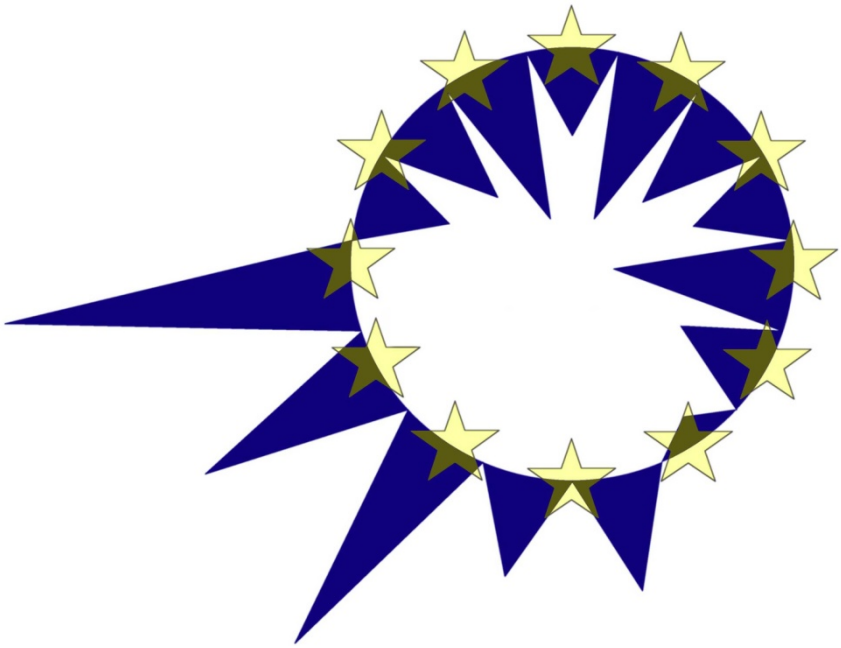
EUROMOD

COUNTRY REPORT



PORTUGAL (PT)

[2007 - 2010]

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EUROMOD version F6.0

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

A major EUROMOD development project (*EUROMODupdate*), supported by DG-EMPL of the European Commission is enlarging and updating EUROMOD to cover all 27 Member States and recent policy systems, using EU-SILC (European Union Statistics on Income and Living Conditions) data as the input database.

The work is being carried out by the EUROMOD core developer team, based mainly in ISER University of Essex, in collaboration with a group of national teams.

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The results presented in this report are derived using EUROMOD version F6.0 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: http://www.iser.essex.ac.uk/research/euromod

This document is supported by the European Union Programme for Employment and Social Solidarity – PROGRESS (2007-2013).

This programme is managed by the Directorate-General for Employment, social affairs and equal opportunities of the European Commission. It was established to finally support the implementation of the objectives of the European Union in the employment and social affairs area, as set out in the Social Agenda, and thereby contribute to the achievement of the Lisbon Strategy goals in these fields.

The seven-year Programme targets all stakeholders who can help shape the development of appropriate and effective employment and social legislation and policies, across the EU-27, EFTA-EEA and EU candidate and pre-candidate countries.

PROGRESS mission is to strengthen the EU contribution in support of Member States' commitment. PROGRESS is instrumental in providing analysis and policy advice on PROGRESS policy areas; monitoring and reporting on the implementation of EU legislation and policies in PROGRESS policy areas; promoting policy transfer, learning and support among Member States on EU objectives and priorities; and relaying the views of the stakeholders and society at large

For more information see: http://ec.europa.eu/progress

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1. BASIC INFORMATION

1.1 Basic figures

Table 1. Basic figures

	Pop. (m.)	pop. < 18	pop. ≥ 65	Life expect. (years)	Fertility rate	Unemp rate	GDP per head (PPP) [1]	Currency Name	Currency exch. rate
2006	10.6	1993	1810	78.9	1.36	8.6	18.6	Euro	1
2007	10.6	1986	1829	79.1	1.33	8.9	19.6	Euro	1
2008	10.6	1975	1850	79.4	1.37	8.5	19.5	Euro	1
2009	10.6	1963	1874	79.6	1.32	10.6	18.9	Euro	1
2010	10.6	1948	1901	79.8	1.36	12.0	19.8	Euro	1

Source: Eurostat (2011) [1] GDP in thousand PPS, at current prices

1.2 The tax-benefit system

Table 2. Tax-benefit system and government budget

	Total general government revenue % of GDP	Total tax Receipts [1] % of GDP	Total general government expenditure % of GDP	Social protection % of GDP
2006	40.5%	23.6%	44.5%	23.1%
2007	41.1%	24.0%	44.4%	22.6%
2008	41.1%	23.8%	44.8%	23.2%
2009	39.7%	21.7%	49.9%	25.6%
2010	41.6%	22.2%	51.3%	-

Source: Eurostat (2011) [1] Total general government tax receipts (excluding social contributions)

Table 3. Social protection expenditure by function (as % of total social protection expenditure)

	Sickness/ health care	Disability	Old age	Survivors	Family/ children	Unemployment	Housing	Social exclusion
2006	27.4%	9.3%	39.6%	6.6%	4.8%	5.2%	0.0%	1.1%
2007	26.8%	9.4%	40.6%	6.8%	5.0%	4.8%	0.0%	1.1%
2008	26.6%	8.8%	42.1%	6.9%	5.2%	4.3%	0.0%	1.2%
2009	27.0%	8.0%	41.4%	6.8%	5.5%	5.1%	0.0%	1.3%
2010	-	-	-	-	-	-	-	-

Source: Eurostat (2011)

Table 4. Taxation (as % of total tax receipts)

	Personal income tax	Corporate income tax	Social security contributions		Taxes on goods and services	Other taxes
			Employees	Employers		
2006	16.5%	9.2%	11.2%	14.2%	46.6%	2.5%
2007	16.9%	11.0%	10.8%	14.7%	44.6%	2.1%
2008	17.1%	11.2%	10.9%	15.0%	43.2%	2.5%
2009	18.6%	9.3%	11.9%	16.5%	41.2%	2.6%
2010	17.8%	9.1%	11.3%	16.5%	42.6%	2.7%

Source: Eurostat (2011)

1.2.1 Basic information about the tax-benefit system

- The tax-benefit system is a unified, national system. However, the Azores and Madeira autonomous regions benefit from lower income tax rates.
- The "fiscal year" is the same as the calendar year (e.g., 1st of January – 31st of December). The tax system generally changes in January each year. Benefit changes can occur along the year.
- Legal retirement age is 65 (both for men and women) over the period, although some special careers may have lower minimum ages. The reforms implemented in 2007 introduced the "sustainability factor", a reduction factor updated every year accordingly to life expectancy. To reach full pension, the worker at the legal retirement age has the option to retire later thus receiving bonus in order to offset the reduction.
- Minimum school leaving age in 2006 is 15 (9th grade); For tax purposes, dependent children are defined as aged under 18 or under 25 with a monthly income below the national minimum wage and having attended the 11st or the 12nd grade of schooling or having attended compulsory military or civil service.
- For benefit purposes lone parents are the parents of resident dependent children; they do not cohabit with a partner of the opposite sex (whether or not any partner is the parent of the child is irrelevant); for tax purposes a lone parent is not legally married to anyone and is a parent of a resident dependent child.
- Income is taxed jointly. For married couples, the aggregate income is initially divided by two. Then, the tax rate is applied, after which the resulting tax is multiplied by two in order to obtain the couple's tax liability. Finally, the tax credits are applied to the tax liability.
- Some income components like capital income are already taxed on source (withholdings) and may be left out of final tax calculations, which means that the capital income will be taxed differently (e.g. different rate) from the other income components.
- Taxpayers need to fill a tax return, as there are always difference between withholdings and the exact amount due in the end of the year.
- The means-tested benefit system comprehends different approaches to income temporal assessment. While some benefits assessed yearly past income, others assessed monthly past or actual income.

1.3 Social Benefits

Old age contributory pension (*Pensão de velhice*): Old-age insurance provides a pension to all who are aged 65 and over, integrated in a compulsory social insurance scheme for the population (employees and self-employed) with benefits related to the registered earnings and to the duration of the affiliation.

Old-age social pension (*Pensão social de velhice*): The social pension is a non-contributory means tested pension for old age (there is also a social pension for the disability, but it can't be simulated by the model) that provides a minimum amount to individuals aged 65 or more with low incomes.

Survivors pension (*Pensão de sobrevivência*): The survivor pension can be granted to a spouse of a previously insured person, aged at least 35, and divorced former spouse who is entitled to alimony. It can also be granted to children until the age of 18 (25 or 27 in the case of further or higher education) and to parents dependent on the deceased if no spouse or children exist.

Disability benefit (*Pensão de invalidez*): The disability benefit aims to protect any worker who before reaching retirement age becomes unable to earn more than one third of a normal wage, as the result of illness or accident not covered by the specific legislation on working injuries and occupational diseases.

Sickness cash benefit (*Subsídio de doença*): The sickness cash benefit is available in the compulsory social insurance scheme for all insured employees (voluntary scheme for self-employed) with benefits related to the registered earnings.

Child benefits (*Abono de família para crianças e jovens*): The "Abono de família" is a social policy directed to families with children and young people as a compensation for their expenditure on raising and educating them. It belongs to a group of schemes directed to families, along with allowances for funeral expenses or special benefits paid to disabled and dependent people, essentially children. As a means tested policy, the "abono" stands apart from the other kind of policies that rely on a previous family income test, as it has a more "universal" character.

Maternity cash benefit (*Subsídio de maternidade*): The sickness cash benefit is available in the compulsory social insurance scheme for all insured employees with benefits related to the registered earnings.

Solidarity supplement for older persons (*Complemento Solidário para Idosos*): The solidarity supplement for old persons started in 2006. It's a non-contributory means tested scheme designed to help pensioners aged 65 or more who live on low incomes. It evaluates a wide range of income types, including some which aren't common in these kinds of schemes, as the case of the monetary income of the recipients' descendants, even when they don't live with the parents, or the frequency of an old age care institution funded by the Social Security.

Social insertion income (*Rendimento Social de Inserção*): The social insertion income is a non-contributory scheme designed to help families living on very low incomes. It is built on two basic pillars: a cash benefit and a compulsory integration programme.

Unemployment benefit (*Subsídio de desemprego*): Unemployment insurance and unemployment assistance are the two main policies to provide financial compensation to unemployed. Both are restricted to compulsory social insurance scheme for the employees with benefits related to the registered earnings.

There are other kinds of less significant benefits (or specific bonus or complements among main benefits) in the Portuguese social security system which provides protection on areas like disability, death, social inclusion, etc.

- ***Scope and scale***

The following tables provide an indication of the relative scale and coverage of each benefit by showing the number of recipients and the expenditure on each benefit.

