

EUROMOD

COUNTRY REPORT



GREECE (EL)

2013-2016

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

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

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

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

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

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1. BASIC INFORMATION

1.1 Basic information about the tax-benefit system

- The tax-benefit system is a unified, national system.
- The fiscal year runs from 1st January to 31st December.
- The public pension system in Greece is the cumulative product of a series of fragmentary measures and legislative initiatives. This fragmentation can be seen in terms of the following dimensions:
 - *Organisational arrangements by sector of employment.* The provision of pension varies by occupation or profession of the insured. They are provided by a multiplicity of social insurance agencies or “funds”. The conditions of pension provision (retirement ages, replacement rates, contributions etc.) vary significantly, chiefly by pension fund, though there remains considerable variability within funds by occupational subgroups.
 - *Differences by date of first contact with the system.* A new system was created for those entering the labour market after 1st January 1993, which is essentially uniform for the non-rural social insurance sector. The general retirement age for those who began working after this date is 65 (67 since 2013) for both men and women.
- Minimum school leaving age is 15.
- The definition of dependent children varies. Two examples are listed below:
 - dependent children for non-contributory large family benefits are defined as (a) unmarried, aged under 23, (b) suffering from any kind of disability over 67% irrespective of age.
 - dependent children for taxation purposes are defined as: (a) unmarried, aged under 18, (b) unmarried, aged under 20 and registered in OAEΔ as unemployed, (c) unmarried, aged under 25 and enrolled in post-secondary or tertiary education or fulfilling their military service, (d) unmarried, aged under 27, enrolled in post-secondary or tertiary education and registered in OAEΔ as unemployed, (e) suffering from any kind of disability over 67% irrespective of age
- Any single person living with one or more children defined as dependent for taxation purposes is considered to be a lone parent.
- Even though spouses file a joint tax report, their income is taxed individually. Some tax allowances and tax credits are shared between spouses in proportion to their taxable income.
- Taxable income is reported under various categories namely employment, property, investments, commerce, agriculture and professions. These income sources are added together before allowances and deductions are taken into account in order to derive total taxable income. Corporate profits are taxed at a flat rate. Different rules and tax rates also apply to gains from the sale of real estate located in Greece.
- All employees and self-employed are required by law to file a tax return in spring of year x for fiscal year $x-1$ (all persons except from those defined as dependent children are required to file a tax return since 2013). When the tax return is cleared, a

supplementary tax may be due. The supplementary tax can be negative (i.e. when one's tax withholdings exceed one's final income tax liability), but is usually positive. Tax withholdings are designed in such a way that taxpayers whose sole source of income is dependent employment with a single employer find that tax withheld matches their entire tax liability (i.e. their supplementary tax is zero).

- There is no single indexing regime for taxes and benefits. Indexation of benefits is usually ad hoc and sometimes skipped altogether. Revaluation policy is erratic, with some benefits receiving higher rises than others, for no apparent reason and with no explanation given.
- Income thresholds for some benefits often fail to keep pace with inflation or are left unchanged in nominal terms. Moreover, the income concept applied when assessing claims varies between benefit agencies. These practices often give rise to inconsistencies and distortions of the original benefits' design.
- All tax and benefit rates provided below are those valid in 30th June of each respective year.

1.2 Minimum wage

The system for setting wages is different for workers in the private sector and workers in the public sector. In the public sector pay is determined by law, according to the government's annual income policy. Various levels of minimum wage are set, depending on level of education, years of service and hierarchical grade etc.

In the private sector, collective agreements set wages at various levels (national, per sector, enterprise-level). The basis for setting wages is the National General Collective Labour Agreement (*ΕΓΣΣΕ*), which sets the overall minimum wages for white and blue-collar workers. The amount of minimum pay varies depending on a worker's years of service, level of education and family status. On the sectoral level, the industry-wide collective agreements set minimum levels for the workers that they cover. Finally, enterprise-level agreements set minimum wages for workers in individual enterprises. Sectoral and enterprise-level agreements are not allowed to contain less favourable provisions than the *ΕΓΣΣΕ*'s. Note that in 2012 the government imposed a 22% cut on the standard minimum monthly wage of €751. For those under 25, the reduction was even more severe and reached 32%.

1.3 Social Benefits

ΙΚΑ old-age pension (σύνταξη γήρατος ΙΚΑ): *ΙΚΑ* is the social insurance fund for most dependent workers outside the civil service, banks and the utilities. For workers first insured before 1st January 1993, the standard age of retirement is 67 for men and 62 for women (since 2013), but various exceptions apply. Also, a *reduced pension* may be granted from the age of 57 for women or 62 for men, provided they meet the contributions requirement. Pension benefits are calculated on the basis of (a) contributions record of at least 15 years, and (b) pensionable earnings calculated as the best five years of the decade prior to retirement. A *minimum pension* is paid to retirees whose contributions record and pensionable earnings would have entitled them to an "organic amount" below a certain level. For workers first insured after 1st January 1993, the standard age of retirement is 67 for both women and men, but the calculation of pension benefits remains the same as above. A *reduced pension* may be granted from the age of 62, for those with a contributions record of at least 15 years or from the age of 55, for those with a contributions record of 35 years.

IKA survivors' pension: in case of death of an insured worker or pensioner, the closest relatives may be entitled to a survivors' pension. Beneficiaries include: a) the surviving spouse; b) the worker's or pensioner's children – provided they are unmarried, do not work, do not receive a pension and are aged below 18 years (24 if in full-time education); c) the worker's or pensioner's adult children – provided they are disabled or unfit for employment and whose disability started before they were 18; d) the worker's or pensioner's grandchildren – provided they are orphaned and were supported by the deceased; e) the worker's or pensioner's parents – provided they were supported by the deceased. The level of IKA survivor's pension depends on the person(s) entitled to it. For workers first insured *after 1st January 1993*, only the surviving spouse and orphaned children may be beneficiaries.

OAEF old age pension (σύνταξη γήρατος OAEF): OAEF is the social insurance fund for most self-employed workers, except those in the “liberal professions” of medicine, law and engineering. For workers first insured *before 1st January 1993*, the standard age of retirement is 67 (since 2013) for those with a contribution record of at least 15 years, or 60 for those with a contributions record of 35 years. From 2007 all self-employed workers insured with OAEF, irrespective of the date they were first insured, are placed in 14 insurance classes. Contribution rates and pension benefits rise with insurance class. For self-employed workers first insured *after 1st January 1993*, the standard age of retirement is 67 for both women and men. Pension benefits are calculated on the basis of (a) contributions record of at least 15 years, and (b) pensionable earnings calculated as the last five years prior to retirement. Furthermore, a *reduced pension* may be granted from the age of 62, for those with a contributions record of at least 15 years. A *minimum pension* is paid to retirees whose contributions record and pensionable earnings would have entitled them to an “organic amount” below a certain level, set at 70% of the minimum wage.

Civil servants old age pension (σύνταξη δημοσίων υπαλλήλων): for civil servants first insured *before 1st January 1993*, the retirement age after 25 years of service is 67 for men and 62 for women (since 2013). For those first employed *after 1st January 1993*, the standard age of retirement is 67 for both women and men. Pension benefits are calculated on the basis of (a) contributions record of at least 15 years, and (b) pensionable earnings calculated as the last five years prior to retirement. A *reduced pension* may be granted from the age of 60, for those with a contributions record of at least 15 years or from the age of 58, for those with a contributions record of 35 years. A *minimum pension* is paid to retirees whose contributions record and pensionable earnings would have entitled them to an “organic amount” below a certain level, set at 70% of the minimum wage.

OFA contributory pension (κύρια σύνταξη γήρατος OFA): active farmers are allocated to seven insurance classes. Contribution rates and pension benefits rise with insurance class. Since 2013 the age of retirement is 67 for both men and women. One more year of compulsory insurance was added every year until 2013, when the official minimum limit of 15 years was reached. The accrual rate is 2%.

OFA basic pension (βασική σύνταξη γήρατος OFA): since 2013 this basic pension is paid on reaching the age of 67 to men and women who have worked as farmers for at least 25 years and do not receive a pension from any other social insurance fund. The basic pension is phased out as the new contributory pension for farmers (see above) is phased in.

Social pension (σύνταξη ανασφαλιστών υπεργολίκων): social pension is paid to the non-insured elderly, aged above 67 on a means-tested basis. Supplements are paid for a dependent spouse below 67 or children below 18. For more information, see section 2.4.1.

Pensioners' social solidarity benefit (ΕΚΑΣ): an income-tested supplement to low pensions, restricted to those receiving a contributory social insurance pension. Beneficiaries must be over 60 (65 since 2014) if in receipt of an old age pension or a survivor pension. The age condition

does not apply to recipients of invalidity or orphans' pensions. The benefit amount is paid at four rates (five since 2011) depending on the beneficiaries' level of income. Taxation on *EKAS* was abolished in 2008. For more information, see section 2.4.2.

Pension benefits: as of 2013, means-tested, lump sum Easter, Christmas and vacations bonuses that were paid to pensioners above 60 were abolished. In May 2016, the personal monthly amount of pension income exceeding €2,000 was suspended. Additionally, an upper threshold equal to €3,000 per month was set on the sum of the net amount of all pension incomes. For more information, see section 2.4.7.

Unemployment insurance benefit (*επίδομα ανεργίας*): dependent workers may be eligible for this benefit if they are involuntarily unemployed, capable and available for work, have an adequate contributory record and are registered with an *OAEΔ* employment office. Since 2012 the benefit rate is €360 per month. The rate is raised by 10% for each dependent family member up to the third. Since 2013 the benefit is also granted to self-employed workers. Its duration is a function of contributory record; it is payable for at most 12 months, average duration being seven months. A part of the benefit is still payable if the person finds an occasional or part-time employment of up to three non-consecutive days per week. For more information, see section 2.4.6.

Unemployment assistance for older workers (*επίδομα μακροχρονίως ανέργων*): this benefit is paid to unemployed for more than 12 months who are aged 45-65 (22-66 since 2014) and are not receiving the unemployment insurance benefit (see above). It is means-tested and payable for a maximum period of 12 months. The level of the benefit is set at €200 per month (unchanged since 2003). For more information, see section 2.4.5.

Seasonal unemployment benefit (*εποχιακά βοηθήματα*): payable as a lump sum to occupational groups characterized by a pattern of seasonal employment (builders, tobacco workers, actors, ceramists, forest workers, musicians, etc). Different rates and conditions apply according to the occupational group a worker belongs to.

Benefit for young persons aged 20-29 (*επίδομα σε νέους/ες 20-29 ετών*): payable to persons aged 20-29 only if they are out of work and remain in the unemployed record for one year.

Contributory family allowances: they are automatically added to civil servants' and baking employees' pay. Lower allowances are also paid by *OAEΔ* to private sector employees irrespective of social insurance affiliation. They are taxed.

Large family benefit (*πολυτεχνικό επίδομα*): it is paid to families and lone parents with three or more children, (of any age and irrespective of whether they live together with their parents or not) as well as children orphaned from both parents if they are two or more. The benefit is claimed by the mother, unless she is dead or has left the household, in which case it is drawn by the father. It is paid for every child of the family that is unmarried and aged less than 23 years old or suffering from any kind of disability over 67% irrespective of age. A means test and new eligibility conditions were added in 2013. For more information, see section 2.4.4.

Child benefit (*ενιαίο επίδομα τέκνων*): it was established in 2013. It is paid monthly to families with one or more children that are considered as dependent for taxation purposes. The benefit rates are related to the household's equivalent income. Three rates apply (full rate, 2/3 and 1/3 of the full rate). For more information, see section 2.4.3.

