners who have reached the legal age of retirement and live on low incomes. It considers a wide range of income sources which are not usually considered in this kind of schemes, like the monetary income of the recipients’ descendants (even when they don’t live with their parents), or residence in an old age care institution funded by the Social Security.

Social integration income (*‘rendimento social de inserção’*): cash benefit granted together with an integration contract. Aims to ensure that individuals and their family members have sufficient resources to cover their basic needs, while promoting their gradual social and professional integration.

Child benefit (*‘abono de família para crianças e jovens’*): social policy targeted to families with children and young people, as a compensation for their expenditure on educating. Belongs to the same group as funeral expenses allowances or special benefits paid to disabled and dependent people, essentially children. Even though it is means-tested, child benefit has a more universal nature than the other policies that rely on income testing.

Prenatal family allowance (*‘abono de família pré-natal’*): allowance assigned for 6 months to pregnant women starting from the 13th week of gestation, to encourage motherhood by compensating the costs increase during this period.

Parental allowance (*‘subsídio parental’*): allowance paid to the mother and/or father to replace the ‘lost’ work income during the period of childbirth leave. Parents need to have record of remunerations in Social Security. This allowance comprises several modalities (which have different concession periods): initial parental allowance, mother’s initial parental allowance, parent’s original parental allowance, and initial parental allowance of one parent in the event of the impossibility of the other. The daily amount of the allowance is calculated by applying a percentage to the value of the beneficiary’s reference remuneration. It is available an extended parental allowance.

Parental social allowance (*‘subsídio social parental’*): alongside the parental allowance, this is the main policy that provide financial compensation to the parents of a born child. This allowance is paid to the parents who are not qualify for the parental allowance.

Besides the ones previously mentioned, there are other less important benefits (or specific bonus or complements to the main benefits) in the Portuguese Social Security system, which provide protection in areas like disability, death, or social inclusion.

1.3 Social contributions

Employee and employer Social Security contributions (*‘contribuições do trabalhador por conta de outrem e da entidade patronal’*): contributions are shared between employees (23.75%) and employers (11%). There are several different regimes reflecting specific occupations such as non-profit organizations, rural workers, football players, clergy, domestic services, young people in their first job, or disabled people.

Self-employed Social Security contributions (*‘contribuições dos trabalhadores independentes’*): from 2011 to 2018, self-employed workers paid a flat rate of 29.6% upon a reference income. Since 2019, the rate changed to 21.4% over the actual income.

Civil servants’ contributions: workers that entered the Civil Service before 2006 belong to a separate Social Security scheme. From January 1st of 2006, new civil servants (and their employer institutions) contribute to the regular Social Security scheme and follow the general regime rules.

1.4 Taxes

Personal income tax (*‘Imposto sobre o Rendimento das Pessoas Singulares’, IRS*): paid by residents in Portugal and by non-residents receiving income in Portugal. If the resident is part of a family unit composed by spouse and dependents, the tax is applied to all the family members. Capital income is taxed at source (withholdings) and may be left out of the final tax calculations, meaning that a different tax rate can be applied. Labour income is also taxed at source, but it is re-evaluated at the annual tax calculations stage.

Corporate income tax (*‘Imposto sobre o Rendimento das Pessoas Coletivas’, IRC*): paid by companies on their profits at a flat rate of 21%. There is also a local government levy (*‘Derrama’*).

Property transfer municipal tax (*‘Imposto Municipal sobre as Transmissões Onerosas de Imóveis’, IMT*): local government tax on real estate transactions.

Property municipal tax (*‘Imposto Municipal sobre Imóveis’, IMI*): local government tax on rural and urban properties. In 2017, a new extension (*AIMI*) was created for highly valued real estates, which provides funding for the Social Security Financial Stabilisation Fund.

Value Added Tax (*‘Imposto sobre o Valor Acrescentado’, IVA*): general rate of 23%. Lower rates apply to specific classes of goods and in the autonomous regions of Azores and Madeira.

Special taxes on consumption include **alcohol duty/tax** (*‘Imposto sobre o Alcool e as Bebidas Alcoólicas’, IABA*), **fuel duty/tax** (*‘Imposto sobre Produtos Petrolíferos e Energéticos’, ISP*) and **tobacco duty/tax** (*‘Imposto sobre o Tabaco’, IT*).

Taxes on vehicles include the sales tax over new cars (*‘Imposto Sobre Veículos’, ISV*) and the annual **vehicles tax** (*‘Imposto Único de Circulação’, IUC*).

Besides the ones previously mentioned, there are other less important taxes in the Portuguese tax system.

1.5 COVID-19 temporary measures

The COVID-19 outbreak, classified as a Pandemic by the World Health Organization on March 2020, also spread to Portugal, where State of Emergency was declared on March 18th, 2020. This outbreak has a very significant social and economic impact, generating a high degree of uncertainty for the households, companies, and entities. Governments had to quickly respond during the crisis, and were called to support those who most needed, to help them get through the main challenges that people are facing now and that will be foreseen in the mid- and long-term.

As a first step, Portuguese Government put in order a set of measures to reduce economic activity, to mitigate the spread of the disease. But then, measures to foster economic activity and to support households' income were also needed.

The measures that are being implemented to mitigate COVID-19 effects are constantly under revision and subject to change. Notwithstanding, the main ones currently in force, aimed at households, workers, and companies, are the following:

- Treasury support with credit lines, preferably aimed at SME and companies within the most affected sectors (tourism, accommodation), to foster economic recovery. Also, the option of credit default to companies regardless of its size.
- Credit default also for the households (moratorium that suspends the payment of instalments), as well as deferral of housing rent payment.
- Extraordinary extension of unemployment benefits and all benefits of the social security system that guarantee subsistence minimums whose concession period or renewal period ends before the prevention measures cease.
- While the employee does not work because he must assist his child or grandchild, he is entitled to the respective daily allowance (100% of the reference remuneration in case of child assistance, and 65% for grandchild).
- It was granted the deferral of some taxes and contributions. For instance, there was the postponement and extension of the deadlines regarding corporate income tax compliance; fractional delivery of PIT and VAT withholdings; deferral of 2/3 of social contributions of the employer's responsibility from March, April and May 2020 to the 2nd semester of 2020, paid through a 3- or 6-month instalment plan (also applied to self-employed, regarding the contributions of April, May and June).
- The one-off allocation (of the same amount), in September, of the child benefit, is going to be paid to all children in the 1st, 2nd and 3rd income brackets.
- Some workers entered a simplified layoff scheme. But whether there was a reduction in the normal working time or suspension of the contract, workers were entitled to a minimum amount equal to 2/3 of their gross salary. This compensation may not be less than €635.00 or more than €1,905.00.
- Employers with layoff workers were entitled to a Social Security support in the amount of 70% of 2/3 of the normal gross wage of each worker covered, up to a limit of €1,333.5 per worker, to support the payment of wages. It was also granted exemption from Social Security Contributions for employers for the duration of the support.
- It will also be provided special financial support for self-employed with significant reduction of their economic activity, worth 1/3 of the median compensation, and it will be allowed deferral of social contributions. Compensation ranges between €438.81 and €635, depending on previous contributions to Social Security. Self-employed that contributed with the minimum level of contribution (€20) are granted an income support of €219.41. Self-employed workers are eligible to income support if they contributed three consecutive months prior to the lockdown, or six months with gaps in the last twelve months prior to the lockdown.

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1 Scope of simulation

Table 2.1 Simulation of benefits in EUROMOD, 2017-2020

	Variable	Treatment in EUROMOD		Why it is not fully simulated?
		2017-2019	2020	
Survivors' pension	psu	I	I	No data on the loss of family members.
Disability benefit	pdi	I	I	No data on disability incidence.
Sickness cash benefit	bhl	I	I	No data on sick leave incidence
Other family benefits	bfa	I	I	
Other social assistance benefits	bsaot	I	I	Composed of several benefits impossible to split and simulate.
Education benefit	bed	I	I	
Housing benefit	bho	I	I	
Child benefit	bch_s	S	S	
Prenatal family allowance	bmapr_s	S	S	However, the simulation is switched off in the baseline, i.e., non-simulated components (<i>bfa</i>) are used.
Parental allowance	bplct_s	S	S	
Parental social allowance	bplnc_s	S	S	
Old age contributory pension	poact_s	PS	PS	No data on contributory career (years, amount of contributions). Simulation of the minimum pension only.
Old age social pension	poanc_s	PS	PS	No data on contributory career (years, amount of contributions). Split of the original microdata aggregated variable related to old age pensions only.
Solidarity supplement for the elderly	bsaoa_s	PS	PS	No data on the descendants of beneficiaries that do not live in the same household. No data on residence in Social Security funded institutions. Difficulty in dealing with non-take up issue.
Social integration income	bsa00_s	PS	PS	Difficulty in matching the simulated family unit with the actual one. Difficulty in dealing with non-take up issue.
Unemployment insurance	bunct_s	PS	PS	No data on the reason for becoming unemployed. No data on benefits history. Split of the original aggregated variable only. Benefit recipients are imputed using information of the reported receipt of the respective benefit in SILC data (<i>i.e.</i> , simulations are conditional on the report of the benefit receipt in the microdata).
Unemployment assistance	bunnc_s	PS	PS	
Wage compensation scheme COVID-19	bwkmcee_s	-	S	This benefit can only produce results if the model is run in combination with the LMA add-on.
Self-employed compensation scheme COVID-19	bwkmcse_s	-	PS	General rules assumed. Significantly influenced by individual choices. This benefit can only produce results if the model is run in combination with the LMA add-on.

Note: “**I**” included in the micro-data but not simulated; “**PS**” partially simulated as some of its applicable rules are not simulated; “**S**” simulated, although some minor or very specific rules may not be simulated.

Table 2.2 Simulation of taxes and social contributions in EUROMOD, 2017-2020

	Variable	Treatment in EUROMOD 2017-2020	Why it is not fully simulated?
Personal income tax	tin_s	PS	Influenced by individual choices. No data available on some of the tax allowances (particularly health, one of the most important).
Property transfer municipal tax		E	
Property municipal tax		E	No data on wealth
Value added tax		E	
Employee social insurance contribution	tscee_s	S	General rules assumed.
Employer social insurance contribution	tscer_s	S	General rules assumed.
Self-employed social insurance contribution	tscse_s	PS	General rules assumed. Significantly influenced by individual choices.

Notes: “E” *excluded* from the model’s scope, as it is neither included in the microdata nor simulated by EUROMOD; “PS” *partially simulated* as some of its applicable rules are not simulated; “S” *simulated*, although some minor or very specific rules may not be simulated.

2.1.1 Part-simulated tax-benefit components

The unemployment insurance (*bunct_s*) and unemployment assistance (*bunnc_s*) benefits are part-simulated because there is no data on the contribution history of unemployed individuals, nor on the previous earnings before unemployment. Thus, the simulation is restricted only to those individuals who have reported the unemployment benefit in the underlying microdata.

2.1.2 Structural changes in 2017

Social Support Index: the SSI was updated to €421.32 (previous amount: €419.22).

Unemployment benefit – insurance: for claims after April 2012, after six months the benefit amount was reduced by 10% (even if it becomes lower than the lower bound). From June 2017, the decrease cannot result in an amount lower than the lower bound, except in the cases where the amount was already lower than it. (NOT SIMULATED)

Pensions: change in the legal retirement age to 66 years and 3 months.

Minimum pension:

- Change in the minimum amount guaranteed for working career lengths inferior to 15 years: every pension amounting up to 2 x SSI is updated by 0.5%.
- Extraordinary update in pensions: in August, extraordinary increase for pensions earned by people who have a total pension income up to 1.5 x SSI, from €6 to €10 depending on specific criteria.

Old age social pension: change in the base amount to €203.35 and in the extraordinary solidarity supplement to €17.70 and €35.38 (depending on age).

Solidarity supplement for the elderly: increase in the reference value to €5,084.30/year.

Social integration income: increase in the reference amount to €183.84.

Child benefit:

- Age brackets are rescheduled: a new age bracket is created – older than 12 months up until 36 months – granting these children a higher amount than previously. The goal is to further increase this amount

over the years, so that in 2019, children aged 12-36 months will be entitled to the same level of protection that was provided for children in their first year of life.

- 4th income bracket is reinstated, but only for children aged up to 36 months.
- Supplement for large families: due to the change in the amounts for children in the 12-36 months age bracket, the supplement for large families became equal to the amount paid to children aged 36+ in each of the income brackets.

Pensions and civil servants' wages cuts: reductions on pensions and wages implemented during the adjustment period were fully extinguished.

2.1.3 Structural changes in 2018

Social Support Index: the SSI was updated to €428.90 (previous amount: €421.32).

Unemployment benefit – insurance: elimination of the policy rule that applied a 10% reduction in the amount paid after six months. (NOT SIMULATED)

Unemployment benefit – assistance: previous recipients of the means-tested social unemployment benefit who are unemployed six months (one year before 2018) after the end of the benefit and still fulfil the remaining conditions are entitled to a new six-month benefit amounting 80% of the previous one. (NOT SIMULATED)

Pensions: change in the legal retirement age to 66 years and 4 months.

Minimum pension:

- Change in the minimum amount guaranteed for working career lengths inferior to 15 years: every pension amounting up to 2 x SSI is updated by 1.8%.
- Extraordinary update in pensions: in August, second extraordinary increase for pensions earned by people who have a total pension income up to 1.5 x SSI, from €6 to €10 depending on specific criteria.

Old age social pension: change in the base amount to €207.01 and in the extraordinary solidarity supplement to €18.02 and €36.02 (depending on age).

Solidarity supplement for the elderly:

- Increase in the reference value to €5,175.82/year.
- Coverage increase: to compensate the penalties in early pensions since 2014, an exception to the minimum age is granted in cases where the pensioner had an early pension starting since January 2014. (NOT SIMULATED)
- From October 2018, invalidity pensioners who are not recipients of the new benefit for handicapped people, may also be entitled to the Solidarity supplement for the elderly.

Social integration income: increase in the reference amount to €186.68.

Child benefit: the gradual changes introduced in 2017 continued (amount paid to children aged between 12 and 36 months increased). The amount paid in the 4th bracket increased extraordinarily to converge with the 2011 level.

Personal Income Tax: income brackets were segmented, creating two new ones (2nd and 4th).

Extraordinary surtax on income: ceased to be applied.

2.1.4 Structural changes in 2019

Social Support Index: the SSI was updated to €435.76 (previous amount: €428.90).

Pensions: change in the legal retirement age to 66 years and 5 months.

Minimum pension:

- Change in the minimum amount guaranteed for working career lengths inferior to 15 years: every pension amounting up to 2 x SSI is updated by 1.6%.
- Extraordinary update in pensions: in January, third extraordinary increase for pensions earned by people who have a total pension income up to 1.5 x SSI, from €6 to €10 depending on specific criteria.

Old age social pension: change in the base amount to €210.32 and in the extraordinary solidarity supplement to €18.31 and €36.60 (depending on age).

Solidarity supplement for the elderly: increase in the reference value to €5,258.63/year.

Social integration income: increase in the reference amount to €189.66.

Child benefit:

- Extension of the 4th income bracket age: the special age condition regarding the 4th income bracket is eliminated. There is an extension to twice the time of support for those in the 4th income bracket: before these families only received child benefits until the child reaches 36 months. Now, a fixed amount of €38.31 is paid until the child is 6 years old.
- Amounts of the intermediate age bracket are updated: there will be a gradual increase in child benefits in the age bracket between 12 and 36 months. The goal is to further increase these amounts so that in July children aged 12-36 months will be entitled to the same level of protection that was provided for children in their first year of life, within each income bracket.

Self-employed social contributions: self-employed scheme has undergone several changes. Base of incidence is now the actual income (instead of a conventional income based on brackets). The regular contribution rate is now 21.4% (previous amount: 29.6%).

Personal income tax:

- Self-employed net income guarantee (*‘mínimo de existência’*): self-employees start being covered by the PIT net income guarantee. This means that now these workers also have part of their income tax-free, similarly to what already happened in previous years with dependent employees. Net income guarantee should then also include self-employment income (*yse*).
- Self-employment tax allowance: previously it was assumed a 25% tax allowance on self-employment income. Since 2019, for amounts higher than €27,360, the tax allowance is *yse* x 15% – €4,104 (can be higher, when eligible justifications/expenses are presented).