Table 5. Social benefits: recipients (thousands)

	2007	2008	2009	2010
Old age pension	1790.7	1827.0	1864.8	1903.5
Survivors pension	681.8	688.3	697.2	703.1
Disability benefit	310.2	302.5	297.2	289.4
Sickness cash benefit	551.2	553.2	589.5	549.8
Child benefits	1194.3	1235.6	1264.6	1252.3
Maternity benefit	75.7	75.6	130.3	240.8
Solidarity supplement for older persons	54.6	174.4	223.0	n/a
Social insertion income	139.1	160.6	192.3	n/a
Unemployment benefit	526.7	495.4	592.6	511.5

Notes: Data on pensions excludes civil servants; data on child benefits and social insertion income refers to number of families.
Source: Ministry of Labour and Social Solidarity

Table 6. Social benefit: expenditure (10^6 euros)

	2007	2008	2009	2010
Old age pension	15488.9	16515.7	17618.5	n/a
Survivors pension	2419.6	2558.4	2723.6	n/a
Disability benefit	1428.0	1426.3	1421.2	n/a
Sickness cash benefit	451.1	429.0	450.8	n/a
Child benefits	713.4	878.8	1067.0	n/a
Maternity benefit	289.4	290.9	375.8	n/a
Solidarity supplement for older persons	39.2	109.5	223.5	n/a
Social insertion income	356.2	393.6	466.2	n/a
Unemployment benefit	1684.8	1565.6	2045.2	n/a

Source: Ministry of Labour and Social Solidarity; Eurostat

1.4 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 regimes, according to specific activities situations (non-profit organizations, rural workers, football players, clergy, domestic services, young people in the first job, handicapped people, etc.).

Self-employed contributions (*contribuições de trabalhadores independentes*): Self-employed workers pay contributions according to the kind of protection wanted by them (there are two regimes: basic and broader coverage) and a reference remuneration they chose to declare, regardless their real earnings.

- ***Scope and scale***

Table 7. Social contributions: contributors (thousands)

	2007	2008	2009	2010
Social contributions	**n/a**	**n/a**	**n/a**	**n/a**
Employee and employer social security contributions	n/a	n/a	n/a	n/a
Self-employed contributions	n/a	n/a	n/a	n/a

Notes: contributors with at least one contribution during the year
Source: Ministry of Labour and Social Solidarity

Table 8. Social contributions: revenue (10^6 euros)

	2007	2008	2009	2010
Social contributions (total)	**12370**	**13082**	**13132**	**n/a**
Employee and employer social security contributions	n/a	n/a	n/a	n/a
Self-employed contributions	n/a	n/a	n/a	n/a

Source: Ministry of Labour and Social Solidarity

1.5 Taxes

Some of the most relevant taxes:

Personal income tax (*Imposto sobre o Rendimento das Pessoas Singulares - IRS*): Personal income tax is due by the 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 taxation can apply to the whole members of the family unit, which is composed basically by both spouses and their dependents.

Property transfer municipal tax (*Imposto Municipal sobre as Transmissões Onerosas de Imóveis*): Levy on immovable property/real estate transfers.

Property municipal tax (*Imposto Municipal sobre Imóveis*): Tax on wealth comprehending both rural and urban property.

Value added tax (*Imposto sobre o Valor Acrescentado - IVA*): The general rate was 21% in 2006 (20% from July 2008 onwards). Lower rates are applied to specific classes of goods and to the autonomous regions of Azores and Madeira.

There is also taxation on corporate profits, in products like vehicles (acquisition and circulation), oil derivates, tobacco or alcohol, etc.

- ***Scope and scale***

Table 9. Taxes: taxpayers

	2007	2008	2009	2010
Direct taxes				
Personal income tax (thous. tax units)	2075	2062	2008	n/a
Property municipal tax (thousands of property items)	n/a	19460	19522	n/a
Indirect taxes				
Property transfer municipal tax (thousands of transfers)	n/a	261	226	n/a
VAT	n/a	n/a	n/a	n/a

Source: Ministry of Finance

Table 10. Taxes: revenue (10^6 euros)

	2007	2008	2009	2010
Direct taxes				
Personal income tax	8202	8301	8148	n/a
Property municipal tax	n/a	983	1087	n/a
Indirect taxes				
Property transfer municipal tax	n/a	787	612	n/a
VAT	13196	13428	10883	n/a

Source: Ministry of Finance

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1 Scope of simulation

Table 11. Simulation of benefits in EUROMOD

	Variable name(s)	Treatment in EUROMOD 2007	2008	2009	2010	Why not fully simulated?
Old age contributory pension	psoact	PS	PS	PS	PS	No data on contributive career (years, amount of contributions); simulation of the minimum pensions only;
Old age social pension	psoanc	PS	PS	PS	PS	No data on contributive 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 ocurrence;
Sickness cash benefit	bhl	I	I	I	I	No data on work leave due to sickness;
Child benefits	bch	S	S	S	S	
Maternity cash benefit	bma	I	I	I	I	Subject to several types of behavioural response (how does the couple share the leave? How long is the leave, before/after birth? Etc.);
Solidarity supplement for older persons		E	E	E	E	No data on offsprings of beneficiaries who live outside the household; No data on the frequency of social services; Difficulty on dealing with non-taking up issues;
Social insertion income	bsa00	PS	PS	PS	PS	Difficulty in matching the simulated family unit with the actual one; Difficulty on dealing with non-taking up issues;
Unemployment benefit (contributive)	bunct	PS	PS	PS	PS	No data on reason for unemployment (deliberate or compulsory, for instance); split of the original aggregated variable only.
Unemployment benefit (non-contributive)	bunnc	PS	PS	PS	PS	No data on reason for unemployment (deliberate or compulsory, for instance); no data on previous benefit history; split of the original aggregated variable only.

Notes: "-": policy did not exist in that year; "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 relevant rules are not simulated; "S" *simulated* although some minor or very specific rules may not be simulated.

Table 12. Simulation of taxes and social contributions in EUROMOD

	Variable name(s)	Treatment in EUROMOD 2007	2008	2009	2010	Why not fully simulated?
Personal income tax	tin_00	PS	PS	PS	PS	Some behavioural issues; no data available for the evaluation of some of the deductions (mainly 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		S	S	S	S	General rules assumed;
Employer social insurance contribution		S	S	S	S	General rules assumed;
Self-employed social insurance contribution		PS	PS	PS	PS	General rules assumed (in a wider range than the employee/employer contributions; some significant behavioural issues.

Notes: "-" policy did not exist in that year; "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 relevant rules are not simulated; "S" policy is *simulated* although some minor or very specific rules may not be simulated.

2.2 Order of simulation and interdependencies

- ***Order of simulation in 2007-2010***

The following table shows the benefits and taxes simulated by the EUROMOD for the years 2006-2009. As there were few structural changes in the Portuguese system within the period, the order in which the policies are simulated should be replayed every year. This allows us to represent the order of simulation for all years in just one table.

The order in which policies are simulated results essentially from the interdependency between them concerning the types of income simulated by some and taken as inputs by others. For instance, policies like minimum wage and minimum pension are simulated first, as their outcomes are employment and pensions income, which will be used by the following policies. Unemployment benefits should be then simulated as every input needed is now available (i.e., was available before or was already changed through simulation) and its output (unemployment benefit income) will be used later. Child benefits come next, although, by now, after having employment and pension income resulting from the previous policies and as its income (the child benefit) is not used by the following policies, its order is irrelevant. Next in the simulation spine are the taxes and contributions policies, and, lastly, although this order is irrelevant, the minimum mean tested schemes and social insertion income.

Table 13. EUROMOD Spine: order of simulation, 2007-2010

Policy	Description	Main output
yem_pt	Minimum wage	yem
poacm_pt	Minimum old-age pension	poact_s
bunct_pt	Unemployment insurance	bunct_s
bunnc_pt	Unemployment assistance	bunnc_s
poanc_pt	Old-age social pension	poanc_s
bch_pt	Child benefits	bch_s
tscee_pt	Employee social insurance contributions	tscee_s
tscer_pt	Employer social insurance contributions	tscer_s
tscse_pt	Self-employed social insurance contributions	tscse_s
tin_00_pt	Personal income tax	tin_s
bsa00_pt	Social insertion income	bsa00_s

2.3 Social benefits

2.3.1 Introductory note on austerity measures

Since August 2010, following the debt crisis, Portuguese authorities have been enacting a suite of austerity measures with meaningful repercussions in social benefits, mainly in social unemployment benefit (assistance), social insertion income and child benefit. As these changes took only effect later in the year – in some cases, even only in 2012 – it remains outside the scope of EUROMOD's 2010 simulations[1].

2.3.2 Unemployment benefits: insurance (*bunct*)

The unemployment benefit cannot be fully simulated in Euromod, as there is no data on the reason for unemployment (deliberate or compulsory, for instance), neither on the durations of the last jobs. This constraint applies to the main unemployment benefit, sometimes called contributive or insurance unemployment benefit, and to the social unemployment benefit (next section), also called non-contributive (not being entirely a true designation, as there were also contributions, only in a lesser degree) or assistance unemployment benefit.

However, we can simulate a split of the original variable in the database (bun), by observing some of the occurrences more easily associated with the latter kind of benefit (see next section for more detailed explanation of the splitting procedures).

- ***Definitions***

The unit of analysis is the individual. There are no benefit units (alternatively, the units are single), as well as no income test.

- ***Eligibility conditions***

- Being fired of a job (by exclusive decision of the employer) after working at least 420 days over the previous 24 months, excluding self-employment;
- Being actively looking for work;

[1] As a general rule in EUROMOD, June 30 is the reference date for all policies.

- ***Benefit amount***

- The amount is 65% of the referring remuneration (lower limit: the social support index – SSI – unless the referring remuneration is lower than this; upper limit: three times the SSI);
- The referring remuneration is calculated by averaging wages of the first 12 of the 14 months previous to the firing date.

2.3.3 Unemployment benefit: assistance (*bunnc*)

As said above, the unemployment benefits cannot be fully simulated, but we can, at least, simulate a split of the original unemployment benefit variable (bun) in social and contributive related variables (bunnc and bunct). First of all, the concepts over which the social or assistance unemployment benefit is designed are such as follows:

- ***Definitions***

This benefit is given both as a prolonging of a ceased main assistance unemployment benefit (as long as these additional conditions are fulfilled) and as an initial benefit for those who haven't worked as long as needed by the main benefit.

The unit of analysis is the individual. Contrary to the main benefit (last section) there is a family unit:

- the individual
- his/her partner
- any dependent children (dependency defined as having an income below the social pension if the child is single or, if the child has a partner, that couple having income below two social pensions).

- ***Eligibility conditions***

- 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), excluding self-employment;
- Being actively looking for work;

- ***Benefit amount***

- The amount is 80% of the Social Support Index (SSI) for individuals in a single benefit unit;
- 100% of the same referral if the benefit unit size is larger than one.

- ***Income test***

The family unit overall income (as defined below) must be below 80% of the SSI, after divided by the unit's size (e.g., per capita).

Table 14. 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

- ***Split***

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

1) Unemployment benefit existence: bun is different from zero.
2) Amount proximity: the amount in the variable bun is not less than 90% or greater than 110% the reference treshold:
    a. 80% of the SSI if the unit size is 1;
    b. 100% of the SSI if the unit has two people or more.
3) Benefit eligibility: unit's income per person is 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).