Unprotected children benefit (*επίδομα απροστάτευτων παιδιών*): this is a monthly means-tested benefit, paid to each unprotected child up to the age of 16.

Single parent benefit (*επίδομα μονογονεϊκής οικογένειας*): it is a means-tested benefit paid to lone parents who do not receive the ‘unprotected children benefit’.

Income support to families with children in compulsory education (*σχολικό επίδομα*): it is a means-tested benefit paid to families with children aged 6 to 16 on the condition that they are in compulsory education. Since 2011 means-testing is (partly) done on a presumptive basis, not allowing for the simulation of the benefit.

Sickness / accident allowance (*επίδομα ασθένειας / εργατικού ατυχήματος*): civil servants and workers insured with *IKA* are entitled to sickness allowance. The period of receipt is conditional on prior contributions. It is taxed as income. In case of an accident at work, they are also entitled to accident allowance with no eligibility conditions related to prior contributions. No benefit is paid for the first three days of absence. Workers insured with *OAE* are entitled to accident allowance when an accident at work leaves them unfit for work for at least 30 days. The allowance can be paid for up to four months and it is taxed. *OAE* pays no sickness allowance.

Maternity or “pregnancy-confinement” allowance (*επίδομα κνοφορίας-λοχείας*): it is paid to civil servants and to workers insured with *IKA* and *ΟΓΑ*. It is not taxed. Working women insured with *IKA* are entitled to maternity allowance provided that they have accumulated a minimum of 200 insurance days in the 24 months before delivery. It is paid for 17 weeks (8 weeks before and 9 after child birth). Civil servants’ maternity allowance is paid for a total of five months (two months before and three months after child birth). In the case of farmers, the allowance is paid as a lump-sum.

Birth grant (*επίδομα τοκετού*): since 2012 a lump-sum benefit equal to €900 is provided only if the childbirth does **not** take place in a (public or private) hospital.

Death or “funeral expenses” grant (*έξοδα κηδείας*): it is paid as a lump-sum by all social insurance funds in case of death of an insured employee, self-employed or pensioner. It is not taxed.

Birth grant to non-insured (*επίδομα μητρότητας ανασφαλιστων*): those unable to claim maternity benefit from an insurance fund, either because they failed to meet the contributory conditions or because they were uninsured, can apply for this grant, paid as a lump sum and administrated by local government at prefecture level. It is not taxed.

Contributory disability benefits: most social insurance funds provide contributory disability benefits and invalidity pensions, related to the contribution history or the employment status of their members. No contributory record is required for invalidity pensions paid to insured workers who suffered from an accident at work or an occupational disease, provided it resulted to a degree of disability of at least 50%. The most important disability benefit is the “extra-institutional benefit” (*εξωιδρυματικό επίδομα*), paid to pensioners suffering from quadriplegia - paraplegia over 67% or other conditions with the same effects on mobility. Disability benefits are not taxable whereas invalidity pensions are subject to taxation.

Non-contributory disability benefits: they are administrated by local government at the prefecture level and funded out of general taxation. Although not explicitly income tested, most of them are reduced or withdrawn if the recipient is in employment, a pensioner, or in receipt of invalidity pension. They are highly heterogeneous by type of disability (i.e. blindness benefit, severe mental retardation benefit etc.) and sometimes by category of recipient, but almost 60% of beneficiaries are in receipt of ‘severe disability benefit’ (*επίδομα βαριάς αναπηρίας*). They are not taxed.

Rent allowance (*επίδομα ενοικίου*): it is a means-tested benefit that was initially implemented from April to December 2015 and then expanded until the end of 2016. It is granted to low-income families who rent a house as their main residence. The benefit amount ranges from €70

up to €20 per month depending on the household composition. It is not taxed. For more information, see section 2.4.10.

Housing benefit for non-insured elderly (στεγαστική συνδρομή ανασφαλιστών): this is a non-contributory benefit, administrated by local government at prefecture level. It is paid directly to landlords on behalf of uninsured persons aged over 65 on low income. It is not taxed.

Student housing benefit (φοιτητικό στεγαστικό επίδομα): it is a means-tested benefit, paid for every dependent child enrolled in tertiary education residing in a town other than his/her family's main residence.

Emergency social help (ειδικό επίδομα άμεσης προστασίας): paid as a lump sum for families suffering loss of life or whose home was damaged due to natural disasters.

Special allowance for released prisoners (επίδομα αποφυλακισμένων): this is paid to recently released non-reoffending prisoners within two months of their release for a period of three months. The allowance is indexed to unemployment benefit. Since 2010, it became means-tested.

Special allowance for repatriated Greeks (επίδομα παλλινιστούντων): this allowance is paid to political refugees who left Greece during the civil war or to ethnic Greeks from the countries of Eastern Europe, provided they are on the *OAEΔ* unemployed lists. It is indexed to unemployment benefit and it is paid thrice, once every four months.

Benefit for households in less favoured areas (εισοδηματική ενίσχυση ορεινών και μειονεκτικών περιοχών): it is paid to households residing in one of a list of 'less favoured areas'. It is income-tested.

Social dividend (κοινωνικό μέρισμα): this benefit was awarded as a lump sum only in 2014 to those on low incomes, on the basis of 2012 tax returns information. The government financed it using part of the primary budget surplus achieved in the previous year to support the poorest part of the population.

- *Not strictly benefits*

Social contributions rebate for low earners (επιδότηση εργατικής εισφοράς χαμηλομίσθων): it is targeted to minimum wage earners as a rebate of their *IKA* social contributions for pension insurance (6.67% of gross earnings).

Food stamps (επιδότηση σίτισης): it is a means tested benefit that was awarded to low income families from April 2015 to the end of 2016. The amount of benefit was ranged from €70 up to €20 per month depending on the household composition. For more information, see section 2.4.9.

1.4 Social contributions

Private sector employees (IKA): the main social insurance fund for employees in the private sector is *IKA*. All workers insured with *IKA* pay contributions at a flat rate of their "reference earnings". Reference earnings reflect the notional wage for every one of *IKA*'s 28 insurance classes, where private sector employees are placed according to their actual earnings. Employers' contributions are also charged at a flat rate of reference earnings. Hazardous occupations are subject to extra contributions. An upper earnings threshold applies. *IKA* contributions are deducted at source, and pay for pension and sickness insurance. In addition to *IKA* contributions, *IKA* workers (and their employers) also pay contributions for related benefits: to *OAEΔ* for family and unemployment benefits, to *OEK* for housing benefits, and to *OEE* for various other benefits. For more information, see sections 2.5.1 and 2.5.2.1.

Self-employed workers (*OAE*): the main social insurance fund for self-employed workers is OAE. Social contributions for self-employed workers are set at fixed amounts per insurance class, according to a schedule revised annually. *OAE* contributors are allocated to 14 insurance classes (ten compulsory and four optional). *OAE* members are placed in the 1st (lowest) class, then transferred to the next after three years. Contributions were also (partly) harmonised for those first insured before 1st January 1993. For more information, see section 2.5.3.

Civil servants: civil servants, with the exception of public enterprise employees, pay social contributions for pension and sickness insurance. Pension insurance includes primary and supplementary pension, plus a separation benefit paid as a lump sum and some additional benefits. For more information, see section 2.5.2.2.

Public enterprise workers: persons working in (formerly) public utilities are insured in a variety of enterprise-specific insurance schemes. Compared to *IKA*, these schemes generally levy higher contributions and provide more generous benefits. In 2008 public enterprise workers' social insurance funds were merged with *IKA*. For more information, see section 2.5.2.3.

Banking employees: employees of (formerly) state-controlled banks are insured in separate social insurance schemes, generally levying higher contributions and providing more generous benefits. In 2008 banking employees' social insurance funds were merged with *IKA*. For more information, see section 2.5.2.4.

Liberal professions: medical doctors, lawyers, journalists and engineers are considered as liberal professions. The relevant social insurance funds insuring these categories are collectively known as “noble funds” for the high level of benefits and quality of services they usually provide. For more information, see sections 2.5.3.3.

Farmers (*OΓA*): persons active in agriculture and related occupations such as fishing, as well as those active in other sectors but resident in rural areas (defined as settlements with a population below 2,000) are all insured with the farmers' social insurance fund *OΓA*. Persons insured with *OΓA* voluntarily choose to be placed in one of the seven available insurance classes. Contributions for pensions and sickness insurance are set as a proportion of the notional income that corresponds to each insurance class. For more information, see section 2.5.4.

Pensioners: pensioners' social insurance contributions are levied at a flat 4% of pension income (6% since July 2015). Such contributions pay for sickness insurance and are deducted at source. For more information, see section 2.5.5.

1.5 Taxes

Personal income tax (*φόρος εισοδήματος φυσικών προσώπων*): it applies to income from dependent employment, liberal profession, commercial activities, agricultural activities, property, investment etc. With the exception of some cases that are treated separately, all income is added together before allowances and deductions are taken into account. Married couples fill in a joint tax return, even though each spouse's income is taxed separately. The list of tax allowances and tax credits is revised on an annual basis. Taxable income is subject to a progressive tax schedule. A major personal income tax reform took place in 2013, resulting in the application of different tax schedules depending on income source. Another important reform took place in 2016, changing the tax rates of different tax brackets and altering employment income tax credit. For more information, see section 2.6.

Corporate income tax (*φορολόγηση εισοδήματος νομικών προσώπων*): companies registered as *Sociétés Anonymes* (*S.A.*), other than banks and insurance companies, are taxed on their total net income or profit derived from business activities in Greece or abroad. Distributed profits are net of corporate income tax.

Interest income tax (φόρος επί τόκων καταθέσεων): interest on bank deposits is taxed at 15% since 2013. For more information, see section 2.7.1.

Value added tax (φόρος προστιθέμενης αξίας): two VAT rates apply: a *lower rate* (13% from 1st January 2011), applicable to some basic commodities and services; and a *higher rate* (23% in 2013-2015 and 24% from 1st June 2016), applicable to all other items. Books and print are subject to half the lower rate.

Self-employed and liberal professions contribution (τέλος επιτηδεύματος): a special levy paid since 2010 by self-employed and liberal professionals. The amount of tax depends on where the business activity takes place and its duration. For more information, see section 2.7.8.

Emergency property tax (έκτακτο ειδικό τέλος ακινήτων): in 2013, all persons who owned commercial or residential property in Greece were subject to an emergency property tax, collected via electricity bills. Its amount, varying from €3 to €6 per square meter, depends on the size, the age and the location of the property. A *reduced and a zero tax rate* apply to certain vulnerable population categories. For more information, see section 2.7.10.

Joint tax on the ownership of real estate (Ενιαίος Φόρος Ιδιοκτησίας Ακινήτων): In 2014, the emergency property tax was replaced by a joint tax on the ownership of real estate. The tax is divided into a “primary” and a “supplementary” part. For more information, see section 2.7.11.

Real estate transfer tax (φόρος μεταβίβασης ακινήτων): the transfer of property is taxed according to *cadastral values*. A progressive tax schedule applies. A 3% *municipality tax* on real estate transfer tax is also applicable. The real estate transfer tax is paid only by the buyer of the property in any transaction of the property.

Additional tax on rental income (συμπληρωματικός φόρος εισοδήματος από μισθώματα): in addition to its taxation as personal or corporate income, rental income is also subject to an additional flat tax. Its amount may not exceed total liability in terms of personal or corporate income tax. This tax was abolished in 2014. For more information, see section 2.7.2.

Pensioners’ solidarity contribution (εισφορά αλληλεγγύης συνταξιούχων): since 1st August 2010 main pensions exceeding €1,400 per month are subject to taxation. The tax rates vary from 3% to 14%. For more information, see section 2.7.3.