2.1.5 Structural changes in 2020

Social Support Index: the SSI was updated to €438.81 (previous amount: €435.76).

Minimum pension:

- Change in the minimum amount guaranteed for working career lengths inferior to 15 years: every pension amounting up to 2 x SSI is updated by 0.7%.
- Extraordinary update in pensions: in May, fourth extraordinary increase for pensions earned by people who have a total pension income up to 1.5 x SSI, from €6 to €10 depending on specific criteria.

Old age social pension: change in the base amount to €211.79 and in the extraordinary solidarity supplement to €18.44 and €36.86 (depending on age).

Solidarity supplement for the elderly: change in the ‘family solidarity’. Children/descendants’ income in the second- and third-income bracket cease to be considered in the recipient’s assessed income.

Child benefit: elimination of the lower age bracket. The age bracket up to 12 months cease to exist and now children aged up to 36 months will be entitled to the same level of protection that was provided for children in their first year of life, within each income bracket.

Prenatal family allowance: introduction of a 4th income bracket, a new upper income bracket with the upper bound of 2.5 x 14 x SSI.

Personal income tax:

- Income brackets limits updated by 0.3%, keeping the applicable marginal rates unchanged.
- Tax credits regarding taxpayers and their dependent children: until 2019, dependent children entitled to an automatic tax credit of €600 (€726 if the child is under 3 years old). Since 2020, each child older than 3 years old continues to enable an automatic tax credit of €600 (and of €726 if the child is under 3 years old), but for families with two or more children, the tax credit increases from €726 to €900 for the second and subsequent children (if they are aged up to 3 years old), regardless of the age of the first child. That is, the increase is now of €300 (instead of €126), starting from the second child when there are two or more dependents who do not exceed 3 years old.
- Partial exemption for young people between 18 and 26 years old, who earn dependent income, the first three years of work, according to the following amounts per year of work:
 - 1st year: 30%, with a limit of €3,291 (7.5 x SSI).
 - 2nd year: 20%, with a limit of €2,194 (5 x SSI).
 - 3rd year: 10%, with a limit of €1,097 (2.5 x SSI).
- New exemption for dependent children who are still studying, up to 5 x SSI (€2,194.04).

COVID-19 temporary measures:

- Wage compensation scheme COVID-19: workers that entered in the simplified layoff scheme were entitled to receive a minimum amount equal to 2/3 of their gross salary.
- Self-employed compensation scheme COVID-19: self-employed with significant reduction of their economic activity were entitled to receive special financial support, worth 1/3 of the median compensation. Self-employed that only contributed with the minimum level of contribution (€20) are granted an income support of €219.41.

2.2 Order of simulation and interdependencies

The following table shows the benefits and taxes simulated by EUROMOD for the years of 2017-2020. As there were only a few structural changes in the Portuguese tax-benefit system during this period (excluding, naturally, the COVID-19 temporary measures), the order by which the policies are simulated remains unchanged.

Essentially, the simulation order results from policies’ interdependence, as the income simulated by some policies is then taken as an input by others. For example, the minimum wage and minimum pension policies (as well as the wage compensation scheme for employees related with the COVID-19¹) are simulated first, as their outcomes are employment and pension’s income, which will be used by subsequent policies.

The simulation of social contributions comes next, as employment and COVID-related compensation schemes are subject to social contributions. Importantly, the simulation of the social contributions of the

¹ COVID-19 monetary compensation schemes can only produce results if the model is run in combination with the LMA add-on. For more information about the modelling of labour market transitions, please consult the “Simulating labour market transitions in EUROMOD” document.

self-employed is repeated, as, first, the contributory base of self-employed is used as input to determine the final amount of the COVID-19 compensation scheme and, second, social contributions are paid on the resulting compensation for self-employed.

Unemployment benefits should be simulated next, as all inputs required are now available (either from the original data or simulated) and its output (unemployment benefit income) will be used after.

Then parental leave benefits are simulated² as their income tests include unemployment benefits and pensions.

Child benefits comes next, although it is not used in later policies, and therefore its ordering becomes irrelevant.

All necessary inputs are now available to simulate the personal income tax and the tax on capital income.

Finally, the minimum means-tested schemes and social integration income (although the order is now irrelevant).

Table 2.3 EUROMOD spine: order of simulation, 2017-2020

Policy	2017-2019	2020	
SetDefault_pt	on	on	DEF: DEFAULT VALUES FOR VARIABLES
uprate_pt	on	on	DEF: UPDATING FACTORS
Uprate_bands_pt	on	on	DEF: UPDATING IN BANDS: PENSIONS
ConstDef_pt	on	on	DEF: CONSTANTS
ilsdef_pt	on	on	DEF: STANDARDISED INCOME LISTS
ilsUDBdef_pt	on	on	DEF: UDB-RELATED STANDARDISED INCOME LISTS
Ildef_pt	on	on	DEF: NON-STANDARD INCOME CONCEPTS
random_pt	on	on	DEF: Random assignment for bsaoa_s / COVID-19 compensation schemes
TransLMA_pt	n/a	off	DEF: select individuals that undergo the transition to wage comp. / unemployment (LMA transitions)
tundef_pt	on	on	DEF: ASSESSMENT UNITS
InitVars_pt	on	on	DEF: Initialise variables
yem_pt	switch	switch	INC: Minimum wage (salario mínimo)
yempb_pt	n/a	n/a	INC: Public wages cuts
poacm_pt	off	off	BEN: Minimum pension (Pensões mínimas)
pcuts_pt	n/a	n/a	INC: Pensions cuts and solidarity contributions
neg_pt	on	on	DEF: recode negative self-employment income to zero
yemcomp_pt	n/a	on	BEN: Wage compensation scheme Covid-19
tscee_pt	on	on	SIC: Employee social insurance contributions
tscer_pt	on	on	SIC: Employer social insurance contribution
tscse_pt	on	on	SIC: Self-employed social insurance contribution
ysecomp_pt	n/a	on	BEN: Self-employment income compensation scheme Covid-19
tscse_pt	on	on	SIC: Self-employed social insurance contribution (repetition of policy with order 23)
bunct_pt	on	on	BEN: Unemployment insurance (Subsídio de desemprego) PART-SIMULATED
bunnc_pt	on	on	BEN: Unemployment assistance (subsídio social de desemprego) PART-SIMULATED
buncm_pt	on	on	BEN: Unemployment benefit bonus
poanc_pt	on	on	BEN: Social Pension (Pensão social de velhice)
bmapr_pt	switch	switch	BEN: Prenatal family allowance (Abono de família pré-natal)

² Even though their simulation is switched off in the baseline. See section 2.3 and the corresponding policies' descriptions for more information.

Policy	2017-2019	2020	
bplct_pt	switch	switch	BEN: Parental allowance (Subsídio parental)
bplnc_pt	switch	switch	BEN: Parental social allowance (Subsídio social parental)
bch_pt	on	on	BEN: Family benefit (Abono de família para crianças e jovens)
tin00_pt	on	on	TAX: Progressive personal income tax
tiniy_pt	on	on	TAX: Income tax on capital income
bsaoa_pt	on	on	BEN: Solidarity supplement for older persons (Complemento Solidário para Idosos - CSI)
bsa00_pt	on	on	BEN: Social insertion income (Rendimento social de inserção ou mínimo garantido)
output_std_pt	on	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
output_std_hh_pt	off	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

2.3 Policy extensions

There are four extensions included in the Portuguese model:

- **Uprating by Average Adjustment (UAA)**, allowing the user to choose between uprating (non-simulated) public pensions based on the growth in average amounts (if extension is on) or by using statutory indexation rules (if extension is off). The default for the baselines is off.
- **Minimum Wage Adjustment (MWA)**, allowing the user to switch on/off the minimum wage simulation. The default for the baselines is off.
- **Full Year Adjustments (FYA)**. While EUROMOD usually simulates policies as of June 30th of the respective year, it is also possible to simulate within-year policy changes. It is now switched off in the baseline scenario.
- **Parental Benefits Extension (PBE)**, allowing the user to choose between the observed (non-simulated) parental leave benefits (extension off) or the simulated ones (extension on). The default for the baselines is off.

Apart from the abovementioned extensions, there are two policies that are **turned off** in the baseline:

- ‘**minimum pensions**’ (*poacm_pt*). This policy is switched off in the baseline due to its underestimating effect on elderly poverty.
- ‘**labour market transitions**’ (*TransLMA_pt*). This policy defines the individuals that are selected to undergo transitions to monetary compensation schemes and/or unemployment. The transitions are only enabled if used together with the Labour Market Adjustments (LMA) add-on (i.e. the LMA add-on switches on this policy automatically). The transitions are based on a random allocation of individuals and they might be triggered by feeding the parameters of this policy with official or hypothetical information³. This policy, in combination with the LMA add-on, enables the simulation of the wage compensation scheme (*yemcomp_pt*) and the self-employment compensation scheme (*ysecomp_pt*).

³ For more information about the modelling of labour market transitions, please consult the “Simulating labour market transitions in EUROMOD” document.

2.4 Social benefits

2.4.1 Unemployment benefit – insurance (*bunct_s*)

The unemployment benefits cannot be fully simulated in EUROMOD, as there is no information on the reason why people became unemployed (voluntary or compulsory), nor on the duration of the most recent jobs. These constraints apply to the main unemployment benefit – called contributory or insurance unemployment benefit – and to the social unemployment benefit (see next section), also referred to as non-contributory benefit (although there was some limited contribution) or assistance unemployment benefit.

Nonetheless, a split of the original variable in the database (*bun*) can be simulated by observing some of the occurrences more easily associated with the latter kind of benefit (see next section for a more detailed description of the splitting process).

- **Definition**

The unit of analysis is the individual. There are no benefit units (*i.e.* the units are single), and no income test.

- **Eligibility conditions**

- Have been fired (exclusively by decision of the employer) after working for at least 360 days over the previous 24 months (insurance period). It excludes self-employment.
- Actively looking for work.

- **Benefit amount**

- Reference remuneration: wages' average of the first 12 of the 14 months before the firing date.
- Amount: 65% of the reference remuneration. Lower bound: SSI unless amount is higher than that remuneration. Upper bound: 2.5 x SSI.
- Bonus of 10% for couples with children if both partners claim insurance or assistance unemployment benefit.

- **Unemployment benefit for chairmen and self-employed**

Chairmen and self-employed may also be entitled to an unemployment benefit, under specific rules. (NOT SIMULATED)

Table 2.4 Characteristics of the insurance unemployment benefit

		2017		2018-2020	
Eligibility	Contribution period	1 year out of the last 2		No changes	
	Other conditions	Have been fired & listed on the unemployment register (actively looking for work)		No changes	
	Eligibility of self-employed*	Yes (under specific rules)		No changes	
Payment	Contribution base	Wages' average of the first 12 of the 14 months before the firing date		No changes	
	Basic amount	65% of the contribution base		No changes	
	Additional amount	10% bonus for couples with children if both partners claim any unemployment benefit		No changes	
	Floor	SSI		No changes	
	Ceiling	2.5 x SSI		No changes	
Duration in months	Up to 29 years old	Up to 14 months	5 months	No changes	
		15-23 months	7 months	No changes	
		24+ months	11 months	No changes	
		Bonus	30 days for every 5 years employed	No changes	
	30-39 years old	Up to 14 months	6 months	No changes	
		15-23 months	11 months	No changes	
		24+ months	14 months	No changes	
		Bonus	30 days for every 5 years employed	No changes	
	40-49 years old	Up to 14 months	7 months	No changes	
		15-23 months	12 months	No changes	
		24+ months	18 months	No changes	
		Bonus	45 days for every 5 years employed	No changes	
	50+ years old	Up to 14 months	9 months	No changes	
		15-23 months	16 months	No changes	
		24+ months	18 months	No changes	
		Bonus	60 days for every 5 years employed	No changes	
	Subject to	Taxes	No		No changes
		SIC	No		No changes

* (NOT SIMULATED)

2.4.2 Unemployment benefit – assistance (*bunnc_s*)

As mentioned above, the unemployment benefits cannot be fully simulated, but it is possible to simulate a split of the original unemployment benefit variable (*bun*) into assistance/social and insurance/contributory related variables (*bunnc_s* and *bunct_s*, respectively).

- **Definition**

Either this benefit is granted as an initial benefit to claimants who have not worked long enough to claim the main unemployment benefit, or as an extension to those who cease to be entitled to the main unemployment benefit (as long as they meet the additional conditions listed below).

Unlike the main benefit, the social benefit considers both individual and family units. Family units are defined as:

- The individual;
- His/her partner;
- Any dependent children (those below 18 years old).

- **Eligibility conditions**

- For the ‘initial benefit modality’: Have been fired (exclusively by decision of the employer) after working for at least 180 days over the previous 12 months (insurance period). It excludes self-employment.
- For the ‘extended modality’: Having ended the main assistance unemployment benefit.
- For the long-term unemployed: Previous recipients of the means-tested social unemployment benefit who are still unemployed six months (one year before 2018) after the end of the benefit and still fulfil the remaining conditions.
- Actively looking for work.

- **Income test**

The family unit equivalent income must be less than 80% of the SSI. The equivalent income is defined by total income after applying the following equivalence scale:

- Recipient – 1
- Every other adult (18+) – 0.7
- Every under-18 – 0.5

Table 2.5 Unemployment benefit – assistance: assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory (simulated)
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypr	INCOME: Property
ypt	INCOME: Private transfers received
yyi	INCOME: Investment
bho	BENEFIT/PENSION: Housing (new from August 2010) ⁽¹⁾

⁽¹⁾ For non-monetary housing benefits (benefits in kind), the maximum amount of rent subsidy is considered, in progressive terms along the duration of the unemployment benefit. (NOT SIMULATED)

Specific rules regarding investment and property income (NOT SIMULATED):

- Financial assets: If 5% of the total financial assets is higher than the yearly investment income declared, that will be the amount considered. The family's total financial assets amount must be lower than 240 x SSI.
- Property assets: If 5% of the total estate assets is higher than the yearly property income declared, that will be the amount considered. Total estate assets must not include the house where the household lives permanently, at least until the amount of 600 x SSI.

- ***Benefit amount***

- Amount: 80% of the SSI for individuals in a single benefit unit and 100% of the SSI if the benefit unit size is larger than one.
- Bonus of 10% for couples with children if both partners claim insurance or assistance unemployment benefit.
- Amount of the long-term unemployed benefit: 80% of the previous one.

- ***Benefit's length***

‘Initial modality’: Same as for the insurance unemployment benefit.

‘Extended modality’: if age at the end of the insurance benefit is below 40 years old, the length is half of that benefit's length. Otherwise, it is the same as the ‘initial modality’.

- ***Split***

The original splitting of the unemployment benefit variable (*bun*) into two variables, namely the ones respecting to the contributory unemployment benefit (*bunct*) and the non-contributory unemployment benefit (*bunnc*), was made through the EU-SILC variables py092g and py091g, respectively.

Table 2.6 Characteristics of the assistance unemployment benefit

		2017	2018-2020
Eligibility	Contribution period	180 days over the last year (<i>“initial modality”</i>) OR having ended the main unemployment benefit (<i>“extended modality”</i>)	No changes
	Other conditions	Family unit equivalent income < 80% of the SSI & actively looking for work)	No changes
	Eligibility of self-employed	No	No changes
Payment	Contribution base	n/a	No changes
	Basic amount	80% of the SSI for single benefit units OR 100% of the SSI for larger benefit units	No changes
	Additional amount	10% bonus for couples with children if both partners claim any unemployment benefit	No changes
	Floor	No	No changes
	Ceiling	No	No changes
Duration in months	Standard	<i>Initial modality</i> : same as for the insurance unemployment benefit	No changes
	Special cases	<i>Extended modality</i> : if < 40 years old, the length is half of that benefit’s length. Otherwise, it is the same as the “initial modality”	No changes
Subject to	Taxes	No	No changes
	SIC	No	No changes

2.4.3 Minimum pension (*poacm_s*)

The simulation of the old age contributory pensions is not achievable using the available microdata, due to the lack of information on several attributes. However, it is possible to simulate the non-contributory pensions and, with some degree of simplification, the level of minimum pensions. Furthermore, this methodology offers the possibility of ‘correcting’ the original data regarding the low declared old age pension income.