Until 2010, there were no changes in the social unemployment benefit apart from the update in the reference: the SSI takes the values 397.86 (2007), 407.41 (2008) and 419.22 (2009 and 2010).

2.3.4 Minimum pension (*poacm*)

Simulation of pensions is by far impossible to attain with the available microdata, due to the lack of information on several attributes needed to compute contributive old age pensions (we offer an approach to simulate non contributive old age pensions, though). However, it is possible, with some degree of simplification, not only to simulate the level of minimum pensions as well as to (try to) "correct" the original data on the grounds of low declared old age pension income.

- ***Definitions***

Unit of analysis is the individual.

- ***Eligibility conditions***

Minimum pensions are guaranteed to individuals with past contributions that enter reform at 65 years of age or later and have a statutory pension lower than the minimum he/she is entitled to, as shown below.

- ***Benefit amount***

Minimum pensions are made up of two parcels: the statutory pension and the "social supplement" (the difference between the statutory and the minimum amounts). The former is financed by the social security

budget while the latter is financed by the state budget. The minimum amounts are fixed each year, according to the pensioners' working career length. For the simulation, we assume the variable liwwh (work history – length of time in months) as a proxy to the career length. Thus, every old age pension (boa) in the database is "corrected" accordingly to the following grid:

Table 15. Old age contributive pension: minimum values, 2007-2010

Career Length	2007	2008	2009	2010
Less than 15 years	230.16	236.47	243.32	246.36
15 to 20 years	256.72	263.76	271.40	274.79
21 to 30 years	283.28	291.05	299.49	303.23
More than 30 years	354.10	363.81	374.36	379.04

In 2008 and 2009, it was implemented a new automatic indexation rule, shown in the following table:

Table 16. Pensions' automatic indexation rules, 2008-2009

	GDP<2%	2%<=GDP<3%	GDP>=3%
Monthly pension <=1.5 SSI	CPI	CPI + 20% GDP (min. limit: .5pp above CPI)	CPI + 20% GDP
1.6 SSI<Mo. pension <= 6 SSI	CPI - .5pp	CPI	CPI + 12.5% GDP
1.6 SSI<Mo. pension <= 12 SSI	CPI - .75pp	CPI - .25pp	CPI

In 2010, the rule was temporarily deactivated, as the inflation in that year came negative. Lower pensions were upgraded through an administrative factor of 1.25%.

2.3.5 Child benefit (*bch*)

- ***Definitions***

The unit of analysis is the family. Children are the recipients and number of recipients is the only data needed for the equivalence scale but the family income is observed.

Benefit units: 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 comprised by the recipient child (or children), his/her siblings, his/her parents, tutors or stepparents.

Equivalence scale for income evaluation: 1 for each recipient plus one. This scale only takes in account the number of children. Example: a family has two recipient children – the family's income is then divided by 3.

- ***Eligibility conditions***

Child(ren) age not above 16. It may extend until 24 (not above…) under certain conditions:

a) 17 or 18: need to attend primary education (1st to 6th grade) or greater;

b) 19 or 20: need to attend secondary education (7th to 12th grade) or greater;

c) Until 24: need to attend superior school or greater;

d) Also until 24 if disabled children and receiving disability allowances (not simulated).

Also: not being at work (children).

- ***Income test***

The annual "reference income" may not stand above five times the national minimum wage multiplied by 14 (in 2007, until May 2008). The "reference income" results from the total annual family unit income divided by the total number of recipients plus one. According to the "reference income", families are ranked along five income brackets:

Table 17. Child benefit income brackets, 2007-2010

Income bracket	Income bracket top limits (euros)			
	2007	2008	2009	2010
1st	0.5x14x403 = 2821	...x407.41 = 2851.87	...x419.22 = 2934.54	...x419.22 = 2934.54
2nd	1x14x403 = 5642	...x407.41 = 5703.74	...x419.22 = 5869.08	...x419.22 = 5869.08
3rd	1.5x14x403 = 8463	...x407.41 = 8555.61	...x419.22 = 8803.62	...x419.22 = 8803.62
4th	2.5x14x403= 14105	...x407.41 = 14259.35	...x419.22 = 14672.70	...x419.22 = 14672.70
5th	5x14x403 = 28210	...x407.41 = 28518.70	...x419.22 = 29345.40	...x419.22 = 29345.40

National minimum wage: 403 euros/month (2007). The minimum wage was replaced by the Social Support Index (SSI) from May 2008 onwards as an indexing referral for the child benefits income test: 407.41 (2008), 419.22 (2009 and 2010).

Table 18. Child benefit: assessed income

Variable	Label	Remarks
yem	INCOME: Employment	
yse	INCOME: Self employment	In 2009, there is a change in the self-employment income assessment, aligning with the personal tax criteria: 70% of earnings, 20% of sales (no longer 100%).
bunct	BENEFIT/PENSION: Unemployment insurance	
bunct_s	BENEFIT/PENSION: Unemployment : contributory: simulated	
bunnc_s	BENEFIT/PENSION: Unemployment : non contributory : simulated	
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	
yot	INCOME: Other	

- ***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 19. Child benefit amounts, 2007-2010

Income bracket	2007		2008 jan-jul		2008 jul-dec (*)		2009		2010 (**)	
	<=12yrs	>12yrs	<=12yrs	>12yrs	<=12yrs	>12yrs	<=12yrs	>12yrs	<=12yrs	>12yrs
1st	130.62	32.65	135.84	33.96	169.80	42.45	174.72	43.68	174.72	43.68
2nd	108.85	27.22	112.66	28.17	140.83	35.21	144.91	36.23	144.91	36.23
3rd	87.08	25.04	86.69	25.79	=	=	92.29	26.54	92.29	26.54
4th	53.79	21.52	55.13	22.06	=	=	56.45	22.59	56.45	22.59
5th	32.28	10.76	33.09	11.03	=	=	33.88	11.29	33.88	11.29

(*) In mid-2008, there was a change in the benefit amount due to a 25% supplement for the first and second brackets.
(**) From November 2010 onwards, the last two brackets are suspended as well as the 25% supplement for the first two income brackets introduced in 2008 (out of scope for the 2010 Euromod simulation).

The child benefit is paid in a monthly basis, twelve times a year. There is an extra instalment in September, in the same amount, for children that fulfil the following conditions:

a) The child's family is in the 1st bracket (e.g., lower incomes);
b) The child is in the age group between 6 and 16 (age attained whenever during the civil year, 2006 in this case);
c) The child attends school.

- ***New features introduced during the period 2007-2010***

- From May 2008 onwards: N**ew supplement for lone parent families**: the benefit is majored in 20%.
- From January 2009 onwards: The **extra installment in September** previously available for children in families of the first income bracket, is now available in every other brackets as long as the other criteria are attained: age (anytime in the civil year) between 6 and 16; the child attends school.
- From January 2009 onwards: **New supplement for large families**:
  - When a second child is born (or integrated) in a family → the benefit of every child in the family in the ages comprehending 12 and 36 months is doubled;
  - When a third child is born (or integrated) → the benefit of every child in the family in the ages comprehending 12 and 36 months is tripled.
- From September 2009 onwards: **New education allowance for children at school**. Amount of the 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);
  e) From September 2009 onwards: **New education allowance for children at school**. Amount of the allowance: twice the amount of the benefit the child is receiving. Set of criteria that must be fully observed:

- (As already stated above) from November 2010 onwards, the last two brackets are suspended as well as the 25% supplement for the first two income brackets introduced in 2008 (out of scope for the 2010 Euromod simulation).

2.3.6 Old age social pension (*poanc*)

- ***Definitions***

The recipient is an individual, nevertheless, when there is a couple, the income from both partners is observed.

Equivalence scale: 1 for a single, 5/3 for a couple.

EUROMOD Notes: the original 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 here described.

- ***Eligibility conditions***

Minimum age: 65 years.

- ***Income test***

a) single - monthly gross income not above 30% of the Social Support Index (*);
b) couple - monthly gross income (couple's total) not above 50%.

(*) SSI: 397.86 (2007), 407.41 (2008), 419.22 (2009 and 2010).

The framework of the social pension is vague about the kinds of income evaluated in the means test process, but generally they should be:

Table 20. Old age social pension assessed income

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

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 pension given to every recipient amounts to 177.05 (in 2007). Besides that amount, every recipient receives a supplement called Complemento Extraordinário de Solidariedade (Extraordinary Supplement of Solidarity) that varies according to age: 16.38 to individuals aged 65-69; 32.75 to individuals aged 70 or more. In practical terms, that totals 193.43 for 65-69 ages and 2009.80 for 70 or more. Full table for the period 2007-2010:

Table 21. Old age social pension amounts, 2007-2010

	2007		2008		2009		2010	
	65-69	70+	65-69	70+	65-69	70+	65-69	70+
Social pension base amount	177.05		181.91		187.18		189.52	
Extraordinary supp. solidarity	16.38	32.75	16.83	33.65	17.32	34.63	17.54	35.06
Sum	193.43	209.80	198.74	215.56	204.50	221.81	207.06	224.58

These amounts are paid on a monthly basis and there is a 13rd (July) and a 14th extra instalments (December) in the exact same amounts.

2.3.7 Solidarity supplement for older persons

- ***Definitions***

The recipient is an individual, nevertheless, the couple income is observed; descendants' income is also observed in an indirect way. Thus, family unit is an individual (when single) or a couple.

Equivalence scale for income evaluation: 1 for a single, 1.75 for a couple. This stands for the recipient's "family unit". There is a second kind of "family unit" in this scheme, which is applicable to the descendants' households.

- ***Eligibility conditions***

Age: 80 and plus (the general limit is fixed at 65 years, but its application was gradual over the first years: 80 and plus in 2006, 70 and plus in 2007 and 65 and plus since 2008).

- ***Income test***

a) single - yearly gross income not above 4338.60 euros (in 2007);
b) couple - yearly gross income (couple's total) not above 1.75*4338.60 euros (in 2006); the single means test must also be verified - if one of the elements of the couple has a yearly gross income above 4338.60 euros he/she will not be eligible (this is important for the calculation of the amounts).

Table 22. Solidarity supplement for older persons: reference values, 2007-2010

	2007	2008	2009	2010
Single	4338.60	4800.00	4960.00	5022.00
Couple (1.75xsingle)	7592.55	8400.00	8680.00	8788.50

Income of both elements of the family unit, Y_1 and Y_2 in the formulae presented in the next section, are derived from a wide range of income variables in EUROMOD, as described below. Certain kinds of income are impossible or difficult to be acquired in a simulation, though.

Table 23. Solidarity supplement for older persons assessed income

Variable	Label	Remarks
yem	INCOME: Employment	
yse	INCOME: Self employment	Only 65% of the amount
bunct	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	
yiy	INCOME: Investment	
yot	INCOME: Other	
ypt	INCOME: Private transfers	
-	Family solidarity (imputed)	Not fully acquirable in the simulation.
-	Institution frequency	The yearly subsidy that Social Security pays to the institution. Impossible to be acquired in a simulation
-	Income inputation from wealth	5% 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 be acquired in a simulation.

