EUROMOD

COUNTRY REPORT

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

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

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The results presented in this report are derived using EUROMOD version G4.0. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD.

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

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1. BASIC INFORMATION

1.1 Basic information about the tax-benefit system

- The Portuguese tax-benefit system is a single national system. However, the autonomous regions of the Azores and Madeira have lower income tax rates.
- The "fiscal year" coincides with the calendar year (*i.e.*, January 1st to December 31st). Changes to the tax system generally take effect in January whereas benefit changes can occur throughout the year.
- Legal retirement age, in 2013, was 65 (both men and women), although it could be lower for workers in some special occupations. The reforms implemented in 2007 introduced the "sustainability factor", a reduction factor which is updated every year according to the national life expectancy. In 2014, the legal age of access to the old-age pension has raised to 66, and from 2016, the legal age for the entitlement to the old-age pensions will vary according to the evolution of life expectancy at the age at 65, during the 2nd and 3rd years before the pension date. With this amendment, in 2016 the legal retirement age has raised to 66.2. The determination of the sustainability factor has changed, the initial reference year, of the average life expectancy at 65, passed from 2006 to 2000. For a worker with the legal retirement age or more is given the option of retiring later with a pension bonus.
- For tax purposes, dependent children are defined as children aged 18 or under, or those under 25 that have a monthly income below the national minimum wage, and attend or successfully completed year 11 or 12 at school during the relevant fiscal year.
- For benefit and tax credit purposes single parents are defined as parents of resident dependent children who are not cohabiting with a partner of the opposite sex; for tax purposes single parents are defined as parents of resident dependent children who are not married.
- Until 2015 aggregate income was divided by two and the tax rate was applied, then, the resulting tax liability was multiplied by two to obtain the couple's total tax liability. In 2015 the income tax base was divided by a value which took into account the number of household members (each taxpayer is granted a factor 1 and each dependent the factor 0.3 or 0.15). That reduction was limited according to the family situation and the respective tax regime. In 2016, with the new Government in office, the rules in personal tax were reverted to the scheme in place in 2014, e.g., the family quotient was suspended. 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, as there can always be differences between the withholdings at source and the exact tax liability.
- The means-tested component of the benefit system uses different time scales to evaluate incomes: 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 definition.

1.2 Social Benefits

Old age contributory pension (*Pensão de velhice*): Old-age insurance provides a pension to all the elderly aged 65 (66 in 2014 and 2015, 66.2 in 2016) and over that contributed to the compulsory social insurance scheme (both employees and self-employed). The amount of the old-age pension is a function of the average monthly earnings adjusted over the person's entire insurance life, up to a maximum of 40 years.

Old-age social pension (*Pensão social de velhice*): The social pension is a non-contributory means tested pension for the elderly that provides a minimum pension to elderly individuals aged 65 (66 in 2014 and 2015, 66.2 in 2016) or more on low incomes. There are also disability and survivor social pensions, but they cannot be simulated in EUROMOD.

Survivors' pension (*Pensão de sobrevivência*): Survivors' pension is granted to the surviving spouse (aged at least 35) of a deceased insured person, or to the divorced surviving spouse in receipt on maintenance. It can also be granted to children until they are 18 (25 or 27 if they are in higher education) or, when there are no surviving children or spouses, to the dependent parents of the deceased.

Disability benefit (*Pensão de invalidez*): Any worker under the retirement age who becomes unable to earn more than one third of his/her normal wage due to illness or a work related accident not covered by health and safety legislation is entitled to the disability benefit/pension.

Minimum pension (Pensão mínima): New pensioners entitled to an old age or a disability pension and who contributed to the compulsory social insurance scheme are guaranteed a minimum pension. Its value is updated every year.

Sickness cash benefit (*Subsídio de doença*): The sickness cash benefit is available to all insured employees as part of the compulsory social insurance scheme, but participation is voluntary to the self-employed. Benefits are related to earnings.

Child benefits (*Abono de família para crianças e jovens*): The "Abono de família" is a social policy directed at families with children and young people as a compensation for their expenditure on raising and educating them. It belongs to the same group as funeral expenses allowances or special benefits paid to disabled and dependent people, essentially children. Although it is a means tested child benefit has a more "universal" character than the other policies that rely on income testing.

Maternity/Paternity cash benefit (*Subsídio de parentalidade*): The maternity/paternity cash benefit is available to all insured female or male employees as part of the compulsory social insurance scheme. Benefits are related to earnings.

Solidarity supplement for the elderly (*Complemento Solidário para Idosos*): The solidarity supplement for the elderly was introduced in 2006. It is a non-contributory means tested scheme designed to help pensioners aged 65 (66 in 2014 and 2015, 66.2 in 2016) or more living on low incomes. It considers a wide range of income sources which are not usually taken into account 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*): The social integration income is a cash benefit granted together with an integration contract. Its aim is to ensure that individuals and their family members have sufficient resources to cover their basic needs, while promoting their gradual social and professional integration.

Unemployment benefits (*Subsídio de desemprego*): Unemployment insurance and unemployment assistance are the two main policies that provide financial compensation to the unemployed. The assistance benefit acts as an extension of the main benefit or as the only benefit for shorter warranty periods, being both modalities means tested. Both benefits (main one and assistance) are restricted to participants in the employees' compulsory social insurance scheme. The main benefit amount is related to earnings. A new benefit for long-term unemployed started in April 2016, re-enacting the assistance benefit one year after its exhaustion if the individual is still unemployed and still fulfils the remaining conditions like the means test. This new benefit is not simulated in EUROMOD due to lack of relevant information in the database.

National Minimum Wage (Retribuição Mínima Mensal Garantida): Although not strictly a social benefit, the minimum wage guarantees by law a minimum remuneration to all full time workers.

Monthly amounts: 485 euros until September 2014; 505 euros from October 2014 to December 2015; 530 euros since January 2016.

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 and employers. 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 contributions (*contribuições de trabalhadores independentes*): Self-employed workers pay contributions according to the kind of protection they choose (either basic or broader coverage) and declared reference remuneration, regardless of their actual earnings.

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

1.4 Taxes

Some of the most relevant taxes:

Personal income tax (*Imposto sobre o Rendimento das Pessoas Singulares - IRS*): Personal income tax is paid by individuals residing in Portugal and by non-residents receiving income in Portugal. If the resident is part of a family unit composed by spouse and dependents, then this tax applies to all 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 apply. Labour income is also taxed at source, but it is re-evaluated at the end of the year tax calculations stage.

Corporate income tax (Imposto sobre o Rendimento das pessoas Coletivas – IRC): Corporate tax is paid by companies on their profits at a flat rate. There is also a local government levy ("Derrama") which is added to the IRC.

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.

Value added tax (*Imposto sobre o Valor Acrescentado - IVA*): The general rate was set at 20% between July 2008 and June 2010, 21% between July-December 2010 and, finally, 23% since January 2011. Lower rates apply to specific classes of goods and in the autonomous regions of the Azores and Madeira.

Special taxes on consumption include Alcohol duty/Tax (Imposto sobre o Álcool 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 'new car'sales tax (Imposto Sobre Veículos – ISV) and the (annual) car Tax (Imposto Único de Circulação – IUC).

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1 Scope of simulation

Table 2.1 Simulation of benefits in EUROMOD

	Variable name(s)	Treatment in EUROMOD 2013	2014	2015	2016	Why not fully simulated?
Old age contributory pension	poact_s	PS	PS	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	PS	PS	No data on contributory career (years, amount of contributions); split of the original microdata aggregated variable related to old age pensions only;
Survivors pension	psu	I	I	I	I	No data on the loss of family members;
Disability benefit	pdi	I	I	I	I	No data on disability incidence;
Sickness cash benefit	bhl	I	I	I	I	No data on sick leave incidence
Child benefit	bch_s	S	S	S	S	
Other Family Benefits	bfa	I	I	I	I	Composed of several benefits impossible to split and to simulate, including maternity cash benefits
Solidarity supplement for the elderly	bsaoa_s	PS	PS	PS	PS	No data on the offspring of beneficiaries that don't live together 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	PS	PS	Difficulty in matching the simulated family unit with the actual one; difficulty in dealing with non-take up issue;
Other Social Assistance Benefits	bsaot	I	I	I	I	Composed of several benefits impossible to split and to simulate.
Education benefits	bed	I	I	I	I	Composed of several benefits impossible to split and to simulate.
Housing benefit	bho	I	I	I	I	Composed of several benefits impossible to split and to simulate.
Unemployment benefit (contributory)	bunct_s	PS	PS	PS	PS	No data on reason for becoming unemployed (like voluntary or compulsory redundancy); split of the original aggregated variable only.
Unemployment benefit (non-contributory)	bunnc_s	PS	PS	PS	PS	No data on reason for becoming unemployed (like voluntary or compulsory redundancy); no data on benefits history; split of the original aggregated variable only.

Notes: "E": *excluded* from the model as it is neither included in the micro-data nor simulated; "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

	Variable name(s)	Treatment in EUROMOD				Why not fully simulated?
		2013	2014	2015	2016	
Personal income tax	tin_s	PS	PS	PS	PS	Influenced by individual choices; no data available on some of the deductions/rebates (particularly health, one of the most important deductions)
Property transfer municipal tax		E	E	E	E	
Property municipal tax		E	E	E	E	
Value added tax		E	E	E	E	
Employee social insurance contribution	tscee_s	S	S	S	S	General rules assumed;
Employer social insurance contribution	tscer_s	S	S	S	S	General rules assumed;
Self-employed social insurance contribution	tscse_s	PS	PS	PS	PS	General rules assumed. Significantly influenced by individual choices.

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

- ***Structural changes between 2013 and 2014***

Old age pension and social pension: The legal age of retirement rose from 65 to 66; changes in the sustainability factor affect new pensions amounts (higher cut than before if pension is claimed before age 66; no cut if claimed at 66 or at an older age).

Solidarity supplement for the elderly: Minimum age rose from 65 to to 66 years.

Personal income tax: Deduction of 15% of the amount of the VAT paid in products or services from specific sectors.

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

Personal income tax: The number of dependent children and dependent parents now add up to the income divisor before being subject to the tax rates (family quotient); deduction of general household expenses, corresponding to 35% of the amount of expenses incurred by any member of the household, limited to € 250 per taxpayer, whose taxpayer number is included in invoices for services or goods acquired in any sector of activity.

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

Old age pension and social pension: Minimum age rose to 66 years and 2 months.

Unemployment benefit (assistance): Introduction of a new benefit for long-term unemployed.

Child benefit: Increase in the benefit amount by 3.5%, 2.5% and 2% in the 1st, 2nd and 3rd income bracket amounts, respectively (since February 2016); further increase by 0.5% in the 2nd and 3rd income bracket amounts (since April 2016); increase of 15pp in the bonus for lone parent families; increase by 3% in the bonus for handicapped children.

Social integration income: Change to the OECD equivalence scale; indexation to SSI changed to 43.173%. Resulting amount: 180.99/month.

Solidarity supplement for the elderly: Minimum age rose to 66 years and 2 months; increase in the reference value from 4,909 to 5,059 euros/year.

Personal income tax: The rules for the quotient were reverted to the scheme in place in 2014, e.g., the family quotient was suspended.

2.2 Order of simulation and interdependencies

The following table shows the benefits and taxes simulated by EUROMOD for the years 2013-2016. As there were few structural changes in the Portuguese system during this period, the order in which the policies are simulated remains unchanged and can be described in a single table.