- **Definition**

The unit of analysis is the individual.

- **Eligibility conditions**

Minimum pensions are guaranteed to individuals with past contributions that retire at legal age or later and have a statutory pension amount lower than the minimum that the pensioner is entitled.

- **Benefit amount**

Minimum pensions are composed by two parts: the statutory pension and the ‘social supplement’ (difference between the statutory and the minimum amount). The former is financed by the Social Security budget, while the latter is financed by the state budget. The minimum value is fixed each year and varies with the pensioners’ working career length. In the simulation, the variable *liwwh* (work history, in months) is used as a proxy to the working career length. Thus, every old age contributory pension (*poact*) in the database is ‘corrected’ accordingly to the following grid:

Table 2.7 Old age contributory pension: minimum amounts, 2017-2020 (monthly, in €)

Career length	2017	2018	2019	2020
Less than 15 years	264.32	269.08	273.39	275.30
15 to 20 years	277.27	282.26	286.78	288.79
21 to 30 years	305.96	311.47	316.45	318.67
More than 30 years	382.46	389.34	395.57	398.34

- **EUROMOD notes**

This policy is switched off (*i.e.*, not executed) in the baseline, due to its underestimating effect on elderly poverty.

2.4.4 Old age social pension (*poanc_s*)

- **Definition**

The recipient is the individual, although if living with a partner, the income of the couple is considered in the income test.

- **Eligibility conditions**

Minimum age: 66 years old and 3 months in 2017, 66 years and 4 months in 2018, and 66 years and 5 months in 2019 and 2020.

- **Income test**

- Single recipient: monthly gross income up to 40% of the SSI.
- Couple: monthly gross income up to 60% of the SSI.

The framework of the old age social pension is unclear regarding which types of income should be included in the means-test evaluation, but they should include, at least:

Table 2.8 Old age social pension assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
bun	BENEFIT/PENSION: Unemployment
poact_s	BENEFIT/PENSION: Old age: contributory
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypr	INCOME: Property
bsaot	Other social assistance benefits
bho	BENEFIT/PENSION: Housing
yyi	INCOME: Investment
yot	INCOME: Other

Important rule to consider while simulating the old age social pension (especially when testing couples): although the social pension itself (of the partner, in this case) amounts to the total couple income, it should be considered only its base value. So, for example, Extraordinary Solidarity Supplement should not be included.

- **Benefit amount**

The monthly amount of the old age social pension is €211.79 in 2020. Notwithstanding, besides that amount, every recipient receives an Extraordinary Solidarity Supplement (*Complemento Extraordinário de Solidariedade*), that differs according to their age (€18.44 for those aged up to 70 years old, and €36.86 for those older than 70 years old).

Table 2.9 Old age social pension amounts, 2017-2020 (monthly, in €)

	2017		2018		2019		2020	
	65-69	70+	65-69	70+	65-69	70+	65-69	70+
Old age social pension base amount	203.35		207.01		210.32		211.79	
Extraordinary solidarity supplement	17.70	35.38	18.02	36.02	18.31	36.60	18.44	36.86
Sum	221.05	238.73	225.03	243.03	228.63	246.92	230.23	248.65

These amounts are paid monthly and there is a 13th (in July) and 14th (in December) extra payment in the same amounts. In 2017, the 14th payment was 50% distributed evenly by the 12 months, while the remaining 50% were paid in December. But in 2018 it was again fully paid in December.

- *Split*

The original EU-SILC py102g, py103g and py104g variables are used to split old age benefits into old age contributory pension (*poact*) and old age social pension (*poanc*). The values of this initial splitting are checked to assure that the value of *poanc* cannot be higher than the maximum value of the old age social pension.

This disaggregation should be done according to the policy rules described before and if the original value of the variable *poa* is within the band [-3.5%, +3.5%] of the individual income.

2.4.5 Solidarity supplement for the elderly (*bsaoa_s*)

• **Definition**

The recipient is the individual, although if living with a partner, the income of the couple is observed. Their children/descendants' income is also indirectly observed. Thus, the family unit is the individual, if living alone, or the couple otherwise.

Equivalence scale for the recipient's 'family unit': 1 for the single recipient and 1.75 for the couple. This benefit also considers a second family unit: the household of the recipient's children.

• **Eligibility conditions**

Minimum age: 66 years old and 3 months in 2017, 66 years and 4 months in 2018, and 66 years and 5 months in 2019 and 2020. Since 2018, to compensate the penalties in early pensions since 2014, an exception to the minimum age is granted in cases where the pensioner has an early pension starting since January 2014. (NOT SIMULATED)

From October 2018, invalidity pensioners who are not recipients of the new benefit for handicapped people (*'prestação social para a inclusão'*), may also be entitled to the solidarity supplement.

• **Income test**

- Single recipient: annual gross income up to the reference amount.
- Couple: annual gross income up to 1.75 x reference amount. However, the single recipient means-test must also be met.

Table 2.10 Solidarity supplement for the elderly: reference value (RV), 2017-2020 (annual, in €)

	2017	2018	2019	2020
Single	5,084.30	5,175.82	5,258.63	5,258.63
Couple (1.75xsingle)	8,897.53	9,057.69	9,202.60	9,202.60

The income of both elements of the family unit (Y_1 and Y_2 in the formula in Table 2.15 below) include a wide range of income variables in EUROMOD, as listed below (although some types of income are impossible or difficult to simulate).

Table 2.11 Solidarity supplement for the elderly: assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment (only 65% of the amount)
bunct_s	BENEFIT/PENSION: Unemployment: insurance
bunnc_s	BENEFIT/PENSION: Unemployment: assistance
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory (simulated)
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypr	INCOME: Property
bsaot	Other social assistance benefits
bho	BENEFIT/PENSION: Housing
yy	INCOME: Investment
yot	INCOME: Other
ypt	INCOME: Private transfers
-	Family solidarity (not fully simulated – see below)
-	Institution attendance: annual subsidy paid by Social Security to social institutions. Impossible to simulate.
-	Income imputation from wealth: 5% of the value of financial assets (when this value is higher than the investment income declared) and 5% of real estate (when this value is higher than the property income declared). Impossible to simulate.

‘Family Solidarity’

As mentioned above, this benefit also considers the income of the recipients’ children/descendants. They are evaluated within their own households and comprise their own partners and any dependent children. The income level of each recipients’ descendants is thus observed, and the family solidarity income calculated. This income is then added to the recipients’ own income, and if a descendants’ income is high enough, the parent/recipient is excluded from the Solidarity Supplement for the elderly. However, it is only possible to simulate the Family Solidarity income when both the recipient and descendants live in the same household.

The types of income of the recipients’ descendants that are evaluated are:

Table 2.12 Solidarity supplement for the elderly: assessed income (Family Solidarity)

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
poa	BENEFIT/PENSION: Old age
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypt	INCOME: Private transfers
ypr	INCOME: Property
bsaot	Other social assistance benefits
bho	BENEFIT/PENSION: Housing

Then, the household’s total income is equivalised through an ‘OECD modified’ resembling scale of equivalence (1 for the first adult, 0.5 for other adults with more than 18 years old, and 0.3 for every child aged 0-17). The computed equivalent income is then used to position the descendant on a scale.

Table 2.13 Solidarity supplement for the elderly: Family Solidarity scale

Equivalent income	Rank
Below or equal to 2.5 x reference value (RV)	1 st
Between 2.5 and 3.5 x RV	2 nd
Between 3.5 and 5 x RV	3 rd
Above 5 x RV	4 th

Each ranking is translated into a Family Solidarity amount as defined in the table below.

Table 2.14 Solidarity supplement for the elderly: Family Solidarity amounts, 2017-2019

Rank	Family Solidarity (FS)	
	Parent (recipient) has no partner	Parent (recipient) has a partner
1 st	No FS	No FS
2 nd	5% of the RV	5% of the RV x 1.75
3 rd	10% of the RV	10% of the RV x 1.75
4 th	Automatic exclusion from the benefit	

This process is repeated for each descendant of the same recipient, and all FS amounts are then added to the recipient’s income. Until 2019, if the rank of one of these descendants is equal to 4, the parent is immediately excluded from the benefit. From 2020, children/descendants’ income in the second- and third income bracket also cease to be considered in the recipient’s assessed income.

Two important remarks:

- A descendant ‘generates’ a FS amount to each parent (and only to them). For example, if two recipients who live as a couple have a son in the 2nd rank, then each of them will be awarded an extra Solidarity Supplement for the elderly of 5% of €5,175.82 x 1.75. But if the person is the son of only one of the recipients, it will only ‘generate’ one extra amount awarded to the parent, and the partner will not be entitled to any Solidarity Supplement from this FS ‘source’.
- The FS only happens when a parent is a recipient. For example, if an elderly couple have a daughter together, but only the wife is a recipient, then she will only “generate” the FS to her mother.
- ***Benefit amount***

The amount paid is the difference between the reference value (€5,258.63 in 2020) and the annual income of the recipient. Calculations are simple when the recipient lives alone, but complicated when living in couples:

- When there is only one recipient in the couple, the amount paid is the minimum of two values: the difference between the reference value and the actual individual income of the recipient (or half of the actual income of the couple), and the difference between the ‘total equivalent reference value’ (€5,258.63 x 1.75 in 2020) and the couple's total income.
- When both are recipients, the amount paid is given by the difference between the ‘total equivalent reference value’ and the couple's total income. This amount is then divided between the two recipients according to specific rules.

Table 2.15 Calculation of the solidarity supplement for the elderly

Single recipient:	$amount = RV - Y_1$
Couple, one recipient:	$amount = \min \left\{ \begin{array}{l} RV - Y_1 \\ RV \times 1.75 - Y_1 - Y_2 \end{array} \right.$
Couple, two recipients:	$amount = RV \times 1.75 - Y_1 - Y_2$

Note: Y_1 is the total individual income of the sole recipient or of the first recipient in a couple where both are recipients, while Y_2 is the total individual income of the partner or second recipient in the couple. RV is the reference value. Y_1 and Y_2 include the FS, but only in the case of the recipients.

The solidarity supplement for the elderly is paid monthly, twelve times a year.

- **Split**

The EU-SILC hy060g variable (*social exclusion not elsewhere classified*) contains information about several benefits: solidarity supplement for the elderly, social integration income and others.

In EU-SILC UDB hy061g, hy062g and hy064g are missing and have the flag=-2. This implies that hy060g = hy063g and all the hy060g amount is non-contributive and means-tested. The option is to split *bsa* into *bsaoa* and *bsa00* and make *bsaot*=0 for all cases.

The solidarity supplement for the elderly is the first variable to get from the split, considering the rules of this policy. Basically, for households with a positive amount of this variable ($bsa > 0$) and with at least one person within the legal retirement age or more, the expected amount of solidarity supplement for the elderly is calculated. If the original value (*bsa*) is greater or equal to that expected amount, then the solidarity supplement is equal to that amount, otherwise it is equal to the original value of *bsa*.

- **EUROMOD notes**

Given the impossibility of simulating all means-tested conditions of the non-resident descendants, the simulation overestimates the number of recipients and the benefit amounts. Thus, the number of recipients was **calibrated** (*random_pt* policy) to guarantee consistency with official statistics.

2.4.6 Social integration income (*bsa00_s*)

• **Definition**

The unit of analysis is the family. This unit comprises:

- The head of the family;
- His/her partner;
- All his/her under-18 relatives;
- Other direct descendants of the head aged 18+ that are his dependents. Dependency is defined by having an income level up to 70% of the social pension.

Equivalence scale for income evaluation: 1 for the first adult (aged 18+); 0.7 for each additional adult; 0.5 for each child.

• **Eligibility conditions**

Individuals of all ages. However, the head of the family must be an adult (aged 18 or older).

• **Income test**

The family’s total income must be lower than their ‘Social Integration Income (SII) value’, which is equal to the scale of equivalence multiplied by the SII reference amount (€189.66 in 2020).

There is also a specific test on financial assets, which must be less than 60 x SSI. (NOT SIMULATED)

Table 2.16 Social integration income: assessed income

Variable	Label
yem	INCOME: Employment (only 80% of the amount)
yse	INCOME: Self-employment (only 80% of the amount)
bunct_s	BENEFIT/PENSION: Unemployment: insurance
bunnc_s	BENEFIT/PENSION: Unemployment: assistance
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory (simulated)
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypt	INCOME: Private transfers
ypr	INCOME: Property
yyi	INCOME: Investment
yot	INCOME: Other

• **Benefit amount**

The amount paid results from the difference between the ‘SII value’ and the family’s total income. The SII is paid in a monthly basis, twelve times a year.

Other modifications (beyond the equivalence scale and threshold) not documented here, can affect the benefits claiming, renewal and administrative processes, and may have a negative impact on the number of recipients, such as:

- New rules for new claims and renewals of the SII may increase the bureaucratic process and create additional difficulties to families, leading to an increase in non-take-up and exit issues.
- Increased emphasis in inspection checks to combat fraudulent claims.
- Individuals must now follow stricter rules concerning their integration programs. If an individual fails to attend a Social Security services meeting without reasonable motive, the benefit is cancelled.
- Individuals who live in institutions funded by the state (including jail) are no longer eligible.

- *Split*

SII is just one of the possible benefits included in the original variable *hy060g*. Previously, solidarity supplement for the elderly has been extracted by estimation from *hy060g*. The difference between *bsa* and *bsaoa* is attributed to *bsa00*.

- *EUROMOD notes*

The simulation of the social integration income (*bsa00_s*) is adjusted in a way such that individuals who were eligible for the solidarity supplement for the elderly (*bsaoa_s*) but did not take it up because of the calibration procedure, are automatically excluded from receiving *bsa00_s*.

2.4.7 Child benefit (*bch_s*)

• **Definition**

The unit of analysis is the family. The recipients are the children. The number of recipients is the only data needed for the equivalence scale calculations, although the family income is also observed.

It assumes a wider concept of benefit unit than the one that is generally used. The *de facto benefit* unit is a tax unit including the recipient child (or children), siblings, parents, tutors, and stepparents.

Equivalence scale for income evaluation: 1 for each recipient plus one (e.g., the income of a family with 2 recipient children is divided by 3).

• **Eligibility conditions**

Children up to 16 years old. It can be extended to individuals up to 24 years under certain conditions:

- Aged 17 or 18: if attending primary education (1st to 6th grade) or higher.
- Aged 19 or 20: if attending secondary education (7th to 12th grade) or higher.
- Until 24 years old: if attending higher/superior education.
- Also until 24 years old: if disabled children and receiving disability allowance (not simulated), and children not working.

• **Income test**

The annual ‘reference income’ cannot exceed 5 x SSI. It results from the total annual family unit income divided by the total number of recipients plus one. According to the ‘reference income’, families are ranked along four income brackets:

Table 2.17 Child benefit income brackets, 2017-2020

Income bracket	Income bracket upper bounds ⁽¹⁾	In 2020
1 st	0.5 x 14 x SSI	€3,071.67
2 nd	1.0 x 14 x SSI	€6,143.34
3 rd	1.5 x 14 x SSI	€9,215.01
4 th	2.5 x 14 x SSI	€15,358.35

⁽¹⁾ The SSI is not necessarily the amount of SSI in the year that the benefit is paid, but rather the amount that was in force in the income reference year. For example, in 2020 the income assessed will probably date to 2019 or even 2018, so it should be assessed by the SII amount of that corresponding year.

Table 2.18 Child benefit: assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment (70% of earnings, 20% of sales)
bunct_s	BENEFIT/PENSION: Unemployment: insurance
bunnc_s	BENEFIT/PENSION: Unemployment: assistance
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory (simulated)
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypr	INCOME: Property
yy	INCOME: Investment
yot	INCOME: Other

- **Benefit amount**

The amount paid every month depends on the child’s age and on the income bracket of the child’s family.

Table 2.19 Child benefit amounts, 2017 (monthly, in €)

Income bracket	From January to June			From July to December		
	<=12 months	>12 and <=36 months	>36 months	<=12 months	>12 and <=36 months	>36 months
1 st	146.42	54.90	36.60	146.42	73.21	36.60
2 nd	120.86	45.33	30.22	120.86	60.43	30.22
3 rd	95.08	38.64	27.35	95.08	49.93	27.35
4 th	9.46	9.46	-	18.91	18.91	-

Note: in EUROMOD it is used the average amounts referring to the two semesters.