Additional pensioners’ solidarity contribution (αυξημένη εισφορά αλληλεγγύης συνταξιούχων): since 1st August 2011 pensioners below 60 with main pensions exceeding €1,700 per month are subject to taxation. The tax rates vary from 6% to 10%. For more information, see section 2.7.4.

Pensioners’ solidarity contribution for supplementary pensions (εισφορά αλληλεγγύης επικουρικών συντάξεων): since 1st August 2011 supplementary pensions exceeding €300 per month are subject to taxation. The tax rates vary from 3% to 10%. For more information, see section 2.7.5.

Solidarity contribution (εισφορά αλληλεγγύης): this emergency measure applied retrospectively from 2010 onwards. Individuals with taxable incomes exceeding €12,000 are taxed; the tax rates vary from 1% to 4% in 2013-14, 0.7% to 8% in 2015 and 2.2% to 10% in 2016. For more information, see section 2.7.6.

Additional taxes on pensions: since 1st November 2011, all pensioners below 55 with main old-age pensions exceeding €1,000 (after all solidarity contributions have been deducted) are subject to 40% taxation. Pensioners below 55 with main old-age pensions exceeding €1,200 are subject to 20% taxation. Since 1st January 2012, main old-age pensions exceeding €1,300 (after the deduction of solidarity contributions) are subject to 12% taxation. Supplementary pensions are subject to additional progressive taxation. For more information, see section 2.7.9.

Inheritance tax (*φόρος κληρονομιάς*): property and other assets transferred as gifts and bequests are subject to inheritance tax. The tax rates vary according to the amount of inheritance and the degree of the relationship between taxpayer and donor.

Regional and municipal taxes (*δημοτικά τέλη ακίνητης περιουσίας*): a number of individual flat taxes and duties are paid to local authorities, at rates set locally. They are collected with electricity bills, and apply to the cadastral values of flats and houses.

Excise duties (*φόροι κατανάλωσης*): special consumption taxes apply for alcohol, tobacco, fuel and luxury goods.

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1 Scope of simulation

EUROMOD is a cross-country comparative benefit-tax model. The model simulates a variety of taxes and benefits. However, not all taxes and benefits mentioned in section 1 are simulated. Some are entirely beyond the scope of the model, and are not included either in the EUROMOD input database or as output variables, while others are included as output variables, as it is impossible to be simulated. Tables 2.1 and 2.2 classify the main tax and benefit instruments according to how each is treated in EUROMOD, and provide a brief explanation as to why the instrument is not fully simulated when this is the case.

Table 2.1 Simulation of benefits in EUROMOD

	Variable name	Treatment in EUROMOD				Why not fully simulated?
		2013	2014	2015	2016	
Retirement benefits/pensions						
Main old age pension	poa00	I	I	I	I	1
Supplementary old age pension	poacm	I	I	I	I	1
Other minor old age pensions	poaot	I	I	I	I	
Survivors pension	psuwd	I	I	I	I	1
Orphans pension	psuor	I	I	I	I	1
Pensioners' social solidarity benefit	boact_s	S	S	S	S	
Social pension	boanc_s	S	S	S	S	
Abolishment of 13 th and 14 th pension and compensations	pxp_s	S	S	S	S	
Lump-sum benefit to low paid pensioners	boaxp_s	-	-	-	-	
Unemployment benefits						
Unemployment insurance	bunct_s	PS	PS	PS	PS	1
Unemployment assistance for older workers	bunnc_s	S	S	S	S	
Other (minor) unemployment benefits	bunot	I	I	I	I	2
Family benefits						
Large family benefit	bfalg_s	S	S	S	S	
Child benefit	bch_s	S	S	S	S	
3 rd child benefit	bchlg_s	-	-	-	-	
Lump sum €2,000 birth grant	bchba_s	-	-	-	-	
Lifetime pension for mothers of many children	pfa	-	-	-	-	2
Civil servants family benefit	bfacs	I	I	I	I	2
Income support to families with children in compulsory education	bched	I	I	I	I	2
Other (minor) family benefits	bfaot	I	I	I	I	2
Sickness – maternity benefits						
Sickness benefits	bhl	I	I	I	I	1
Maternity benefits	bmact	I	I	I	I	1
Disability benefits						
Disability pensions (contributory)	pdi	I	I	I	I	1
Disability benefits (non-contributory)	bdi	I	I	I	I	2
Housing benefits						
OEK housing benefits	bho	I	I	I	I	2
Rent allowance	bho_s	-	-	S	S	
Scholarships and grants						
	bed	I	I	I	I	2
Social assistance benefits						
Social dividend	bsamttm_s	-	S	-	-	
Food stamps	bsamt_s	-	-	S	S	
Other social assistance benefits	bsaot	I	I	I	I	2
Minimum wage						
	yem	S	S	S	S	

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;
 “1”: no data on contribution history;
 “2”: data available not sufficient to simulate all eligibility conditions.

Table 2.2 Simulation of taxes and social contributions in EUROMOD

	Variable name(s)	Treatment in EUROMOD				Why not fully simulated?
		2013	2014	2015	2016	
Taxes						
Personal income tax	tin00_s	S	S	S	S	<i>except for some tax credits</i>
Corporate income tax	-	E	E	E	E	1
Interest income tax	tinktdt_s	S				
Value added tax	-	E	E	E	E	1
Large property tax	tpr	I	-	-	-	2
Real estate transfer tax	-	E	E	E	E	1
Additional tax on rental income	tinrt_s	S	-	-	-	
Solidarity contribution	txc00_s	S	S	S	S	
Pensioners' solidarity contribution	txcpe_s	S	S	S	S	
Pensioners' solidarity contribution for supplementary pensions	txcpe_s	S	S	S	S	
Additional pensioners' solidarity contribution	txcpe_s	S	S	S	S	
Additional taxes on pensions	txcpe00_s	S	S	S	S	
Self-employed and liberal professions contribution	txcse_s	S	S	S	S	
Emergency property tax	txcpr_s	S	-	-	-	
Joint tax on ownership of real estate	tpr_s	-	S	S	S	
Capital gains tax	-	E	E	E	E	1
Regional and municipal taxes	-	E	E	E	E	1
Excise duties	-	E	E	E	E	1
Social insurance contributions						
Employers	tscer*_s					
Private sector		S	S	S	S	<i>IKA</i>
Employees	tscee*_s					
Private sector		S	S	S	S	<i>IKA</i>
Civil servants		S	S	S	S	<i>civil servants scheme</i>
Public enterprise workers		S	S	S	S	<i>TAI-OTE</i>
Banking employees		S	S	S	S	<i>ETE</i>
Liberal professions		S	S	S	S	<i>ΤΣΑΥ</i>
Self-employed	tscse*_s					
liberal professions		S	S	S	S	<i>ΤΣΑΥ</i>
own account workers		S	S	S	S	<i>TEBE</i>
other self-employed		S	S	S	S	<i>TAE</i>
Farmers	tscfr*_s	S	S	S	S	<i>OΓΑ</i>
Pensioners	tscbesi_s	S	S	S	S	

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.

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

In 2014, the joint tax on ownership of real estate (ENΦΙΑ) was introduced replacing both the property tax ΦΑΠ and the emergency property tax ΕΕΤΑ. Part of the budget surplus achieved by the government in the previous year was distributed to the poor in the form of a one-off lump sum benefit called social dividend. Unemployment assistance to the long-term unemployed was granted to a larger age group (20-66 from 45-65 years old). As of 1.12.2013, ΕΤΕΑ supplementary pension contributions rates, contribution base and contribution base upper limit were harmonized. As of 1/7/2014, family benefits employees’ social insurance contribution was abolished and employers’ sickness and other benefits social insurance contributions were reduced. Finally, the additional tax on rental incomes was abolished in 2014.

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

In 2015, the social solidarity tax schedule was revised. Also, pensioners’ social insurance contributions for health and property income taxation were increased. In addition, two new benefits were introduced in April 2015, food stamps and rent allowance, targeting low-income families.

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

As of 01/06/2016, an increase in the rate of social insurance contributions for supplementary pensions was applied. Additionally, an upper limit of €2,000 per month was set on every gross pension received by existing pensioners, while the sum of all net pension incomes can no longer exceed €3,000 per month. An important tax reform took place in May 2016 changing the income brackets and tax rates of the personal income tax and solidarity contribution. Employment and pension income tax credit was also revised. Finally, ΕΚΑΣ’ lowest rate (i.e. €30 per month) was abolished and a wealth condition was established for social pension.

2.2 Order of simulation and interdependencies

The following table shows the order of policies’ simulation in the Greek system in 2013-2016. The policy spine starts with various ‘switches’, to choose whether the model should account for issues such as tax compliance, benefit non take-up, policies as of 30th June and changes in employment status. More information on switches is provided in the following section. These are followed by ‘core’ policies starting with minimum wage, which changes employment income for those observed below the legal limit. This policy is switched off in the baseline scenario. After minimum wage, the model simulates an upper limit in civil servants’ pay, the suspension of ΟΕΚ housing benefit, the abolishment of 13th and 14th pensions and compensations. Employer and employee SIC – which are levied on employment income – self-employed (including farmers) SIC are simulated afterwards. Unemployment insurance benefits and family benefits are simulated before the income tax, as, since 2010, they are potentially taxable. Pensioners’ solidarity contributions – which are levied on pension income – are also simulated before the income tax. The last elements of the spine include untaxed benefits and additional taxes.

Further characteristics which affect the order of simulations:

- Unemployment insurance benefit is included in the means-test of social pension and affects the calculation of unemployment assistance for older workers. It is also included in the tax base for solidarity contribution and income concept for social dividend and property tax means test.
- Child benefit is included in the means-test of social pension.
- Child benefit and large family benefit affect the calculation of emergency property tax.
- Social pension is subject to pensioners' SIC.
- Means-test for EKAΣ is net of employee and pensioners' SIC. At the same time EKAΣ is also subject to pensioners' SIC. Therefore, pensioners' SIC is run twice: first with EKAΣ set to zero, after which EKAΣ is calculated, and then again with EKAΣ final values.
- EKAΣ is included in the tax base for solidarity contribution and income concept for social dividend and property tax means test.
- Means-test for benefit for families with children at school is based on taxable income.
- 3rd child benefit and large family benefit are subject to withholding income tax on benefits.
- EKAΣ, 3rd child benefit, child benefit and large family benefit are included in the means-test of unemployment assistance for older workers. The latter became taxable in 2010, therefore, requiring the income tax policy to be run twice.