The simulation order results essentially from the interdependence between policies, as the income simulated by some is then taken as an input by others. For example, the minimum wage and minimum pension policies are simulated first, as their outcomes are employment and pension's income, which will be used by subsequent policies. 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. Child benefit comes next, although it is not used in later policies, and therefore its ordering becomes irrelevant. Next in the simulation spine are the taxes and contributions policies and, finally, although the order is now irrelevant, the minimum means tested schemes and the social integration income.

Table 2.3 EUROMOD Spine: order of simulation, 2013-2016

Policy	2013	2014	2015	2016	
SetDefault_pt	on	on	on	on	DEF: DEFAULT VALUES FOR VARIABLES
uprate_pt	on	on	on	on	DEF: UPRATING FACTORS
Uprate_bands_pt	on	on	on	on	DEF: UPRATING IN BANDS: PENSIONS
ConstDef_pt	on	on	on	on	DEF: CONSTANTS
ilsdef_pt	on	on	on	on	DEF: STANDARDISED INCOME LISTS
tudef_pt	on	on	on	on	DEF: ASSESSMENT UNITS
InitVars_pt	on	on	on	on	DEF: Initialise variables
random_pt	on	on	on	on	DEF: Random assignment for bsaoa_s
FYA_pt	n/a	n/a	n/a	n/a	SWITCH: full year adjustments
yem_pt	off	off	off	off	INC: Minimum wage (salario mínimo)
yempb_pt	on	on	on	on	INC: Public Sector wages cuts
poacm_pt	off	off	off	off	SWITCH: Minimum pension (Pensões mínimas)
yempb_pt	on	on	on	on	INC: Public Sector wages cuts
pcuts_pt	on	on	on	on	INC: Pensions cuts
neg_pt	on	on	on	on	DEF: recode negative self-employment income to zero
bunct_pt	on	on	on	on	BEN:Unemployment insurance (subsídio de desemprego)
bunnc_pt	on	on	on	on	BEN: Unemployment assistance (subsídio social de desemprego)
buncm_pt	on	on	on	on	BEN:Unemployment benefit bonus
poanc_pt	on	on	on	on	BEN: Social Pension (Pensão social de velhice)
bch_pt	on	on	on	on	BEN: Child benefit (Abono de família para crianças e jovens)
tscee_pt	on	on	on	on	SIC: Employee social insurance contributions
tscer_pt	on	on	on	on	SIC: Employer social insurance contributions
tscse_pt	on	on	on	on	SIC: Self-employed social insurance contributions
tin00_pt	on	on	on	on	TAX: Progressive personal income tax
tiniy_pt	on	on	on	on	TAX: Income tax on capital income
bsaoa_pt	on	on	on	on	BEN: Solidarity supplement for the elderly (Complemento Solidário para Idosos - CSI)
bsa00_pt	on	on	on	on	BEN: Social integration income (Rendimento social de inserção ou mínimo garantido)
output_std_pt	on	on	on	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
output_std_hh_pt	off	off	off	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

2.3 Policy switches

As indicated in Table 2.3 above, the policy spine starts with various ‘switches’ that enable the model to take into account issues that seriously affect the implementation of most policies or not. Depending on user’s choices, relevant adjustments are then automatically applied throughout the model. The following switches are applicable to the case of Portugal:

• Minimum Wage (yem_pt) is turned off throughout due to unsatisfactory results: the underlying EU-SILC data seems to prevent the simulation of the minimum wage;

• The same applies to the Minimum Pensions (poacm_pt), which is also turned off for the whole period.

2.4 Social benefits

2.4.1 Introductory note on austerity measures

Since August 2010, following the debt crisis, Portuguese authorities have been implementing a set of austerity measures with significant repercussions on social benefits, particularly on social unemployment benefit (assistance), social integration income, and child benefit.

From the end of 2015 the Portuguese government has taken measures in order to improve families' income, raising income levels to economically vulnerable families by strengthening social support and restoring the minimum social standards.

2.4.2 Unemployment benefits: insurance (*bunct_s*)

The unemployment benefit cannot be fully simulated in EUROMOD, as there is no information on the reason for becoming unemployed (like voluntary or compulsory redundancy), nor on the duration of the most recent jobs. This constraint applies to the main unemployment benefit, sometimes 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.

However, 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 procedures).

- ***Definitions***

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 made redundant (exclusively by decision of the employer) after working for at least 360 days over the previous 24 months (insurance period), and excluding self-employment.
- Actively looking for work.

- ***Benefit amount***

- Its value is equal to 65% of the referring reference remuneration (lower bound: the SSI, unless this value is higher than that remuneration; upper bound: 2,5 times the SSI;
- The remuneration is calculated by averaging the earnings/wages of the first 12 months of the last 14 month period before being made redundant;
- For claims starting after April 2012, after six months the benefit value is reduced by 10% (even if it then becomes lower than the lower bound defined above); there is also a new bonus of 10% for couples with children if both partners claim regular or assistance unemployment benefit.

- ***Length***

Table 2.4 Unemployment benefit's length, after April 2012

Age	Mths. with wage	Unemployment benefit's lenght		
		in days	in months	bonuses
up to 29	up to 14	150	5	-
	15-23	210	7	
	24+	330	11	30 days for every 5 years employed
30-39	up to 14	180	6	-
	15-23	330	11	
	24+	420	14	30 days for every 5 years employed
40-49	up to 14	210	7	-
	15-23	360	12	
	24+	540	18	45 days for every 5 years employed
50+	up to 14	270	9	-
	15-23	480	16	
	24+	540	18	60 days for every 5 years employed

- ***Contributions to social security***

(For benefits given in October-December 2013)

During this time, "insurance" benefits are subject to a contribution of 6% to social security. Net monthly benefit minimum set at SSI amount (unless gross benefit is lower). Benefits that are given a 10% bonus when both members of a couple with children are unemployed are exempted of contributing. Due to its short duration, this contributions scheme is not being simulated in EUROMOD.

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

Chairmen and self employed may also be entitled to an unemployment benefit, under specific rules (not simulated in EUROMOD).

2.4.3 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 social and contributory related variables (bunnc_s and bunct_s). First of all, it is important to review thoroughly the social (or assistance) unemployment benefit framework:

- ***Definitions***

This benefit is awarded either 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 assistance 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 who have an income lower than the social pension if they are single or, if they have a partner, the couple's income is lower than twice the value of the social pension).

- ***Eligibility conditions***

- (For the "initial benefit modality") Being fired of a job (by exclusive decision of the employer) after working at least 180 days over the previous 12 months to the firing date (insurance period), excluding self-employment;
- (For the "prolonging modality") Having ended the main assistance unemployment benefit;
- (For the long-term unemployed) Previous recipients of the means tested social unemployment benefit who are unemployed one year after the end of the benefit and still fulfil the remaining conditions are entitled to a new six-month (from April 2016)
- Actively looking for work.

- ***Benefit amount***

- The amount is equal to 80% of the SSI for individuals in a single benefit unit;
- It is equal to 100% of the SSI if the benefit unit size is two or more
- For claims starting after April 2012, there is a bonus of 10% for couples with children if both partners claim regular or assistance unemployment benefit.
- The amount for the new benefit for long-term unemployed (from April 2016) is 80% of the previous.

- ***Income test***

The family unit equivalent income (as defined below) must be less then 80% of the SSI.

The equivalent income is defined by the total income after appliance of the following equivalence scale:

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

There are specific rules regarding investment and property income:

- FINANCIAL ASSETS - If 5% of the total financial assets is superior to the yearly investment income declared, this will be the amount considered

- PROPERTY ASSETS - If 5% of the total estate assets is superior to the yearly property income declared, this 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 Social Support Index.

EUROMOD Notes: this last two rules are impossible to simulate

The family's total financial assets value must be lower than 240 x SSI (240 x 419.22 = 100,612.80 euros.

- ***Benefit's length***

Initial modality: Same as for "insurance" benefit.

Prolonging modality: If age at the end of the "insurance" benefit is below 40 – half of the "insurance" benefit's length; otherwise, the same as the initial modality.

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
yiy	INCOME: Investment
bho	BENEFIT/PENSION: Housing (new from August 2010)

- ***Split***

For the split to be possible, the following rules must be observed:

1) Unemployment benefit exists: bun variable is different from zero.
2) Amount proximity: the value of the bun variable is between 75% and 125% of the reference threshold;
    a. 80% of the SSI if the unit size is 1;
    b. 100% of the SSI if the unit size is two or more.
3) Benefit eligibility: unit's income per equivalent adult less than 80% of the SSI.

If the set of rules described above is fully observed, then the split happens, and the original amount in the variable bun is transferred to bunnc. If not, the amount is transferred to the variable bunct (previous section).

The value of the SSI is €419.22 since 2009.

2.4.4 Minimum pension (*poacm_s*)

The simulation of the contributory pensions is not achievable using the available microdata, due to the lack of information on several attributes required to compute them. However, it is possible to offer an approach to simulate the non-contributory pensions and, with some degree of simplification, the level of the minimum pensions. Furthermore, this methodology offers the possibility of "correcting" the original data on the grounds of low undervalued old age pension income.

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

- ***Definitions***

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 value lower than the minimum the pensioner is entitled to, as shown below.

- ***Benefit amount***

Minimum pensions are composed of two parts: the statutory pension and the "social supplement" (the difference between the statutory and the minimum value). 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 – length of time 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 2.6 Old age contributory pension: minimum values, 2013-2016 (monthly, in €)

Career Length	2013	2014	2015	2016
Less than 15 years	**256.79**	**259.36**	**261.95**	**263.00**
15 to 20 years	274.79	274.79	274.79	**275.89**
21 to 30 years	303.23	303.23	303.23	**304.44**
More than 30 years	379.04	379.04	379.04	**380.56**

Note:Updates in bold.

The 2007 reform brought in a new rule for the automatic **update of pensions**, which is a function of inflation and GDP growth. However, as inflation became negative in 2010, this rule was suspended, and the minimum pensions were upgraded in that year using an administrative factor of 1.25%, as shown in Table 2.6 above. Due to the crisis, this indexation rule was then suspended in 2011-15, and only the lowest of the minimum pensions were updated in 2012-15 as shown in the 1st row of the table above. In 2016, the automatic mechanism for pensions indexation set in 2008 was unfrozen. Thus, every pension amounting up to 628.83 euros/month, including every minimum pension, was updated by 0.4% (the inflation rate known in November 2015). Every other amount remained frozen.

2.4.5 Child benefit (*bch_s*)

- ***Definitions***

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

The benefit's law specifies a wider concept of benefit unit than the one which is used in general. The *de facto benefit* unit is basically a tax unit including the recipient child (or children), his/her siblings, his/her parents, tutors or step parents.

Equivalence scale for income evaluation: 1 for each recipient plus one. This scale only takes into account the number of children. For example: the income of a family with two recipient children is divided by 3.

- ***Eligibility conditions***

Child(ren) aged 16 or below. It may be extended up to, but not above, individuals aged 24 under certain conditions:

a) aged 17 or 18: if in primary education (school year 1 to 6) or higher;

b) aged 19 or 20: if in secondary education (school year 7 to 12) or higher;

c) Until age 24: if in tertiary (higher) education;

d) Also until 24: disabled children on disability allowance (not simulated) and children not in work.