"Family Solidarity":

Depending on the income level of each descendant, one specific value is added up to the recipient's income. When the descendant income level surpasses certain amount it even rules the recipient out of the scheme, automatically.

Simulation of the "family solidarity" (FS) in EUROMOD would only be possible for descendants living in the same households of the recipients, though the scheme considers every descendant.

Every descendant is observed at the level of his own household, here defined as the Portuguese tax system household, which comprises: the descendant, his/her partner, any dependent descendant (check section 3.2. – Tax Income – for a full description of the tax unit).

The kinds of income observed for these tax units are:

Table 24. Solidarity supplement for older persons 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

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 as such is then used to situate the descendant on a scale:

Table 25. Solidarity supplement for older persons: family solidarity brackets

Equivalent income	Rank
Below or equal to 2.5xRV	1st
Above 2.5xRV and below or equal to 3.5xRV	2nd
Above 3.5xRV and below or equal to 5xRV	3rd
Above 5xRV	4th

(RV stands for Reference Value, which is updated every year; 4338.60€ in 2007, ... – check previous table)

Each rank corresponds to an amount that is defined as the FS:

Table 26. Solidarity supplement for older persons: family solidarity amounts

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

This process is repeated for every descendant. All FS amounts are them sum up and added to the recipient parents' income. If at least one of the descendants of a recipient is at the 4th rank, exclusion from the scheme is immediate, no matter what the ranks are for any other siblings, descendants from the same parent.

At this point, there are two important things to be noted:

a) A descendant "generates" a FS to each of his/her parents (and only to them). This means that, for instance, if a couple of recipients have one son situated in the 2nd rank, each of the recipients will have an extra 379.63 euros (5%x4338.60x1.75), in 2007 terms. But if he's not son of one of the partners, then he will only "generate" one extra amount of 379.63 euros to his parent.

b) FS only occurs when the parent is a recipient. This means that FS only adds up to recipients. In a couple where only one of the partners is a recipient, even when there's a common daughter, she will only "generate" FS to her parent that is a recipient.

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 terms, the amount paid results from the difference between the "reference value" (4338.60 euros in 2007 – check previous table for other values) and the yearly income of the recipient. This is clear when calculating the amount to pay a single recipient. For married couples, the calculation formula gets more complicated:

- When there's only one recipient in the couple (in simulation terms, this happens when the other partner doesn't fulfill the entitlement criteria), the amount paid results from the minimum of two differences. First, the difference between the "reference value" (4338.60 euros, in 2007) and the individual income of the recipient. "Individual income" here refers to the recipient own income, not any sort of "equivalent income" (although common income is meant to be divided by two). Second, the difference between the "total equivalent reference value" (4338.70*1.75, in 2007) and the couple's total income. The smallest value will be the amount paid.

- When there are two recipients in the couple, the amount paid results from the second difference above, e.g., the "total equivalent reference value" (4338.60*1.75, in 2007) and the couple's total income. This amount is then divided between the two recipients according to specific rules.

Table 27. Calculation of the solidarity supplement for older persons

For a single recipient:	$amount = RV - Y_1$
For a couple with only one recipient:	$amount = \min \begin{cases} RV - Y_1 \\ RV \times 1.75 - Y_1 - Y_2 \end{cases}$
For a couple with two recipients:	$amount = RV \times 1.75 - Y_1 - Y_2$

Y_1 stands for the total individual income of the sole recipient or the first recipient in a couple of both recipients, while Y_2 stands for the total individual income of a partner or a second recipient in the couple; VR stands for reference value.

The Solidarity supplement for old persons is paid in a monthly basis, twelve times a year, with no additional holiday or Christmas instalment.

Given the simulation constraints expressed along this section and the inadequate tests' results (great overestimation of the number of recipients and, thus, total expenditure), decision was made to not simulate the solidarity supplement for old persons.

2.3.8 Social insertion income (*bsa00*)

- ***Definitions***

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

a) The head/owner/representative;
b) His/her partner;
c) All of his/her under-18 relatives;
d) Other adults (18+) in kinship (up or down, not sideways like the head brother, for instance) who are dependent from the rest of the family. Dependency, in this case, is defined by having an income level equal or below 70% of the social pension.

In 2006, there was the possibility of splitting the family in two or more families (that is, two or more different benefits), when the following happened:

If the large family becomes eligible to the benefit, then the family can be split in smaller units (for instance, one or a couple of grandparents can be "parted" from the large family and be dealt as a new family).

If the large family isn't eligible to the benefit, there will be no split and no individual will be able to receive the benefit.

Equivalence scale for income evaluation: 1 for each of the two first adults (age >= 18); 0.7 for each of the other adults; 0.5 for each of the two first children; 0.6 for every other children. There is a supplement to maternity, consisting on 0.3 for the pregnancy of the head or the head's partner (not possible to be simulated by EUROMOD) and, after the child is born, 0.5 during the first year of life. There is also a supplement to handicaps (not possible to be simulated by EUROMOD).

- ***Eligibility conditions***

Age: all ages (ownership – i.e. representation of the family – may only be held by 18 and older)

- ***Income test***

The family's total income must not be greater than the respective "SII value" which results from the social pension amount (177.05 in 2007) multiplied by the scale of equivalence. In other words, reworking the inequation, the family's equivalent income must not be greater than the social pension. Social pension for the following years: 181.91 (2008), 187.18 (2009) and 189.52 (2010).

Table 28. Social insertion income assessed income

Variable	Label	Remarks
yem	INCOME: Employment	Only 80% of the amount
yse	INCOME: Self employment	Only 80% of the amount
bunct	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	
ypt	INCOME: Private transfers	
ypr	INCOME: Property	
yiy	INCOME: Investment	
yot	INCOME: Other	

- ***Benefit amount***

The amount paid results from the difference between the "SII value" (social pension x scale of equivalence) and the family's total income. The SII is paid in a monthly basis, twelve times a year, with no additional holiday or Christmas instalment.

Housing costs supplement:

There's also a supplement supporting house costs for the families that pay rents (or mortgage costs) above 25% of their own "SII value" (the referral, e.g. social pension, multiplied by the equivalence scale). The supplement amount is the same as the rent/mortgage cost, with an upper limit equal to the official higher rent allowance for a family of the same size. These limits are the following:

Table 29. Social insertion housing supplement limits

Family size	Upper limits			
	2007	2008	2009	2010
1	101.33	103.86	106.87	106.87
2	140.74	144.26	148.44	148.44
3	163.26	167.34	172.19	172.19
4	182.96	187.53	192.97	192.97
5	205.48	210.62	216.73	216.73
6	219.55	225.04	231.57	231.57
7	230.81	236.58	243.44	243.44
8	253.33	259.66	267.19	267.19
9	278.66	285.63	293.91	293.91
10+	295.55	302.94	311.73	311.73

2.4 Social contributions

2.4.1 Employee social contributions

Generally, employees pay contributions according to a flat rate on their gross employment income: 11%.

EUROMOD notes: There are several regimes, according to specific activities situations (non-profit organizations, rural workers, football players, clergy, domestic services, young people in the first job, handicapped people, etc.). Due to lack of information on the available data, EUROMOD will only be able to simulate the general rule.

2.4.2 Employer social contributions

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

2.4.3 Self-employed social contributions

Self-employed workers pay contributions according to two dimensions, which depend upon their decision:

Firstly, the choice between compulsory minimum coverage and a broader coverage, which determines the rate of the contribution:

- Compulsory minimum coverage in social protection: 25.4%

- Broader coverage: 32%

EUROMOD notes: Again, as for the common employees, there's a wide range of taxes, but the general regime is not only significantly widespread but it also turns to be the only one possible to simulate in EUROMOD.

Secondly, regardless his/her real remuneration, the self-employed worker also gets the chance to chose the reference remuneration he/she'll be paying contribution every month of the year (12 times if he/she has open activity during all the year), according to ten levels which are indexed to the Social Support Index (SSI):

Table 30. Self employed contributions voluntary amounts

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

SSI in the following years: 407.41 (2008) and 419.22 (2009 and 2010).

EUROMOD notes: EUROMOD is able only to simulate the social contributions as if every worker chose the compulsory coverage rate (25.4%) and the minimum reference remuneration (1.5 x SSI).

Exemptions:

The self-employed workers are exempt of paying social contributions if their annual income from self-employment is less than 6 times the SSI. The self-employed workers are also exempt of paying social contributions if they have received income as employee superior to 12 times the SSI. Another condition of exemption is to have incomes from old-age or disability pensions. These exemptions are simulated through EUROMOD.

2.4.4 Other social contributions

(n/a)

2.5 Personal income tax

2.5.1 Tax unit

Personal income tax (Imposto sobre o Rendimento Singular – IRS) is due by the 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 taxation can apply to the whole members of the family unit, which is composed basically by both partners and their dependent children. Dependents are defined as:

- Offspring, adopted children and stepchildren, minor of age (less than 18) and not emancipated;

- Offspring, adopted children and stepchildren, adults (18 and plus) not older than 25, with a monthly income below the national minimum wage and having attended the 11st or the 12nd grade of schooling or having attended compulsory military or civil service;

- Offspring, adopted children and stepchildren, adults (18 and plus) being declared as inept for work (assumption taken for the model: all individuals with disability are considered inept for work), with a monthly income below the national minimum wage;

- Minors of age (less than 18) in wardship and earning no income.

The age assessment's date is 31st December.

In strict terms, dependent parents don't belong to the tax unit, like other non-dependent parents don't, constituting a different tax unit on their own. Dependent parents are accounted only in the deductions phase. However, if they fulfil the conditions to be considered dependent parents (e.g., income below the minimum pension of the general regime) they become exempted of tax obligations. So, for simplicity in the calculation of the deductions, we assume them as being part of the son/daughter tax unit.

Joint taxation is not compulsory, but for Euromod purposes, we need to assume it as such, even for unmarried couples (still, it is the most frequent, almost universal, option).

2.5.2 Tax allowances

Methods for income determination and tax collection may vary from category to category. However, the taxable income is total income resulting from the aggregation of gross incomes of different categories minus income specific deductions applied to each income category, and minus reductions.

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

Table 31. Personal tax deductions

Income category	Deductions 2007	2008	2009	2010
A – Employment income	72% of twelve times the national minimum wage = 3481.92. 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, apart from… 72% of NMW*12 = 3680.64	No changes, apart from… 72% of NMW*12 = 3888.00	No changes, apart from… 72% of NMW*12 = 4104.00
B – Business and professional income	Simplified regime: taxable income is 20% of sales or 70% of other earnings, with the minimum set at 2821 (half yearly national minimum wage). For the simulation, we assume a 30% deduction on self employment income.	No changes, apart from the NMW. ½ NMW*14 = 2982	No changes, apart from the NMW. ½ NMW*14 = 3150	No changes, apart from the NMW. ½ NMW*14 = 3325
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.	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.	No changes	No changes	No changes
H - Pensions	Deduction is 6100 (or yearly pension if this is lower) until yearly pension of 35000. Above 3500, the deduction is subtracted of 15% of the exceeding amount (until deduction reaches zero).	No change, apart from the amounts: 6000 for deductions 30000 for "turning point". The following decay is 13% of the exceeding amount.	No change at all.	Change on the "turning point": 30,240 euros/year. The deduction is subtracted of 13% of the yearly pension surplus above 30,000 until it reaches zero (e.g., at a 76,393.85pension total).