Table 2.3 EUROMOD Spine: order of simulation

Policy	2013	2014	2015	2016	Description of policies
SetDefault_el	on	on	on	on	DEF: Default values for variables
Uprate_el	on	on	on	on	DEF: Uprating factors
ConstDef_el	on	on	on	on	DEF: Constants
InitVars1_el	on	on	on	on	DEF: Initialise variables
Ildf_el	on	on	on	on	DEF: Income concepts
Tudf_el	on	on	on	on	DEF: Assessment units
InitVars2_el	on	on	on	on	DEF: Initialise variables
TCA_el	switch	switch	switch	switch	SWITCH: Tax compliance adjustments
BTA_el	switch	switch	switch	switch	SWITCH: Benefit take-up adjustments
FYA_el	switch	switch	switch	switch	SWITCH: Full year adjustments
yem_el	off	off	off	off	DEF: minimum wage
pxp_el	on	on	on	on	BEN: abolishment of 13th/14th pensions & compensations, civil servants' pay cap, suspension of OEK housing benefit
neg_el	on	on	on	on	DEF: recode negative self-employment income to zero
initVars3_el	on	on	on	on	DEF: initialise variables
tscer_el	on	on	on	on	SIC: private sector employers (IKA)
tscee_el	on	on	on	on	SIC: private sector employees (IKA)
tscee01_el	on	on	on	on	SIC: liberal professions employees (ΤΣΑΥ)
tscee02_el	on	on	on	on	SIC: banking employees (ETE)
tscee03_el	on	on	on	on	SIC: public enterprise employees (ΤΑΠ-ΟΤΕ)
tscee04_el	on	on	on	on	SIC: civil servants
tscseA_el	n/a	n/a	n/a	n/a	SIC: self-employed TEBE up to 2006
tscse02_el	n/a	n/a	n/a	n/a	SIC: self-employed TAE up to 2006
tscseB_el	on	on	on	on	SIC: self-employed OAEE (= TEBE+TAE) from 2007

tscse01_el	on	on	on	on	SIC: self-employed liberal professions (ΤΣΑΥ)
tscfr_el	on	on	on	on	SIC: farmers (ΟΓΑ)
txcpe_el	on	on	on	on	TAX: pensioners' solidarity contributions (εισφορές αλληλεγγύης συνταξιούχων)
txcpe00_el	on	on	on	on	TAX: additional solidarity contributions on high pensions
bunct_el	on	on	on	on	BEN: unemployment insurance benefit (επίδομα ανεργίας) – Part simulated
bchlg_el	off	off	off	off	BEN: third child benefit (επίδομα τρίτου παιδιού)
bfalg_el	on	on	on	on	BEN: large family benefit (πολυτεκνικό επίδομα)
bchba_el	off	off	off	off	BEN: Lump sum €2000 birth grant (εφάπαξ παροχή €2,000)
tscbesi_el	on	on	on	on	SIC: pensioners
bch_el	on	on	on	on	BEN: child benefit (ενιαίο επίδομα στήριξης τέκνων)
boanc_el	on	on	on	on	BEN: social pension (σύνταξη ανασφάλιστων υπερηλίκων)
tin00_el	on	on	on	on	TAX: personal income tax (φόρος εισοδήματος)
boact_el	on	on	on	on	BEN: pensioner's social solidarity benefit (ΕΚΑΣ)
bunnc_el	on	on	on	on	BEN: unemployment assistance for long-term unemployed (επίδομα μακροχρονίως ανέργων)
tscbesi_el	on	on	on	on	SIC: social insurance contributions – pensioners (repetition of policy with order 31)
tin00_el	on	on	on	on	TAX: personal income tax (φόρος εισοδήματος) (repetition of policy with order 35)
tinwh_el	off	off	off	off	TAX: withholding tax on benefits
bched_el	off	off	off	off	BEN: income support to families with children in compulsory education (σχολικό επίδομα)
tinkttdt_el	on	on	on	on	TAX: interest income tax (φόρος επί τόκων καταθέσεων)
tinrt_el	on	off	off	off	TAX: additional tax on rental income (συμπληρωματικός φόρος εισοδήματος από μισθώματα)
txcpr_el	on	off	off	off	TAX: emergency property tax (ΕΕΤΗΔΕ)
bhoxp_el	n/a	n/a	n/a	n/a	BEN: lump sum heating benefit (επίδομα θέρμανσης)
bcsxp_el	n/a	n/a	n/a	n/a	BEN: lump sum benefit to civil servants
boaxp_el	n/a	n/a	n/a	n/a	BEN: lump sum benefit for low-paid pensioners
txcse_el	on	on	on	on	TAX: self-employed and liberal professions contribution (τέλος επιτηδεύματος)
txcxt_el	n/a	n/a	n/a	n/a	TAX: extraordinary contribution
txc00_el	on	on	on	on	TAX: solidarity contribution (εισφορά αλληλεγγύης)
tpr_el	n/a	on	on	on	TAX: property (Ενιαίος Φόρος Ακινήτων ΕΝΦΙΑ)

bsamttm_el	n/a	on	off	off	BEN: Social Dividend (Κοινωνικό Μέρισμα)
bsamt_s	n/a	n/a	on	on	BEN: Food Stamps (επιδότηση σίτισης)
bho_s	n/a	n/a	on	on	BEN: Rent allowance (επίδομα ενοικίου)
output_std_el	on	on	on	on	DEF: Standard output individual level
output_std_hh_el	off	off	off	off	DEF: Standard output household level

2.3 Policy switches

As mentioned above, the policy spine starts with various ‘switches’, that enable the model to choose whether to account for issues that seriously affect the implementation of most policies. Depending on user choices, relevant adjustments are then automatically applied throughout the model. The following switches are applicable for the case of Greece.

Tax compliance adjustments: the tax compliance switch controls which set of gross earnings variables – see section 3.3.3 for more information – are used to derive disposable income and whether to limit the tax bases and benefit means-test to reported earnings only. In the baseline scenario, it is set to partial tax compliance (i.e. accounting for tax evasion).

Benefit take-up adjustments: benefit take-up switch controls non take-up modelling for certain benefits, such as social pension and unemployment assistance for older workers. It is switched on in the baseline scenario.

Full-year adjustments: while EUROMOD in general simulates policies as of 30th June in the respective year, it is also possible to simulate within year policy changes. This switch was considered as important because since 2010 the implementation of a number of policies took place after 30th June. More precisely, pensioners’ solidarity contribution was introduced in 2010 after 30th June (see section 2.7.5). The 2011 policies implemented after 30th June were additional pensioners’ solidarity contribution (see section 2.7.6) and pensioners’ solidarity contribution for supplementary pensions (see section 2.7.7). Moreover, in August 2011, the rates for pensioners’ solidarity contribution changed (they now vary from 3% to 14%), there was a 0.5% increase in employees’ and employers’ social insurance contributions for unemployment insurance and the introduction of a social insurance contribution for unemployment insurance for self-employed workers (€10 per month). It is switched off in the baseline scenario. In December 2013, the harmonization of ETEA supplementary pension contributions rates, contribution base and contribution base upper limit was implemented. In July 2014, the family benefits contribution paid by employees was abolished and employers’ sickness and other benefits social insurance contributions were reduced. In July 2015, pensioners’ social contributions for health were increased. It is switched off in the baseline scenario.

2.4 Social benefits

2.4.1 Social pension (*boanc_s*)

This is a non-contributory, income-tested pension. Since 2013 it is reserved for people over 67 years of age who lack independent means of support.

- *Definitions*

The unit of analysis comprises the head, the spouse and own children aged up to 18.

- ***Eligibility conditions***

Beneficiaries must be 67 years old and over. They must not be in receipt of any other pension or, irrespective of the fund or the pension's amount.

- ***Income test***

The benefit is granted if personal income does not exceed the benefit amount itself (i.e. €4,320 per year) and if family income does not exceed twice the benefit amount itself (i.e. €8,640 per year).

For the calculation of personal (and family) income the following income sources are taken into account: employment, self-employment and other market income, income from rent, private pensions, investment income, maintenance payments received, minor family benefits, sickness and maternity benefits, unemployment insurance and minor unemployment benefits, disability pensions, main old-age pension and all sorts of retirement benefits/pensions apart from *EKAΣ*.

- ***Wealth test***

In 2016 a wealth threshold was also established. Specifically, the annual wealth threshold corresponds to the total taxable immovable property of the beneficiary which should not exceed €90,000. Note that in EUROMOD we have only been able to approximate the cadastral value of beneficiaries' main residence.

- ***Benefit amount***

The pension is payable 12 times a year to all eligible beneficiaries. In 2013-2016 it was equal to €60 per month. Supplements are paid for a dependent spouse aged less than or equal to 65 and children aged less than or equal to 18.

- ***EUROMOD notes***

If non-take up modelling is activated then social pension is simulated only for those actually observed in receipt. This is however limited to simulations using input datasets based on SILC 2006 and SILC 2007 (i.e. for 2005-2012 policy systems).

2.4.2 Pensioners' social solidarity benefit (*boant_s*)

This is an income-tested supplement aimed at recipients of old age and survivor pension aged 60 and over (65 and over since 2014), or recipients of invalidity pension or orphan's pension irrespective of age. It is restricted to those receiving a contributory social insurance pension; *OΓA* pensioners are thus excluded.

- ***Definitions***

The income concept used for the first income condition comprises employment earnings, sickness benefits, civil servants' family benefits and social insurance pensions of all types except farmer basic pension and social pension; net of employee social insurance contributions and income tax.

The income concept used for the second and third condition is the tax base. The tax base is defined as taxable income less employee and self-employed social insurance contributions.

The family unit is the same as for income tax purposes, i.e. it comprises the head, the spouse and dependent children. The latter are defined as: (a) unmarried, aged under 18, (b) unmarried, aged under 20 and registered in *OAEΔ* as unemployed, (c) unmarried, aged under 25 and enrolled in post-secondary or tertiary education or fulfilling their military service, (d)

unmarried, aged under 27, enrolled in post-secondary or tertiary education and registered in OAEΔ as unemployed, (e) suffering from any kind of disability over 67% irrespective of age.

- **Eligibility conditions**

Beneficiaries must be 60 and over (65 and over since 2014) if in receipt of an old age pension or a survivor pension. There is no age condition if in receipt of an invalidity or orphans pension. Recipients of a farmer basic pension or a social pension are excluded.

- **Income test – benefit amount**

Four income concepts are assessed separately:

1. personal net income from pensions, benefits and employment earnings
2. personal taxable income from all sources
3. family taxable income
4. gross main & supplementary pensions and benefits

The annual income thresholds and the monthly benefit rates to which they corresponded in 2013-16 are shown in Table 2.4. The benefit is payable 12 times a year.

Table 2.4 *EKAΣ* income thresholds and benefit rates (2013-2016)

Pension income thresholds (€per year)	2013-2015	2016
(a) Pension income, earnings and benefits for:		
Full rate	7,716.00	7,216.00
Reduced rate A	8,018.00	7,518.00
Reduced rate B	8,220.00	7,720.00
Reduced rate C	8,472.00	7,972.00
Reduced rate D	9,200.00	n/a
(b) All personal income	9,884.00	8,884.00
(c) Family taxable income	15,381.00	11,000.00
(d) Gross pensions and benefits	10,200.00	7,968.00
Benefit rates (€per month)		
Full rate	230.00	230.00
Reduced rate A	172.50	172.50
Reduced rate B	115.00	115.00
Reduced rate C	57.50	57.50
Reduced rate D	30.00	n/a

- **EUROMOD notes**

Dependent child definition used in the model is simplified and excludes military condition and condition (d) (the latter is not considered to be followed in practice anyway).

Note that income assessment is based on tax returns of the year before the application, for incomes earned two years before the application (that is the most recent year for which a tax return is available). For this reason, incomes used in means-testing are being multiplied with the average of the two-year lagged uprating factors for employment incomes and GDP growth.

2.4.3 Child benefit (*bch_s*)

This benefit was established in 2013. It is paid to low-income families with dependent children regardless of the number of children.

- *Definitions*

The family unit is the same as for income tax purposes, i.e. it comprises the head, the spouse and dependent children. The latter are defined as: (a) unmarried, aged under 18, (b) unmarried, aged under 23 and enrolled in post-secondary or tertiary education or fulfilling their military service, (c) suffering from any kind of disability over 67% irrespective of age.

- *Eligibility conditions*

Beneficiaries are families with one or more dependent children.

- *Income test – benefit amount*

An equivalence scale is used for the purposes of means-testing. This assigns the value of 1 to the household head, 1/3 to the spouse and 1/6 to each dependent child of the tax unit. Equivalent family taxable income is calculated by dividing family taxable income by the sum of the weightings. The 2013 income thresholds and monthly benefit rates are shown in Table 2.5. The benefit is paid 12 times per year. It is not taxable.