- ***Income test***

The annual "reference income" cannot exceed five times the SSI. It is calculated as the total annual family unit income divided by the total number of recipients plus one. Families are ranked in three income brackets:

Table 2.7 Child benefit income brackets, 2013-2016

Income bracket	Income bracket upper bounds (in euros)
1st	0.5 x 14 x 419.22 = 2,934.54
2nd	1.0 x 14 x 419.22 = 5,869.08
3rd	1.5 x 14 x 419.22 = 8,803.62

Note: Social Support Index (SSI):€ 419.22 (2009-2016).

Table 2.8 Child benefit: assessed income

Variable	Label	Remarks
yem	Employment income	
yse	Self-employment income	70% of earnings, 20% of sales
bunct_s	Contributory unemployment benefit	
bunnc_s	Non-contributory unemployment benefit	
poact_s	Contributory old age pension	
poanc_s	Non-contributory old age pension	
psu	Survivors pension	
pdi	Disability pensions/benefits	
bed	Educational benefits	
ypp	Private pension	
ypr	Property income	
yiy	Investment income	
yot	Other income	

- ***Benefit amount***

The amount paid every month depends on the child's age and the income bracket of the child's family, as shown in the following table:

Table 2.9 Child benefit amounts, 2013-2015 (monthly, in €)

Income bracket	2013-2015	
	<=12yrs	>12yrs
1st	140.76	35.19
2nd	116.74	29.19
3rd	92.29	26.54

There are no changes in the 2012-2015 period, but several changes take place in 2016.

Table 2.10 Child benefit amounts, 2016 (monthly, in €)

	February and March 2016		Since April 2016	
Income bracket	**<=12yrs**	**>12yrs**	**<=12yrs**	**>12yrs**
1st	145.69	36.42	145.69	36.42
2nd	119.66	29.92	120.26	30.07
3rd	94.14	27.07	94.61	27.21

Supplement for large families:

- When a second child is born (or integrated) in a family, the benefit of all children aged between 12 and 36 months is doubled;
- When a third child is born (or integrated), the benefit of all children aged between 12 and 36 months is tripled.

The child benefit is paid monthly, twelve times a year. An extra payment (of the same monthly value) is made in September to children that meet all of the following criteria:

a) Their family is in the 1st income bracket;
b) They are aged between 6 and 16 (age reached during the civil year);
c) They attend school regularly.

Bonus for lone parent families:

20% increase in the above amounts (since February 2016 increased to 35%).

Education allowance:

Twice the amount of the benefit the child is receiving. Set of criteria that must be fully observed:

a) The family income bracket is the first or the second;
b) The child is frequenting the 10-12th grade;
c) The child's age is less than 18 years (can be 18 if that age is attained during the school year);
d) The child has school success (not able to be simulated);

- ***Split***

EU-SILC variable HY050g (Family/children related allowances) contains information about two benefits: bch (child benefit) and bfa (other family/children related allowances). This split should be done according to child benefits rules.

The amount of child benefit, bch shall take:

1) the original value (bfa), if it does not exceed 20% above of the calculated amount;
2) the calculated value for the child benefit, if this amount is 20% less than original bfa;

In the end a final bfa will be equal to the difference between original bfa and bfa.

2.4.6 Old age social pension (*poanc_s*)

- ***Definitions***

The recipient is the individual, although if he/she lives with a spouse/partner, the income of the couple is taken into account in the income test.

Equivalence scale: single recipient: 1and 1.5 for couple – derived from the income test (see below).

EUROMOD Notes: the original EU-SILC py100g variable (Old-age benefits) must be split first as it may include a social pension. This split should be done according to the policy rules described below.

- ***Eligibility conditions***

Minimum age: 65 years in 2014, 66 in 2014 and 2015, 66 years and 2 months in 2016.

- ***Income test***

a) single recipient: monthly gross income up to 40% of the SSI (*);
b) couple: monthly gross income up to 60% of the SSI.

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

Table 2.11 Old age social pension assessed income

Variable	Label
yem	Employment income
yse	Self employment income
bunct_s	BEN:Unemployment insurance (subsídio de desemprego)
bunnc_s	BEN: Unemployment assistance (subsidio social de desemprego)
poact_s	Contributory old age pension
psu	Survivors pension
pdi	Disability pension
bed	Education benefit
ypp	Private pension
ypr	Property income
bsaot	Other social assistance benefits
bho	Housing benefits
yiy	Investment income
yot	Other income

One important rule to bear when simulating the social pension, especially when the simulation is testing couples: although the social pension itself (of the partner, in this case) amounts to the total couple income, it should be taken in account only its base value, e.g, the Extraordinary Supplement of Solidarity should not be included.

- ***Benefit amount***

The monthly value of the social pension was equal to €197.55, in 2013 as shown in Table 2.12 below. Each recipient is also awarded an 'Extraordinary Solidarity Supplement' (Complemento Extraordinário de Solidariedade) with a value that varies with their age. The value, since 2013, is equal to €17.54 for those aged 65-69 and €35.06€ for those aged 70 or more. Therefore, the total actual values of the social pension, in 2013, were €215.09 and €232.61, respectively. See full table for the period 2013-2016:

Table 2.12 Old age social pension amounts, 2013-2016 (monthly, in €)

	2013		2014		2015		2016	
	65-69	70+	65-69	65-69	70+	65-69	65-69	70+
Social pension base amount	**197.55**		**199.53**		**201.53**		**202.34**	
Extraordinary supp. solidarity	17.54	35.06	17.54	17.54	35.06	17.54	**17.61**	**35.20**
Sum	**215.09**	**232.61**	**217.07**	**215.09**	**232.61**	**217.07**	**219.95**	**237.54**

Note: updates in bold.

The social pension is paid monthly 14 times a year: there is an extra instalment paid in July and another one paid in December (in recent years, the December instalment is evenly distributed along the 12 months in the year).

- ***Split***

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

2.4.7 Solidarity supplement for the elderly (bsaoa_s)

- ***Definitions***

The recipient is the individual, although if he/she lives with a spouse/partner, the income of the couple is observed. Their children/descendants' income is also observed in an indirect way. Thus, the family unit is the individual, if living alone, or the couple, if not.

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

- ***Eligibility conditions***

Age: 65 or more before 2014, 66 in 2014 and 2015, 66 years and 2 months in 2016.

- ***Income test***

a) single recipient: annual gross income up to €4,909 (in 2013);
b) couple: annual gross income up to 1.75*€4,909 (in 2013); however, the single recipient means test must also be met: if one of the spouses/partners has an annual gross income exceeding €4,909, he/she will not be eligible.

Table 2.13 Solidarity supplement for the elderly: reference values, 2013-2016 (annual, in €)

	2013-2015	2016	
		Jan-Mar	Since Apr
Single	4,909.00	5,022.00	5,059.00
Couple (1.75xsingle)	8,590.75	8,788.50	8,853.25

The income of both elements of the family unit (Y1 and Y2 in the formulae in Table 2.18 below) include a wide range of income variables in EUROMOD, as listed in Table 2.14 below, although some types of income are impossible or difficult to simulate.

Table 2.14 Solidarity supplement for the elderly assessed income

Variable	Label	Remarks
yem	INCOME: Employment	
yse	INCOME: Self employment	Only 65% of the amount
bunct_s	BENEFIT/PENSION: Unemployment insurance	
bunnc_s	BENEFIT/PENSION: Unemployment : contributory	
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	Social assistance other	
bho	BENEFIT/PENSION: Housing benefit	
yiy	INCOME: Investment	
yot	INCOME: Other	
ypt	INCOME: Private transfers	
-	Family solidarity (see below)	Not fully simulated.
-	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 takes into account the income of the recipients' children, or descendants. They are evaluated within their own households, as defined by the Portuguese tax system (full definition given in section 2.6 below) and comprise their own partners and any dependent children of their own. The income level of each of the 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 CSI. However, it is only possible to simulate the family solidarity (FS) income when both the recipient and his/her descendants live in the same household.

The types of income of the recipients' descendants that are evaluated are listed in Table 2.15 below:

Table 2.15 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	Social assistance other
bho	BENEFIT/PENSION: Housing benefit

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 aged 18 or more, and 0.3 for every child aged 0-17). The equivalent income computed is then used to position the descendant on a scale:

Table 2.16 Solidarity supplement for the elderly: family solidarity scale

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

Note: RV values for 2013-15 given in Table 2.13 above.

Each ranking is translated into a family solidarity value as defined in the table below:

Table 2.17 Solidarity supplement for the elderly: family solidarity amounts

Rank	Family Solidarity (FS)	
	Parent(recipient) has no partner	Parent(recipient) has a partner
1st	No FS	No FS
2nd	5% of the RV	5% of the RV x 1.75
3rd	10% of the RV	10% of the RV x 1.75
4th	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. If the rank of one of these descendants is equal to 4, and whatever the rank of his/her siblings if there are any, the parent is immediately excluded from the CSI.

Two important remarks:

a) A descendant "generates" a FS value to each of his/her parents (and only to them). For example, if two recipients who live as a couple have a son with rank 2, then each of them will be awarded an extra CSI of €5022 calculated as 5% of €5022 times 1.75, using January 2016 values. But if the person is the son of only one of the recipients, for example, the wife, then he will only "generate" one extra amount of €434 awarded to his mother, and her husband will not be entitled to any CSI from this FS 'source';

b) 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.

In the formulae presented in the next section, Y_1 and Y_2 include the FS, but only in the case of the recipients (this stands essentially for Y_2).

- ***Benefit amount***

In general, the amount paid is the difference between the "reference value" (€4,909 in 2013, see Table 2.13 above for other values) and the annual income of the recipient. The calculations are simple when the recipient lives alone, but become complicated when they live in couples:

- When there is only one recipient in the couple (*i.e.*, the other partner does not meet the entitlement criteria), 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" (€4,909*1.75 in 2013) and the couple's total income;

- When both are recipients, the amount paid is given by the second difference above, *i.e.*, 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 2.18 Calculation of the solidarity supplement for the elderly

Single recipient:	$amount = RV - Y_1$
Couple, one recipient:	$amount = \min \begin{cases} RV - Y_1 \\ RV \times 1.75 - Y_1 - Y_2 \end{cases}$
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.

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

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

- ***Split***

The EU-SILC hy060g variable (Social Exclusion Not Elsewhere Classified) contains information about several benefits. These are Solidarity Supplement for Older Persons, the Social Integration Income and other.

The Solidarity Supplement for Older Persons is the first to get from the split, taking into account the rules about this policy. Basically, for households with a positive amount in this variable (bsa>0) and with at least one person aged legal retirement age or more, the expected amount of Solidarity Supplement for Older Persons is calculated. If the original value (bsa) is greater or equal to that expected amount, then the Solidarity Supplement for the Elderly is equal to that amount, otherwise it is equal to the original value of bsa.

2.4.8 Social integration income (*bsa00_s*)

- ***Definitions***

The unit of analysis is the family. This unit comprises:
a) The head of the family;
b) His/her partner;
c) Relatives of the head aged under 18;
d) Other direct descendants of the head aged 18+ that are his dependents. Dependency is defined as having an income of up to 70% of the social pension.

Equivalence scale for income evaluation (until February 2016): 1 for the first adult (aged 18+); 0.5 for each additional adult; 0.3 for each child.

Equivalence scale for income evaluation (from March 2016): 1 for the first adult (aged 18+); 0.7 for each additional adult; 0.5 for each child.