For the reductions, the only thing that counts are the pensions that are under court decision, with no limit (not simulated).

2.5.3 Tax base

Personal income tax (IRS) is computed as follows:

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

With TAXABLE INCOME = GROSS INCOME – INCOME SPECIFIC DEDUCTIONS – REDUCTIONS

a) According to the splitting system, income from married couples is divided by 2 before being subjected to the tax rate.

b) In the case of the married couples, the resulting tax is multiplied by two to obtain the tax liability (before tax credits).

IRS is levied on the annual overall income from six specific categories of income employment, self-employment, investment income, rental income, net worth increases and pensions, respectively identified by the letters A, B, E, F, G and H in the previous section.

2.5.4 Tax schedule

The previously computed taxable income is submitted to tax rates according to income brackets, as shown in the following table:

Table 32. Personal tax marginal rates

Marginal Rate	2007		2008		2009		2010		
	Income bracket	Deduct	Income bracket	Deduct	Income bracket	Deduct	New marginal rate (*)	Income bracket	Deduct
10.5	Up to 4544	0	Up to 4639	0	Up to 4755	0	11.08%	Up to 4793	0
13	4544-6873	113.60	4639-7017	115.98	4755-7192	118.88	13.58%	4793-7250	119.83
23.5	6873-17043	835.26	7017-17401	852.76	7192-17836	874.04	24.08%	7250-17979	881.08
34	17043-39197	2624.78	17401-40020	2679.87	17836-41021	2746.82	34.88%	17979-41349	2822.81
36.5	39197-56807	3604.71	40020-58000	3680.37	41021-59450	3772.34	37.38%	41349-59926	3856.53
40	56807-61260	5592.95	58000-62546	5710.37	59450-64110	5853.09	40.88%	59926-64623	5953.94
42	Above 61260	6818.18	Above 62546	6961.29	Above 64110	7135.29	42.88%	64623-150000	7246.40
							45.88%	Above 150000	11746.40

(*) In 2010 there has been a major revision of the marginal rates as well as the inclusion of a new income bracket.

Notes:

The income of the spouses and their dependents is aggregated and the tax is determined according to the splitting system (division by 2).

In Azores and Madeira the marginal tax rates are lower than in Mainland (not simulated).

2.5.5 Tax credits

In order to obtain the personal income tax (IRS), certain expenses can be subtracted to the tax liability: health and education expenses, costs with institutions for old age-care, buildings, insurance premiums, personal tax credits and other deductions as the following table illustrates:

Table 33. Personal tax credits

Tax credit group	Taxpayer's situation	Maximum limit			
		2007	2008	2009	2010
Tax credits regarding taxpayers and their dependents, parents and grandparents	Per partner in the couple (or for a single)	221.65 (55% of the NMW)	234.30	247.50	261.25
	Lone parent	322.40 (80% NMW)	340.80	360.00	380.00
	Per dependent child	161.20 (40% NMW)	170.40	180.00	190.00 (new: 380 if aged less than 3)
	Per parent/grandparent (with income below the minimum pension)	221.65 (342.55 if only one) (55% and 85% NMW)	234.30 (362.10 if only one)	247.50 (382.50 if only one)	261.25 (403.75 if only one)
Health	Married/single	30% of expenses – not simulated			
Education and training	Married/single	30% of expenses (with upper limits) – not simulated			
Frequency of retirement homes	Married/single	25% of expenses (with upper limits) – not simulated			
Buildings (house credit – both capital and interest – and rents paid)	Married/single	30% (up to 574)	30% (up to 586)	30% (up to 586)	30% (up to 591)
Life and personal accident insurance premiums	Married	25% of expenses (with upper limits) – not simulated			
	Single	25% of expenses (with upper limits) – not simulated			
Health insurance	Married	30% of expenses (with upper limits) – not simulated			
	Single	30% of expenses (with upper limits) – not simulated			
	Per dependent	Above limits increase a fixed amound per dependent – not simulated			
Disability	Married	1209.00	1491.00	1800.00	1900.00
	Single	403.00	639.00	675.00	712.50
	Per dependent	403.00	639.00	675.00	712.50

There are also other tax credits associated to private retirement plans, share saving plans, house-saving deposit accounts, acquisition of computers, acquisition of renewable energy equipment, legal counseling, etc.

2.6 Other taxes

(n/a)

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 and all the members of a selected household are eligible for inclusion in the sample. The EU-SILC allows the study of the composition and distribution of households' and individuals' income; living conditions (housing conditions, comfort, financial capacity, etc.); the social transfers' impact on poverty and social exclusion; the link between poverty and economic activity, employment, familiar composition, education, health, housing, etc. The survey takes place between May and July of the year following the income reference year.

According to Portuguese Quality Report the EU-SILC sample is made 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 (made of census enumeration areas) and they are stratified by a regional criterion. The second stage comprises the selection of dwellings and all the 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 ultimate sampling units) are the dwellings, each one identified by an address and the name of the household header.

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

Table 34. EUROMOD database description

EUROMOD database	PT_2008_a2
Original name	EU-SILC UDB
Provider	Eurostat
Year of collection	2008
Period of collection	Fieldwork was executed in 2008, between May 14th and July 14th.
Income reference period	2007
Sampling	stratified, multi-stage, clustered
Unit of assessment	Household and Personal
Coverage	Private households (Households living at private residential addresses)
Sample size	4454 households, 11786 individuals
Response rate	82% (household interview response rate)

3.2 Sample quality and weights

3.2.1 Non-response

Table 35. Response rate

Response rate for households	
Number of addresses successfully contacted (DB120=11)	4814
Number of valid addressed selected (DB120=11, 21, 22)	4866
Ra (address contact rate)	99%
Number of household interviews completed and accepted for database (DB135=1)	4454
Number of eligible households at contact addressed (DB130 filled)	4804
Rh (proportion of complete households interviews accepted for database	93%
NRh (household non-response rate)	**8%**
Response rate for persons	
Number of personal interviews completed (RB250=11, 12, 13)	10101
Number of eligible individuals in households whose interviews were completed and accepted for the database (RB245=1, 2, 3)	10185
Rp (proportion of complete personal interviews within the households accepted for the database)	99.2%
Overall individual non-response rates (NRp)	
NRp=[1-(Ra*Rh*Rp)]*100	9%

Non-response is treated by re-weighting the final sample, e.g., by recalculating the sample weights.

3.2.2 Weights

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

In the case of the 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 the information is the Labour Force Survey at the second quarter of 2008.

The calibration variables for persons are the distribution of the population by five year age groups and gender according to the Independent Estimates of the Population in 31/12/2007.

Table 36 below shows descriptive statistics for the grossing up weight used.

Table 36. Descriptive Statistics of the Grossing-up weight

	PT_2008_a2
Number	11772
Mean	889.82
Median	776.19
Maximum	4626.28
Minimum	61.25
Max/Min	75.53
Decile 1	190.32
Decile 9	1463.07
Decile 9 / Decile 1	7.69

3.3 Data adjustment

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 interview (14 cases) have been dropped from the sample. The weights were not adjusted in order to take into account the drop of those individuals. The EUROMOD final sample consists of 4454 households and 11786 individuals.

3.4 Imputations and assumptions

3.4.1 Time period

In the 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 (dividing by 12) for the EUROMOD database.

There are two age variables in the SILC dataset. The first one relates to age at the moment of the survey and the second to the age at the end of the income reference period. EUROMOD uses the first one to characterise all individuals in the dataset.

3.4.2 Gross incomes

The EU-SILC survey contains information on both gross and net monetary incomes, if applicable. 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 either in gross values or in net values. Because of that, the net series is obtained by the Portuguese Statistics using a a specific gross-to-net micro simulation model. This model was presented and is available on the Proceedings of the EU-SILC Conference, Helsinki, 6-8 November 2006, on Comparative EU Statistics on Income and Living Conditions: Issues and Challenges (Eurostat Methodologies and Working papers), pages 157-172, “Income in EU-SILC – Net/Gross Conversion Techniques for Building and Using EU-SILC Databases”.

3.4.3 Other imputed variables

Education status and years of education were imputed to children aged under 16 according to age and the Portuguese education system.

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

3.5 Updating

The factors that are used to update monetary variables from 2007 to 2008-2010 are shown in Table 38. Most of the factors used to update pensions depend upon their initial level (pensions are updated every year according to the amount bracket they fall in, as shown in Table 37 – rather than setting a small amount of factors, this fact required an evolving tree with all possible outcomes until 2010).

Table 37. Pension amount updating, 2008-2010

2008		2009		2010	
Previous year pension bracket	**Increase**	**Previous year pension bracket**	**Increase**	**Previous year pension bracket**	**Increase**
[0, 611.12]	2.74%	[0, 628.83]	2.9%	[0, 628.83]	1.25%
[611.13, 2444.46]	2.17%	[628.83, 2515.32]	2.2%	[628.83, 1500]	1%
[2444.47, 4888.92]	1.89%	[2515.33, 5030.64]	2.15%	>1500	0%
>4888.92	0%	>5030.64	0%		

Note: General rule (applied in 2008 and 2009): when GDP grows less than 2%, pensions below 1.5 social support index (SSI) are updated accordingly to previous year inflation; pensions between 1.5 and 6 SSI are updated accordingly to inflation minus .5 pp; pensions between 6 and 12 SSI are updated accordingly to inflation minus .75 pp; pensions above 12 SSI remain unchanged. For 2008 only, these general rates were increased in 2/14 in order to compensate pensioners for the shift in the updating month from previous year's December to January. For 2010, as inflation in 2009 became negative, the general indexing rule was suspended and replaced by discretionary updating factors.