Table 2.5 Child benefit income thresholds and benefit rates (2013-2016)

Equivalent income thresholds (€per year)	2013 - 2016
Equivalent income for:	
Full rate	6,000
Reduced rate A	12,000
Reduced rate B	18,000
Benefit rates (€per month per dependent child)	
Full rate	40.00
Reduced rate A	26.67
Reduced rate B	13.33

2.4.4 Large family benefit (*bfa1g_s*)

This benefit is targeted to families with three or more children of any age and irrespective of whether they live together with their parents or not. Since 2013 it is provided to families with three or more dependent children.

- *Definitions*

Since 2013, the family comprises the head, the spouse and own dependent children (i.e. children up to 18 years old or under 20 and registered as unemployed or 25 if they are enrolled in tertiary education or under 25 and enrolled in post-secondary or tertiary education fulfilling their military service and registered as unemployed or suffering from any kind of disability over 67% irrespective of age).

- *Eligibility conditions*

Beneficiaries are families with three or more dependent children.

- *Income test*

An income test was introduced in 2013; the annual taxable income of the family must not exceed €45,000. The amount is raised by €3,000 for families with three dependent children. A

further €4,000 increase in the income threshold is applicable for each subsequent child after the fourth.

- ***Benefit amount***

Since 2013, the benefit equals €500 per year per dependent child.

- ***EUROMOD notes***

Due to the fact that the benefit is provided to beneficiaries irrespective of whether their children lived in the same household or not, large family benefit is also granted to persons with observed but not simulated benefit receipt that pass the income test.

2.4.5 Unemployment assistance for long-term unemployed (*bunnc_s*)

This benefit is paid to long-term unemployed, as eligibility for contributory unemployment insurance expires after 12 months. There is no general unemployment assistance scheme.

- ***Definitions***

The unit of analysis comprises the head, the spouse and own children aged up to 18.

- ***Eligibility conditions***

Unemployment assistance for older workers is targeted to long-term unemployed workers aged 45-65 on low incomes. Since 2014 workers aged 22-66 years old may also be eligible.

- ***Income test***

In 2013, the threshold was €12,000 plus €587 for every child. Since 2014, the threshold is €10,000 plus €587 for every child. Once family income is equal or higher than that, the benefit is fully withdrawn. Incomes that are taken into account for the calculation of the threshold are: employment and self-employment income, other market income (received by children), income from rent and private transfers, education allowances, civil servants' family benefit, disability pensions, large family and child benefit as well as all sorts of retirement benefits/pensions apart from social pension.

- ***Benefit amount***

The monthly benefit rate in 2013-2016, paid 12 times per year, was €200.

- ***Accounting for non take-up***

Non take-up for this benefit is known to be rife.¹ In order to account for that fact, a user can activate the function in the policy sheet which restricts the benefit receipt to a fraction of simulated recipients. The non take-up rates used vary according to EUROMOD's underlying dataset. They are calculated on the basis of data on the number of actual recipients, provided by *OAEA*. This adjustment is switched on in the baseline scenario. The benefit's take-up rates for 2013-16 are indicated below:

¹ When the benefit was first introduced (2002), the official prediction was that the beneficiaries would amount to 35,000; the benefit reached 711 persons instead.

Table 2.6 Unemployment assistance for older workers take-up rates (2013-2016)

Dataset	2013	2014	2015	2016
el_2008*	0.40	0.15	0.15	0.15
el_2010*	0.40	0.12	0.12	0.12
el_2012*	0.21	0.05	0.04	0.04
el_2014*	0.16	0.04	0.02	0.02

- **EUROMOD notes**

Being long-term unemployed is modelled as being unemployed in the current year ($lunmy > 0$) and not in receipt of the contributory unemployment benefit ($bunct_s = 0$). Benefit amount is additionally adjusted with the number of months in receipt ($lunmy_s$, defined in the contributory unemployment benefit policy).

2.4.6 Unemployment insurance benefit (*bunct_s*)

This benefit is paid to dependent workers who are involuntarily unemployed, capable and available for work and registered with an *OAEA* employment office. In order to receive the benefit, they have to be insured and have a specific contributions history. Since 2013 it is also paid to self-employed workers under strict eligibility conditions.

- **Definitions**

The definition of family members includes: a) the spouse, b) unmarried children up to 18 or up to 26 if in full time education or up to 24 if unemployed, c) the parents of the beneficiary, d) unmarried, orphan grandchildren and siblings up to 18. In order to be considered as dependent, the person has to be registered to the family health booklet of the unemployed.

- **Eligibility conditions**

Dependent workers must have been insured with any social insurance fund, and have accumulated the following contribution days:

- First-time claimants need to have worked and paid contributions for either (i) 80 days per year over the last two years, of which at least 125 days must be in the last 14 months excluding the last two months, or (ii) 200 days in the last two years excluding the last two months, of which at least 80 days in each of the last two years.
- Second-time claimants need to have worked and paid contributions for 125 days over the last 14 months excluding the last two months.
- Seasonal workers need to have worked and paid contributions for 100 days over the last 12 months.
- Construction workers and fishermen need to have worked and paid contributions for 100 days over the last 14 months.

- **Benefit amount - Benefit duration**

Since March 2012 unemployment insurance benefit was reduced by 22% to €360 per month and remained in this level for the period 2013-2016. The rate is raised by 10% for each dependent family member up to the third. The benefit is payable for at most 12 months, average duration being seven months. A part of the benefit is still payable if the person finds an occasional or part-time employment of up to three non-consecutive days per week.

The benefit's duration is a function of contributory record according to the table below:

Table 2.7 Duration of unemployment insurance benefit

General category Over the last 14 months excl. the last 2 months	Number of contributory days		Benefit duration in months
	Seasonal workers Over the last 12 months	Construction workers Over the last 14 months	
125-149 ^[a]	100-149 ^[a]	100-149 ^[a]	5
150-179 ^[b]	150-179 ^[b]	150-179 ^[b]	6
180-219 ^[c]	180-219 ^[c]	180-219 ^[c]	8
220-249	220-249	220-249	10
250+	250+	250+	12
210+ if aged 49+	210+ if aged 49+	210+ if aged 49+	12

Notes: [a] or 200 days over the last 2 years
 [b] or 250 days over the last 2 years
 [c] or 300 days over the last 2 years

- **EUROMOD notes**

The benefit is modelled in such a way that those currently employed can be also covered if needed (e.g. to simulate their entitlement if they become unemployed, for replacement rates calculations).

Unemployment duration (*lunmy_s*) is set equal to the observed unemployment duration (*lunmy*) or observed number of months in receipt of unemployment benefit (*bunctmy*), whichever is longer. If modelling unemployment benefit for those currently employed, unemployment duration is set equal to the reported number of months in employment in the current year (*liwmy*), once contribution history (see the next step) is modelled. It is effectively also assumed that unemployment spells start in the reference year. Simulated unemployment duration is also used for unemployment assistance for older workers.

Modelled contribution history is based on the reported number of months in employment (*liwmy*), controlling for the total number of months in work (*liwwh*).

- For those currently employed, *liwmy* is used.
- For those currently unemployed (*lunmy_s* > 0) and in receipt (*bunct* > 0), this is set at least equal to the minimum qualifying period.
- For those currently unemployed (*lunmy_s* > 0) and not in receipt (*bunct* = 0), this is set to zero.

At this point, people who are unemployed (*lunmy_s* > 0) and with sufficient contribution history are considered eligible. It is assumed that all of them belong to the general category, are involuntarily unemployed and capable and available for work (there is a variable in the SILC data identifying the latter but only filled in for those currently unemployed).

Benefit duration (*bunctmy_s*) is derived from the underlying dataset. For currently employed, a further cap is imposed corresponding roughly to the average duration observed.

The condition for dependent family member (being registered to the family health booklet) is proxied by the lack of certain sources of income (employment income, self-employment income and income from state pensions).

Finally, the benefit amount is adjusted with the number of months in receipt.

Since the unemployment benefit to self-employed workers (established in 2013) suffers from severe non take-up and its receipt depends on conditions that cannot be simulated due to lack of

information (i.e. beneficiaries must not have any debts to social insurance funds and the income test in period t depends on people's incomes in periods t-1 and t-2), it has not been simulated.

2.4.7 Pension benefits (*pxp_s*)

After the abolishment of the 13th and 14th pension instalments in 2010, means tested, lump sum Easter, Christmas and vacations bonuses, were also abolished in 2013. Additionally, an upper limit of €2,000 per month was set on every gross pension received by existing pensioners, while the sum of all net pension incomes can no longer exceed €3,000 per month. Note that the latter is not simulated in EUROMOD.

- ***Definitions***

The unit of analysis comprises individuals.

2.4.8 Social dividend (only valid in 2014) (*bsamttm_s*)

This is a lump sum benefit awarded to those on low incomes, on the basis of 2012 tax returns information. The benefit was awarded only in 2014, as the government decided to distribute part of the primary budget surplus achieved in the previous year to support the poorest part of the population.

- ***Definitions***

Dependent members are: i) the spouse, ii) any other adult offered accommodation, iii) own unmarried children up to 18 or up to 26 if in full time education, own children in military service, own disabled children and iv) any children offered accommodation.

- ***Eligibility conditions***

Eligibility depends on 2012 household income.

- ***Income test***

The income test applies to total household income. The income threshold for the head is set at €7,050 per year and is increased per dependent member as presented in Table 2.8.

- ***Wealth test***

The total value of immovable assets of the household should be less than €125,000 for single taxpayers or €200,000 for married couples (with or without children). Moreover, owners of cars with engines having more than 3,000 HP are excluded from benefit receipt. Note that in EUROMOD we have only been able to approximate the cadastral value of households' main residence.

- ***Benefit amount***

The basic benefit rate is €500 per year. It is increased per dependent household member as shown in Table 2.8.

Table 2.8 Social dividend (2014)

Income thresholds (€per year)	2014
(a) personal income	7,050.00
(b) Additional amounts for	
Spouse/Adult guest	2,350.00
Own dependent child/Child guest	1,175.00
Single parent	2,350.00
Disabled person	1,175.00
Benefit rates (€per year)	
(a) Basic rate	500.00
(b) Additional amounts for	
Spouse/Adult guest	166.67
Own dependent child/Child guest	83.33
Single parent	166.67
Disabled person	83.33

- *EUROMOD notes*

Benefit receipt is restricted to the amount of the primary budget surplus that was allocated to the social dividend, i.e. approximately €450 million.

2.4.9 Food stamps (*bsamt_s*)

This means-tested benefit was established in April 2015. It is granted as a debit card in which a monthly amount is credited depending on household composition. This amount is not taxed and can only be used in order to buy food products.

- *Definitions*

The family unit is the same as for personal income tax purposes, i.e. it comprises the head, the spouse, dependent parents and dependent children. The latter are defined as: (a) unmarried, aged under 18, (b) unmarried, aged under 25 and enrolled in post-secondary or tertiary education or fulfilling their military service or being unemployed, and their taxable income does not exceed €3,000/year (c) suffering from any kind of disability over 67% irrespective of age and their taxable income does not exceed €6,000/year. Dependent parents are defined as parents of the household's head or his/her partner with taxable income less than €3,000/year.

- *Eligibility conditions*

Beneficiaries are low-income families. However, the final recipients come up from a point system which gives some extra weight to families with children, lone-parent families, low-income families and families with unemployed members.

- *Income test*

The income which is assessed comprises the taxable income of the family unit, all taxable pensions and benefits received excluding disability benefits, minus income taxes and social insurance contributions.