- ***Eligibility conditions***

Age: individuals of all ages, but the head of the family, has to 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 product of the social pension (€189.52 in January 2013) by the scale of equivalence, *i.e.*, the family's equivalent income must not be higher than the social pension. From February 2013 the indexation to SSI changed to 42.495%. Resulting amount: 178.15. Since March 2016, the threshold value was again revised to the previous amount but in phased terms over four years, meaning the amount in place in 2016 increments in 25% of the difference between the two previous amounts [(189.52-187.15)*25%]. Thus, the new amount in place in 2016 is 180.99.

Specific test on financial assets – Not possible to simulate in EUROMOD: financial assets must be less than 60xSSI (25,153.20 euros).

Table 2.19 Social integration income assessed income

Variable	Label	Remarks
yem	Employment income	Only 80% of the amount
yse	Self-employment income	Only 80% of the amount
bunct_s	Contributory unemployment benefit	
bunnc_s	Non-contributory unemployment benefit	
poact_s	Contributory old age pension	
poanc_s	Non-contributory old age pension	
bsaoa_s	Solidarity supplement for older persons	
psu	Survivors pension	
pdi	Disability pensions/benefits	
bed	Educational benefits	
ypp	Private pension	
ypt	Private transfers	
ypr	Property income	
yiy	Investment income	
yot	Other income	
bsaoa_s	Solidarity supplement for the elderly	

- ***Benefit amount***

The amount paid is the difference between the SII (social pension times the scale of equivalence) and the family's total income. The SII is paid twelve times a year.

The SII suffered a profound reform in 2010 (with visible effects from 2011), but was again altered in August 2012. The most significant change concerns the equivalence scale used. Between 2010 and August 2012, an approximation to the so-called "OECD old scale" was used which was replaced by the "OECD modified scale" (although the children condition is still defined for the under-18, rather than the OECD under-14). This change reduced the potential target universe and the benefit amounts awarded to families with more than one person. In 2016 the equivalence scale was replaced again to the "OECD old scale".

Table 2.20 Equivalence scale used in Social integration income

Change	January 2013	February 2013- February 2016	March 2016 onwards
Equivalence scale	First adult: 1 Other adults: 0.7; Children: 0.5	First adult: 1; Other adults: 0.5; Children: 0.3	First adult: 1 Other adults: 0.7; Children: 0.5
Real estate limit	120 times the SSI	60 times the SSI	60 times the SSI
Threshold indexation	Threshold indexed to 45.208% of the SSI	Threshold indexed to 42.495% of the SSI	Threshold indexed to 43,173% of the SSI

Table 2.21 below illustrates the changes in the equivalence scale and in the threshold over the period with the example of a couple with two children.

Table 2.21 Social integration income changes in equivalence scale and in threshold (example for a couple with two children)

	Number of equivalent adults in SII	SII threshold (monthly)	Var (%)	SII's maximum amount as % of the Poverty Line (*)
Feb 2013- Feb 2016	2.1	374.12€		42.2%
Since Mar 2016	2.7	488.67€	30%	55.2%

(*) Poverty line in 2014 for a couple with two children: 885.68/month.

Other modifications not documented here 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, an important issue in the past;
- Individuals must now follow stricter rules concerning their integration programs. If an individual fails to attend a social security services meeting without reasonable motive his/her benefit is cancelled;
- Individuals who live in institutions funded by the state (including jail) are no longer eligible.

- ***Split***

Social Integration Income is just one of the possible benefits included in the original variable hy060g. Previously (see 2.4.7), Solidarity Supplement for Older Persons has been extracted by estimation from hy060g. This splitting technique is now applied again in order to extract Social Integration Income.

The process is similar to the one followed in Solidarity Supplement for Older Persons. First, the expected SII amount is calculated for each family with positive bsa, according to the policy rules and considering a 20% margin in order to take into account the other supplements that this policy pays. If the amount remaining after deducting Solidarity Supplement for Older Persons is greater, then the SII is equal to that amount being the rest left to other benefits (bsaot), otherwise it is equal to the amount remaining after deducting the Solidarity Supplement for Older Persons.

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 similar to the private sector flat 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, disabled). Due to 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 at a 23.75% flat rate.

2.5.3 Self-employed social contributions *(tscse_pt)*

- The self-employed workers one general rate: 29.6% (28.3% for agricultural workers);
- The contribution base is approximately the actual self-employment income. However, the self-employed individuals may opt for a base higher than his/her actual income;
- The contribution level is fixed each October (brackets given in Table 2.22 below) and remains fixed for 12 months as long as the individual remains self-employed for that period;
- New self-employed individuals (or those who had no income for a during the previous year or longer) are placed in the first bracket;
- The contribution base of all other self-employed individuals 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;
- Progressive adjustment: every October the income bracket position of all self-employed individuals is revised.

If the self-employed individual works on a regular basis for one institution, *i.e.*, more than 80% of his/her self-employment income is paid by this institution and the individual has no other source of employment income, then the institution pays a contribution of 5% of the total amount it paid for the (self-employed) services.

EUROMOD notes: EUROMOD simulates the social contributions as if every worker chooses the compulsory coverage rate (25.4%) and the minimum reference remuneration (1.5 times the SSI).

Exemptions:

The self-employed workers are exempt from paying social contributions if: their annual income from self-employment is less than 6 times the SSI; they have earned as employees an income above 12 times the SSI, or they receive old-age or disability pensions. All these exemptions are simulated in EUROMOD.

Table 2.22 Self-employed contributions amounts (2013-2016)

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

2.6 Personal income tax *(tin00_pt)*

2.6.1 Tax unit

Personal income tax (Imposto sobre o Rendimento Singular – IRS) is paid 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 or stepchildren younger than 18 and not emancipated;
- Children, adopted children or stepchildren aged between 18 and 25 (adults), with a monthly income below the national minimum wage, who attended school up to year 11, or completed the compulsory military or civic service if male;
- Children, adopted children or stepchildren aged 18 or more that have been declared unfit to 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 the 31st December.

Dependent parents do not belong to the tax unit, but constitute a different tax unit of their own that is only included 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 that they are part of the son/daughter's tax unit.

Joint taxation for unmarried couples is not compulsory, but is by far the most frequent option. Therefore it is assumed to be compulsory for EUROMOD purposes.

2.6.2 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 (for allowances, see next section).

Table 2.23 Personal income tax assessed income (before allowances deduction)

Variable	Label	Remarks
yem	Employment income	
Yse	Self-employment income	
poact_s	Contributory old age pension	
poanc_s	Non-contributory old age pension	
psu	Survivors pension	
pdi	Disability pensions/benefits	
ypp	Private pension	
ypr	Property income	
Yiy	Investment income	Although interest is subject to personal income tax, it is generally taxed at source, through the banking system, at a flat rate (25%). Thus, in EUROMOD, it is simulated separately and not added to the families' income.

2.6.3 Tax allowances

Deductions are applied at the individual level, even when there is joint taxation. For instance, if both spouses/partners work, the deductions of the first income category (see Table 2.24 below for definitions) 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 2.24 Personal tax deductions, 2013-2016

Income category	Deductions			
	2013	2014	2015	2016
A – Employment income	72% of twelve times the national minimum wage = 4104 euros. If contributions to Social Security are superior, then their amount will be the limit. (Not simulated) The general limit may be increased up to 75% of twelve times the NMW when there were contributions to professional corps or expenses with professional training.	No changes	Ceased the basic deduction indexation to the NMW, but amount remains the same (4104); everything else also remains. (*)	No changes
B – Business and professional income	Simplified regime: taxable income is 20% of sales or 70% of other earnings, with the minimum set at 3395 (half yearly national minimum wage). For the simulation, we assume a **30% tax allowance** on self-employment income.	No changes	15% of sales or 75% of liberal job earnings or 35% of other services provision earnings (*) For the sim: **25% allowance**	No changes
E – Investment income	No particular deduction, but only 50% of the net yearly gain is taxable. (Not simulated,)	No changes	No changes	No changes
F – Rental income	Repairs and maintenance expenses effectively incurred, municipal tax and expenses with building administration. (Not simulated.)	No changes	No changes	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	No changes	No changes
H – Pensions	Deduction new limit: 4104 "Turning point" remains at 22,500 euros/year. Deduction subtracted by 20% of the yearly pension surplus above until it reaches zero (e.g., at 43,020 pension total)	No changes	Deduction limit remains at 4104 (although ceasing to be indexed to NMW as in employment income deduction). Also, this deduction becomes universal, e.g., there's no more "turning point" after which the deduction starts decreasing. (*)	No changes

(*) Since 2015 - Specific considerations regarding income in A, B and H from disabled/handicapped people (90% incapacity): only 90% of income from categories A, B and H is considered as taxable (as long as the reduction obtained in each category is 2500 euros maximum).

2.6.4 Tax base

Personal income tax (IRS) is computed as follows:

IRS = TAXABLE INCOME (a) * RATE (b) – TAX CREDITS

Where: **TAXABLE INCOME = GROSS INCOME – INCOME SPECIFIC DEDUCTIONS – REDUCTIONS**

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

Changes brought by the Family Quotient (2015)

The number of dependent children and dependent parents now add up to the income divisor:

a) Tax base from couples is divided by 2 + 0.3 * (no. dep. children + no. dep. parents) before being subject to the tax rates;

b) In individual taxation, tax base is divided by 1 + 0.15 * (no. dep. children + no. dep. parents) before being subject to the tax rates;

c) In the case of single/divorced individuals, tax base is divided by 2 + 0.3 * (no. dep. children + no. dep. parents) before being subject to the tax rates (note: the same dependent child or parent can't count for two different tax units);

d) As before, the resulting tax is then multiplied by the above quotients to obtain the tax liability (before tax credits)

This rule is not to be fully applied, however. There are limits in the tax base reduction obtained when applying the new rule as compared to the old one. For simulation purposes, the old rules (division by 1 or 2) must be kept for comparison.

So, maximum reduction admitted is:

Table 2.25 Tax base maximum reduction

	No. of dependent children or parents	Maximum reduction in collected tax (IRS)
Individual taxation	One	300 euros (+50 if monoparental)
	Two	625 euros (+125 if monoparental)
	Three or more	1000 euros (+200 if monoparental)
Joint taxation	One	600 euros
	Two	1,250 euros
	Three or more	300 euros (+50 if monoparental)

2.6.5 Tax schedule

The computed taxable income is subjected to tax rates according to income brackets, as shown in the following tables:

Table 2.26 Personal tax marginal rates, 2013-2015

Marginal Rate	2013-2015	
	Income bracket	Deduct
14.5%	Up to 7,000	0
28.5%	>7000 – 20,000	980
37.0%	>20,000 – 40,000	2,680
45.0%	>40,000 – 80,000	5,880
48.0%	Above 80,000	8,280
Plus **"additional solidarity tax"**: income above 80,000 and below 250,000 is additionally taxed in 2.5%; income above 250,000 is additionally taxed in 5%.		

Table 2.27 Personal tax marginal rates, 2016

Marginal Rate	2016	
	Income bracket	Deduct
14.5%	Up to 7,035	0
28.5%	>7,035 – 20,100	984.9
37.0%	>20,100 – 40,200	2,693.4
45.0%	>40,200 – 80,000	5,880.0
48.0%	Above 80,000	8,280.0
Plus **"additional solidarity tax"**: income above 80,000 and below 250,000 is additionally taxed in 2.5%; income above 250,000 is additionally taxed in 5%.		