Table 2.20 Child benefit amounts, 2018 (monthly, in €)

Income bracket	From January to June			From July to December		
	<=12 months	>12 and <=36 months	>36 months	<=12 months	>12 and <=36 months	>36 months
1 st	148.32	91.99	37.08	148.32	110.77	37.08
2 nd	122.43	75.93	30.61	122.43	91.43	30.61
3 rd	96.32	73.12	27.71	96.32	73.12	27.71
4 th	28.61	28.61	-	38.31	38.31	-

Note: in EUROMOD it is used the average amounts referring to the two semesters.

Table 2.21 Child benefit amounts, 2019 (monthly, in €)

Income bracket	From January to June				From July to December			
	<=12 months	>12 and <=36	>36 and <=72	>72 months	<=12 months	>12 and <=36	>36 and <=72	>72 months
1 st	149.85	130.31	43.44	37.46	149.85	149.85	49.95	37.46
2 nd	123.69	107.56	35.85	30.93	123.69	123.69	41.23	30.93
3 rd	97.31	85.22	28.41	28.00	97.31	97.31	32.44	28.00
4 th	48.35	48.35	16.12	-	58.39	58.39	19.46	-

Note: in EUROMOD it is used the average amounts referring to the two semesters.

Table 2.22 Child benefit amounts, 2020 (monthly, in €)

Income bracket	<=36 months	>36 and <=72 months	>72 months
1 st	149.85	49.95	37.46
2 nd	123.69	41.23	30.93
3 rd	97.31	32.44	28.00
4 th	58.39	19.46	-

Supplement for large families:

- Every child up to 36 months entitled to the benefit with one other sibling, receives an additional amount equal to what a child aged 36+ receive in the same income bracket.
- Every child up to 36 months entitled to the benefit with two or more other siblings, receives an additional amount equal to two times what a child aged 36+ receive in the same income bracket.

Number of payments: the child benefit is paid in a monthly basis, twelve times a year. There is an extra payment (of the same amount) in September, for children that fulfil the following conditions:

- The child's heir family is in the 1st income bracket.
- The child is between 6 and 16 years old (age attained during the civil year);
- The child attends school.

Bonus for lone parent families: 35% increase in the above amounts.

Education allowance: twice the amount of the benefit that the child is receiving. Conditions that must be fully observed:

- The family income bracket is the 1st or the 2nd.
- The child is attending the 10-12th grade.
- The child's age is less than 18 years (can be 18 if that age is attained during the school year).
- The child has school success. (NOT SIMULATED)

- *Split*

The EU-SILC variable hy050g (family/children related allowances) contains information regarding two benefits: child benefit (*bch*) and other family/children related allowances (*bfa*). The identification of the *bch* variable was done using the information of the EU-SILC variable hy053g (family/children-related allowances non-contributory and means-tested). The remains components of the variable hy050g were affected to *bfa*.

2.4.8 Prenatal family allowance (*bmapr_s*)

• **Brief description**

A pregnant woman receives the benefit. It is an allowance attribute to the pregnant woman from the 13th week of gestation, which aims to encourage motherhood by compensating for the increased costs during the period of pregnancy. The applicant cannot have a reference income higher than 1.5 x SSI x 14.

• **Definition**

The unit of analysis is the family.

• **Eligibility conditions**

- Have reached the 13th week of gestation.
- Be resident in Portugal or equivalent to a resident.
- Have the reference income equal to or less than the value established for the third income bracket (equal to or less than 1.5 x SSI x 14).
- Do not have financial capital more than 240 x SSI.

• **Income test**

The income brackets are established in the basis of the SSI.

The reference income is calculated by summing the total income of each family member divided by the number of children and young people entitled to the family allowance in that same household plus one and the number of unborn children.

Table 2.23 Prenatal family allowance income brackets, 2017-2020

Income bracket	Income bracket upper bounds	In 2020
1 st	0.5 x 14 x SSI	€3,071.67
2 nd	1.0 x 14 x SSI	€6,143.34
3 rd	1.5 x 14 x SSI	€9,215.01
4 th ⁽¹⁾	2.5 x 14 x SSI	€15,358.35

⁽¹⁾ This income bracket is only applicable in 2020.

Table 2.24 Prenatal family allowance: assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
bunct_s	BENEFIT/PENSION: Unemployment: insurance
bunnc_s	BENEFIT/PENSION: Unemployment: assistance
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory
psu	BENEFIT/PENSION: Survivors
bsaoa_s	BENEFIT/PENSION: Solidarity supplement for the elderly
bsa00_s	BENEFIT/PENSION: Social integration income
bsaot	BENEFIT/PENSION: Other social assistance benefits
bho	BENEFIT/PENSION: Housing benefits
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypt	INCOME: Private transfers
ypr	INCOME: Property
yy	INCOME: Investment
yot	INCOME: Other

- ***Benefit amount***

The prenatal family allowance is assigned for 6 months, from the month following that in which the 13th week of pregnancy is reached.

If the period of pregnancy is:

- Over 40 weeks, it is attributed for 6 months or until the month of birth, inclusive.
- Less than 40 weeks, it is attributed for 6 months, and can be accumulated with the child benefit after birth.

If an interruption of pregnancy occurs, it is attributed until the month of termination of pregnancy.

The amount of prenatal family allowance is variable based on the reference income of the household and corresponds to the amount of the child benefit in the first year of life. It is increased by 35% in single parenting situations.

Table 2.25 Prenatal family allowance amounts, 2017-2020 (monthly, in €)*

Income bracket	2017	2018	2019	2020
1 st	146.42	148.32	149.85	149.85
2 nd	120.86	122.43	123.69	123.69
3 rd	95.08	96.32	97.31	97.31
4 th	-	-	-	58.39

* The amounts in case of twins are doubled (tripled if triplets).

- ***Subject to taxes/SIC***

Not taxable. Not subject to SICs.

- *EUROMOD notes*

In the EUROMOD Public Release of 2021 (I3.0) this benefit is only simulated from 2015 to 2020. The simulation is, however, switched off as part of the baselines, i.e., non-simulated components (*bfa*) are being used.

The benefit can only be simulated for those women who already gave birth and therefore could be eligible for the allowance for up to 6 months before the childbirth during each policy year. The duration of this allowance depends on the month of birth of the child.

2.4.9 Parental allowance (*bplct_s*)

- **Brief description**

This benefit is intended for citizens beneficiaries of the Social Security system and is intended to replace the lost work income (of the mother and/or the father) during the period of childbirth leave. It is not compatible with work income and unemployment benefits (that will be suspended while receiving the parental allowance). There are different concession periods considering the different modalities that this allowance comprises.

- **Definition**

This benefit is intended for citizens:

- Beneficiaries of the Social Security system covered by the employees/self-employed/voluntary social insurance scheme;
- Beneficiaries in pre-retirement status who carry out an activity under any of the aforementioned schemes;
- Beneficiaries receiving unemployment benefits (insurance and assistance);
- Beneficiaries who receive a relative disability pension or survivor's pension and that are working and with records of remuneration in the Social Security.

This allowance comprises several modalities (which have different concession periods):

- **Initial parental allowance:** attributed for a period up to 120 or 150 consecutive days, according to the parents' option. This period can be extended by 30 days in cases of shared license or birth of twins (for each twin, in addition to the first).
- **Mother's exclusive initial parental allowance:** assigned to the mother for a period up to 72 days (30 days, at most, before childbirth and 42 mandatory days immediately after delivery). This period is included in period corresponding to the initial parental allowance.
- **Father's exclusive initial parental allowance:** assigned to the father for a period of 15 mandatory working days (of which 5 immediately after the birth and 10 within 30 days of the birth) and 10 optional working days (consecutive or not) which must be taken after the 15 mandatory days and within the period of the mother's maternity leave. This period is additional to the initial parental allowance.
- **Initial parental allowance of one parent in the event of impossibility of the other:** assigned to the father or mother in the event of physical or mental incapacity, or death of one of them, for the period of the initial parental allowance which the other parent lacked.

- **Eligibility conditions**

- Have a minimum period of contributions of at least 6 months.
- Enjoy the respective licenses, absences and unpaid waivers under the Labour Code or equivalent periods.
- Have Social Security contributions paid by the end of the third month immediately preceding the month in which the parents leave work for the birth child (if self-employed person or if covered by the voluntary social insurance scheme).

- **Income test**

This is not a means-tested benefit.

- **Benefit amount**

The daily amount of the allowance is calculated by applying a percentage to the amount of the beneficiary's reference remuneration (RR), defined by:

- $RR = R/180$, where R is equal to the total of the salaries registered in Social Security in the first six calendar months immediately preceding the second month preceding the beginning of the incapacity for work; or
- $RR = R/(30 \times n)$ if there is no remuneration record in that six-month period because there has been a totalization of taxable periods, and where R is equal to the total remuneration recorded in Social Security since the beginning of the reference to the day before the impediment to work, and n is the number of months to which they report.

Table 2.26 Parental allowance amounts, 2017-2020

Periods of concession	Monthly amounts
120 days of leave	
150 days of shared leave (120 + 30)	
30 additional days for each twin (plus the first)	100% of RR
Days of father's exclusive license	
180 days of shared leave (150 + 30)	83% of RR
150 days of leave	80% of RR

Minimum daily amount: the amount of the allowance cannot be less than 80% of 1/30 of the SSI, which corresponded to €11.70 in 2020, €11.62 in 2019, €11.44 in 2018, and €11.24 in 2017.

- **Extended parental allowance**

Allowance paid to the mother or the father or both, alternatively aiming to replace the lost work income during the period of childbirth leave, provided that the leave is taken immediately after the end of the period of the parental allowance or the extended parental allowance of the other parent.

It is assigned for a period up to 3 months.

The daily amount of the allowance is calculated by applying 25% to the value of the beneficiary's reference remuneration.

Minimum daily amount: the amount of the allowance cannot be less than 40% of 1/30 of the SSI, which corresponded to €5.85 in 2020, €5.81 in 2019, €5.72 in 2018, and €5.62 in 2017.

- **Subject to taxes/SIC**

Not taxable. Not subject to SICs.

- **EUROMOD notes**

In the EUROMOD Public Release of 2021 (I3.0) this benefit is only simulated from 2015 to 2020. The simulation is, however, switched off as part of the baselines, i.e., non-simulated components (*bfa*) are being used.

We assume that the mother takes the whole duration of leave and chooses to take a shorter leave at higher replacement rate (120 days including 30 days before the childbirth, extended to 150 days in total in case of multiple births)⁴. For the partner we assume that they take the maximum duration (25 working

⁴ However, external statistics shows that it exists a clear preference on choosing 150 days (for the mothers, in the initial parent allowance). The same does not happen when one considers the initial parental social allowance.

days given the 6 working days week or 29 calendar days). We also assume that parents do not decide to make use of the extended parental allowance.

Besides, as the benefit amount depends on the previous earnings, we assume those to be equal to the imputed wage ($yivwg$) or the current wage, whichever is higher. The imputed wage is recorded in hourly terms, hence we assume a country-specific standard number of hours worked per week (40 hours) and we recalculate $yivwg$ in monthly terms ($yivwg*40*(52/12)$).

2.4.10 Parental social allowance (*bplnc_s*)

- **Brief description**

This benefit is intended for citizens that are not covered by any compulsory social protection scheme or by the voluntary social insurance scheme. This allowance is paid to the father and/or mother who do not work and do not have Social Security contributions, or who do not qualify for parental allowance. It is not compatible with work income and unemployment benefits (that will be suspended while receiving the parental social allowance).

- **Definition**

This benefit is intended for citizens:

- Not beneficiaries of any compulsory social protection scheme or by the voluntary social insurance scheme;
- Beneficiaries receiving unemployment benefits (insurance and assistance).

This allowance comprises several modalities (which have different concession periods): initial parental social allowance, mother's exclusive initial parental social allowance, parent's exclusive initial parental social allowance, and initial parental social allowance of one parent in the event of the impossibility of the other. The concession periods are the ones equal to the contributory parental allowance.

- **Eligibility conditions**

- Be resident in Portugal or equivalent to a resident.
- Have a monthly income, per person, of the household, equal or less than 80% of the SSI.
- Do not have financial capital more than 240 x SSI.

- **Income test**

The reference income is the sum of all the monthly income of the household of the applicant divided by the elements of his household, considering the following weighting for each element of the household:

- Recipient: 1
- Every other adult (18+): 0.7
- Every under 18: 0.5

Table 2.27 Parental social allowance: assessed income

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
bunct_s	BENEFIT/PENSION: Unemployment: insurance
bunnc_s	BENEFIT/PENSION: Unemployment: assistance
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory
psu	BENEFIT/PENSION: Survivors
bsaoa_s	BENEFIT/PENSION: Solidarity supplement for the elderly
bsa00_s	BENEFIT/PENSION: Social integration income
bsaot	BENEFIT/PENSION: Other social assistance benefits
bho	BENEFIT/PENSION: Housing benefits
bed	BENEFIT/PENSION: Education
ypp	INCOME: Private pension
ypt	INCOME: Private transfers
ypr	INCOME: Property
yy	INCOME: Investment
Yot	INCOME: Other

- **Benefit amount**

The amount of the allowance corresponds to a percentage of the SSI, as indicated below:

Table 2.28 Parental social allowance amounts, 2017-2020

Periods of concession	Monthly amounts	In 2020
120 days of leave		
150 days of shared leave (120 + 30)	80% x SSI	€351.05
30 additional days for each twin (plus the first)		
10 days of father's exclusive license		
180 days of shared leave (150 + 30)	66% x SSI	€289.61
150 days of leave	64% x SSI	€280.84

- **Subject to taxes/SIC**

Not taxable. Not subject to SICs.

- **EUROMOD notes**

In the EUROMOD Public Release of 2021 (I3.0) this benefit is only simulated from 2015 to 2020. The simulation is, however, switched off as part of the baselines, i.e., non-simulated components (*bfa*) are being used.

The duration of this allowance is modelled for both parents the same way as for the contributory parental allowance.

2.5 Social contributions

2.5.1 Employee social contributions (*tscee_pt*)

Generally, employees pay contributions on their gross employment income at an 11% flat rate. Civil servants that started working before 2006 contribute to a separate scheme with multiple rates, but their average rate is like the private sector general regime rate.

- **EUROMOD notes**

There are several regimes, according to specific activities/situations (non-profit organizations, rural workers, football players, clergy, domestic services, young people in their first job, handicapped). Due to the lack of detailed information in the available data, EUROMOD can only simulate the general rule.

2.5.2 Employer social contributions (*tscer_pt*)

Employers pay contributions on their employees' gross income according to a flat rate of 23.75%.

2.5.3 Self-employed social contributions (*tscse_pt*)

Self-employed social contributions since 2011 to 2018:

- **Contribution rates:** 29.6% (28.3% for rural workers).
- **Contribution base:** approximately the actual self-employment income. However, the individuals may choose a base higher than the actual income. The contribution base is defined as that of the bracket immediately below one twelfth of the previous year's income. The annual income is defined as 70% of services or 20% of sales, according to the nature of the business.
- **Contribution level:** fixed each October (brackets given below) and remains fixed for 12 months if the individual remains self-employed for that period. There is a progressive adjustment: every October the income bracket position of all self-employed individuals is revised. New self-employed individuals (or those who had no income during the previous year) are placed in the 1st bracket.
- **Exemptions:** the self-employed workers are exempt of paying social contributions if their annual income from self-employment is less than 6 x SSI, if they have received as employees an income above 12 x SSI, or if they receive old age/disability pensions. All these exemptions are simulated in EUROMOD.
- **Self-employed 'employers' contribution:** if the self-employed individual works on a regular basis for one institution, i.e., more than 80% of the self-employment income is paid by this institution and the individual has no other source of employment income, then the institution must pay a contribution of 5% of the total amount paid for the services.