The annual income threshold is €2,400 for single-person tax units increased by €1,200 for each additional adult and by €600 for each dependent minor of the tax unit. The upper limit of the annual income threshold is €6,000/ year. Additionally, in a lone-parent family unit, the first dependent minor is counted as an adult thus the annual income threshold increases by €1,200

instead of €600. If the assessed income is equal or higher than the threshold, the benefit is fully withdrawn.

- **Asset test**

In addition to the income threshold, a wealth threshold is also defined by law. Specifically, the annual wealth threshold corresponds to the total taxable property which should not exceed €90,000 per person increased by €15,000 for each adult and by €10,000 for each minor member of the tax unit. The upper limit of the annual wealth threshold is €200,000. Finally, the tax unit's income from investments should be less than the double of the annual income threshold.

- **Benefit amount**

The monthly benefit amount is €70 for single-person family units increased by €30 for each additional tax unit member up to a maximum of €220 per month. This benefit was paid for 9 months in 2015 and it has been expanded to the end of 2016 under the same conditions.

- **EUROMOD notes**

Income assessment is based on tax returns of the year before the application, for incomes earned two years before the application (that is the most recent year for which a tax return is available). For this reason, incomes used in means-testing are being multiplied with the average of the two-year lagged uprating factors for employment incomes and GDP growth. Additionally, a point system was implemented in order to select those recipients who are mostly in need. This is described in the following table.

Table 2.9 Point system of food stamps

Criteria	Points
Lone parent	3
Family units with 3 or more dependent children	3
Family units with 2 dependent children	2
Family units with 1 dependent child	1
Assessed income up to 1/3 of income threshold	2
Assessed income from 1/3 to 2/3 of income threshold	1
Family units with one long-term unemployed adult member	2
Family units with one short-term unemployed adult member	1

The number of potential beneficiaries without implementing the point system was about 826,260. Applying the point system, beneficiaries are classified as those who are mostly in need depending on the number of points they collect. In order to be consistent with the actual number of recipients reported by the Ministry of Social Solidarity, a random selection of those who had 4 or more points was applied, ending up with 148,205 recipients.

2.4.10 Rent allowance (*bho_s*)

This benefit was established in April 2015 and while it was initially scheduled to end in December 2015, it was extended to the end of 2016. It is a means-tested benefit given to low-income tenants on a monthly basis. It is not taxed.

- **Definitions**

The family unit is the same as for personal income tax purposes.

- ***Eligibility conditions***

Beneficiaries are low-income families living in rented dwellings.

- ***Income and asset test***

The income and asset tests of this benefit are the same as those used for food stamps.

- ***Benefit amount***

The monthly benefit amount is €70 for single-person family units increased by €30 for each additional unit member up to a maximum of €220 per month. It was paid for 9 months in 2015.

- ***EUROMOD notes***

Income assessment is based on tax returns of the year before the application, for incomes earned two years before the application (that is the most recent year for which a tax return is available). For this reason, incomes used in means-testing are being multiplied with the average of the two-year lagged uprating factors for employment incomes and GDP growth. As with food stamps, the same point system has also been applied to the case of rent allowance (see Table 2.9). The number of beneficiaries before the implementation of the point system was 183,520 while after its application it was 20,363, in accordance with the official statistics.

2.5 Social contributions

Social insurance in Greece, as explained earlier, is highly fragmented. Because of this, the simulation of all possible cases would be rather futile. Instead, each occupational category is represented by the largest social insurance fund for that category. This is shown in Table 2.2. Pensioners' social contributions are also simulated.

Note that identifying contributors in the “old” and “new” regimes, contributors in hazardous occupations, as well as the procedure for placing contributors in insurance classes for all self-employed workers is explained in section 2.5.3. Reference earnings are equated to employment earnings reported in EU-SILC.

2.5.1 Employers (*tscer*_s*)

- ***Liability to contributions***

All private sector employers are required to pay social insurance contributions according to IKA rules. Employers' contributions are paid as a proportion of their reference earnings.

- ***Income base used to calculate contributions***

The rates above are related to “reference earnings”. Reference earnings reflect the notional wage for every one of IKA's 28 insurance classes where private sector employees are placed according to their actual earnings. Civil servants, employees in public enterprises and banking employees are covered by separate schemes. Additionally, occupations that are officially classified as “hazardous” are subject to extra contributions at 2.15% of reference earnings.

Table 2.10 IKA upper earnings thresholds (2013-2016), €per month

	2013-2015	2016
Workers first insured before 31 December 1992	5,543.55	5,860.00
Workers first insured after 1 January 1993	5,543.55	5,860.00

- *Contribution rates*

As of 1.7.2014, sickness insurance contributions were decreased from 5.1% to 4.55%, housing and other benefits contributions were decreased to 0.51% whereas the family benefits contribution was abolished. In 2016, the upper earnings threshold was set to €5,860 per month while the percentage of supplementary pension was increased from 3% to 3.5%.

Table 2.11 Employer social contributions simulated (2013-2016)

Social insurance contributions	% of reference earnings		
	2013-2014	2015	2016
Case 1: general regime			
Primary pension	13.33	13.33	13.33
Supplementary pension	3.00	3.00	3.50
Sickness insurance	5.10	4.55	4.55
Unemployment insurance (<i>OAEΔ</i>)	3.17	3.17	3.17
Family benefits (<i>OAEΔ</i>)	1.00	-	-
Housing and other benefits (<i>OAEΔ</i> , <i>OEK</i> , <i>Εργατική Εστία</i>)	1.86	0.51	0.51
Total SIC: general regime	27.46	24.66	25.06
Case 2: hazardous occupations			
Primary pension (extra SIC)	1.40	1.40	1.40
Supplementary pension (extra SIC)	0.75	0.75	0.75
Extra SIC: hazardous occupations	2.15	2.15	2.15
Total SIC: hazardous occupations	29.61	26.81	27.21

- *EURO MOD notes*

IKA contribution rules are applied to all private sector employees and seamen (lpmfc=1). Upper threshold on earnings is adjusted with the number of

months receiving employment income (yemmy).

2.5.2 Employee social contributions (*tscee*_s*)

2.5.2.1 Private sector employees

- *Liability to contributions*

Workers insured with IKA pay social contributions at a flat rate equal to 16% of their reference earnings (in 2016). As mentioned above, there are additional contributions for “hazardous” occupations.

- *Income base used to calculate contributions*

Contribution rates are related to “reference earnings”. The upper earnings thresholds are the same for both employers’ and employees’ social insurance contributions and are presented in Table 2.10. As mentioned above, in 2016, the upper monthly earnings threshold changed to €5,860. As of 1.7.2014, the family benefits contribution was abolished. In May 2016, an increase in the rate of supplementary pension was applied (from 3% to 3.5%).

- *Contribution rates*

Table 2.12 Private sector employees' social contributions simulated (2013-2016)

Social insurance contributions	% of reference earnings		
	2013-2014	2015	2016
Case 1: general regime			
Primary pension	6.67	6.67	6.67
Supplementary pension	3.00	3.00	3.50
Sickness insurance	2.55	2.55	2.55
Unemployment insurance (OAEA)	1.83	1.83	1.83
Family benefits (OAEA)	1.00	-	-
Housing and other benefits (OAEA, OEK, OEE)	1.45	1.45	1.45
Total SIC: general regime	16.50	15.50	16.00
Case 2: hazardous occupations			
Primary pension	2.20	2.20	2.20
Supplementary pension	1.25	1.25	1.25
Extra SIC: hazardous occupations	3.45	3.45	3.45
Total SIC: hazardous occupations	19.95	18.95	19.45

- *EU ROMOD notes*

IKA contribution rules are applied to all private sector employees and seamen (lpmfc=1). Upper threshold on earnings is adjusted

with the number of months receiving employment income (yemmy).

2.5.2.2 Civil servants

- *Liability to contributions*

All civil servants are subject to social insurance contributions.

- *Income base used to calculate contributions*

Civil servants' total wage is the sum of the basic wage and of various allowances (for seniority etc). It is thought that such allowances comprise approximately 20% of a civil servant's total earnings.² Reference earnings (RE) are civil servants' total wage. Different contribution rates apply for the basic wage (assumed to be equal to 80% of RE) and for the additional allowances (assumed to be equal to 20% of RE). As of 1.12.2013, the supplementary pension contribution was set at 3% of reference earnings of 31.10.2011, while it was increased to 3.5% in 2016. The upper earnings threshold was also increased to 5,860 euro per month.

² "The salaries of civil servants in EU countries", Journal of *INE-ΓΣΕΕ*, issue 79, Jan 2002.

- *Contribution rates*

Table 2.13 Civil servants' social contributions simulated (2013-2016)

	% of reference earnings			Derivation
	2013	2014-15	2016	
Case 1: contributors to the “old” regime				
Primary pension	5.34	5.34	5.34	6.67% × (80% of RE)
Supplementary pension (<i>TEAY</i>)	2.80	3.00	3.50	2013: 3% × (80% of RE) + 2% × (20% of RE) 2014-2015: 3% × RE _{31.10.2011} 2016: 3.50% × RE _{31.10.2011}
Other benefits (<i>MTIY</i>)	3.40	3.40	3.40	4% × (80% of RE) + 1% × (20% of RE)
Sickness benefits (<i>OIAA</i>)	2.55	2.55	2.55	2.55% × (100% of RE)
Separation payment (<i>THAY</i>)	3.20	3.20	3.20	4% × (80% of RE)
Unemployment benefits (<i>OAEA</i>)	2.00	2.00	2.00	2% × (100% of RE)
Total SIC	19.29	19.49	19.99	
Case 2: contributors to the “new” regime				
Primary pension	6.67	6.67	6.67	6.67% × (100% of RE)
Supplementary pension (<i>TEAY</i>)	3.00	3.00	3.50	2011-2013: 3% × (100% of RE) 2014-2015: 3% × RE _{31.10.2011} 2016: 3.50% × RE
Other benefits (<i>MTIY</i>)	3.40	3.40	3.40	4% × (80% of RE) + 1% × (20% of RE)
Sickness insurance (<i>OIAA</i>)	2.55	2.55	2.55	2.55% × (100% of RE)
Separation payment (<i>THAY</i>)	4.00	4.00	4.00	4% × (100% of RE)
Unemployment benefits (<i>OAEA</i>)	2.00	2.00	2.00	2% × (100% of RE)
Total SIC	21.62	21.62	22.12	

2.5.2.3 Public enterprise workers

- *Liability to contributions*

Those working in the public utilities are insured in a variety of enterprise-specific insurance schemes. *IKA*, these schemes generally levy higher contributions and provide more generous benefits. The rules simulated here are those applying to the social insurance fund of *TAII-OTE*. In 2008 the vast majority of public enterprise workers' social insurance funds were merged with *IKA*. However, the merger did not affect contributions paid or benefits received.

- *Income base used to calculate contributions*

For the computation of social insurance contributions, reference earnings are also used. Table 2.14 presents the social contribution rates for those working in public utilities. Note also that as of 1.12.2013 the income base for the supplementary pension contribution was subject to the upper earnings ceiling shown in Table 2.10 (€5,543.55). This income base was revised in 2016 (€5,860 per month). As of 1.7.2014, the family benefits contribution for employees belonging to the new regime was abolished. In May 2016, the percentage of reference earnings for the supplementary pension was set to 3.5%.