Notes: The income of spouses and dependents is aggregated and the tax liability is determined according to the splitting system.
In Azores and Madeira the marginal tax rates are lower than in the mainland (not simulated).

Table 2.28 Net income guarantee (Mínimo de Existência), 2013-2016 (euros per year)

	2013	2014	2015	2016
Tax rates can't reduce net income below **X euros** if income originates mainly from employment and also pensions	NMW*14*1.2 = 8,148	No change	8,500	No change
If individual tax base is less or equal to **X euros** tax is zero	1,911	No change	Ceased	No change
Households with 3 or 4 dependent children and a taxable income less or equal to **x euros/year** are exempt (*)	NMW*14*1.6 = 10,864	No change	11,320	No change
Households with 5+ dependent children and a taxable income less or equal to **x euros/year** are exempt (*)	NMW*14*2.2 = 14,938	No change	15,560	No change

(*) or half the amount in couples choosing individual taxation.

2.6.6 Tax credits

Certain expenses related to health, education old age-care, housing, insurance premiums, and disability can be deducted from the taxable income and thus reduce the total tax liability. Table 2.29 below lists all personal tax credits and other deductions:

Table 2.29 Personal tax credits, 2013-2016

Tax credit group	Maximum limit			
	2013	2014	2015	2016
Tax credits regarding taxpayers and their dependent children or dependent parents or grandparents (defined has having income below minimum pension)	**213.75** per partner in the couple (or for a single) or **332.50** per lone parents + **213.75** per each dependent child (or **427.50** if aged <3) + 261.25 per dependent parent (403.75 if only one)	213.75 per partner in the couple (or for a single) or 332.50 per lone parents + 213.75 per each dependent child (or 427.50 if aged <3) **or 237.50 (427.50 if aged <3) in HHs with 3+ dependent children** + 261.25 per dependent parent (403.75 if only one)	**325** per each dependent child (or **450** if aged <3) + **300** per dependent parent (**410** if only one) (**other modalities are ceased**)	**600** per each dependent child (or 725 if aged <3) + **525** per dependent parent (635 if only one)
Health (*)	10% of expenses (with upper limits)		**15% (up to 1,000)**	No change
Education and training (*)	30% of expenses (with upper limits)		**30% (up to 800)**	No change
Retirement homes residency (*)	25% of expenses (with upper limits)		**25% (up to 403.75)**	No change
Housing (for mortgages – both capital and interest – and rents)	15% (up to **296** for mortgages or up to **502** for tenants in the official renting regime)	15% (up to **296** for mortgages or up to **414** for tenants in the official renting regime)	15% (up to 296 for mortgages or up to **502** for tenants in the official renting regime **and other specific limits** – see below)	No change
Paid alimonies (*)		20% of the alimonies annual amount up to €419.22	No change	No change
Disability	3,800 per married couples both disabled (or 1900 per individual) and/or 712.50 per disabled dependent			3,800 per married couples both disabled (or 1,900 per individual) and/or **1,187.50** per disabled dependent
Invoice claiming (*)	-	15% of the VAT paid in products and services from specific sectors (restaurants and hotels, car repair, …) up to 250 euros	No change	No change
Household general expenses	-		35% of expenses (up to 250 euros) supported by each partner in the couple or by each single taxpayer or 45% of expenses (up to 335 euros) in the case of lone parents – see below	No change

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

Specific limits for housing tax credit in 2015 and 2016

FOR TENANTS PAYING RENT

a) For individual tax bases (e.g., income divided by the family quotient, before being subject to tax rates – see above) below 7,000 euros (7,035 euros in 2016), the limit is augmented to 800.

b) For individual tax bases between 7,000 (7,035 in 2016) and 30,000 euros, the limit is augmented to:

$$Limit = 502 + 298 \times \frac{30{,}000 - Ind.Tax\ Base}{23{,}000}\ (in\ 2015)$$

$$Limit = 502 + 298 \times \frac{30{,}000 - Ind.Tax\ Base}{22{,}965}\ (in\ 2016)$$

FOR OWNERS PAYING MORTGAGE

a) For individual tax bases below 7,000 euros (7,035 euros in 2016), the limit is augmented to 450.

b) For individual tax bases between 7,000 (7,035 in 2016) and 30,000 euros, the limit is augmented to:

$$Limit = 296 + 154 \times \frac{30{,}000 - Ind.Tax\ Base}{23{,}000}\ (in\ 2015)$$

$$Limit = 296 + 154 \times \frac{30{,}000 - Ind.Tax\ Base}{22{,}965}\ (in\ 2016)$$

Household general expenses

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 euros/year (335 if monoparental) 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.

There are also tax credits associated with investing in private retirement plans, stocks and shares savings plans, mortgage savings accounts, buying computers and renewable energy equipment, or for legal counselling fees, amongst others. These are not simulated in EUROMOD.

Tax credits' general limits

Until 2014, the total amount of certain tax credits is limited per income bracket as shown in the Table 2.30. The limits refer to the sum of the tax credits due to expenses on health, education, housing, alimonies, invoice claiming, residential homes and fiscal benefits. Fixed tax credits regarding the number of taxpayers or other elements in the tax units, disability or tax credits regarding general expenses (in 2015) are not considered for these limits.

Table 2.30 Tax credits' limits, 2013-2014

Year	Income bracket	Limit
2013 and 2014	1st	No limit
	2nd	1250 euros (+10% per dependent child)
	3rd	1000 euros (+10% per dependent child)
	4th	500 euros (+10% per dependent child)
	5th	0

For 2015-2016, a new limits schedule is applied (again, health, education, housing, alimonies, invoice claiming, residential homes and fiscal benefits). For individual tax bases (e.g., income divided by the family quotient, before being subject to tax rates – see above) below 7,000 euros (7,035 euros in 2016), there is no limit (e.g., apart from tax itself – there isn't a negative tax). For individual tax bases between 7,000 (7,035) and 80,000 euros, the limit is defined such as:

Limit=1,000 + 1,500 × (80,000 - Ind.Tax Base)/73,000

For individual tax bases above 80,000 euros, the limit is 1,000 euros. In tax units with three or more dependent children all above limits are augmented further in 5% for each one.

Note on the limits:

The limits refer to the sum of the tax credits due to expenses on health, education, housing, alimonies, invoice claiming, residential homes and the 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 (since 2016) are not considered for these limits.

2.6.7 Extraordinary surtax on income (2013-2016)

The extraordinary surtax on income" ("sobretaxa extraordinária sobre rendimentos") is a special one-off flat rate tax of 3.5% paid on the personal taxable income earned during the year minus the amount of one annual (14 months) national minimum wage (NMW[1]):

(Personal Taxable income – NMW*14) * 3.5%

Tax credits on this surtax:

- 2.5% of the monthly NMW per dependent;

- Amounts deducted at source by employers or pension providers related to the surtax (not needed for EUROMOD's simulation);

Examples:

- In 2013, a couple with no children and each partner earning an annual employment income of €18,200 (total: €36,400). Total personal taxable income: €28,192 (€36,400 total income – 2 * €4,104 in specific deductions). Total surtax taxable income: €14,096 (€28,192 – 2 * €6,790). Total surtax: €511.42 (€14,096 * 3.5%);

- The same couple, in the same year, but with two dependent children. Surtax: €487.16 (previous example surtax €511.42 – €12.13 * 2 children deduction).

[1] NMW=485€ in 2013 and 2014; NMW=505€ in 2015 ; NMW=530€ in 2016

Surtax in 2016

In 2016, the criteria and the application of the surtax changed. It ceased to be calculated accordingly to a fixed rate (3.5%), being now differentiated accordingly to specific income brackets:

Table 2.31 Surtax rates, 2016

Income bracket	Rate (%)
Up to 7070	0.00
>7070 <=20,000	1.00
>20,000 <=40,000	1.75
>40,000 <=80,000	3.00
>80,000	3.50

Income is previously deducted of an amount equivalent to the annual national minimum wage (530x14=7420 euros). In joint taxation, the income brackets limits shown above are halved and the resulting surtax is multiplied by 2.

Tax credit in surtax: 2.5% of the monthly NMW pear each dependent child (2.5%x530=13.25 euros) or half of that amount in the case of joint taxation. 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. Example:

Person A, with 20,100 euros of income, already deducted of the NMW, would be placed in the third bracket, with a rate of 1.75%. This would mean that his/her calculated surtax would have been 351.75 euros, leaving him/her with 19,748.25 euros of net income. At the same time, person B, with 20,000 euros of income, also already deducted of the NMW, would have a rate of 1% and a surtax of 200 euros, thus a net income of 19,800€. Person A, albeit having a greater gross income than person B, ends up with lower net income. This is why the safeguard clause limits person A's surtax to 300 euros, so that he/she ends up with a net income of 19,800€, as person B.

2.7 Pension cuts *(pcuts_pt)*

Due to the public debt crisis, pensions were reduced by the introduction of 'Extraordinary Solidarity Contribution on pensions'.

- In **2013**, the ESC was applied to a greater number of pensions as the minimum threshold for incidence was lowered:
  - If pension income above **1,350€/month** and below **1,800€/month** – cut of 3.5% over total income;
  - If pension income above **1,800€/month** and below **3,750€/month** – cut of 3.5% of 1,800 (63€) plus 16% of the amount exceeding 1,800€;
  - If pension income above **3,750€/month** – cut of 10% over total income.
  - (Accumulatively) Amount between 12 and 18xSSI – 15% cut;
  - (Accumulatively) Amount above 18xSSI – 40% cut.
  - For instance, for the same 8,000€/month pension income, total ESC will be 1,358.92/month.
    - Pension is higher than 3,750€/month, so the general cut is 10%: 800€;
    - Amount between 12 and 18xSSI is 2,515.32, so the second cut is 15% of 2,515.32 = 377.3€;
    - Amount above 18xSSI is 454.04, so the third cut is 40% of 454.04 = 181.62;
    - Total ESC = 800 + 377.3 + 181.62 = 1,358.92

- In **2014**, the minimum threshold was once again lowered (as well as other thresholds):
  - Pension income above **1,000€/month** and below 1,800€/month – cut of 3.5% over total income;
  - Pension income above **1,800€/month** and below **3,750€/month** – cut of 3.5% of 1,800 (63€) plus 16% of the amount exceeding 1,800€;
  - Pension income above **3,750€/month** – cut of 10% over total income.
  - (Accumulatively) Amount between **11** (4,611.42€/month) and **17xSSI** (7,126.74€/month) – 15% cut;
  - (Accumulatively) Amount above **17xSSI** – 40% cut.
  - For instance, for the same 8,000€/month pension income, total ESC will be 1,526.6€/month.
    - General cut: 10% of 8,000: 800€;
    - Amount between 11 and 17xSSI is 2,515.32, so the second cut is 15% of 2,515.32 = 377.3€;
    - Amount above 17xSSI is 873.26, so the third cut is 40% of 873.26 = 349.3€;
    - Total ESC = 800 + 377.3 + 873.26 = 1,526.6

- In **2015**, the ESC scope is reduced as cuts are to be applied only to higher pensions again:
  - Amount between **11 and 17xSSI** – 15% cut;
  - Amount above **17xSSI** – 40% cut.
  - For instance, for the same 8,000€/month pension income, total ESC will be 726.6€/month.
    - Amount between 11 and 17xSSI: 377.3€;
    - Amount above 17xSSI: 349.3€;
    - Total ESC = 377.3 + 349.3 = 726.6€.