Table 38. Updating factors

Index	Income Source/index type	2008	2009	2010
default	Portuguese Central Bank Annual Report - Inflation	102.6	101.8	103.2
yivwg	**INCOME : Imputed value : Wage/Salary**	103.3	105.9	108.0
Yem	**INCOME: Employment (if lcs=0)**	103.3	105.9	108.0
Yem	**INCOME : Employment (if lcs=1)**	102.1	105.1	105.1
Ypp	**INCOME : Private Pension**	102.6	101.8	103.2
Yse	**INCOME : Self Employment**	103.3	105.9	108.0
Yiy	**INCOME : Investment**	102.6	101.8	103.2
ypr	**INCOME : Property**	102.6	101.8	103.2
yprrt	INCOME : Property : Rent	102.6	101.8	103.2
ypt	**INCOME : Private Transfers**	102.6	101.8	103.2
yptmp	INCOME : Private Transfers : Maintenance Payment	102.6	101.8	103.2
yot	**INCOME : other**	102.6	101.8	103.2
ysv	INCOME : Severance pay	102.6	101.8	103.2
yds	**INCOME : Disposable**	102.6	101.8	103.2
bch	BENEFIT/PENSION : Child	102.6	101.8	103.2
bed	**BENEFIT/PENSION : Education**	102.6	101.8	103.2
bun	**BENEFIT/PENSION : Unemployment**	103.3	105.9	108.0
bhl	**BENEFIT/PENSION : Health**	102.6	101.8	103.2
bfa	**BENEFIT/PENSION : Family**	102.6	101.8	103.2
bsa	**BENEFIT/PENSION : Social Assistance**	102.6	101.8	103.2
bsa00	Minimum income	102.7	105.7	107.0
bsaot	Social Assistance Other	102.7	105.7	107.0
bho	**BENEFIT/PENSION : Housing**	102.6	101.8	103.2
poa	**BENEFIT/PENSION : Old Age**			
	If poa in 2007 <= 594	102.7	105.7	107.0
	If poa in 2007 > 594 and poa in 2007 <= 611	102.7	105.7	106.8
	If poa in 2007 > 611 and poa in 2007 <= 617	102.2	105.1	106.8
	If poa in 2007 > 617 and poa in 2007 <= 1433	102.2	104.6	105.7
	If poa in 2007 > 1433 and poa in 2007 <= 2445	102.2	104.6	104.6
	If poa in 2007 > 2445 and poa in 2007 <= 2474	101.9	104.3	104.3
	If poa in 2007 > 2474 and poa in 2007 <= 4889	101.9	104.1	104.1
	If poa in 2007 > 4889 and poa in 2007 <= 5030	100.0	102.2	102.2
	If poa in 2007 > 5030	100.0	100.0	100.0
ppdi	**BENEFIT/PENSION : Disability**			
	If pdi in 2007 <= 594	102.7	105.7	107.0
	If pdi in 2007 > 594 and pdi in 2007 <= 611	102.7	105.7	106.8
	If pdi in 2007 > 611 and pdi in 2007 <= 617	102.2	105.1	106.8
	If pdi in 2007 > 617 and pdi in 2007 <= 1433	102.2	104.6	105.7
	If pdi in 2007 > 1433 and pdi in 2007 <= 2445	102.2	104.6	104.6
	If pdi in 2007 > 2445 and pdi in 2007 <= 2474	101.9	104.3	104.3
	If pdi in 2007 > 2474 and pdi in 2007 <= 4889	101.9	104.1	104.1
	If pdi in 2007 > 4889 and pdi in 2007 <= 5030	100.0	102.2	102.2
	If pdi in 2007 > 5030	100.0	100.0	100.0

Index	Income Source/index type	2008	2009	2010
poa00	**BENEFIT/PENSION : Old Age : Contributory**			
	If poa00 in 2007 <= 594	102.7	105.7	107.0
	If poa00 in 2007 > 594 and poa00 in 2007 <= 611	102.7	105.7	106.8
	If poa00 in 2007 > 611 and poa00 in 2007 <= 617	102.2	105.1	106.8
	If poa00 in 2007 > 617 and poa00 in 2007 <= 1433	102.2	104.6	105.7
	If poa00 in 2007 > 1433 and poa00 in 2007 <= 2445	102.2	104.6	104.6
	If poa00 in 2007 > 2445 and poa00 in 2007 <= 2474	101.9	104.3	104.3
	If poa00 in 2007 > 2474 and poa00 in 2007 <= 4889	101.9	104.1	104.1
	If poa00 in 2007 > 4889 and poa00 in 2007 <= 5030	100.0	102.2	102.2
	If poa00 in 2007 > 5030	100.0	100.0	100.0
poanc	BENEFIT/PENSION : Old Age : Non-Contributory	102.7	105.7	107.0
psu	**BENEFIT/PENSION : Survivors**			
	If psu in 2007 <= 594	102.7	105.7	107.0
	If psu in 2007 > 594 and psu in 2007 <= 611	102.7	105.7	106.8
	If psu in 2007 > 611 and psu in 2007 <= 617	102.2	105.1	106.8
	If psu in 2007 > 617 and psu in 2007 <= 1433	102.2	104.6	105.7
	If psu in 2007 > 1433 and psu in 2007 <= 2445	102.2	104.6	104.6
	If psu in 2007 > 2445 and psu in 2007 <= 2474	101.9	104.3	104.3
	If psu in 2007 > 2474 and psu in 2007 <= 4889	101.9	104.1	104.1
	If psu in 2007 > 4889 and psu in 2007 <= 5030	100.0	102.2	102.2
	If psu in 2007 > 5030	100.0	100.0	100.0
bma	BENEFIT/PENSION : Maternity	102.6	101.8	103.2
tpr	TAX : Property tax	102.6	101.8	103.2
tad	TAX : Repayments/Receipts	102.6	101.8	103.2
tscee	TAX : SIC : Employee	102.6	101.8	103.2
tscse	TAX : SIC : Self-Employed	102.6	101.8	103.2
tscer	TAX : SIC : Employer	102.6	101.8	103.2
tin	TAX : Income tax	102.6	101.8	103.2
tis	TAX : Income tax and SICs	102.6	101.8	103.2
twl	TAX : Wealth	102.6	101.8	103.2
tpr	**TAX : Property tax**	102.6	101.8	103.2
kfb	**IN KIND : Fringe Benefit**	102.6	101.8	103.2
kivho	IN KIND : Imputed value : Housing	102.6	101.8	103.2
afc	ASSETS : Financial Capital	102.6	101.8	103.2
xmp	EXPENDITURE : Maintenance Payment	102.6	101.8	103.2
xpp	EXPENDITURE : Private Pension (voluntary)	102.6	101.8	103.2
xhc	EXPENDITURE : Housing cost	102.6	101.8	103.2
xhcrt	EXPENDITURE : Housing cost : Rent	102.6	101.8	103.2
xhcmomi	EXPENDITURE : Housing cost : Mortgage Payment (interest+capital) : Mortgage Interest	107.3	36.4	38.2
xhcot	EXPENDITURE : Housing cost : Other	102.6	101.8	103.2

Notes: More information on DRD file for Portugal

4. VALIDATION

4.1 Aggregate Validation

4.1.1 Non simulated incomes

Table 39 presents the number of recipients and the annual level of the different income sources reported but not simulated in EUROMOD. However, for some of those income sources it isn't possible to have data from external source to validate them.

Table 39. EUROMOD validation: income sources and benefits included but not simulated, 2007

	Recipients/Payers (Thousands)			Expenditure/Revenue (€ million/year)		
	EUROMOD	External[1]	Original Database[2]	EUROMOD	External[1]	Original Database[2]
Employment	4290	102%	102%	56310	105%	102%
Self-employment	855	100%	100%	10224	158%	100%
Investment	825		169%	649		100%
Property	296		161%	966		100%
Private pension	28		100%	102		100%
Private transfers	151		100%	525		100%
Paid private transfers	154		100%	455		100%
Fringe benefits	231		100%	474		100%
Imputed housing	5016		155%	5038		100%
Other	16		140%	14		95%
Disability benefits	249	80%	100%	1084	76%	100%
Survivor's pension	546	67%	100%	1778	73%	100%
Sickness benefit	134	24%	100%	419	93%	100%
Other family benefits	331	381%		294	85%	
Maternity Benefits						
Housing Benefit	529		173%	142		100%
Education benefits	71		100%	262		100%

Sources: Social Security, IRS stats.
Notes:
[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).
[2] Adjustment of EUROMOD estimate versus original database (i.e., EUROMOD aggregate divided by original EU-SILC aggregate).

Table 39.a. EUROMOD validation: income sources and benefits included but not simulated, 2008

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Employment	4290	101%	58014	103%
Self-employment	855	100%	10561	163%
Investment	825		665	
Property	296		991	
Private pension	28		105	
Private transfers	151		539	
Paid private transfers	154		467	
Fringe benefits	231		486	
Imputed housing	5016		5169	
Other	16		14	
Disability benefits	249	82%	1112	78%
Survivor's pension	546	66%	1823	71%
Sickness benefit	134	24%	430	100%
Other family benefits	331	380%	302	85%
Maternity Benefits				
Housing Benefit	529		145	
Education benefits	71		268	

Sources: Social Security, IRS stats.
Notes:
[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

Table 39.b. EUROMOD validation: income sources and benefits included but not simulated, 2009

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Employment	4290	101%	59515	105%
Self-employment	855	88%	10825	178%
Investment	825		665	
Property	296		991	
Private pension	28		105	
Private transfers	151		539	
Paid private transfers	154		463	
Fringe benefits	231		482	
Imputed housing	5016		5128	
Other	16		14	
Disability benefits	249	84%	1147	81%
Survivor's pension	546	66%	1878	69%
Sickness benefit	134	23%	426	95%
Other family benefits	331	233%	299	67%
Maternity Benefits				
Housing Benefit	529		145	
Education benefits	71		268	

Sources: Social Security, IRS stats.
Notes:
[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

Table 39.c. EUROMOD validation: income sources and benefits included but not simulated, 2010

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Employment	4290		60437	
Self-employment	855		11042	
Investment	825		669	
Property	296		996	
Private pension	28		105	
Private transfers	151		542	
Paid private transfers	154		470	
Fringe benefits	231		489	
Imputed housing	5016		5200	
Other	16		14	
Disability benefits	249		1162	82%
Survivor's pension	546		1901	67%
Sickness benefit	134	24%	432	97%
Other family benefits	331	131%	304	61%
Maternity Benefits				
Housing Benefit	529		146	
Education benefits	71		270	

Sources: Social Security, IRS stats.
Notes:
[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

The number of employees and the level of total wages are quite similar to the figures obtained from external sources in all the policy years. However, the increase in employment income during the period 2007-2010 above the values of external sources needs an additional explanation. In EUROMOD the wages increase based on the variation of the nominal compensation per employee as reported in official statistics and reproduced in the update factors, not on the global wage amounts. The latter have a lower growth, mainly due to unemployment growth. As the base is kept static at 2007 for individual matters, if we use the average wage growth, the total amounts won't reflect the unemployment breakout.

The number of recipients of self-employment income seems also accurate when compared with other sources. However, the level of self employment income seems clearly over-reported. The complexity of the social security contributions could explain part of this. The Portuguese version of the EU-SILC and the EUROMOD seem to attribute social security contributions to most of recipients of self-employment income that in reality don't pay it, due to lack of capacity to deal with evasion or/and multiple exemption schemes (see Table 40).

Disability and survivor's benefits are taken from data and not corrected or simulated in EUROMOD. The number of recipients and the amounts received in the EU-SILC dataset are significantly underestimated compared to external sources. Consequently, EUROMOD reproduces this underestimation (around 20-40%).

The number of sickness benefits recipients is clearly underreported in the EU-SILC and in EUROMOD. The number of recipients is around a quarter of the number reported by external sources. However, the aggregate amount is very similar to the one presented in external sources. One possible explanation is that external data are constructed using sickness episodes along the year and there is no information about the number of individuals experiencing various episodes along the year.