Table 2.29 Self-employed contribution amounts (2017-2018)

Contribution bracket	Monthly amount
1 st	1 x SSI
2 nd	1.5 x SSI
3 rd	2 x SSI
4 th	2.5 x SSI
5 th	3 x SSI
6 th	4 x SSI
7 th	5 x SSI
8 th	6 x SSI
9 th	8 x SSI
10 th	10 x SSI
11 th	12 x SSI

Self-employed social contributions since 2019: it was completely changed. Changes and new features:

- **Contribution rates** (applied to the monthly average income): 21.4% (25.2% for rural workers).
- **Contribution base:** actual income, rather than a conventional income based on brackets. Still, not all the gross income is considered. Relevant income: 70% of services or 20% of sales, according to the nature of the business. In the income declaration, the self-employed has the option to change the total income used for the calculation of contributions, increasing, or lowering it by up to 25%.
 - Maximum base: 12 x SSI.
 - Minimum base: a base of incidence resulting in a contribution amount lower than €5 is considered null.
- **Quarterly reporting:** every quarter (end of January, April, July, October) the self-employed are obliged to communicate their income from the previous quarter. The quarterly income is then divided by three to get the monthly average income. Quarterly update: every quarter, contribution amounts are updated according to the updated monthly average income derived from the quarterly income declaration.
- **Minimum contribution:** €20/month.
- **Exemptions:** the self-employed workers are exempt of paying social contributions if they receive old age/disability pensions, and if they simultaneously have received as employees an income above 12 x SSI and a monthly average income from self-employment below 4 x SSI (the exceeding amount is relevant and is considered in the contribution base).
- **Self-employed ‘employers’ contribution:** if the self-employed individual works on a regular basis for one institution, i.e., more than 50% (or 80%) of the self-employment income is paid by this institution and the individual has no other source of employment income, then the institution must pay a contribution of 7% (or 10%, respectively) of the total amount paid for the services.

2.6 Taxes

2.6.1 Personal income tax (*tin00_pt*)

- ***Tax unit***

Personal income tax (*‘Imposto sobre o Rendimento Singular’* – IRS) is due by individuals residing in Portugal and by non-residents receiving income in Portugal. When the individual residing in Portugal is part of a family unit, the income tax applies to all its members. The basic tax unit is composed by the two partners and their dependent children who are defined as:

- Children, adopted children and stepchildren younger than 18 years old and not emancipated.
- Children, adopted children and stepchildren aged between 18 and 25 (adults), with a monthly income below the national minimum wage, who have attended school the 11th or 12th grade of schooling or have attended the compulsory military or civic service.
- Children, adopted children and stepchildren aged 18+ that have been declared unfit for work and have a monthly income below the national minimum wage (the model assumes that all disabled individuals are unfit to work);
- Minors (less than 18) living with a guardian and earning no income.

The age assessment’s date is December 31st.

Dependent parents do not belong to the tax unit. They constitute a different tax unit of their own, that is only accounted in the deductions phase. However, if they fulfil the conditions required to be considered dependent parents (*i.e.*, income below the minimum pension) they are exempt from tax obligations. So, for simplicity in the calculation of the deductions, the model assumes them as being part of the son/daughter’s tax unit.

Joint taxation for unmarried couples is not compulsory (although it is by far the most frequent option), but for EUROMOD purposes it is assumed as such.

- ***Taxable income***

Methods for income determination and tax collection may vary between different income sources. Nevertheless, the taxable income is always the total income resulting from the aggregation of gross incomes of different sources minus income specific deductions applied to each income category, and specific reductions/allowances.

Table 2.30 Personal income tax: assessed income (before allowances deduction)

Variable	Label
yem	INCOME: Employment
yse	INCOME: Self-employment
poact_s	BENEFIT/PENSION: Old age: contributory
poanc_s	BENEFIT/PENSION: Old age: non-contributory
psu	BENEFIT/PENSION: Survivors
pdi	BENEFIT/PENSION: Disability
ypp	INCOME: Private pension
ypr	INCOME: Property
yiy	INCOME: Investment (Although interest is subject to personal income tax, it is generally taxed at source, through the banking system, at a flat rate of 28%. Thus, in EUROMOD, it is simulated separately and not added to the families' income)

• **Tax allowances**

Deductions are applied at the individual level, even on joint taxation. For instance, if both partners work, the deductions of the first income category (see next table) are applied separately to their individual incomes, with zero as limit for the outcome for each of them. Hence, if only one of the partners received employment income, only one deduction is applied. The same rule applies to pensions.

Table 2.31 Personal income tax deductions, 2017-2020

Income category	Deductions	
	2017-2018	2019 -2020
A – Employment income ⁽¹⁾⁽²⁾⁽³⁾	Deduction limit: €4,104. If contributions to Social Security are superior, then their amount will be the limit.	No changes
B – Business and professional income ⁽¹⁾⁽³⁾	Simplified regime: taxable income is 15% of sales or 75% of liberal job earnings or 35% of other services provision earnings. For the simulation, we assume a 25% tax allowance on self-employment income.	For amounts higher than €27,360, the tax allowance is $yse \times 15\% - €4,104$
E – Investment income	No deduction, but only 50% of the yearly gain is taxable. (NOT SIMULATED)	No changes
F – Rental income	Repairs and maintenance expenses effectively incurred, municipal tax and expenses with building administration. (NOT SIMULATED)	No changes
G – Net worth increases	50% of the net yearly gain is taxable. This rule does not apply to realized gains from the sale of financial assets, where a 10% special rate is applied. (NOT SIMULATED)	No changes
H – Pensions ⁽¹⁾	Deduction limit: €4,104 (or yearly pension, if lower)	No changes

⁽¹⁾ Specific considerations regarding income in A, B and H from disabled people (90% incapacity): only 90% of income from categories A, B and H is considered as taxable (if the reduction obtained in each category is €2,500 maximum).

⁽²⁾ Since 2020, there is a partial deduction for young people between 18 and 26 years old, who earn dependent income, in the first three years of work, according to the following amounts per year of work:

- 1st year: 30%, with a limit of €3,291 (7.5 x SSI).
- 2nd year: 20%, with a limit of €2,194 (5 x SSI).
- 3rd year: 10%, with a limit of €1,097 (2.5 x SSI).

⁽³⁾ Since 2020, there is a deduction for dependent students, who earn employment and self-employment income, up to 5 x SSI (€2,194.04).

- *Tax base*

Personal Income Tax = Tax base * Rate – Tax credits,

Where **Tax base** = **Gross income** – **Income specific deductions** – **Reductions**

According to the splitting system, income from married couples is divided by 2 before applying the tax rate. In the case of married couples, the resulting tax is multiplied by two to obtain the tax liability (before tax credits).

- *Tax schedule*

The taxable income is subjected to tax rates according to income brackets. In Azores and Madeira, the marginal tax rates are lower than in the mainland⁵.

Table 2.32 Personal income tax marginal rates 2017

Marginal Rate	2017	
	Income bracket	Deduction
14.5%	Up to 7,091	0
28.5%	>7,091 – 20,261	992.74
37.0%	>20,261 – 40,522	2,714.93
45.0%	>40,522 – 80,640	5,965.69
48.0%	Above 80,640	8,375.89

Plus ‘**additional solidarity tax**’: income above €80,000 and below €250,000 is additionally taxed at 2.5%. Income above €250,000 is additionally taxed at 5%.

Table 2.33 Personal income tax marginal rates 2018-2020

Marginal Rate	2018-2019		2020	
	Income bracket	Deduction	Income bracket	Deduction
14.5%	Up to 7,091	0	Up to 7,112	0
23.0%	>7,091 – 10,700	602.74	>7,112 – 10,732	604.54
28.5%	>10,700 – 20,261	1,191.24	>10,732 – 20,322	1,194.80
35.0%	>20,261 – 25,000	2,508.20	>20,322 – 25,075	2,515.63
37.0%	>25,000 – 36,856	3,008.20	>25,075 – 36,967	3,017.27
45.0%	>40,522 – 80,640	5,965.68	>36,967 – 80,882	5,974.54
48.0%	Above 80,640	8,375.88	Above 80,882	8,401.21

Plus ‘**additional solidarity tax**’: income above €80,000 and below €250,000 is additionally taxed at 2.5%. Income above €250,000 is additionally taxed at 5%.

⁵ Since 2018 EU-SILC, the EUROMOD input data contains regional information at NUTS2 level, allowing to simulate the different existing tax schedules in Azores and Madeira.

Table 2.34 Personal income tax marginal rates 2020, Azores and Madeira

Income bracket	Marginal rate	
	Madeira	Azores
Up to 7,112	11.60%	10.15%
>7,112 – 10,732	20.70%	17.25%
>10,732 – 20,322	26.50%	21,38%
>20,322 – 25,075	33.75%	28,00%
>25,075 – 36,967	35.87%	29.60%
>36,967 – 80,882	44.95%	36.00%
Above 80,882	48.00%	38.40%

Plus ‘**additional solidarity tax**’: income above €80,000 and below €250,000 is additionally taxed at 2.5%. Income above €250,000 is additionally taxed at 5%.

Table 2.35 Net income guarantee (‘*mínimo de existência*’), 2017-2020 (€/year)

	2017	2018	2019-2020
Tax rates can’t reduce net income below X euros if income originates mainly from employment and pensions	8,500	14 x 1.5 x SSI ⁽²⁾	No changes
Households with 3 or 4 dependent children and a taxable income less or equal to X euros/year are exempt ⁽¹⁾	11,320	No changes	No changes
Households with 5+ dependent children and a taxable income less or equal to X euros/year are exempt ⁽¹⁾	15,560	No changes	No changes

⁽¹⁾ Or half the amount in couples choosing individual taxation.

⁽²⁾ 14 x NMW if higher, which has not been the case neither in 2018-2020.

Since 2019, self-employed start being covered by the PIT net income guarantee. This means that now these workers also have part of their income tax-free, similarly to what already happened in previous years with dependent employees. Net income guarantee should then also include self-employment income (*yse*).

- **Tax credits**

Certain expenses related to health, education, old age-care, housing, insurance premiums, and disability can be deducted from the taxable income, reducing the total tax liability. Table below lists all personal tax credits and other deductions.

Besides the ones presented, there are also other tax credits associated with private retirement plans, stocks, shares savings plans, mortgage savings accounts, acquisition of computers, acquisition of renewable energy equipment, legal counselling fees, among others. (NOT SIMULATED)

Table 2.36 Personal income tax credits, 2017-2020

Tax credit group	Maximum limit	
	2017-2019	2020
Dependent children	€600 per dependent child (or €726 if aged <3)	€600 per dependent child (or €726 if aged <3, or €900 per child aged <3 for families with 2+)
Dependent parents / grandparents	€525 per dependent parent (€635 if only one)	No changes
Health ⁽¹⁾	15% of expenses (up to €1,000)	No changes
Education and training ⁽¹⁾	30% of expenses (up to € 800)	No changes
Retirement homes residency ⁽¹⁾	25% of expenses (up to €403.75)	No changes
Housing (for mortgages – both capital and interest – and rents)	15% of expenses (up to € 296 for mortgages or up to €502 for renters in the official renting regime and other specific limits – see below)	No changes
Paid alimonies ⁽¹⁾	20% of the alimonies annual amount (up to €419.22)	No changes
Disability	€3,800 per couple both disabled (or €1,900 per individual) + €1,187.50 per disabled dependent + 30% of expenses on special education + 25% of expenses on life insurance of covering exclusively the risks of death, disability, or old age	No changes
Invoice claiming ⁽¹⁾	15% of the VAT paid in products and services from specific sectors (restaurants, hotels, car repair, ...) up to €250	No changes
Household general expenses ⁽²⁾	35% of expenses (up to €250) supported by each partner in the couple or by each single taxpayer or 45% of expenses (up to €335) in the case of lone parents – see below	No changes

⁽¹⁾ EU-SILC contains no data on these expenses, so the simulated tax credits are equal to zero.

⁽²⁾ From 2015 on, a new tax credit is given according to documented general expenses. Data may not yield information on consumption, but the limit of €250/year (€335 if single parent) should prove to be easily attainable for every non-exempt taxpayer, thus providing strong arguments to simulate the full limit to every household without the need to regard consumption.

Table 2.37 Specific limits for housing tax credit, 2017-2020

	2017	2018-2020
For renters paying rent	For individual tax bases up to the 1 st income bracket, the limit is €800	No changes
	For individual tax bases between the 1 st income bracket and €30,000: $Limit = 502 + 298 \times \frac{30,000 - Ind. Tax Base}{22,909}$	No changes
For owners paying mortgage	For individual tax bases up to the 1 st income bracket, the limit is €450	No changes
	For individual tax bases between the 1 st income bracket and €30,000: $Limit = 296 + 154 \times \frac{30,000 - Ind. Tax Base}{22,909}$	No changes

Limits for tax credits: the tax credits total amount (only on health, education, housing, alimonies, invoice claiming, residential homes and fiscal benefits) is restricted accordingly to the table below. Note: the limits refer to the sum of the tax credits due to expenses on health, education, housing, alimonies, invoice claiming, residential homes and other fiscal benefits. Fixed tax credits regarding the number of

taxpayers or other elements in the tax units, disability or tax credits regarding general expenses are not considered for these limits.

Table 2.38 Limits for tax credit, 2017-2020

2017-2019	2020
For individual tax bases up to the 1 st income bracket, there is no limit.	No changes
For individual tax bases between the 1 st and 4 th income brackets: $Limit = 1,000 + 1,500 \times \frac{80,640 - Ind. Tax Base}{73,549}$... the limit is: $Limit = 1,000 + 1,500 \times \frac{80,882 - Ind. Tax Base}{73,549}$
For individual tax bases above the 4 th income bracket, the limit is €1,000.	No changes

Note: In tax units with 3+ dependent children, all the above limits are further increased in 5% for each one.

- **Extraordinary surtax on income (2015-2017)**

The **Extraordinary surtax on income** (*‘sobretaxa extraordinária sobre rendimentos’*) was a special one-off flat rate tax of 3.5%, paid on the personal taxable income earned during the year deducted of an amount equivalent to the annual national minimum wage (14 months). Since 2016, it ceased to be calculated based on the flat rate, being differentiated accordingly to specific income brackets. And since 2018, it ceased to be applied.

Tax credit in the surtax: 2.5% of the monthly national minimum wage per each dependent child (or half the amount in case of joint taxation), and the amounts deducted at source by the employers or pension providers related to the surtax (not needed for EUROMOD’s simulation). The resulting surtax may not be negative.

Safeguard clause: for a certain surtax rate, net income should not be inferior to what would result if gross income was at the top limit of the previous bracket.

Table 2.39 Surtax rates, 2017

2017	
Income bracket (€)	Rate (%)
Up to 20,261	0.00
> 20,261 <= 40,522	0.88
> 40,522 <= 80,640	2.75
> 80,000	3.21

Note: In joint taxation, the income brackets limits are halved, and the resulting surtax is multiplied by 2.

2.7 COVID-19 temporary measures

2.7.1 Wage compensation scheme COVID-19 (*yemcomp_pt*)

- **Definition**

This benefit intends to support employees via a simplified layoff scheme (available to companies with activity substantially affected), to compensate wages loss. Employers participating in this regime cannot dismiss/fire their employees.

Whether there was a reduction in the normal working time or suspension of the contract, workers are entitled to receive a minimum amount equal to 2/3 of their gross salary. Employers can apply this system either for total or partial layoffs, *i.e.*, workers can work zero hours or a proportion of the hours in their contracts.

This compensation has an initial duration of up to one month, and can be extended monthly, up to a maximum of 3 months, if justified.

- **Eligibility conditions**

There are no specific eligibility conditions.

- **Benefit amount**

The replacement rate of the salary for the non-worked hours is 2/3 of the gross wage (original salary). Once the replacement rate is applied, the employer pays 30% of the compensation, and Social Security pays the remaining 70% (up to a limit of €1,333.5 per worker). Workers are entitled to a minimum compensation of €635 (1 x NMW) and a maximum of €1,905 (3 x NMW). These limits are adjusted proportionally if the worker has a part-time contract.

In partial layoff, the worker earns 2/3 of the proportion of the salary corresponding to the hours lost, and 100% of the proportion of the salary corresponding to the hours worked. Limits are additionally adjusted by the share of lost hours over total hours in the contract.

- **Subject to taxes/SIC**

Income from this compensation scheme is treated as salaries for tax and benefit purposes, being thus subject to income taxation, employees' SIC and means tested benefits.

On the other hand, employers that entered in the simplified layoff scheme are temporarily exempt from paying the 23.75% flat rate regarding employers' SIC for the workers covered by the temporary compensation scheme.