- In **2016**, the ESC cuts are halved:
  - Amount between **11 and 17xSSI** – 7.5% cut;
  - Amount above **17xSSI** – 20% cut.

Note: for all the years, a pensioner's total pension amount is observed, not his/her single pensions. For instance, if someone receives an old age and a survivor pension, both amounts should be summed to attain his/her liabilities. Total pension = old age pension + survivor pension + disability benefit.

2.8 Public wage cuts *(yempb_pt)*

WAGE CUTS IN 2013-2014

- Wages equal or above to 4,165€/month are reduced in 10% (applicable to wage as a whole). For instance, a 5,000€ wage is reduced to 4,500€.
- Wages equal or above to 2,000€/month and below 4,165€/month are reduced through application of the following formula: 2,000 * 3.5% + (wage – 2,000) * 16%.
- Wages above 1,500€/month and below 2,000€/month are reduced by 3.5% (applicable to wage as a whole) with 1,500€/month as a lower limit.
- Wages up to 1,500€/month are not reduced.

WAGE CUTS IN 2015

In 2015, cuts are reduced by 20%, which means in practical (i.e. simulation) terms:

- Wages equal or above 4,165 €/month are reduced in 8%.

- Wages equal or above 2,000€/month and below 4,165€/month are reduced through application of the following formula: 2,000 * 2.8% + (wage – 2,000) * 12.8%.
- Wages above 1,500€/month and below 2,000€/month are reduced by 2.8% with 1,500€ as a lower limit.
- Wages up to 1,500€/month are not reduced.

WAGE CUTS IN 2016

In 2016, cuts are due to be eliminated in a phased schedule, meaning that at the start of every quarter, the wage cuts are reduced in 20% more (being 100% = 2011's cuts).

EUROMOD notes: the simulation of these cuts and the respective changes between years must take into account that these cuts are already implicit in the wages at the gross level, in more recent datasets. For instance, when using a dataset from 2011, the policy concerning wage cuts must be turned off in 2011-2014 (because data already shows its effect). Also, the reduction of 20% in the cuts occurred in 2015, as well as the 2016 set of reductions, must be designed in a coherent manner.

3. DATA

3.1 General description

The Portuguese database consists of the European Union Statistics on Income and Living Conditions (EU-SILC), which is a rotating panel survey (4 rotational groups) representative of the Portuguese households. The observation units are both households and individuals. Households are clusters of individuals where all members of a selected household are eligible for inclusion in the sample. The EU-SILC enables the study of the composition and distribution of the households' and individuals' income; living conditions (for example: housing conditions, comfort, financial capacity); the impact of social transfers poverty and social exclusion; the link between poverty and economic activity, employment, family structure, education, health, housing, amongst others. The survey takes place between May and July of the year following the income reference year.

According to the Portuguese Quality Report, the EU-SILC sample is composed of four independent sub-samples where each one follows a stratified two-stage cluster sampling design. The primary sampling units are the areas of the Master Sample (census enumeration areas) and stratified by a regional criterion. The second stage comprises the selection of dwellings and all households and therefore all the persons living in the same dwelling are interviewed.

The primary sampling units are the areas of the Master Sample. Each area comprises one or more contiguous census enumeration areas in order to achieve a minimum of 240 dwellings as usual residence per area.

The secondary sampling units (and also the final sampling units) are the dwellings, each one identified by an address and the name of the household head.

The primary sampling units (areas of the Master Sample) are stratified by NUTS 3, but for EU-SILC purposes a sub-sample of areas was selected independently in each NUTS 2.

Table 3.1 EUROMOD database description

EUROMOD database	PT_2014_a1
Original name	EU-SILC UDB
Provider	Eurostat
Year of collection	2014
Period of collection	Fieldwork executed between 17th Mars and 21st May 2014.
Income reference period	2013
Sampling	stratified, multi-stage, clustered
Unit of assessment	Household and Personal
Coverage	Private households (Households living at private residential addresses). Persons living in the institutional households (e.g. in care or imprisonment institutions, etc.) are excluded
Sample size	6850 households, 17221 individuals
Response rate	93.9% (household interview response rate)

Source: Statistics Portugal (2015) "Intermediate Quality Report - Portugal".

3.1.1 Sample quality and weights

The target population of the EU-SILC data is the private households. Households are selected from two sampling frames: the Master Sample 2001 (MS) and the new sampling frame drawn from the National Dwellings Register (NDR).The MS was designed and selected using the information of the 2001 Census of Population and Housing (Census 2001). It is constituted by private dwellings and it excludes collective households and institutions since they represent 1% of the total population residing in Portugal. The MS has almost 750000 private dwellings (535000 of which are of usual residence, the remaining are vacant, seasonal or for secondary use). The new sampling frame was selected from the NDR which in turn uses information collected in the 2011 Census. It is also constituted by private dwellings of usual residence and excludes collective households and institutions. Its size is approximately 1400000 dwellings of usual residence.Both sampling frames are stratified one-stage cluster samples.

3.1.1.1 Non-response

Table 3.2 Response rate

Response rate for households	
Ra (address contact rate)	99.3%
Number of household interviews completed and accepted for database (DB135=1)	6850
Number of eligible households at contact addressed (DB130 filled)	7293
Rh (proportion of complete households interviews accepted for database	93.9%
NRh (household non-response rate)	**6.8%**
Response rate for persons	
Number of personal interviews completed (RB250=11, 12, 13)	14693
Number of eligible individuals in households whose interviews were completed and accepted for the database (RB245=1, 2, 3)	14701
Rp (proportion of complete personal interviews within the households accepted for the database)	99.9%
Overall individual non-response rates NRp=[1-(Ra*Rh*Rp)]*100	**6.8%**

Non-response is corrected by re-weighting the final sample, i.e., by recalculating the sample weights.

3.1.1.2 Weights

Adjustments to the 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 of the second quarter of 2012.

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.

Table 3.3 below shows descriptive statistics for the grossing up weights used.

Table 3.3 Descriptive Statistics of the Grossing-up weight rb050

	EU-SILC UDB Portuguese data
Number	17,221
Mean	605.4992
Median	570.3009
Maximum	2502.22
Minimum	45.59
Max/Min	54..89
Decile 1	215.5409
Decile 9	1,038.4613
Decile 9 / Decile 1	4.82

3.2 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 coherent. In order to guarantee consistency between demographic variables 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 (26 cases) were dropped from the sample. However, the weights were not re-adjusted to take into account the drop of these individuals. The EUROMOD final sample consists of 6,850 households and 17,195 individuals.

3.3 Imputations and assumptions

3.3.1 Time period

In the EU-SILC dataset the income reference period is the year previous to the year of the survey. All monetary amounts are expressed in annual terms. These are converted into monthly amounts (divided by 12) 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 his/her age at the end of the income reference period. EUROMOD uses the first one to characterise all individuals in the dataset.

3.3.2 Gross incomes

The EU-SILC survey contains information on both gross and net monetary incomes, if applicable. The survey also contains flag variables, which indicate if the observation has been collected either in 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. This model was presented at the EU-SILC Conference on Comparative EU Statistics on Income and Living Conditions: Issues and Challenges, Helsinki, 6-8 November 2006, and is available in its proceedings volume, pages 157-172, “Income in EU-SILC – Net/Gross Conversion Techniques for Building and Using EU-SILC Databases”.

3.3.3 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 and thus have to been fully imputed in the EUROMOD dataset by splitting of the original variables. These are:

a. Old-age pensions are split into contributory pensions (poac) and the means-tested non-contributory benefit for the elderly (poanc - Social Pension). The splitting is based on both the benefit eligibility rules relating to age and income of the elderly and the observed total amount of this benefit in the dataset;
b. The unemployment benefit in the UDB is disaggregated into the contributory unemployment benefit (bunct) and the means-tested unemployment benefit (bunnc). The disaggregation is based on the benefit rules: individual's unemployment benefit is classified as non-contributory if he/she meets the eligibility conditions and reports a compatible benefit amount;
c. The aggregate family benefits variable in the UDB is split into two components: the child benefit (bch) is calculated using the benefit rules, and the residual amount is placed in a separate variable (bfa – Other family benefits).
d. Social exclusion benefits are split into three components. First, the minimum income benefit (bsa00) is calculated using both the benefit rules and the age and income of the potential beneficiaries. Secondly, the CSI (Solidarity supplement for the elderly) (bsaoa) is calculated by applying the benefit rules. Finally, any residual amount is saved in a separate variable (bsaot - Other social assistance benefits).

Education status and level of education are 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 age 45.

3.4 Uprating

Updating 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. Updating 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 updating factor and sources used, see Annex I.

As a rule, updating 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. Updating 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 II. Market incomes and non-simulated taxes and benefits in the input dataset plus simulated taxes and benefits are validated against external official data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1 Components of disposable income

This subsection outlines the differences in the definition of disposable income in EUROMOD and EU-SILC 2014. 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 level of individual components as can be seen from Table 4.1:

i) The EU-SILC 2014 definition of disposable income includes the (imputed) annual value of (using) a company car, while EUROMOD excludes it;
ii) Pensions from individual private plans are included in the disposable income concept used in EUROMOD, while they are excluded in EU-SILC 2014.

Besides these differences in the definition, the value of the disposable income of the same household can differ 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 2014	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	yiy 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	Poact_s derived from the split of py100g into contributory and non-contributory old age pensions
	poanc_s		Poanc_s derived from the split of py100g into contributory and non-contributory old age pensions
Survivor' benefits	bsu	py110g	bsu derived from py110g
Disability benefits	bdi	py130g	bdi derived from py130g
Unemployment benefits	bunct_s	py090g	Bunct_s derived from the split of py090g into contributory and non-contributory unemployment benefit
	bunnc_s		Bunnc_s derived from the split of py090g into contributory and non-contributory unemployment benefit
Housing allowances	bho	hy070g	bho derived from hy070g
Family/children related allowances	bfa	hy050g	bfa is derived from the split of hy050 into child benefits and other family allowances
	bch_s		bch_s derived from the split of hy050 into child benefits and Other family benefits
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 minimum income benefit (bsa00_s), CSI (poanc_s) and other social exclusion benefits (bsaot)
	poanc_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 tscse_s (simulated SIC self-employee).
	tscee_s		
	Tscse_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 II for tables.

Table II.1 (in Annex II) 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 2.7% between 2013 and 2015 and unemployment falling by 24.4% during the same period. It also shows that there is a clear overestimation of the number of unemployed in EUROMOD (31% to 74% 'extra' unemployed compared with the external source, between 2013 and 2015), and underestimation of employed people (less 9% to 11% in EUROMOD). 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 0.91 to 0.89). An opposite and 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 widened the gap between the two amounts until 2015 (comparing ratio evolved from 1.31 to 1.74).

Tables II.2 and II.3 in Annex II show the number of recipients and annual levels of income earned from different sources reported but not simulated in EUROMOD (with the exception of the simulated austerity measures affecting public wages). 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 similar to the figures obtained from external sources, especially in 2015 (1.04 and 0.91 ratios, respectively). Actually, 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 civil servants cuts reductions and 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 number of recipients of **self-employment** income appears under-estimated (0.68 to 0.80, between 2013 and 2015), whereas the level of self-employment income appears clearly over-estimated (1.37 in 2013). This underreporting of the number of recipients seems justified because the external source (the tax system) records all people that are registered as self-employed even if in a certain year they earn no income of this type, whilst the values in EUROMOD are obtained by counting each individual having an income of this type. The complexity of the social security contributions system could thus explain part of the difference in that amount. The Portuguese version of the EU-SILC and EUROMOD actually 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 evasion.