4.1.2 Simulated tax and benefits

Table 40 shows the number of recipients and total amount of the taxes and benefits simulated by Euromod in each of the policy years.

Table 40. EUROMOD validation: taxes and benefits simulated, 2007

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Benefits				
Old-age contributory pensions	2076	95%	15862	102%
Social Pension	50	81%	125	78%
Unemployment benefit	72	42%	862	70%
Unemployment social benefit	52	33%	256	82%
Child benefit[2]	1438	120%	684	96%
Social insertion income	189	136%	421	118%
Taxes				
Income tax	2880	139%	8946	109%
Tax base	4196	105%	57060	101%
Tax credits	4171	105%	2056	64%
main tc	4171	105%	1463	120%
child tc	1241	90%	289	103%
dep parent tc	42	612%	14	715%
housing tc	1542	142%	652	130%
lone parent tc	116			
Social contributions				
Employer	4290		13374	150%
Employees	4290	114%	6194	107%
Self-employed regime	552	107%	984	143%

Sources: Social security, IRS stats

Notes:

[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

[2] Child benefit recipient data in terms of households

Taxes and benefits simulated assuming 100% take-up of means-tested benefits and tax credits.

Table 40.a. EUROMOD validation: taxes and benefits simulated, 2008

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Benefits				
Old-age contributory pensions	2076	93%	16025	98%
Social Pension	50	82%	129	
Unemployment benefit	184	57%	889	82%
Unemployment social benefit	72	42%	262	81%
Child benefit[2]	1433	116%	772	88%
Social insertion income	188	117%	429	109%
Taxes				
Income tax	2862	139%	9156	110%
Tax base	4129	102%	58630	99%
Tax credits	4171		2174	61%
main tc	4171	102%	1553	119%
child tc	1239	90%	340	103%
dep parent tc	40	635%	15	727%
housing tc	1549	141%	674	116%
lone parent tc	118		40	
Social contributions				
Employer	4290		13778	146%
Employees	4290		6382	107%
Self-employed regime	552		1007	138%

Sources: Social security, IRS stats

Notes:

[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

[2] Child benefit recipient data in terms of households

Taxes and benefits simulated assuming 100% take-up of means-tested benefits and tax credits.

Table 40.b. EUROMOD validation: taxes and benefits simulated, 2009

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Benefits				
Old-age contributory pensions	2076	91%	16491	95%
Social Pension	50	85%	132	
Unemployment benefit	184	46%	912	65%
Unemployment social benefit	72	37%	270	62%
Child benefit[2]	1439	114%	925	87%
Social insertion income	188	98%	444	95%
Taxes				
Income tax	2919	145%	9470	116%
Tax base	4229	102%	59868	101%
Tax credits	4204		2099	57%
main tc	4204	102%	1645	120%
child tc	1239	91%	360	106%
dep parent tc	40	994%	15	1070%
housing tc	1550	143%	458	82%
lone parent tc	118		42	
Social contributions				
Employer	4290		14135	137%
Employees	4290		6547	114%
Self-employed regime	552		1037	119%

Sources: Social security, IRS stats

Notes:

[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).

[2] Child benefit recipient data in terms of households

Taxes and benefits simulated assuming 100% take-up of means-tested benefits and tax credits.

Table 40.c. EUROMOD validation: taxes and benefits simulated, 2010

	Recipients/Payers (Thousands)		Expenditure/Revenue (€ million/year)	
	EUROMOD	External[1]	EUROMOD	External[1]
Benefits				
Old-age contributory pensions	2076	89%	16642	92%
Social Pension	63	110%	167	
Unemployment benefit	184	43%	928	59%
Unemployment social benefit	43	49%	173	40%
Child benefit[2]	1436	115%	919	88%
Social insertion income	183	88%	440	92%
Taxes				
Income tax	3001		9982	
Tax base	4225		60224	
Tax credits	4199		2234	
main tc	4199		1734	
child tc	1236		378	
dep parent tc	39		16	
housing tc	1552		472	
lone parent tc	118		45	
Social contributions				
Employer	4290		14354	127%
Employees	4290		6648	114%
Self-employed regime	550		1035	119%

Sources: Social security, IRS stats
Notes:
[1] Adjustment of EUROMOD estimate versus external statistics (i.e., EUROMOD aggregate divided by external statistic).
[2] Child benefit recipient data in terms of households
Taxes and benefits simulated assuming 100% take-up of means-tested benefits and tax credits.

The numbers of the old-age contributory pensions seems quite accurate in all the period 2007-2010. However, as we move from the original year (2007) to the final year of the simulation (2010) the underreporting of both the number of recipients and the total amount of benefit increases slightly. The increase in the number of persons in retirement in Portugal during this period could explain it.

In the base year EUROMOD underestimates the number of social pension recipients and the amounts of the social pension by around 20%. For the remaining years the underreported of the number recipients becomes less relevant and in the last year (2010) the numbers estimated by EUROMOD is higher than the ones presented in the official statistics. Unfortunately it is not possible to validate the evolution of the values of the social pension due to inexistence of official data.

The simulation of child benefits reveals that EUROMOD overestimates the number the recipients (15-20% at household level) while underestimating the total amount of benefits. The assumption of full take-up in the simulation could explain the overestimation of the number of households receiving child benefits. On the other hand, EUROMOD doesn't simulate some complementary benefits associated to child benefits (for instance, the disability) that could explain, at least partially, the underestimation of the total amount.

The validation reveals a poor performance of the unemployment benefits, both in the number of recipients and in the total amount, in particular on the former. Such differences may result from two reasons, one relating to the underlying data, the other relating to the simulation. In one hand, these differences are already noted when comparing EU-SILC or EUROMOD's input with external data: in 2007, the total unemployment benefit amount (both kind of benefits) accounts for only 70% of the reported external data. On the other hand, there has been a significant increase in unemployment in Portugal over the period with an equivalent impact on the benefit's expenditure, whilst EUROMOD relies on the structural data from the first year, that is, the number of recipients is kept constant all the time (the default simulation process is

basically a split of the original unemployment benefit variable). That accounts for the devolving ratios over the years, as shown in the tables above.

The non-take-up of the minimum income programme (social insertion income) could explain the overestimation of both the number of recipients and the total amounts of this benefit in the base year when compared with the administrative data. The values of the simulation are in line with other simulations of the programme and with the values of non-take-up obtained (Rodrigues,C.F.(2004)). The increase in the number of recipients of the minimum income programme in Portugal along the period 2007-2010 explains why the simulation moved from an overestimation of the beneficiaries and the amounts in the first year of the simulation to an underestimation in the end of the period.

Table 40 also presents the number of taxpayers and the amount of taxes collected during the period 2007-2010 as simulated by EUROMOD. The overestimation of the direct taxes paid by households is not surprising because the model doesn't take into account important tax credits like the tax credit for education and health expenditures. Another explanation for the overestimation of the aggregate value of taxes collected is that households in Azores and Madeira autonomous regions are taxed with the mainland taxes rates because the Portuguese version of EU-SILC doesn't allow to identify the region were the taxpayers live in. Given the previous limitations of the model an overestimation of 10-15% of the income taxes collected seems acceptable.

The overestimation of the number of taxpayers by around 40-45% is a direct consequence of not taking into account important tax credits. This means that that he have in EUROMOD a large number of tax units paying small amounts of tax and counting as tax units that in reality they are exempted of taxes. The impact in aggregate values of taxes is not significant but it implies a clear overestimation of the number of tax units.

The simulation of social contributions also reveals an overestimate of payers and amounts when compared with official data. However, the comparison with external data should be made with care because they lack the contributions to CGA (the social security scheme for pre-2007 civil servants). The overestimation of the social contributions paid be employee and by employer is much less relevant than the figures in Table 40 seems to reveal.

4.2 Income distribution

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 people aged 14+ = 0.5; additional people aged under 14 = 0.3.

4.2.1 Income distribution in the base year (2007)

This section presents the results of income distribution based on three different sources:

- Eurostat: the original distribution provided by Eurostat's website (ec.europa.eu/eurostat),
- EU-SILC: the original database used to build EUROMOD's input data (based on EU-SILC 2008), and
- EUROMOD: the results of the EUROMOD Simulation.

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

i) Inclusion of different sources in the definition of household income. For example, EU-SILC considers in disposable income (variable HY020) the value of company car (py021) that is not taking into account in EUROMOD. The EUROMOD definition of disposable income includes the amounts of the pensions received from individual private plans (py080) and the values of repayments/receipts for tax adjustment what doesn't happen in EU-SILC;

ii) Changes in the sample and in the weighting of the observations;

iii) Changes in the amounts of some income sources due to their simulation in EUROMOD.

The following table shows the distribution of equivalised income by deciles according to the three sources of income. The mean disposable income simulated by EUROMOD is slighter higher (4%) than the figures provides by Eurostat. However, the increase of the first decile is much higher (16%), possibility due to the assumption of non-take-up in the simulation of most of the benefits.

Table 41. EUROMOD validation: equivalized mean income by decile, 2007

Decile:	Eurostat [1]	EU-SILC [2]	EUROMOD [3]	Ratio [3] / [2]	Ratio [3] / [1]	Ratio [1] / [2]
Decile 1	2894	2755	3369	116 %	122 %	95 %
Decile 2	4445	4353	4590	103 %	105 %	98 %
Decile 3	5476	5401	5639	103 %	104 %	99 %
Decile 4	6569	6525	6778	104 %	104 %	99 %
Decile 5	7610	7622	7876	105 %	103 %	100 %
Decile 6	8795	8844	9216	105 %	104 %	101 %
Decile 7	10166	10263	10675	105 %	104 %	101 %
Decile 8	12256	12405	12830	105 %	103 %	101 %
Decile 9	15787	16019	16460	104 %	103 %	101 %
Decile 10	28908	29040	29354	102 %	101 %	100 %
Mean Income	10288	10318	10677	104 %	103 %	100 %
Median Income	8143	8153	8489	104 %	104 %	100 %

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat – EU-SILC UDB 2007

In order to evaluate how these changes spread across the distribution the Table 42 shows the shares of national equivalised income by decile. The share of the first decile increases from 2.8% to 3.2%. All other deciles show small changes.

Table 42. EUROMOD validation: shares of equivalized income by decile, 2007

Decile:	Eurostat [1]	EU-SILC [2]	EUROMOD [3]	Ratio [3] / [2]	Ratio [3] / [1]	Ratio [1] / [2]
Decile 1	2.82	2.70	3.16	112 %	117 %	96 %
Decile 2	4.32	4.18	4.30	100 %	103 %	97 %
Decile 3	5.32	5.24	5.28	99 %	101 %	98 %
Decile 4	6.39	6.32	6.35	99 %	100 %	99 %
Decile 5	7.40	7.39	7.39	100 %	100 %	100 %
Decile 6	8.57	8.57	8.61	101 %	101 %	100 %
Decile 7	9.85	9.95	10.00	101 %	101 %	101 %
Decile 8	11.96	12.04	12.02	100 %	100 %	101 %
Decile 9	15.30	15.50	15.42	101 %	99 %	101 %
Decile 10	28.09	28.12	27.49	98 %	98 %	100 %

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat – EU-SILC UDB 2007

Table 43 presents some inequality indices for the three distributions in analysis. Comparatively to the original EU-SILC figures the EUROMOD simulation estimates lower income inequality indices.