- *Contribution rates*

Table 2.14 TAII-OTE social contributions simulated (2013-2016)

Social insurance contributions (SIC)	% of reference earnings		
	2013-2014	2015	2016
Case 1: contributors to the “old” regime			
Primary pension	11.00	11.00	11.00
Supplementary pension	3.00	3.00	3.50
Sickness insurance	2.55	2.55	2.55
Additional benefits	7.00	7.00	7.00
Total SIC	23.55	23.55	24.05
Case 2: contributors to the “new” regime			
Primary pension	6.67	6.67	6.67
Supplementary pension	3.00	3.00	3.50
Sickness insurance	2.55	2.55	2.55
Separation payment	4.00	4.00	4.00
Unemployment insurance (<i>OAEA</i>)	1.83	1.83	1.83
Family benefits (<i>OAEA</i>)	1.00	-	-
Housing and other benefits (<i>OAEA, OEK, Εργατική Εστία</i>)	1.45	1.45	1.45
Extra SIC: hazardous occupations	3.45	3.45	3.45
Total SIC: non hazardous occupations	20.50	19.50	20.00
Total SIC: hazardous occupations	23.95	22.95	23.45

2.5.2.4 Banking employees

- *Liability to contributions*

Employers of (formerly) state-controlled banks are insured in separate social insurance funds. The rules simulated here are those pertaining to the social insurance fund of the National Bank of Greece (*ETE*). In 2008 banking employees’ social insurance funds were merged with IKA. However, the merger did not affect contributions paid or benefits received.

- *Income base used to calculate contributions*

Social insurance contributions of banking employees are computed on the basis of reference earnings. As of 1.12.2013 the income base for the supplementary pension contribution is subject to the upper earnings ceiling shown in Table 2.10 (€5,543.55) and their rate fell by 0.5 ppts for non-hazardous occupations and increased by 1.25 ppts for hazardous occupations. In 2016, the monthly upper earning ceiling was set to €5,860. As of 1.7.2014, the contribution for family benefits was abolished. As of May 2016, an increase in the supplementary pension contribution was applied (from 3% to 3.5%).

- *Contribution rates*

Table 2.15 ETE social contributions simulated (2013-2016)

Social insurance contributions	% of reference earnings			
	2013	2014	2015	2016
Case 1: contributors to the “old” regime				
Primary pension	11.00	11.00	11.00	11.00
Supplementary pension	3.50	3.00	3.00	3.50
Sickness insurance	2.55	2.55	2.55	2.55
Unemployment insurance (OAEA)	1.83	1.83	1.83	1.83
Family benefits (OAEA)	1.00	1.00	-	-
Housing and other benefits (OAEA, OEK, Εργατική Εστία)	1.45	1.45	1.45	1.45
Separation payment	4.50	4.50	4.50	4.50
Total SIC	25.83	25.33	24.33	24.83
Case 2: contributors to the “new” regime				
Primary pension	6.67	6.67	6.67	6.67
Supplementary pension	3.00	3.00	3.00	3.50
Sickness insurance	2.55	2.55	2.55	2.55
Unemployment insurance (OAEA)	1.83	1.83	1.83	1.83
Family benefits (OAEA)	1.00	1.00	-	-
Housing and other benefits (OAEA, OEK, Εργατική Εστία)	1.45	1.45	1.45	1.45
Separation payment	4.00	4.00	4.00	4.00
Extra SIC: hazardous	3.45	4.70	4.70	4.70
Total SIC: non hazardous occupations	20.50	20.50	19.50	20.00
Total SIC: hazardous occupations	23.95	25.20	24.20	24.70

2.5.2.5 Liberal professions

- *Liability to contributions*

The liberal professions mainly include medical doctors, lawyers and engineers. The relevant social insurance funds insuring these categories are collectively known as “noble funds” for the high level of benefits and quality of services they usually provide. The rules simulated here are those applying to the social insurance fund of medical doctors (ΤΣΑΥ). ΤΣΑΥ’s 2013-2016 social contribution rates for employees are presented in Annex 3.

- *EUROMOD notes*

Fixed amounts paid by employees are adjusted with the number of months receiving employment income (yemmy).

2.5.3 Self-employed workers (*tscse*_s*)

2.5.3.1 Self-employed workers

- *Liability to contributions*

Social contributions of own-account workers are simulated on the basis of *OAE*.

- *Income base used to calculate contributions*

There is no income base for contributions' calculation. Instead, contributors are allocated to insurance classes. For those first insured in *TEBE* before 1st January 1993 there were 10 insurance classes (A to J). Contributors were first allocated to insurance class E. After a year they moved to insurance class F, after another five years to insurance class G, and after another four years to insurance class H, the highest compulsory one. For those first insured in *TEBE* after 1st January 1993 there are 14 insurance classes (1 to 14); the first five are compulsory, the next nine optional. Contributors are first allocated to insurance class 1. Every two years contributors move up one class, until they reach insurance class 5 where they can remain until retirement, unless they choose to be insured according to an optional class. From 2007 all self-employed workers insured with *OAE* (merger of *TEBE*, *TAE* and *TΣA*), irrespective of the date they were first insured, are placed in 14 insurance classes (1-10 compulsory, 11-14 optional). *OAE*'s 2013-2016 social contribution rates are presented in Annex 3.

- *EUROMOD notes*

For 2013-2016, *OAE* contributions are modelled in policy *tscseB_el*.

2.5.3.2 Liberal professions

- *Liability to contributions*

The rules simulated here are again those applying to the social insurance fund of medical doctors (*TΣAY*). *TΣAY*'s 2013-2016 social contribution rates for self-employed are presented in Annex 3.

2.5.4 Farmers (*tscfr*_s*)

- *Liability to contributions*

Most farmers are considered as self-employed, but they do not pay the same social contributions as self-employed. Farmers' contributions are defined in proportion to a notional income in seven insurance classes, revised annually.

- *Income base used to calculate contributions*

The social contributions rate corresponding to each insurance class is set at 7% of notional income for pension insurance (10% since 01/07/2015) and 2.5% of notional income for sickness insurance. Since 2013, farmers falling the first five insurance classes pay a fixed amount for sickness insurance (€6.64 per month). Fixed amounts per insurance class are paid for additional benefits. Contributors can choose freely which insurance class to place themselves in. Farmers' 2013-2016 social contribution rates are presented in Annex 3.

2.5.5 Pensioners (*tscbesi_s*)

Pensioners' social contributions were levied at a flat rate of 4% of pension income (i.e. main old age pensions, minor old age pensions, orphans' and widows' pensions, disability pensions, pensioners' social solidarity benefit and social pension). Such contributions pay for sickness insurance and are deducted at source. As of 1st July 2015, the flat rate rose to 6% and is levied upon supplementary old age pensions too.

2.6 Personal income tax (*tin00_s*)

The most important tax simulated for Greece (from a fiscal point of view) is personal income tax. Personal income tax receipts amounted to €7,971 million in 2013 and €7,849 in 2014.

2.6.1 Tax unit

Tax unit for personal income tax is individual. Spouses file a joint income tax return, but their incomes are entered separately and taxed individually.

However, there is a partial exception to this rule: some tax allowances and/or tax credits are jointly assessed. The tax unit for the joint assessment of tax allowances/credits is broader as it includes both spouses and dependent children. The latter are defined as: (a) unmarried, aged under 18, (b) unmarried, aged under 20 and registered in OAEΔ as unemployed, (c) unmarried, aged under 25 and enrolled in post-secondary or tertiary education or fulfilling their military service, (d) unmarried, aged under 27, enrolled in post-secondary or tertiary education and registered in OAEΔ as unemployed, (e) suffering from any kind of disability over 67% irrespective of age. Note that once such allowances/credits (e.g. child tax allowance) are determined these are shared between (relevant) adults only. Since 2013 the tax unit definition was slightly modified to include parents and disabled siblings as dependent members in the household. Furthermore, any member (including children) of the household earning more than 3,000 euro per year (6,000 euro if disabled) cannot be considered as dependent.

- **EUROMOD notes**

Dependent child definition used in the model is simplified and excludes military condition and condition (d) (the latter is not considered to be followed in practice anyway).

2.6.2 Exemptions

Unemployment benefits, social assistance and some family benefits provided by local government at the prefecture level (such as unprotected children benefit and single parent benefit) are not included in taxable income. Employment or pension income of persons suffering from any kind of disability over 80% is also tax-exempted. From 1st January 2010, unemployment benefits, large family benefit, disability benefits are taxed for individuals with (other) taxable over €30,000 (€10,000 since 2014).

2.6.3 Tax allowances

Tax allowances here are defined as deductions from taxable income and most of them are per tax unit. They include employee and self-employed social insurance contributions, child tax allowance, mortgage interest tax allowance, disability tax allowance, installation of natural gas/solar/ photovoltaic systems tax allowance, private insurance contributions tax allowance as well as charitable donations tax allowance. Throughout the period in question, most tax allowances

were either provided as tax credits or were completely abolished. Note that tax allowances are usually shared between the main taxpayer and his/her spouse.

2.6.3.1 Social insurance contributions tax allowance

All social insurance contributions are fully deducted from taxable income.

2.6.3.2 Disability tax allowance

In 2013-2016 the tax credit was €200 annually per eligible taxpayer.

2.6.4 Tax base

Taxable income includes reported employment and self-employment income, other market income (received by children in SILC), income from rent, private transfers received, education allowances, civil servants family benefit, sickness benefits, disability pensions, main old age pensions (and supplementary since 2014), minor old age pensions, orphans' and widows' pensions). Since 1st January 2010 unemployment benefits, large family benefit, 3rd child benefit, lifetime pension for mothers of many children, lump sum €2,000 birth grant and non-contributory disability benefits are also part of the tax base for individuals with (other) taxable income over €30,000.

The tax base is defined as taxable income minus the various tax allowances described above. Note that, different from these, child tax allowance and tax allowance for disabled do not affect the tax base but change the tax schedule.

2.6.5 Tax credits

Tax credits are defined as deductions from tax due.

2.6.5.1 Maintenance payments tax credit

The tax reduction is 10% of maintenance payments up to a maximum tax credit of €1,500 per year.

2.6.5.2 Medical expenses and expenses for elderly care tax credit

Medical expenses and expenses for elderly care are partly deducted from tax due. Since 2011, the tax credit for medical expenses is calculated 10% of the total medical expenses and this tax credit cannot exceed €3,000 annually per taxpayer. Medical expenses for elderly care tax credit is calculated as the 10% of half the expenditure on care for the old. The upper limit for this credit is also €3,000 per taxpayer.

2.6.5.3 Charitable donations tax credit

Since 2013 charitable donations tax credit is calculated as 10% of donations greater than 100 per annum but less than 5% of tax base.

2.6.5.4 Employment & pensions income tax credit

It was established in 2013. The tax credit is equal to €2,100 if employment and pensions income is up to €21,000 per year. It is capped to the amount of people's actual tax liability (i.e. no negative tax applies). The tax credit is decreased by €100 for each additional €1,000 of employment and pensions' income over €21,000; thus, it becomes zero for people with employment income over €42,000 per year.

Since 2016, employment income tax credit applies to the sum of employment, pensions and farming income (EPF incomes). It is equal to €1,900/€1,950/€2,000/€2,100 for tax payers with zero/one/two/three or more dependent children and EPF incomes up to €20,000 per year and it is capped to the amount of people’s actual tax liability. The tax credit is decreased by €10 for each additional €1,000 of EFP incomes over €20,000.

- **EUROMOD notes**

Maintenance payments and medical expenses are reported at the household level in the original data, but assigned to the person whose age is closest to 45. If there is more than one such person then it is assigned to the one who appears first in the household (by idperson). Hence these credits are simulated for that person.

In EUROMOD, as no detailed information about the nature of medical expenditure is available, it is all treated as hospital expenditure, and is thus deducted from tax due.

2.6.6 Tax schedule

Income taxation is graduated, with progressively higher marginal tax rates applying to higher income brackets.