Tables II.4 and II.5 (in Annex II) show the number of recipients of the non-simulated benefits and the respective aggregate amounts. **Disability** and **survivor**'s benefits are taken from Social Security (SS) data sources and they are not corrected or simulated in EUROMOD. The number of recipients and the amounts received are significantly underestimated in the EU-SILC dataset compared to the SS external sources. Consequently, EUROMOD reproduces this underestimation (see Tables II.4 and II.5).

The number of **sickness benefits** recipients is clearly underreported in the EU-SILC and in EUROMOD. The number of recipients is around one third of the number reported by the SS external sources. However, the aggregate amount is appears to be close to the one recorded by the external sources. 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 II for tables.

Tables II.6 and II.7 (in Annex II) show that the figures on the **old-age contributory pensions** are slightly underestimated along the period (95-94%). Regarding the **non-contributory pension ("Social Pension")**, there is a considerable underestimation in the number of recipients: the split in EUROMOD of the old age pension EU-SILC variable accounts for only 70% of the cases in the base year, but the small number of pensioners at stake should also be noticed (slightly more than 50 thousand, 2% of the total old age pensioners). Underestimation is even higher at the income level (EUROMOD figures account for only 26-29% of the official data).

The validation process reveals a reasonable but differentiated performance of the simulation of the number of **unemployment benefits** recipients between 2013 and 2014 (81 to 104% in the main benefit, although comparison ratios are very low for the less expressive (and also minor) 'unemployment assistance benefit' – 13% to 14%). A similar evolution is seen on the income side (91 to 1.15% in main benefit, 28 to 30% in the 'social' modality). 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 2013 and 2015, 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 rises along the period (14% to 26%) and the same seems to happen to the total aggregates, at least in 2013 and 2014 (21% and 31%).

An adjustment at the core of the simulation was made regarding the number of recipients of the **solidarity supplement for the elderly**, because of misalignment between EUROMOD values and the external source. The amounts are overestimated and that could be explained because the simulation doesn't take into account the incomes of the descendants of the recipients that do not belong to the household, yet are relevant to the calculation of the amount of benefit received.

Tables II.6 and II.7 also include the **number of taxpayers** and **amount of taxes** collected during the period 2013-2016 as simulated by EUROMOD. Unfortunately, there is little external statistics to compare against EUROMOD's results.

The simulation of **social contributions** produces reasonable (yet a bit underestimated) results when compared to external statistics, whether calculated upon employed wages or upon self-employed income. 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 II 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. At the present moment (August 2016), the latest available EU-SILC operation is 2015's thus enabling its use as a benchmark for the EUROMOD estimates between 2013 and 2014.

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; 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 number of recipients and the total amount received, there are again differences between simulated and actual disposable income.

Table II.8, in Annex II, shows the distribution of equivalised income by deciles according to EUROMOD and Eurostat. The mean disposable income simulated by EUROMOD is slighter higher (3% in the base year) than the figures provides by Eurostat. However, the share of the first decile estimated by EUROMOD is much higher (19% in 2013 and 13% in 2014), 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 lower income inequality indices. The EUROMOD higher income share of the bottom decile (see above) can explain, at least partially, this discrepancy.

4.2.2 Poverty rates

Table II.9 shows that the poverty rates estimated by EUROMOD for the base year are similar to those computed using the EU-SILC data for poverty lines defined as 50%, 60% and 70% of the median equivalent income, with -.3pp, -.3pp and -.1pp differences respectively. This difference reaches -.6pp when comparing poverty rates defined at 40% 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 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 borne in mind when planning appropriate uses of the model and in 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 time period under consideration.

• No adjustments are made for structural changes in the characteristics of the population between the data year (2013) 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 in order 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 have to take into consideration the existence of tax evasion as well as the lack of adequate information for the simulation of a number of tax allowances and deductions.

5. REFERENCES

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Verbist, G. (2004) "Redistributive effect and progressivity of taxes An International Comparison across the EU using EUROMOD", EUROMOD Working Paper No. EM5/04.

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

Social benefits descriptions and rules (in Portuguese):

www.seg-social.pt

On-line legislation (in Portuguese):

www.dre.pt

ANNEX I: UPRATING FACTORS

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

Variable		2013	2014	2015	2016	Source/comments
Employment income						
Dependent employment income	**yem**					
Civil servants		106.64	106.64	106.64	106.64	Wages frozen since 2009
Private sector employees		117.38	117.92	119.14	120.38	Soc. Security (Annual rate of change of average wages declared by employees for contributive purposes)
Self-employed income	**yse**	117.38	117.92	119.14	120.38	(In line w/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**	197.55	199.53	201.53	202.34	Base amount of the social pension
Private pension	**Ypp**	113.83	113.83	114.40	114.97	2006-15: Inflation "without deflation" (inflation as 0 on years with deflation); ; 2016: HCPI forecast (src: PT Central Bank, Economic Projections Mar'15)
Unemployment benefits						
Unemp. benefit (insurance and assistance)	**bun, bunnc**	119.89	121.60	122.16	123.43	(In line w/private wages, but lagged one year)
Sickness benefits						
Sickness benefit (for civil servants)	**bhl**	106.64	106.64	106.64	106.64	(In line w/civil servant wages)
Sickness benefit (for private sector employees)		117.38	117.92	119.14	120.38	(In line w/private wages)
Family and child benefits						
Family benefits (for civil servants)	**bfa**	106.64	106.64	106.64	106.64	Essentially, parental leave benefits (updated in line w/civil servant wages)
Family benefits (for private sector employees)		117.38	117.92	119.14	120.38	Essentially, parental leave benefits (updated in line w/private wages)
Child benefit	**bch**	419.22	419.22	419.22	419.22	In line with Social Support Index (kept frozen since 2010)
Social assistance						
Social assistance and social assistance (other)	**bsa, bsaot**	419.22	419.22	419.22	419.22	In line with Social Support Index (kept frozen since 2010)
Social integration income	**bsa00**	178.15	178.15	178.15	180.99	PT law on social integration income's threshold update
Social supplement for the elderly	**bsaoa**	4909	4909	4909	5059	PT law on social supplement for the elderly's threshold update

Other benefits						
Education benefits	**bed**	419.22	419.22	419.22	419.22	In line with Social Support Index (kept frozen since 2010)
Housing benefits	**bho**	419.22	419.22	419.22	419.22	In line with Social Support Index (kept frozen since 2010)
Imputed benefit in kind	**kfbbc**	112.89	112.57	113.13	113.70	2006-15: Inflation Dec'xx (Total aggregates; src: Statistics Office); 2016: HCPI forecast (src: PT Central Bank, Economic Projections Mar'15)
Investment/property income						
Investment income	**yiy**	170.3	173.4	179.4	183.0	2006-2015: Annual GDP current prices (src: Statistics Office); 2016: GDP forecast (src: PT Central Bank - 1.5 real growth + 0.5 HICP growth)
Property income (rent)	**ypr**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) – inflation
Other income						
Private transfers	**ypt**	117.38	117.92	119.14	120.38	(In line w/private wages)
Non-cash income	**kfb**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Income received by <16	**yot**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Assets						
Financial capital	**afc**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Expenditure items						
Rent paid; housing costs (other); maintenance payment	**xhcrt, xhcot, xmp**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Interest on mortgage payment	**xhcmomi**	244.8	244.25	240.5	240.5	2006-2015: average mortgage cost (interest+mortgage) (src: Statistics Office); 2016: no change
Expenditure on private pensions	**xpp**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Tax and SICs						
Property tax	**tpr**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Income tax; Income tax repayments/receipts	**tin, tad**	117.38	117.92	119.14	120.38	(In line w/private wages)
SIC employee, SIC self-employed; SIC employer	**tscee, tscse, tscer**	117.38	117.92	119.14	120.38	(In line w/private wages)
Income tax and SICs	**tis**	117.38	117.92	119.14	120.38	(In line w/private wages)
Other						
Disposable income	**yds**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation
Imputed house rent	**kivho**	112.89	112.57	113.13	113.70	INE (Statistics Portugal) - inflation

Note: For sources and more detailed information refer to the model or the DRD. Not all the updated components are used for EUROMOD calculations. Simulated values used instead of updated once where relevant.

ANNEX II: VALIDATION TABLES

Table II.1 Number of employed & unemployed, thousands

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Employed	4033.1	4033.1	4033.1	4033.1	4429.4	4499.5	4548.7	N/A	0.91	0.90	0.89	N/A
Unemployed	1124.0	1124.0	1124.0	1124.0	855.2	726.0	646.5	N/A	1.31	1.55	1.74	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.

Table II.2 Market Income-Number of recipients, thousands

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Original income												
Employment	3866.9	3866.9	3866.9	3866.9	3457.5	3611	3710.6	N/A	1.12	1.07	1.04	N/A
Self-employment	479.7	479.7	479.7	479.7	710.5	630.5	596.9	N/A	0.68	0.76	0.80	N/A
Investment	1604.4	1604.4	1604.4	1604.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Property	402.9	402.9	402.9	402.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private pension	66.5	66.5	66.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private transfers	251.5	251.5	251.5	251.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Social Security, Statistics Portugal

Table II.3 Market Income-Aggregate amounts, annual amounts in millions euros

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Original income												
Employment	54074.3	54286.7	54850.8	55549.2	59110.5	59469.2	60324.6	N/A	0.91	0.91	0.91	N/A
Self-employment	5999.9	6027.5	6089.8	6153.2	4367.0	N/A	N/A	N/A	1.37	N/A	N/A	N/A
Investment	1486.9	1514.0	1566.4	1597.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Property	1282.9	1279.2	1285.6	1292.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private pension	200.9	200.9	201.9	202.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private transfers	943.1	947.5	957.3	967.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Social Security, Statistics Portugal

Table II.4 Non-simulated taxes and benefits-Number of recipients/payers, thousands

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Pensions												
Disability pension	171.1	171.1	171.1	171.1	266.9	258.7	248.3	266.9	0.64	0.66	0.69	0.64
Survivor's pension	578.8	578.8	578.8	578.8	858.6	878.6	878.6	858.6	0.67	0.66	0.66	0.67
Not simulated benefits												
Sickness benefit	156.4	156.4	156.4	156.4	476.4	494.7	556.3	476.4	0.33	0.32	0.28	0.33
Family Benefits	75.0	75.0	75.0	75.0	156.4	151.2	162.5	156.4	0.48	0.50	0.46	0.48
Education Benefits	96.9	96.9	96.9	96.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Housing benefit	499.6	499.6	499.6	499.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social assistance - other	7.9	7.9	7.9	7.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Not simulated taxes												
Property tax	2387.6	2387.6	2387.6	2387.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Social Security, Statistics Portugal

Table II.5 Non-simulated taxes and benefits-Aggregate amounts, annual amounts in millions euros