Table 43. EUROMOD validation: income inequality, 2007

	Eurostat [1]	EU-SILC [2]	EUROMOD [3]	Ratio [3] / [2]	Ratio [3] / [1]	Ratio [1] / [2]
S90/S10	10.0	10.4	8.7	87 %	83 %	105 %
S80/S20	6.1	6.3	5.8	95 %	91 %	104 %
Gini	35.8	36.3	35.1	98 %	97 %	101 %

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat – EU-SILC UDB 2007

4.2.2 Poverty

Table 44 shows that the poverty rates estimated by EUROMOD are similar to those computed using EU-SILC for poverty lines defined as 50%, 60% and 70% of median equivalised income. However, EUROMOD poverty estimates are significantly lower if the poverty line is defined as 40% of the median. Those results seem to point that the increase of incomes in the lower part of the distribution are not enough to compensate the increase of the median, and the poverty lines are closer to the median income.

Table 44. EUROMOD validation: income inequality, 2007

	Eurostat [1]	EU-SILC [2]	EUROMOD [3]	Ratio [3] / [2]	Ratio [3] / [1]	Ratio [1] / [2]
P. Line (40%)	3257	3261	3396	104 %	104 %	100 %
P. Line (50%)	4071	4076	4245	104 %	104 %	100 %
P. Line (60%)	4886	4892	5094	104 %	104 %	100 %
P. Line (70%)	5700	5707	5943	104 %	104 %	100 %
P. Rate (40%)	5.7	6.5	4.2	73 %	63 %	115 %
P. Rate (50%)	11.9	12.7	11.7	98 %	92 %	107 %
P. Rate (60%)	18.5	19.5	19.8	107 %	101 %	105 %
P. Rate (70%)	27.2	28.2	27.9	103 %	99 %	104 %

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat – EU-SILC UDB 2007

Tables 41 to 44 seem to reveal that the changes introduced in the original EU-SILC in order to fulfil the EUROMOD needs result in a small increase in the inequality and poverty figures, when compared with the original dataset. The main difference between the two distributions results from the consideration in EUROMOD of the repayments/receipts for tax adjustment (variable tad). However, the final simulation of the EUROMOD model inverts this situation mainly due to the increase of the bottom of the distribution. The assumption of full take-up associated with the simulation of the social benefits certainly explains a significant part of this change.

Table 45 presents the poverty rates for the base year using 40%, 50%, 60% and 70% of median equivalent income as the poverty line. It compares males and females and compares with external statistics and with the poverty rates using household disposable income as available from EUROMOD original dataset.

In comparison with the external statistics EUROMOD produces slightly lower poverty rates when the poverty lines are drawn at 40% and 50% of the median, but slightly higher poverty rates for the poverty lines at 60% and 70% of the median. As we have seen before the transformation of the EU-SILC data into the EUROMOD dataset with a change on the definition of disposable income, imply an increase in poverty rates independently of the poverty line used. This is partially reversed with the simulation, were the significant increase of the equivalent income in the lower part of distribution generates lower poverty rates when the poverty line is fixed below 50% of median income.

Table 45. EUROMOD validation: poverty rates at different poverty lines, 2007

percentage of individuals below:	EUROMOD	External Source	Original Database
40% of median equivalent income	4.2	5.7	6.5
males	3.6	5.3	6.3
females	4.7	6.0	6.8
50% of median equivalent income	11.7	11.9	12.7
males	11.1	11.4	12.2
females	12.3	12.4	13.1
60% of median equivalent income	19.8	18.5	19.5
males	18.7	17.9	18.9
females	20.8	19.1	20.1
70% of median equivalent income	27.9	27.2	28.2
males	26.9	26.1	27.1
females	28.9	28.2	29.1

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat

Table 46 presents the poverty rates for the years 2008 – 2010. Here, both the EUROMOD and the EUROSTAT figures suggest a slight decrease in the poverty rates during the period 2008-2009. The simulation for 2010 points to an increase in poverty rates associated with poverty lines defined as 60% or more of the median income but it is not possible, at the moment, validate those figures.

Table 46. EUROMOD validation: poverty rates at different poverty lines, 2008-2010

percentage of individuals below:	2008		2009		2010	
	EUROMOD	External Source	EUROMOD	External Source	EUROMOD	External Source
40% of median equivalent income	4.0	6.4	3.8	6.3	3.7	(-)
males	3.5	6.4	3.3	6.1	3.2	(-)
females	4.5	6.4	4.3	6.5	4.2	(-)
50% of median equivalent income	11.5	10.8	11.3	11.3	11.2	(-)
males	10.8	10.6	10.7	11.2	10.5	(-)
females	12.1	11.0	12.0	11.5	11.8	(-)
60% of median equivalent income	19.5	17.9	19.0	17.9	19.1	(-)
males	18.6	17.3	18.1	17.3	18.1	(-)
females	20.3	18.4	19.9	18.4	20.0	(-)
70% of median equivalent income	27.7	25.6	27.6	26.0	27.9	(-)
males	26.6	24.6	26.5	25.2	26.8	(-)
females	28.8	26.5	28.8	26.7	29.1	(-)

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat

Table 47 presents the poverty rates using the 60% cut-off, differentiated by age groups. The most relevant feature that emerges from the comparison between EUROMOD and the external statistics is the much higher poverty rate for the elderly obtained from the simulation. One possible explanation for this difference is the non simulation in EUROMOD of the solidarity supplement for older persons. This benefit

intends to fulfil the gap between the elderly income and the value of the poverty line and has certainly a significant impact on their poverty incidence. Take up on this benefit increased largely in 2008 and this event isn't captured by the original EU-SILC data.

Table 47. EUROMOD validation: poverty rates by age groups, 2007

percentage of individuals below 60% of median equivalent income:	EUROMOD	External Source	Original Database
Population			
0-17	23.8	22.8	24.1
18-24	19.0	18.1	19.4
25-49	16.4	15.9	16.9
50-64	16.8	16.0	16.7
65 +	26.2	22.3	23.1

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat

The above hypothesis about the impact of the non simulation of the solidarity supplement for older persons in the elderly poverty rates seems to be confirmed by the figures in Table 48, which presents the poverty rates by age for the years 2008-2010. Here again the poverty rates for people aged 65 or more are substantially higher in EUROMOD simulation that in official statistics. One other hand, the children poverty incidence is lower in EUROMOD simulation, what can be associated with the simulation of child benefits under the assumption of full take-up.

Table 48. EUROMOD validation: poverty rates by age groups, 2008-2010

percentage of individuals below 60% of median equivalent income:	2008		2009		2010	
	EUROMOD	External Source	EUROMOD	External Source	EUROMOD	External Source
Population						(-)
0-17	22.6	22.9	21.5	22.4	21.7	(-)
18-24	18.6	18.5	18.4	17.9	19.1	(-)
25-49	16.1	15.3	15.5	14.9	15.6	(-)
50-64	16.9	16.7	16.9	16.1	17.2	(-)
65+	26.6	20.1	26.4	21.0	25.7	(-)

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale.
Sources: Eurostat

4.2.3 Income inequality

Similar to poverty, inequality according to EUROMOD does not differ significantly from the external data (Tables 41-43). In fact, except in the lowest decile, the average equivalised disposable income is quite close to the official figures, despite the fact that income definition is different and all the simplified assumptions made in the simulation. EUROMOD equivalent income is around 3-4% above the official figures and this higher income spreads for all the distribution with the exception of the first decile, which records an increase of 16%. Once again the EUROMOD simulation seems to strengthen the level of social

protection of the bottom of the distribution. A direct result of this increase of the incomes of the lowest part of the distribution is that the Gini and the S80-S20 ratio according to EUROMOD are also somewhat below the official figures.

Table 49 presents the inequality indices and the values of the income distribution by deciles for the years 2008 – 2010. Here, both the EUROMOD and the EUROSTAT figures suggest a slight decrease in the inequality during the period 2008-2010. However, the ratio between EUROMOD average income per decile and the values of the official statistics tends to be higher as we move from the base year to the final year of the simulation. This increase in the overestimation of the household's equivalent income during the period 2007-2010 is consistent with the higher increased we verified in certain components of income, namely the employment income. Obviously, the EUROMOD results are affected by the fact that no account is taken of structural changes between the reference year and the later years, namely the increase of the unemployment rate.

Table 49. EUROMOD validation: income inequality, 2008-2010

	2008		2009		2010	
	EUROMOD	External Source	EUROMOD	External Source	EUROMOD	External Source
Gini Coefficient	34.9	35.4	34.7	33.7	34.5	(-)
Income quintile ratio (S80/S20)	5.7	6.0	5.6	5.6	5.6	
Average income per decile (equivalised)						
1st Decile	3501	2843	3636	3049	3705	(-)
2nd Decile	4764	4637	4949	4821	5017	(-)
3rd Decile	5841	5727	6042	5974	6088	(-)
4th Decile	7009	6747	7219	6959	7285	(-)
5th Decile	8140	7778	8369	8059	8470	(-)
6th Decile	9511	8836	9747	9340	9875	(-)
7th Decile	11020	10249	11294	10762	11423	(-)
8th Decile	13229	12197	13552	12671	13692	(-)
9th Decile	16937	15775	17340	15801	17471	(-)
10th Decile	30148	29130	30873	27966	30991	(-)
Mean Income (equivalised)	11006	10393	11300	10546	11397	(-)
Median Income (equivalised)	8763	8282	9002	8678	9119	(-)

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the "modified OECD" equivalence scale. Income values in euro/year
Sources: Eurostat

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 results.

- Care should be taken in interpreting results for small sub-groups due to small sample sizes.

- The weights do not control for the increase of unemployment in Portugal over the time period in analyse (the unemployment raise for 8.0% in 2008 to 10.8% in 2010).
- No adjustments are made for structural changes in the characteristics of the population between the data year (2007) and the simulation years.
- The Portuguese version of EU-SILC clearly underestimated some social benefits and this is not corrected by EUROMOD if those benefits are not simulated.
- The simulation of some benefits by EUROMOD is conditioned by the difficulty of splitting some income variables from the EU-SILC user database and by the difficulty of some of the recipients in clearly identifying the source of the incomes.
- Non-take-up of benefits is not modelled. This has the effect of (a) inflating the simulated incomes of households who do not take up these benefits in reality. This is particularly relevant in the simulation of child benefits and minimum income.
- The non simulation, at present, of the solidarity supplement for older persons, has important consequences in terms of the living conditions and the poverty incidence of elderly people.
- The social security contributions reported in EU-SILC and estimated by EUROMOD seems clearly overestimated. More work is needed to fully understand all rules end exceptions in the system and to identify the recipients.
- Comparisons between EUROMOD and administrative figures on personal income tax have to take into serious 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.

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