- **EUROMOD notes**

This policy can only produce results if the model is run in combination with the LMA add-on. The individuals that are selected to undergo transitions to monetary compensation schemes are defined in the *TransLMA_pt* 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.

2.7.2 Self-employed compensation due to COVID-19 (*ysecomp_pt*)

- **Definition**

It will be provided special financial support for self-employed with significant reduction of their economic activity. This compensation has an initial duration of up to one month, and can be extended monthly, up to a maximum of 6 months, if justified.

- **Eligibility conditions**

Self-employed are eligible to income support if they have contributed to Social Security 3 consecutive months or 6 months with gaps in the last 12 months prior to the lockdown. They need to be self-employed exclusively (for example, not be a pensioner).

They also need to prove that their activity (or the activity of the respective sector) is stopped because of the COVID-19 outbreak, or that they registered a breach of at least 40% of their invoice in the 30 days prior to the request submitted to Social Security.

- **Benefit amount**

Self-employed are entitled to financial support corresponding to the amount of the average remuneration recorded as a contributory base in the 12 months prior to the request, with an upper limit of €438.81 (1 x SSI), when the average is lower than €658.22 (1.5 x SSI). On the other hand, when the amount of the average remuneration recorded as a contributory base is equal or higher than €658.22 (1.5 x SSI), the benefit amount corresponds to 2/3 of the remuneration recorded as a contributory base, with an upper limit of €635 (1 x NMW).

In the case of an abrupt break of at least 40% of the invoice, the benefit amount is multiplied by the respective break, expressed in percentage terms.

Self-employed workers that contributed with the minimum level of contribution (€20) are granted a lump sum amount of €219.41 (0.5 x SSI).

- **Subject to taxes/SIC**

Income from this compensation scheme is treated as salaries for tax and benefit purposes, being thus subject to income taxation, employees' SIC and means tested benefits.

Only self-employed with employees at their charge are temporarily exempt from paying SIC. (NOT SIMULATED)

- **EUROMOD notes**

This policy can only produce results if the model is run in combination with the LMA add-on. The individuals that are selected to undergo transitions to monetary compensation schemes are defined in the *TransLMA_pt* 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.

3. DATA

3.1 General description

EUROMOD database results from EU-SILC, (EU-SILC containing 2018 cross-sectional and 2018 longitudinal Version 200406). The Portuguese EU-SILC survey is an annual survey with a four-year rotational panel. Fieldwork was carried out in 2018, between March and June, and contains data regarding the incomes of 2017. The database is provided by Eurostat.

The EU-SILC sample is composed of four independent sub-samples, where each one follows a stratified two-stage cluster sampling design. The 2018 sampling frame was selected from the National Dwellings Register (NDR), which uses information gathered in the 2011 Census. It is constituted by private dwellings of usual residence and excludes collective households and institutions. Its size is approximately 1,4 million dwellings of usual residence.

The selection of the sample followed a stratified (NUTS II stratification) and multistage sampling design. The primary sampling units, consisting of cells of the INSPIRE grid of 1km², were selected with probability proportional to the number of dwellings of usual residence. And the secondary sampling units (dwellings) were systematically selected in each primary sampling unit. Information is collected on all households and individuals living in the selected dwelling.

Table 3.1 EUROMOD database description

EUROMOD database	PT_2018_a1
Original name	EU-SILC
Provider	Eurostat
Year of collection	2018
Period of collection	Fieldwork executed between March and June
Income reference period	2017
Sampling	Stratified, multi-stage, clustered
Unit of assessment	Household and personal
Coverage	Private households (households living at private residential addresses). Individuals living in institutional households (e.g. in care or imprisonment institutions, etc.) are excluded.
Final sample size	13,717 households (of which 33,887 individuals)

Source: Statistics Portugal (2019) ‘*ICOR 2018 – Documento Metodológico Versão 3.7*’

3.2 Sample quality and weights

3.2.1 Non-response

The original sample size is composed by 13,717 households. The number of persons in those households was 33,395 (29,360 with 16+ years old).

Non-response is corrected by reweighting the final sample, *i.e.*, by recalculating the sample weights.

3.2.2 Weights

Adjustments to the sample weights are made for the whole sample (combining the four sub-samples) at household and individual level using the SAS macro CALMAR. An integrative calibration is applied to ensure consistency between households and individuals, because all household members receive the same cross-sectional weight as the household they belong to.

In the case of households, the calibration variables are ‘*number of households by household size (1, 2, 3 and 4 or more household members)*’ and ‘*number of households by NUTS II*’. The source of information is the Labour Force Survey.

The calibration variables for individuals are the distribution of the population by five-year age groups and by gender, according to the Independent Estimates of the Population.

The following table shows the descriptive statistics for the grossing-up weights used.

Table 3.2 Descriptive statistics of the grossing-up weight *rb050*

	EU-SILC UDB Portuguese data
Number	33,395
Mean	303.26
Median	162.19
Maximum	1,694.52
Minimum	7.63
Max/Min	222.21
Decile 1 (P10)	37.89
Decile 9 (P90)	703.75
Decile 9 / Decile 1 (P90/P10)	18.57

3.3 Data adjustment

Adjustments to the variables are kept to a minimum. Some minor data cleaning is done to ensure that the relationships of individuals within households are consistent. In order to guarantee consistency between demographic and income variables which refer to the previous year (and on which EUROMOD simulation are based), all children born between the end of the income reference period and the data of the interview (48 cases) were dropped from the sample.

However, the weights were not readjusted to consider the drop of these individuals. EUROMOD final sample contains 13,717 households and 33,887 individuals.

3.4 Imputations and assumptions

3.4.1 Time period

In the EU-SILC dataset, the income reference period is the previous year of the survey. All monetary amounts are expressed in annual terms. Dividing them by 12, these are converted into monthly amounts for the EUROMOD database.

There are two age variables in the EU-SILC dataset: one relates to the age of the individual at the moment of the survey, and the other to the age at the end of the income reference period. EUROMOD uses the first one to characterise all individuals in the dataset.

3.4.2 Gross incomes

The EU-SILC survey contains information on both gross and net monetary incomes, if applicable, and flag variables, which indicate if the observation has been collected in a gross or net form.

Income data can be provided by respondents in either gross or net values. Hence, the net series is obtained by Statistics Portugal using a specific gross-to-net micro simulation model (see more information regarding the model in Rodrigues, 2007).

3.4.3 Disaggregation of harmonized variables and other imputations

Some variables required for the simulation of the tax-benefit system in Portugal are not available in the EU-SILC UDB. Thus, they must be fully imputed in the EUROMOD dataset by splitting the original variables.

- a. **Old age pension** splits into contributory pensions (*poac*) and means-tested non-contributory benefit for the elderly (*poanc* – old age social pension). The splitting is based on the variables PY102G (Old age benefits – Contributory and non-means-tested), PY103G (Old age benefits – Non-Contributory and means-tested) and PY104G (Old age benefits – Non-contributory and non-means-tested), on the benefit eligibility rules relating to age and income of the elderly, and the observed total amount of this benefit in the dataset.
- b. **Unemployment benefit** in the UDB split into contributory unemployment benefit (*bunct*) and the means-tested unemployment benefit (*bunnc*). The splitting is based on the variables PY091G (Unemployment benefits – Contributory and means-tested) and PY092G (Unemployment benefits – Contributory and non-means-tested).
- c. **The aggregate family benefits** variable in the UDB splits into two components: child benefit (*bch*), which is based on the variable HY053G (family/children-related allowances – Non-contributory and means-tested), and Other family benefits (*bfa*), based on the residual amount (HY050G – HY053G).
- d. **Social exclusion benefits** split into three components: Solidarity supplement for the elderly (*bsaoa*), minimum income benefit (*bsa00*) and Other social assistance benefits (*bsaot*). However, in the Portuguese EU-SILC 2017 the new variables HY061g, HY062g and HY064g are missing and have the flag=-2. This implies that $HY060g = HY063g$ and all the HY060g amount is non-contributory and means-tested. The approach followed begins to identify the beneficiaries of solidarity supplement for the elderly between the households that have $HY060g > 0$, using both the benefit rules and the age and income of the potential beneficiaries. Secondly, we identify the eligibility to *bsa00* within households with $HY060g - bsaoa > 0$. Finally, Other social assistance benefits are computed as $HY060g - bsaoa - bsa00$. The three components of *bsa* are attributed to the same member of the household that get *bsa*. This allows that in EUROMOD dataset $bsa = bsaoa + bsa00 + bsaot$ for all persons.

Education level is imputed to children aged under 16 according to their age and the rules of the Portuguese education system.

Incomes reported at household level are assigned to the relevant member of the household or to the first member closer to 45 years old.

3.5 Uprating factors

Uprating factors are used to account for any time inconsistencies between the input dataset and the policy year. Each monetary variable (*i.e.*, each income component) is updated to account for changes in the non-simulated variables that have taken place between the year the data was collected and the simulation year of the tax-benefit system. Uprating factors are generally based on the changes in the average value of the relevant income component between the two years. For detailed information on the construction of each uprating factor and corresponding sources, see Annex I.

As a rule, uprating factors are given in Annex I for both simulated and non-simulated income components included 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 given to enable the user to turn off the simulation of a particular variable if and when required.

4. VALIDATION

4.1 Aggregate Validation

EUROMOD results are validated against external benchmarks. Detailed comparisons of the number of individuals receiving a particular income component and total annual amounts are given in Annex III. It is important to bear in mind that, since labour market transitions are switched OFF in EUROMOD baselines, COVID-19 temporary measures (policies *wage compensation scheme COVID-19* and *self-employed compensation due to COVID-19*) do not produce any effect in baseline simulations, i.e., the EUROMOD results for 2020 do not consider the effect of the pandemic in the Portuguese economy.

Market incomes, non-simulated taxes and benefits in the input dataset, and 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, as well as the factors that may explain the differences.

4.1.1 Components of disposable income

This subsection outlines the differences in the disposable income definition in EUROMOD and EU-SILC 2018. The major components of disposable income are the same in both sources: original incomes (+); benefits (+), taxes (-), employee social insurance contributions (-); and self-employed social insurance contributions (-). However, there are two differences at the individual level components:

- i) The EU-SILC 2018 definition includes the (imputed) annual value of (using) a company car, while EUROMOD excludes it; and
- ii) Pensions from individual private plans are included in the EUROMOD definition used in EUROMOD, while EU-SILC 2018 excludes it.

Besides these differences, the amount of the disposable income of the same household can be different because the simulated income components in EUROMOD can differ from their observed counterparts in EU-SILC dataset.

Table 4.1 Components of disposable income

	EUROMOD	EU-SILC 2018	Notes
Household disposable income	ils_dispy	hy020	
Employee cash or near cash income	Yem	py010g	yem derived from py010g
Company car	-	py021g	
Cash benefits or losses from self-employment	Yse	py050g	yse derived from py050g
Pension from individual private plans	Ypp	-	ypp derived from py080g
Investment income	Yiy	hy090g	yyi derived from hy090g
Income from rental of a property or land	Yprrt	hy040g	yprrt derived from hy040g
Income received by people aged under 16	Yot	hy110g	yot derived from hy110g
Regular inter-household cash transfer received	Ypt	hy080g	ypt derived from hy080g
Regular inter-household cash transfer paid (-)	Xmp	hy130g	xmp derived from hy130g
Old-age benefits	poact_s	py100g py102g	poact_s and poanc_s derived from the split of py100g into contributory and non-contributory old age pensions
	poanc_s	py103g py104g	
Survivors benefits	Bsu	py110g	bsu derived from py110g
Disability benefits	Bdi	py130g	bdi derived from py130g
Unemployment benefits	bunct_s	py090g	bunct_s derived from py092g
	bunnc_s	py091g py092g	bunnc_s derived from py091g
Housing allowances	Bho	hy070g	bho derived from hy070g
Family/children related allowances	Bfa	hy050g	bfa derived from the difference between hy050 and hy053
	bch_s	hy053g	bch_s derived from hy053g
Education related allowances	Bed	py140g	bed derived from py140g
Sickness benefits	Bhl	py120g	bhl derived from py120g
Social exclusion not elsewhere classified	Bsaot	hy060g	hy060g split into social integration income (bsa00_s), solidarity supplement for the elderly (bsaoa_s) and other social assistance benefits (bsaot)
	bsaoa_s		
	bsa00_s		
Tax on income and social contributions (-)	tin_s	hy140g	EUROMOD data includes three simulated components: tin_s (simulated income tax); tscee_s (simulated SIC employee) and tcse_s (simulated SIC self-employee).
	tscee_s		
	tcse_s		
Regular taxes on wealth (-)	Tpr	hy120g	tpr derived from hy120g

Note: all “_s” variables are EUROMOD simulated benefits or taxes.

4.1.2 Validation of incomes inputted into the simulation

Note: Please see Annex III for tables.

Table 4.2 (in Annex III) compares the number of **employed** and **unemployed** people estimated in EUROMOD against the external data source. The latter’s evolution shows the crisis aftermath developments, with employment increasing by 3.3% between 2017 and 2019 and unemployment falling by 26.6% during the same period. Notwithstanding, one should bear in mind that this evolution does not yet contemplate COVID-19 economic impact, that will most probably reverse this evolution in 2020. It also shows that there is a clear overestimation of the number of unemployed in EU-SILC (48% to 101%

‘extra’ unemployed compared with the external source, between 2017 and 2019), and underestimation of employed people (around 7% in EU-SILC). There are certainly differences in the methodologies used by each source to calculate these figures, but it is always to be expected that using EU-SILC data will lead to different values.

However, what is most important for the EUROMOD validation process is the evolution of these comparison ratios. As the number of employed people is kept constant for the entire period in EUROMOD, it is not surprising that the rise in the employed numbers in the official statistics results in bringing these two figures apart (comparing ratio evolved from 0.94 to 0.91). A similar but more expressive deviation happens within the unemployment figures: as the number of unemployed was held constant in EUROMOD, the drop on the external source figure increased the gap between the two amounts until 2019 (comparing ratio evolved from 1.48 to 2.01).

Tables 4.3 and 4.4 in Annex III show the number of recipients and annual levels of income earned from different sources reported but not simulated in EUROMOD. Unfortunately, it is not possible to obtain data from external sources to validate all types of income and for all the simulation years. The number of **employees** and the level of **total wages** are quite like the figures obtained from external sources. The number of employees remains fixed in EUROMOD, while it rises in the external statistics as expected due to the recovery in employment. Concerning the wages, they also rise in EUROMOD, but this is only due to the uprating factors and changes in the policies – namely the updates in the private aggregates – rather than the increase in employment, while the external statistics rise should result from both factors, amongst others. The values of gross wages slightly overestimated the official data, by around 6% between 2017 and 2018. This overestimation of gross incomes comes directly from the EU-SILC 2018 data and is not a consequence of EUROMOD modelling.

The number of recipients of **self-employment** income is clearly underestimated (around 26% between 2017 and 2019). This number remains fixed in EUROMOD, while it rises in the external statistics (as expected due to the recovery in employment, and specially in 2019 after the extensive reform of self-employed social contributions). Conversely, the level of self-employment income appears clearly overestimated (1.47 in 2017 and 1.43 in 2018). The complexity of the self-employment social security contributions system could explain part of this difference. The Portuguese version of the EU-SILC (and EUROMOD) attributes social security contributions to most of the self-employed that actually do not pay them due to the multiple exemption schemes and to the lack of capacity to deal with tax evasion⁶.

The number of recipients of **rent income** is also underestimated around 26% between 2017 and 2018 – being that the number also remains fixed in EUROMOD, while it rises in the external statistics (and considerably in 2018). On the other hand, the level of total rent income is quite like the figures obtained from external sources (1,06 in the baseline and 0,94 in 2018).

Finally, the **investment income** recipients and the level of total income are both substantially overestimated in EUROMOD regarding the figures obtained from external sources (around 21.77 and 4,70, respectively, between 2017 and 2018). Part of this difference could be explained by the fact that EU-SILC does not well-capture capital incomes, and/or the external source data is not strictly comparable to EU-SILC data.