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Pensions												
Disability pension	860.6	861.5	862.4	864.6	1386.0	1351.0	N/A	N/A	0.62	0.64	N/A	N/A
Survivor's pension	2063.0	2063.5	2064.2	2070.4	2095.6	2157.7	N/A	N/A	0.98	0.96	N/A	N/A
Not simulated benefits												
Sickness benefit	388.5	390.0	393.4	396.8	390.7	412.7	N/A	N/A	0.99	0.94	N/A	N/A
Family Benefits	131.7	132.3	133.6	135.0	146.7	141.5	N/A	N/A	0.90	0.93	N/A	N/A
Education Benefits	176.0	176.0	176.0	176.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Housing benefit	47.8	47.8	47.8	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social assistance - other	6.2	6.2	6.2	6.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Not simulated taxes												
Property tax	727.5	725.5	729.1	732.7	1269.1	1469.2	N/A	N/A	0.57	0.49	N/A	N/A

Source: Social Security, Statistics Portugal

Table II.6 Simulated taxes and benefits-Number of recipients/ payers, thousands

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Simulated benefits												
Old-age contributory pensions	2307.3	2307.3	2307.3	2307.3	2439.9	2442.8	2458.6	N/A	0.95	0.94	0.94	N/A
Social Pension	35.1	29.9	29.9	29.2	50.0	47.0	N/A	N/A	0.70	0.64	N/A	N/A
Unemployment insurance benefit	457.1	457.1	457.1	457.1	563.0	495.0	441.4	N/A	0.81	0.92	1.04	N/A
Unemployment assistance benefit	19.2	19.2	19.2	19.2	148.5	143.8	133.2	N/A	0.13	0.13	0.14	N/A
Child benefit	863.5	862.8	851.5	845.2	853.6	847.25	826.9	N/A	1.01	1.02	1.03	N/A
Social integration income	169.1	170.1	169.2	216.4	148.1	139.56	134.2	N/A	1.14	1.22	1.26	N/A
Old age social assistance	214.0	199.3	197.6	222.6	237.9	212.6	176.8	N/A	0.90	0.94	1.12	N/A
Taxes												
Income tax	2761.7	2771.1	2673.5	2576.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tax base	4277.8	4276.9	4287.7	4290.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tax credits	4266.1	4265.1	4272.9	4271.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
main tax credit	4266.1	4265.1	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
child tax credit	1180.7	1180.7	1183.0	1181.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social contributions												
Employer	3866.9	3866.9	3866.9	3866.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Employees	3866.9	3866.9	3866.9	3866.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Self-employed regime	166.2	166.7	166.7	167.6	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 II.7 Simulated taxes and benefits- Aggregate amounts, annual amounts in millions euros

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Simulated benefits												
Old-age contributory pensions	20371.4	20373.4	20375.8	20403.2	20370.5	20658	N/A	N/A	1.00	0.99	N/A	N/A
Social Pension	95.7	82.8	83.6	81.8	328.4	323.8	N/A	N/A	0.29	0.26	N/A	N/A
Unemployment benefit	1950.5	1969.3	1975.4	1989.5	2151.3	1708.4	N/A	N/A	0.91	1.15	N/A	N/A
Unemployment social benefit	89.8	89.8	89.8	89.8	326.6	300.7	N/A	N/A	0.28	0.30	N/A	N/A
Child benefit	674.8	674.5	668.4	706.2	659.7	635.1	N/A	N/A	1.02	1.06	N/A	N/A
Social integration income	345.9	347.5	345.1	534.3	286.0	265.3	N/A	N/A	1.21	1.31	N/A	N/A
Old age social assistance	282.1	244.7	243.2	283.2	263.3	208.4	N/A	N/A	1.07	1.17	N/A	N/A
Taxes												
Income tax	11772.6	11806.1	11561.6	11838.4	13187.5	13385.6	N/A	N/A	0.89	0.88	N/A	N/A
Tax base	57071.2	57218.0	58283.5	59045.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tax credits	2021.6	2028.9	2363.3	2666.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
main tax credit	1437.3	1437.1	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
child tax credit	453.5	499.1	649.0	1175.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social contributions												
Employer	12842.7	12893.1	13027.1	13192.9	13648.1	13793.2	N/A	N/A	0.94	0.93	N/A	N/A
Employees	5948.2	5971.5	6033.6	6110.4	6403.4	6719.5	N/A	N/A	0.93	0.89	N/A	N/A
Self-employed regime	699.9	702.2	702.5	703.8	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 II.8 Income distribution

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Decile shares, %												
1st decile	2.81	2.79	2.75	3.02	2.36	2.47	N/A	N/A	1.19	1.13	N/A	N/A
2nd decile	4.44	4.44	4.38	4.44	4.33	4.41	N/A	N/A	1.03	1.01	N/A	N/A
3rd decile	5.72	5.74	5.68	5.68	5.62	5.70	N/A	N/A	1.02	1.01	N/A	N/A
4rd decile	6.77	6.78	6.70	6.73	6.66	6.77	N/A	N/A	1.02	1.00	N/A	N/A
5th decile	7.84	7.85	7.81	7.83	7.83	7.84	N/A	N/A	1.00	1.00	N/A	N/A
6th decile	8.98	8.97	8.93	8.94	8.95	8.99	N/A	N/A	1.00	1.00	N/A	N/A
7th decile	10.32	10.31	10.36	10.31	10.34	10.33	N/A	N/A	1.00	1.00	N/A	N/A
8th decile	12.31	12.33	12.31	12.32	12.26	12.17	N/A	N/A	1.00	1.01	N/A	N/A
9th decile	15.40	15.38	15.42	15.39	15.40	15.19	N/A	N/A	1.00	1.01	N/A	N/A
10th decile	25.39	25.41	25.66	25.35	26.26	26.14	N/A	N/A	0.97	0.97	N/A	N/A
Mean income (Equivalised)												
total population	10107.0	10125.8	10320.6	10432.9	9856.4	9996.0	N/A	N/A	1.03	1.01	N/A	N/A
males												
females												
Median income (Equivalised)												
total population	8469.7	8482.5	8611.8	8724.3	8228.68	8435.20	N/A	N/A	1.03	1.01	N/A	N/A
males												
females												
Income quintile ratio (S80/S20)	5.65	5.65	5.76	5.49	6.23	6.0	N/A	N/A	0.91	0.94	N/A	N/A
Gini Coefficient	33.13	33.15	33.52	32.92	34.48	34.01	N/A	N/A	0.96	0.97	N/A	N/A

Notes: Based on household disposable income (HDI) equalised 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; computed at the individual level.
Source for External Data: Statisticsl Portugal, EU-SILC-UDB

Table II.9 At risk of poverty rates by gender and age, percent

	EUROMOD (I)				External Source (II)				Ratio (I/II)			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
40% median HDI												
total population	7.95	8.01	8.11	7.03	8.57	8.54	N/A	N/A	0.93	0.94	N/A	N/A
males	7.79	7.86	7.93	6.82	8.52	8.52	N/A	N/A	0.91	0.92	N/A	N/A
females	8.09	8.15	8.28	7.22	8.62	8.56	N/A	N/A	0.94	0.95	N/A	N/A
50% median HDI												
total population	13.47	13.47	13.69	13.38	13.83	13.75	N/A	N/A	0.97	0.98	N/A	N/A
males	13.51	13.47	13.66	13.24	13.60	13.45	N/A	N/A	0.99	1.00	N/A	N/A
females	13.44	13.47	13.72	13.50	14.04	14.03	N/A	N/A	0.96	0.96	N/A	N/A
60% median HDI												
total population	19.22	19.25	19.41	19.38	19.47	19.46	N/A	N/A	0.99	0.99	N/A	N/A
males	18.58	18.64	18.66	18.62	18.91	18.79	N/A	N/A	0.98	0.99	N/A	N/A
females	19.79	19.81	20.08	20.06	19.98	20.06	N/A	N/A	0.99	0.99	N/A	N/A
70% median HDI												
total population	26.05	26.15	26.58	26.65	27.15	27.02	N/A	N/A	0.96	0.97	N/A	N/A
males	25.19	25.30	25.69	25.74	26.40	25.98	N/A	N/A	0.95	0.97	N/A	N/A
females	26.84	26.92	27.38	27.48	27.82	27.96	N/A	N/A	0.96	0.96	N/A	N/A
60% median HDI												
0-17 years	24.44	24.33	24.44	24.12	25.27	24.11	N/A	N/A	0.97	1.01	N/A	N/A
18-24 years	26.23	26.20	26.23	26.07	26.82	25.28	N/A	N/A	0.98	1.04	N/A	N/A
25-49 years	17.00	16.99	16.90	16.77	17.28	17.13	N/A	N/A	0.98	0.99	N/A	N/A
50-64 years	19.91	19.96	19.94	20.02	19.55	19.56	N/A	N/A	1.02	1.02	N/A	N/A
65+ years	14.95	15.20	16.05	16.40	15.12	17.03	N/A	N/A	0.99	0.89	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: Statistical Portugal, EU-SILC-UDB

ANNEX III: POLICY EFFECTS IN 2015-2016

Table III.1 and figure III.1 show the effect that 2016 policies have on disposable income by income component and income decile group. The effect is estimated as the difference between simulated household income under 2016 tax-benefit policies (deflating monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under the year 2015 policies, as a percentage of mean equivalised household disposable income in 2015[2].

Changes in 2016 have a clear progressive effect on the income distribution. Although households in general only get an overall increase of 0.19% in their disposable income, the lower income deciles report very significant gains in comparison. Disposable income for the first income decile grows by almost 11%. This is essentially due to changes in Social Insertion Income and other means tested policies such as the Social Supplement for the Elderly or the Child Benefits. The second income decile also gains from the changes in means tested benefits, having a 1.04% increase in disposable income. Less important gains go along the distribution until the eighth decile, with means tested benefits always playing an important role.

The nominal increase in pensions also benefited the lower income pensioners as shown in the progressive results in table III.1 (negative results show a real loss in disposable income rather than a gain, as this exercise considers an inflation of 0.5% while lower pensions were increased by 0.4%). The last alleviation of the extraordinary solidarity contribution paid by pensioners in 2016 (before being eliminated in 2017) only has a very slight effect (0.06pp) on the richest decile. Finally, taxes are slightly alleviated for middle income deciles while the reduction in the disposable income at the 10th decile is essentially due to the increase in taxes (-1.06pp out of the -1.14% decrease).

Table III.1 Policy effects in 2015-2016, using the CPI-indexation, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee and pensioners SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.00	-0.03	11.01	0.02	0.00	-0.06	-0.01	10.93
2	0.00	-0.05	1.04	0.02	0.00	0.00	0.03	1.04
3	0.00	-0.06	0.44	0.01	0.00	0.00	0.15	0.55
4	0.00	-0.06	0.26	0.02	0.00	0.00	0.25	0.47
5	0.00	-0.06	0.11	0.01	0.00	0.00	0.44	0.51
6	0.00	-0.09	0.09	0.01	0.00	0.00	0.31	0.33
7	0.00	-0.07	0.03	0.01	0.00	0.00	0.19	0.16
8	0.00	-0.13	0.02	0.01	0.00	0.00	0.12	0.02
9	0.00	-0.11	0.01	0.00	0.00	0.01	-0.04	-0.13
10	0.00	-0.16	0.00	0.00	0.06	0.01	-1.06	-1.14
Total	**0.00**	**-0.10**	**0.42**	**0.01**	**0.02**	**0.00**	**-0.15**	**0.19**

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

[2] For the purpose of consistency with the methodology used for other EUROMOD countries, no simulation concerning public sector pay is taken into account. In the Portuguese case, this means that changes occurred in 2016, namely the gradual reduction of the public wages cuts are not taken into account in the exercise.

Figure III.1 Policy effects in 2015-2016, using the CPI-indexation, %