Tables 4.5 and 4.6 (in Annex III) show the number of recipients of the non-simulated taxes and benefits and the respective aggregate amounts. **Disability** and **survivor**'s benefits are taken from Social Security (SS) data sources and are not corrected or simulated in EUROMOD. In both cases, the number of recipients is underestimated in the EU-SILC dataset compared to the SS external sources (except in 2018 and 2019, in the disability benefit case). Consequently, EUROMOD reproduces this underestimation. The underestimation in the disability benefit recipients is also slightly reflected in the aggregate amount (0.87 in 2017), however the aggregate amount in the survivor's benefits appears to be very close to the one recorded by the external sources (1.01 in 2017).

⁶ On the informal economy and tax evasion in Portugal, see CEAFGEA (2008).

The number of **sickness benefits** recipients is clearly underreported in the EU-SILC data. The number of recipients is below one third of the number reported by the SS external sources. The aggregate amount also appears to be underestimated. One possible explanation is that external data is constructed using sickness episodes along the year and there is no information on the EU-SILC data about the number of individuals experiencing various episodes along the year (e.g., counting of a same individual experiencing various episodes along the year).

4.1.3 Validation of outputted (simulated) incomes

Note: Please see Annex III for tables.

Tables 4.7 and 4.8 show that the figures on the **non-contributory pension (“Social Pension”)** are underestimated, especially when it comes to the aggregate amounts (0.28 in 2017).

The validation process reveals an underestimation in the performance of the simulation of the number of **unemployment benefits** recipients between 2017 and 2019 (62% to 68% in the main benefit, and even lower comparison ratios for the less expressive unemployment assistance benefit – 40% to 57%), and consequently also on the aggregate amounts. Such differences over time may be explained by the decrease in unemployment in Portugal over the period and the corresponding impact on its total expenditure, whilst EUROMOD relies on the structural data from the first year, *i.e.*, the number of recipients is kept constant throughout (the default simulation process is basically a split of the original unemployment benefit variable).

The simulation of **child benefit** shows that the figures are quite accurate between 2017 and 2019, both in number of recipients and total amounts.

The difficulty of simulating the minimum income program in Portugal (“*social integration income*”) stems from the difficulties in capturing the means tested entitlement conditions in the simulations, the complex issue of non-take up, and the changes occurred in the entitlement conditions. The overvaluation of the number of recipients is somewhat relevant during the whole period of 2017-2019 (around 20%). The simulated benefit amount shows an overestimation of around the same percentage (18%) in 2017.

An adjustment at the core of the simulation was made regarding the number of recipients of the **solidarity supplement for the elderly**, due to a misalignment of the EUROMOD values and the external source. Still, the amounts in 2017 shows an underestimation of around 35%.

Tables 4.7 and 4.8 also include the **number of taxpayers** and **amount of taxes** collected during the period of 2017-2020 as simulated by EUROMOD. Unfortunately, there is still little external statistics to compare against EUROMOD’s results (only regarding 2017 and 2018). However, for those years, EUROMOD seems to reveal an overestimation of the amount of the income tax (10% on average) that could be associate with the overestimation of gross wages amounts detected before. Besides, the impossibility of simulating some tax credits could be also leading to the observed overestimation. Notwithstanding, it is worth mentioning that this overestimation has improved compared to last year ratio (21%), given the now possibility of simulating the lower tax rates in the autonomous regions of Azores and Madeira.

The simulation of **social contributions** seems quite accurate when compared with external sources. However, some caution must be held against the external statistics, which result from gathering complex and somewhat ambiguous data on different regimes, sources and administrative or budgetary statistics. No information is available regarding the number of individuals paying contributions.

4.2 Income distribution

Note: Please see Annex III for tables.

The analysis in this section provides the indicators of income distribution, poverty, and inequality. 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 is calculated as the sum of all income sources of all household members, net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult = 1; additional individuals aged 14+ = 0.5; additional individuals aged under 14 = 0.3.

4.2.1 Income inequality

In this section, the changes in income distribution estimated by EUROMOD are compared with the “official” results published by Eurostat and Statistics Portugal as computed from different waves of the EU-SILC. Currently, the latest available EU-SILC operation is 2019’s thus enabling its use as a benchmark for the EUROMOD estimates between 2017 and 2018.

The equivalised disposable income simulated in EUROMOD is slightly different from the original EU-SILC data. Several reasons may explain this difference:

- i) Inclusion of different sources of income in the definition of household income as mentioned earlier. For example, the EU-SILC includes in disposable income (variable *hy020*) the company car (*py021*), which is not included in EUROMOD; and EUROMOD includes pensions received from individual private plans (*py080*) and repayments/receipts for tax adjustment, not included EU-SILC;
- ii) Changes in the sample and weighting of the observations;
- iii) Changes in the amounts of some income sources due to their simulation in EUROMOD:
 - a. In general, simulated social benefits rely on full take up, which should generate significant differences in disposable income when compared to EU-SILC;
 - b. The social supplement for the elderly constitutes an exception, as it is adjusted so that simulated take up is coherent with actual take up. But as EU-SILC underestimates the total amount received, there are again differences between simulated and actual disposable income.

Table 4.9 shows the distribution of equivalised income by deciles according to EUROMOD and Eurostat. The mean disposable income simulated by EUROMOD is slightly higher than the figures provided by Eurostat in the base year (3%), and the same in 2018. However, the share of the first decile estimated by EUROMOD is higher (13% in 2017 and 12% in 2018), possibly due to the assumption of full take-up in the simulation for most of the benefits. The differences between EUROMOD and Eurostat figures are almost unnoticeable for the other nine deciles.

The same table also shows the main inequality indices. Compared to the EU-SILC figures, the EUROMOD simulation estimates slightly lower income inequality indices in 2017 and 2018 (2% and 1%, respectively) – EUROMOD higher income share of the bottom decile (see above) can explain, at least partially, this discrepancy).

4.2.2 Poverty rates

Table 4.10 shows that the poverty rates estimated by EUROMOD for the base year are very similar to those computed using the EU-SILC data for poverty lines defined as 60% and 70% of the median equivalent income. The most expressive differences happen when comparing poverty rates defined at 40% and 50% of the median. These results suggest that the increase in incomes in the lower part of the distribution as discussed above is “taking individuals out of poverty” the lower the threshold is, this meaning that the difference between the two income distributions is higher at the extreme lower part.

4.3 Validation of minimum wage

Including minimum wage adjustments as part of the EUROMOD only influence very slightly the results (up to 2%), as it can be seen in table 4.11. For example, the equivalised disposable income will be only 1% higher when minimum wage adjustments are switched on.

4.4 Summary of “health warnings”

This final section summarises the main findings in terms of particular aspects of the Portuguese part of EUROMOD or its database that should be considered while using the model and interpreting its results.

- Care should be taken in interpreting results for small sub-groups due to small sample sizes.
- The weights do not control for the variations of unemployment in Portugal over the period under consideration.
- No adjustments are made for structural changes in the characteristics of the population between the data income collection year (2017) and the simulation years.
- The Portuguese version of the EU-SILC clearly underestimates some social benefits, and this is not corrected by EUROMOD unless these benefits are simulated.
- The simulation of some benefits in EUROMOD is conditioned by the difficulty of splitting some income variables from the EU-SILC user database and by the difficulty some of the recipients have in clearly identifying the source of their incomes.
- Non-take-up of benefits is not modelled in most policies (the exception being the Social Supplement for the Elderly). This has the effect of inflating the simulated incomes of households who do not actually take up these benefits. This is particularly relevant in the simulation of child benefits and social integration income. And although the Social Supplement for the Elderly simulation adjusts the number of recipients to match the actual benefit’s take-up, as EU-SILC underestimates the same number (and amounts), this has an impact on the comparison between EUROMOD results and other indicators based on disposable income obtained from EU-SILC (poverty rate, inequality indices, etc.).
- Comparisons between EUROMOD and administrative figures on personal income tax must take into consideration the existence of tax evasion, as well as the lack of adequate information for the simulation of several tax allowances and deductions.
- Parental leave benefits are only simulated from 2015 to 2020 in EUROMOD I3.0. They are defined in an extension (Parental Benefits Extension) that is switched off in the baselines, i.e., the non-simulated component (*bfa*) is being used. When the extension is switched on, the non-simulated component is reduced by subtracting the value of the simulated components (*bmapr_s*, *bplct_s*, *bplnc_s*). The simulated numbers might differ significantly from external statistics as some policy rules cannot be simulated accurately due to lack of information in the underlying data.
- The simulation of monetary compensation schemes (*yemcomp_pt* & *ysecomp_pt*) is triggered by the simulation of labour market transitions defined in policy *TransLMA_pt*. This policy becomes operational if the model is run in conjunction with the LMA add-on. The nature of these simulations is still experimental and only partially validated. Users are encouraged to refer to the “Simulating labour market transitions in EUROMOD” document prior to their use.
- Labour market transitions 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 2020 to be higher than disposable income in previous years.

5. REFERENCES

CEAFGEA (2008). *Economia Informal em Portugal*. Centro de Estudos de Gestão e Economia Aplicada, UCP, Porto.

INE (2016). *Portuguese EU-SILC Methodology*. INE, Lisboa.

INE (2020). Website database available at www.ine.pt

Rodrigues, C.F. (2007). *Income in EU-SILC - Net/Gross Conversion Techniques for Building and Using EU-SILC Databases*, in Eurostat(ed), *Comparative EU Statistics on Income and Living Conditions: Issues and Challenges*. Eurostat, Luxembourg, pp 159-172.

Eurostat (2020). Website database available at www.ec.europa.eu/eurostat

- ***Sources for tax-benefit descriptions/rules***

Social benefits descriptions and rules (in Portuguese): www.seg-social.pt

Online legislation (in Portuguese): www.dre.pt

ANNEX I: UPRATING FACTORS

Table I.1 Monetary updating raw indices (in relation to 2006)

Variable		2017	2018	2019	2020	Source/comments
Employment income						
Dependent employment income						
Civil servants	yem	106.64	108.99	112.36	116.07	
Private sector employees		123.79	127.44	130.12	132.24	Soc. Security (Annual rate of change of average wages declared by employees for contributory purposes), 2020 forecast (2021 Portuguese State Budget)
Self-employed income	yse	123.79	127.44	130.12	132.24	In line with private wages
Pensions						
Main old age pension, survivors pension, disability pension	poact, psu, pdi	*	*	*	*	PT Law on pensions updating (pensions updated according to every year updating schedule)
Social pension	poanc	203.35	207.01	210.32	211.79	Base amount of the social pension
Private pension	ypp	116.66	117.81	118.22	118.10	2006-19: Inflation "without deflation" (inflation as 0 on years with deflation), 2020 forecast (2021 Portuguese State Budget)
Unemployment benefits						
Insurance and assistance	bun, bunnc	125.73	128.24	132.03	135.11	In line w/private wages, but lagged one year
Sickness benefits						
Sickness benefit (for civil servants)		106.64	108.99	112.36	116.07	In line with civil servant wages
Sickness benefit (for private sector employees)	bhl	123.79	127.44	130.12	132.24	In line with private wages
Family and child benefits						
Family benefits (for civil servants)		106.64	108.99	112.36	116.07	Essentially, parental leave benefits (updated in line w/civil servant wages)
Family benefits (for private sector)	bfa	123.79	127.44	130.12	132.24	Essentially, parental leave benefits (updated in line w/private wages)
Child benefit	bch	421.32	428.90	435.76	438.81	In line with Social Support Index
Social assistance						
Social assistance and social assistance (other)	bsa, bsaot	421.32	428.90	435.76	438.81	In line with Social Support Index
Social integration income	bsa00	183.84	186.68	189.66	189.66	PT law on social integration income's threshold update

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Variable		2017	2018	2019	2020	Source/comments
Social supplement for the elderly	bsaoa	5,084.30	5,175.82	5,258.63	5,258.63	PT law on social supplement for the elderly's threshold update
Other benefits						
Education benefits	bed	421.32	428.90	435.76	438.81	In line with Social Support Index
Housing benefits	bho	421.32	428.90	435.76	438.81	In line with Social Support Index
Imputed benefit in kind	kfbbc	115.37	116.51	116.91	116.79	INE (Statistics Portugal) – inflation
Investment/property income						
Investment income	yy	194.60	201.60	206.04	188.52	2006-2019: Annual GDP current prices (src: Statistics Office); 2020 forecast (2021 Portuguese State Budget)
Property income (rent)	ypr	115.37	116.51	116.91	116.79	INE (Statistics Portugal) – inflation
Other income						
Private transfers	ypt	123.79	127.44	130.12	132.24	In line w/private wages
Non-cash income	kfb	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Income received by <16	yot	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Assets						
Financial capital	afc	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Expenditure items						
Rent paid; housing costs (other); maintenance payment	xhert, xhcot, xmp	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Interest on mortgage payment	xhcmomi	238.00	241.00	246.00	246.00	2006-2019: average mortgage cost (interest+mortgage) (src: Statistics Office), 2020 value kept as in 2019
Expenditure on private pensions	xpp	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Tax and SICs						
Property tax	tpr	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation
Income tax; Income tax repayments/receipts	tin, tad	123.79	127.44	130.12	132.24	In line w/private wages
SIC employee, SIC self-employed; SIC employer	tscee, tscse, tscer	123.79	127.44	130.12	132.24	In line w/private wages
Income tax and SICs	tis	123.79	127.44	130.12	132.24	In line w/private wages
Other						
Disposable income	yds	115.37	116.51	116.91	116.79	INE (Statistics Portugal) - inflation

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Variable		2017	2018	2019	2020	Source/comments
Imputed house rent	kivho	115.37	116.51	116.91	116.79	INE (Statistics Portugal) – inflation

ANNEX II: POLICY EFFECTS IN 2019-2020

Table II.1 and figure II.1 show the effect that 2020 policies have on disposable income by income component and income decile group. The effect is estimated as the difference between simulated household income under 2020 tax-benefit policies (deflating monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under the year 2019 policies, as a percentage of mean equivalised household disposable income in 2019. It's important to note that the results presented here do not account for the Covid-19 labour market shocks and income protection schemes put in place for employees (*wage compensation scheme COVID-19*) and self-employed (*self-employed compensation due to COVID-19*) in 2020.

Changes in 2020 have a small positive effect on the income distribution. In general, households' disposable income is increased by 0.35%, with the bottom income deciles recording the greatest increments (increase in the first decile of 0.66%). This behaviour is coherent with the kind of policy changes implemented and simulated in 2020, mostly parametric (which have implied, for instance, an overall slight increase on pensions income and on total disposable income).

Still, when looking at the changes in income broke down by decile, there are some results that reflect the impact of some of the other policies. For instance, means-tested benefits grow larger in the first deciles (0.28% in the first decile, compared to an overall 0.05%) – this is the expected outcome of increasing child benefits for toddlers, especially in the lower income families, or of the partial relief in the family solidarity income component in the solidarity supplement for the elderly.

Unlike what was observed last year, in 2020 social insurance contributions (SICs) – both paid by employees and self-employed – had no effect on the income distribution, as no changes occurred.

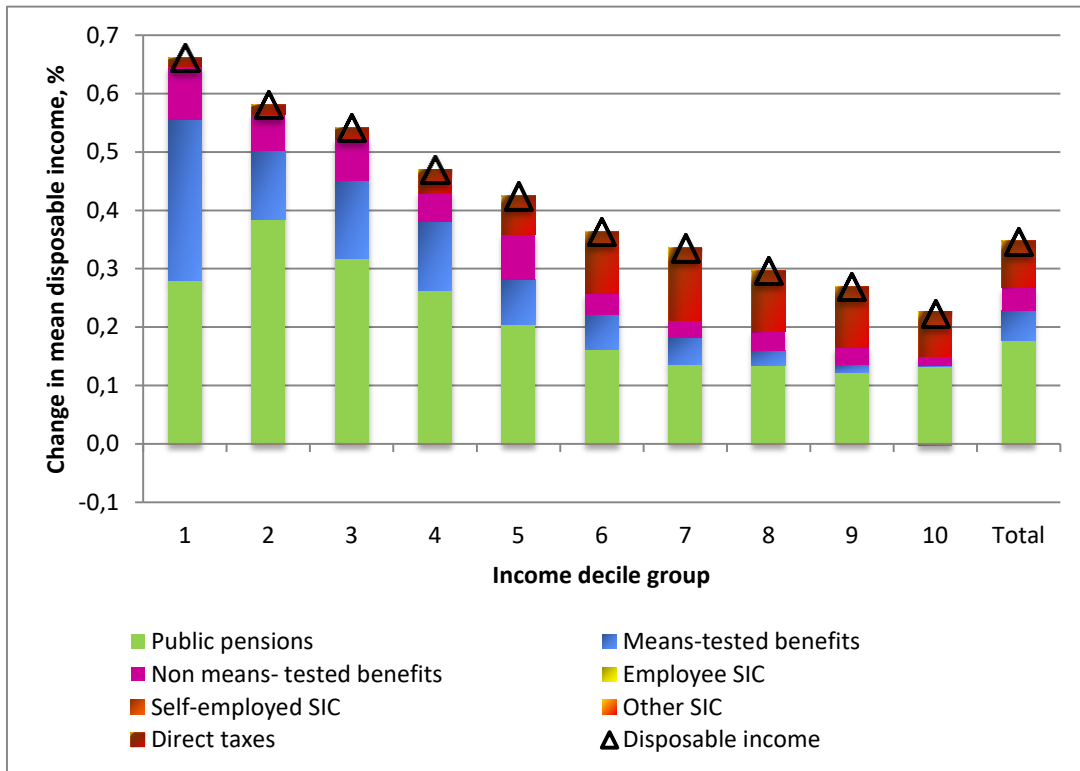
The increase in income from the middle to top deciles was mainly due to the alleviation of direct income taxes. The effect of direct taxes on mean household disposable income was positive (0.08%). The main explanation driving the income gains rely on the update of the income bracket limits, alongside with new and extended tax credits – relating to dependent children still studying; young people in the first three years of work; and higher tax credits regarding taxpayers and their dependent children). In this regard, the intermediate income deciles (specifically the 6th to 8th income deciles) were the ones experiencing the higher income gains on average (from 0.10 to 0.12%).

Table II.1 Policy effects in 2019-2020, using the CPI-indexation (CPI= 0.997686), %

Decile	Original income	Public pensions	Means-tested benefits	Non-means-tested benefits	Employee and pensioners SIC	Self-employed SIC	Other SIC	Direct taxes	Disposable income
1	0.00	0.28	0.28	0.09	0.00	0.00	0.00	0.01	0.66
2	0.00	0.38	0.12	0.06	0.00	0.00	0.00	0.02	0.58
3	0.00	0.32	0.13	0.07	0.00	0.00	0.00	0.02	0.54
4	0.00	0.26	0.12	0.05	0.00	0.00	0.00	0.04	0.47
5	0.00	0.20	0.08	0.08	0.00	0.00	0.00	0.07	0.42
6	0.00	0.16	0.06	0.04	0.00	0.00	0.00	0.11	0.36
7	0.00	0.14	0.04	0.03	0.00	0.00	0.00	0.12	0.34
8	0.00	0.13	0.03	0.03	0.00	0.00	0.00	0.10	0.30
9	0.00	0.12	0.01	0.03	0.00	0.00	0.00	0.10	0.27
10	0.00	0.13	0.00	0.02	0.00	0.00	0.00	0.08	0.22
Total	0.00	0.18	0.05	0.04	0.00	0.00	0.00	0.08	0.35

Note: 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 2019, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2020 policies by Eurostat's Harmonized Index of Consumer Prices (HICP).

Figure II.1 Policy Effects 2019-20, using CPI indexation (CPI= 0.997686), %



ANNEX III: MACROVALIDATION TABLES

Table 4.2 - Number of employed and unemployed

	EUROMOD		External				Ratio			
	2017	2017	2018	2019	2020	2017	2018	2019	2020	
Number of employed	4483	4757	4867	4913	N/A	0.94	0.92	0.91	N/A	
Number of unemployed	684	463	366	340	N/A	1.48	1.87	2.01	N/A	

Notes: EUROMOD number of employed and unemployed computed based on months in employment/unemployment - numbers computed as averages of monthly data over the year.

Source: Statistics Portugal

Table 4.3 - Market income in EUROMOD - Number of recipients (in thousands)

	EUROMOD		External				Ratio			
	2017	2017	2018	2019	2020	2017	2018	2019	2020	
Employment income	4236	3949	4057	4085	N/A	1.07	1.04	1.04	N/A	
Self-employment income	590	786	790	811	N/A	0.75	0.75	0.73	N/A	
Private pensions	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Rent income	494	590	769	N/A	N/A	0.84	0.64	N/A	N/A	
Investment income	1156	53	54	N/A	N/A	22.01	21.53	N/A	N/A	

Source: Social Security, Statistics Portugal

Table 4.4 - Market income in EUROMOD - Annual amounts (in mil.)

	EUROMOD				External				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Employment income	61703.20	63380.31	64798.00	66001.64	57365.85	60801.57	N/A	N/A	1.08	1.04	N/A	N/A
Self-employment income	6973.72	7168.92	7319.68	7438.93	4728.07	5010.26	N/A	N/A	1.47	1.43	N/A	N/A
Private pensions	186.12	187.95	188.61	188.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rent income	2052.61	2072.89	2080.01	2077.87	1938.73	2193.88	N/A	N/A	1.06	0.94	N/A	N/A
Investment income	870.73	902.05	921.91	843.55	160.82	226.16	N/A	N/A	5.41	3.99	N/A	N/A

Source: Social Security, Statistics Portugal

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

	EUROMOD		External				Ratio			
	2017	2017	2018	2019	2020	2017	2018	2019	2020	
Benefits										
Disability pensions	199	229	175	188	N/A	0.87	1.14	1.06	N/A	
Survivor pensions	524	882	875	717	N/A	0.59	0.60	0.73	N/A	
Sickness benefit	175	629	686	737	N/A	0.28	0.25	0.24	N/A	
Family benefits (other than child benefits)	93	168	173	178	N/A	0.56	0.54	0.52	N/A	
Education benefits	112	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Housing benefit	422	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Social assistance - other	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Taxes and Social Insurance contributions										
Property tax	2441	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Source: Social Security, Statistics Portugal

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

	EUROMOD				External				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Benefits												
Disability pensions	1091.52	1109.52	1125.40	1131.71	1256.90	N/A	N/A	N/A	0.87	N/A	N/A	N/A
Survivor pensions	2291.59	2329.79	2363.57	2377.20	2274.36	N/A	N/A	N/A	1.01	N/A	N/A	N/A
Sickness benefit	408.86	420.19	429.22	436.56	513.67	N/A	N/A	N/A	0.80	N/A	N/A	N/A
Family benefits (other than child benefits)	220.51	226.61	231.50	235.50	497.96	N/A	N/A	N/A	0.44	N/A	N/A	N/A
Education benefits	171.38	174.46	177.25	178.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Housing benefit	22.87	23.28	23.65	23.82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social assistance - other	57.41	58.45	59.38	59.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and Social Insurance contributions												
Property tax	940.06	949.35	952.61	951.64	1527.90	1635.10	1653.40	N/A	0.62	0.58	0.58	N/A

Source: Social Security, Statistics Portugal

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

	EUROMOD				SILC	Ratio	External				Ratio			
	2017	2018	2019	2020	2017	2017	2017	2018	2019	2020	2017	2018	2019	2020
Benefits														
Old Age Pension (non contributive)	23	23	23	23	18	1.28	43	N/A	N/A	N/A	0.53	N/A	N/A	N/A
Unemployment benefit - regular	208	208	208	208	227	0.92	338	313	309	N/A	0.62	0.67	0.68	N/A
Unemployment benefit - social	39	39	39	39	39	1.00	98	81	69	N/A	0.40	0.48	0.57	N/A
Child benefit	796	790	868	865	603	1.32	829	820	827	N/A	0.95	1.06	1.05	N/A
Social Insertion Income	162	160	160	154	63	2.58	135	134	128	N/A	1.19	1.19	1.21	N/A
Solidarity Supplement for the Elderly	167	172	172	161	36	4.58	175	177	176	N/A	0.98	0.97	0.92	N/A
Taxes and Social Insurance contributions														
Personal Income Tax	3046	3036	3016	3035	0	N/A	2797	2845	N/A	N/A	1.09	1.06	N/A	N/A
Tax base	4643	4667	4683	4666	0	N/A	4784	4919	N/A	N/A	0.98	0.95	N/A	N/A
Tax credits	4629	4654	4667	4652	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Child tax credit	1225	1227	1231	1232	0	N/A	1238	1244	N/A	N/A	0.99	0.99	N/A	N/A
Employer social contributions	4236	4236	4236	4236	4236	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Employee social contributions	4236	4236	4236	4236	4236	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Self-employed social contributions	220	233	386	386	336	0.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: Child benefit recipient data in terms of households

Sources: Social Security, Statistics Portugal, Ministry of Finance

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

	EUROMOD				SILC				Ratio				External				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Benefits																				
Old Age Pension (non contributive)	74.5	75.8	77.0	77.6	53.7	54.6	55.5	55.9	1.39	1.39	1.39	1.39	269.7	N/A	N/A	N/A	0.28	N/A	N/A	N/A
Unemployment benefit - regular	759.1	774.4	793.0	807.1	1137.7	1162.1	1194.7	1222.6	0.67	0.67	0.66	0.66	993.5	N/A	N/A	N/A	0.76	N/A	N/A	N/A
Unemployment benefit - social	114.2	116.4	118.9	120.5	95.4	97.4	100.1	102.5	1.20	1.20	1.19	1.18	180.4	N/A	N/A	N/A	0.63	N/A	N/A	N/A
Child benefit	702.4	749.5	863.7	886.2	476.6	485.2	492.9	496.4	1.47	1.54	1.75	1.79	675.5	N/A	N/A	N/A	1.04	N/A	N/A	N/A
Social Insertion Income	372.6	374.9	379.3	374.7	194.0	197.0	200.2	200.2	1.92	1.90	1.90	1.87	315.8	N/A	N/A	N/A	1.18	N/A	N/A	N/A
Solidarity Supplement for the Elderly	133.7	141.6	143.8	141.1	56.8	57.8	58.7	58.7	2.35	2.45	2.45	2.40	205.9	N/A	N/A	N/A	0.65	N/A	N/A	N/A
Taxes and Social Insurance contributions																				
Personal Income Tax	12953.7	12872.3	13307.4	13616.3	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	11526.6	11998.0	N/A	N/A	1.12	1.07	N/A	N/A
Tax base	67900.5	70037.0	71824.0	72940.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	63978.7	68424.5	N/A	N/A	1.06	1.02	N/A	N/A
Tax credits	2872.7	2903.9	2931.7	2959.8	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Child tax credit	1071.2	1073.2	1076.6	1103.2	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	966.0	983.4	N/A	N/A	1.11	1.09	N/A	N/A
Employer social contributions	14654.5	15052.8	15389.5	15675.4	14654.5	15064.7	15381.5	15632.1	1.00	1.00	1.00	1.00	15079.2	16144.7	17160.7	N/A	0.97	0.93	0.90	N/A
Employee social contributions	6787.4	6971.8	7127.8	7260.2	6787.4	6977.3	7124.1	7240.1	1.00	1.00	1.00	1.00	7627.6	7704.5	8195.5	N/A	0.89	0.90	0.87	N/A
Self-employed social contributions	810.0	858.7	829.0	841.8	895.2	920.2	939.6	954.9	0.90	0.93	0.88	0.88	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Sources: Social Security, Statistics Portugal, Ministry of Finance

Table 4.9 - Distribution of equivalised disposable income

	EUROMOD				External				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
D1	3.27	3.26	3.26	3.26	2.90	2.90	0.00	0.00	1.13	1.12	N/A	N/A
D2	4.86	4.84	4.85	4.84	4.80	4.80	0.00	0.00	1.01	1.01	N/A	N/A
D3	5.88	5.86	5.87	5.86	5.90	5.90	0.00	0.00	1.00	0.99	N/A	N/A
D4	6.92	6.89	6.90	6.92	6.90	7.00	0.00	0.00	1.00	0.98	N/A	N/A
D5	7.93	7.90	7.90	7.90	8.00	8.00	0.00	0.00	0.99	0.99	N/A	N/A
D6	8.98	8.95	8.95	8.99	9.00	9.00	0.00	0.00	1.00	0.99	N/A	N/A
D7	10.26	10.28	10.30	10.28	10.30	10.30	0.00	0.00	1.00	1.00	N/A	N/A
D8	12.07	12.07	12.07	12.11	12.10	11.90	0.00	0.00	1.00	1.01	N/A	N/A
D9	14.99	14.96	14.96	15.02	14.90	14.80	0.00	0.00	1.01	1.01	N/A	N/A
D10	24.84	24.98	24.93	24.84	25.20	25.30	0.00	0.00	0.99	0.99	N/A	N/A
Median	9575.76	9836.24	10028.74	10181.44	9346.00	10023.00	0.00	0.00	1.02	0.98	N/A	N/A
Mean	11408.93	11737.22	11963.35	12109.39	11063.00	11786.00	0.00	0.00	1.03	1.00	N/A	N/A
Gini	31.37	31.53	31.48	31.47	32.10	31.90	0.00	0.00	0.98	0.99	N/A	N/A
S80/S20	4.90	4.94	4.92	4.92	5.22	5.16	0.00	0.00	0.94	0.96	N/A	N/A

Notes: Computed for individuals according to their household disposable income (HDI) Equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions.

Source for External Data: Eurostat, statistics Portugal, online database.

Table 4.10 - Poverty rates by gender and age

	EUROMOD				External				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
40% median HDI												
Total	5.12	5.21	5.11	5.18	6.00	5.90	0.00	0.00	0.85	0.88	N/A	N/A
Males	5.18	5.26	5.16	5.21	6.00	6.10	0.00	0.00	0.86	0.86	N/A	N/A
Females	5.06	5.16	5.07	5.15	6.00	5.80	0.00	0.00	0.84	0.89	N/A	N/A
50% median HDI												
Total	9.54	9.56	9.52	9.55	10.80	10.50	0.00	0.00	0.88	0.91	N/A	N/A
Males	9.57	9.55	9.50	9.51	10.60	10.20	0.00	0.00	0.90	0.94	N/A	N/A
Females	9.52	9.57	9.54	9.58	11.00	10.70	0.00	0.00	0.87	0.89	N/A	N/A
60% median HDI												
Total	16.25	16.55	16.38	16.70	17.30	17.20	0.00	0.00	0.94	0.96	N/A	N/A
Males	15.50	15.78	15.62	15.87	16.60	16.60	0.00	0.00	0.93	0.95	N/A	N/A
Females	16.92	17.24	17.07	17.44	17.90	17.80	0.00	0.00	0.95	0.97	N/A	N/A
70% median HDI												
Total	24.81	24.97	24.74	24.98	25.30	25.20	0.00	0.00	0.98	0.99	N/A	N/A
Males	23.77	23.90	23.67	23.90	24.30	24.30	0.00	0.00	0.98	0.98	N/A	N/A
Females	25.75	25.92	25.70	25.95	26.30	26.10	0.00	0.00	0.98	0.99	N/A	N/A
60% median HDI												
0-15 years	17.00	17.18	16.47	16.54	18.50	17.50	0.00	0.00	0.92	0.98	N/A	N/A
16-24 years	20.22	20.64	20.07	20.11	21.50	21.90	0.00	0.00	0.94	0.94	N/A	N/A
25-49 years	13.61	13.68	13.48	13.57	14.80	15.10	0.00	0.00	0.92	0.91	N/A	N/A
50-64 years	17.49	17.65	17.60	17.72	18.00	18.20	0.00	0.00	0.97	0.97	N/A	N/A
65+ years	16.86	17.66	18.00	19.14	17.70	17.30	0.00	0.00	0.95	1.02	N/A	N/A

Notes: Computed for individuals according to their household disposable income (HDI) Equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions.

Source for External Data: Eurostat, statistics Portugal, online database.

Table 4.11 - Minimum wage validation

	Baseline				Min Wage Incl.				Ratio			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Equivalised disposable income	79482	81736	83263	84236	80147	82461	84048	85212	0.99	0.99	0.99	0.99
Employment income	61703	63380	64798	66002	62541	64295	65791	67243	0.99	0.99	0.98	0.98
Gini coefficient	31.37	31.53	31.48	31.47	30.94	31.08	31.01	30.89	1.01	1.01	1.02	1.02
Poverty rate (60% median HDI)	16.25	16.55	16.38	16.70	16.05	16.23	16.37	16.80	1.01	1.02	1.00	0.99