In 2013, Law 4110/13, as enacted in law 4172/2013 and modified by law 4223/2013, introduced major amendments to personal income tax. A new tax schedule with three tax brackets was introduced for income deriving from employment and pensions³. Self-employment income deriving from the provision of independent services either through the exercise of a liberal profession, or via a personal commercial enterprise, is taxed by a separate tax schedule. Separate tax schedules for rental and farming income were also introduced. In 2013 farming income was taxed according to the employment and pension tax schedule; in 2014-2015 it was taxed at 13%.

In 2016, Law 4389/2016 introduced new significant changes to personal income tax. A new tax schedule with four tax brackets was introduced for the sum of income deriving from employment, pensions and (non-farming) self-employment. Farming income is taxed separately but according to the same schedule. Property income is also tax separately using a different tax schedule.

The tax schedules applicable for the period 2013-2016 are shown in the following tables.

Table 2.16 Tax schedule: employment & pension income (2013-2015), farming income (2013)

Tax band	Income bracket (€per year)		Tax rate (%)
	Lower limit	Upper limit	
1	0	25,000	22
2	25,001	42,000	32
3	42,001	...	42

³ As far as supplementary pensions are concerned, before 2014 they were taxed separately according to the following schedule: 5% for supplementary pensions up to 2,500 per year; 10% for supplementary pensions from 2,501 to 4,500 per year and 15% for supplementary pensions exceeding 4,500 per year. Since 2014 they are considered together with all other pension income.

Table 2.17 Tax schedule: farming income (2014-2015)

Tax band	Income bracket (€per year)		Tax rate (%)
	Lower limit	Upper limit	
1	0	...	13

Table 2.18 Tax schedule: self-employment income (2013-2015)

Tax band	Income bracket (€per year)		Tax rate (%)
	Lower limit	Upper limit	
1	0	50,000	26
2	50,001	...	33

Table 2.19 Tax schedule: property income (2013-2015)

Tax band	Income bracket (€per year)		Tax rate (%)		
	Lower limit	Upper limit	2013	2014	2015
1	0	12,000	10	11	15
2	12,001	...	33	33	35

Table 2.20 Tax schedule: employment, pension, self-employment and farming income (2016)

Tax band	Income bracket (€per year)		Tax rate (%)
	Lower limit	Upper limit	
1	0	20,000	22
2	20,001	30,000	29
3	30,001	40,000	37
4	40,001	...	45

Table 2.21 Tax schedule: property income (2016)

Tax band	Income bracket (€per year)		Tax rate (%)
	Lower limit	Upper limit	
1	0	12,000	15
2	12,001	35,000	35
3	35,000	...	45

- *EUROMOD notes*

The tax rate of the first tax band is 50% reduced for self-employed who started their business activity in 2013. This reduction holds for a period of three years. Note that this cannot be simulated in EUROMOD due to lack of relevant information.

2.7 Other taxes

2.7.1 Interest income tax (*tinktdt_s*)

- *Tax unit*

The unit of analysis is individual.

- *Tax schedule*

Since 2013, the tax rate is 15%.

- *EUROMOD notes*

Investment income reported in EU-SILC includes both interest and dividend income. However, since their disentanglement is not possible due to data constraints, investment income is treated as interest income. Note that, since 2016 dividend income is also taxed at 15% (in 2013-2015 it was taxed at 10%).

2.7.2 Additional tax on rental income (*tinrt_s*)

- *Tax unit*

The unit of analysis is individual.

- *Tax schedule*

In 2013, in addition to its taxation as personal or corporate income, rental income was also subject to a 1.5% tax, increased to 3% for rentals exceeding 300m² and for rentals belonging to corporations. The amount of additional tax may not exceed total liability in terms of personal or corporate income tax. This tax was abolished in 2014.

2.7.3 Pensioners' solidarity contribution (*txcpe_s*)

This is a special levy on main pensions, introduced in August 2010.

- *Tax unit*

The unit of analysis is individual.

- *Tax schedule*

Main pensions exceeding €1,400 per month are subject to taxation as shown in Table 2.22. Note that the tax rates apply to the entire pension amount.

Table 2.22 Pensioners' solidarity contribution (2013-2016)

Tax band	Pension bracket (€per year)		2013-16
1	0	1,400	0
2	1,401	1,700	3
3	1,701	2,000	6
4	2,001	2,300	7
5	2,301	2,600	9
6	2,601	2,900	10
7	2,901	3,200	12
8	3,201	3,500	13
9	3,501	...	14

2.7.4 Additional pensioners' solidarity contribution (*int_txcpe2*)

This is an additional levy on main pensions, introduced in August 2011.

- *Tax unit*

The unit of analysis is individual.

- **Tax schedule**

The contribution applies to pensioners below 60 (except from mothers of underage children) with main pensions exceeding €1,700 per month. The contributions' rates are shown in Table 2.23. Note that the tax rates apply to the entire pension amount.

Table 2.23 Additional pensioners' solidarity contribution (2013-2016)

Tax band	Pension bracket (€per year)		Tax rate (%)
1	0	1,700	0
2	1,701	2,300	6
3	2,301	2,900	8
4	2,901	...	10

2.7.5 Pensioners' solidarity contribution for supplementary pensions (*int_txcp3*)

This is a special levy on supplementary pensions, introduced in September 2011.

- **Tax unit**

The unit of analysis is individual.

- **Tax schedule**

In 2013-2016 supplementary pensions exceeding €300 per month are subject to taxation as shown in Table 2.24. Note that the tax rates apply to the entire pension amount.

Table 2.24 Pensioners' solidarity contribution for supplementary pensions (2013-2016)

Tax band	Pension bracket (€per year)		Tax rate (%)
1	0	300	1
2	301	350	2
3	351	400	3
4	401	450	4
5	451	500	5
6	501	550	6
7	551	600	7
8	601	650	8
9	651	...	9

2.7.6 Solidarity contribution (*txc00_s*)

This is another emergency tax introduced in 2010, paid by individuals with net taxable incomes exceeding €12,000 per year.

- **Tax unit**

The unit of analysis is individual.

- **Tax schedule**

The contribution applies to individuals with taxable incomes exceeding €12,000 per year. The contribution rates applied in the period 2013-2016 are shown in Tables 2.25- 2.27. During this period the contribution schedule was revised twice (in 2015 and 2016). Taxable income is not allowed to fall below €12,000. Moreover, if the contribution reduces taxable income below the

lower threshold of tax bands 3-5, the contribution is calculated by using the tax rate that corresponds to the lower income threshold.

Note that the 2013-2015 tax rates apply to the entire amount of income (not just the part exceeding the threshold) whereas the 2016 the tax rates apply in a progressive way to the income part exceeding the threshold.

Table 2.25 Solidarity contribution (2013-2014)

Tax band	Income bracket (€per year)		Tax rate (%)
1	0	12,000	0
2	12,001	20,000	1
3	20,001	50,000	2
4	50,001	100,000	3
5	100,001	...	4

Table 2.26 Solidarity contribution (2015)

Tax band	Income bracket (€per year)		Tax rate (%)
1	0	12,000	0
2	12,001	20,000	0.7
3	20,001	30,000	1.4
4	30,001	50,000	2.0
5	50,001	100,000	4.0
6	100,001	500,000	6.0
7	500,001	...	8.0

Table 2.27 Solidarity contribution (2016)

Tax band	Income bracket (€per year)		Tax rate (%)
1	0	12,000	0
2	12,001	20,000	2.2
3	20,001	30,000	5.0
4	30,001	40,000	6.5
5	40,001	65,000	7.5
6	65,001	220,000	9.0
7	220,001	...	10.0

2.7.7 Self-employed and liberal professions' contribution (*txcse_s*)

This is a special levy on self-employed and liberal professions aged less than 63, introduced in 2010.

- *Tax unit*

The unit of analysis comprises individuals. The concept used for the eligibility condition was individuals' social insurance fund (*lpmfc=3,6,8*).

- *Tax schedule*

Since 2012, the tax is set to €650 per year regardless the working area's population.

2.7.8 Additional taxes on pensions (*txcpe00_s*)

These are special levies on main and supplementary pensions, introduced in November 2011, January 2012 and January 2013.

- *Tax unit*

The unit of analysis is individual.

- *Tax schedule*

Since 1st January 2012 all main old-age pensions exceeding €1,300 are subject to 12% taxation. Note that the tax rate applies to the pension amount exceeding €1,300 after the deduction of the above mentioned solidarity contribution. Pensions are not allowed to fall below €1,300.

Since 1st November 2011 all pensioners below 55 with main old-age pensions exceeding €1,000 are subject to 40% taxation. The tax rate applies to the pension amount exceeding €1,000 after all other solidarity contributions concerning main pensions have been deducted. Persons aged above 55 with main old-age pensions exceeding €1,200 are subject to 20% taxation. The tax rate applies to the pension amount exceeding €1,200 after all other solidarity contributions concerning main pensions have been deducted.

Since 1st January 2012 all supplementary pensions are subject to taxation as shown in Table 2.28. Note that the tax rates apply to the entire pension amount minus the solidarity contribution for supplementary pensions.

Table 2.28 Additional tax on supplementary pensions (2013-2016)

Tax band	Pension bracket (€per month)		Tax rate (%)
1	0	250	10
2	250.01	300	15
3	301.01	...	20

Since 1st January 2013 if the sum of main and supplementary pensions received by pensioners exceeds €1,000 they are subject to taxation as shown in Table 2.29.

Table 2.29 Additional tax on main and supplementary pensions (2013-2016)

Tax band	Pension bracket (€per year)		Low Limit	Tax rate (%)
1	0	1,000	-	0
2	1,000.01	1,500	1,000	5
3	1,500.01	2,000	1,425	10
4	2,000.01	3,000	1,800	15
5	3,000.01	...	2,550	20

Note that the tax rates apply to the entire pension amount after the deduction of all the above mentioned pensioners' solidarity contributions. The sum of main and supplementary pensions is not allowed to fall below the amounts shown in Table 2.29 (i.e. low limit amounts).

2.7.9 Emergency property tax (*txcpr_s*)

A tax on commercial and residential property applicable in 2011-2013.

- *Tax unit*

The unit of analysis is individual.

- **Tax schedule**

In 2013, all persons who owned commercial or residential property in Greece were subject to an emergency property tax (*EETHAE*). Its amount, varying from €3 to €6 per square meter, depended on the size and the cadastral value of the building. A specific factor varying from 1 to 1.25 according to the age of the building is also applicable. The tax formula for 2013⁴ was the following:

$$\text{Property tax} = (\text{tax rate} * m^2 * \text{age factor}) * 0.85$$

A reduced tax applied to vulnerable population categories (i.e. people receiving integrated child benefit or large family benefit with taxable income less than €30,000 per year or persons suffering from disability over 67%). A reduced rate of €0.50 per square meter applied to vulnerable population categories (i.e. people receiving integrated child benefit or large family benefit with taxable income less than €30,000 per year or persons suffering from disability over 67%). Long term unemployed or recipients of unemployment benefit for more than 6 months, with family income not exceeding €12,000 per year (plus €4,000 for every dependent child) were exempted from the tax.

It was abolished in 2014.

- **EUROMOD notes**

In EUROMOD the age factor was set to 1 for all of the tax payers due to lack of information about the age of buildings. The tax rates per square meter used were the average rates for urban and rural/ semi-rural areas according to tax data provided by the Greek authorities (i.e. €5.3 per square meter for those residing in urban areas and €3.7 per square meter for those residing in rural/ semi-rural areas).

2.7.10 Joint Tax on the Ownership of Real Estate (*tpr_s*)

- **Tax unit**

The unit of analysis is individual.

- **Tax schedule**

As of 1 January 2014, full ownership titles to real estate, including other property rights, such as usufruct, bare ownership etc., became subject to the so called Joint Tax on the Ownership of Real Estate (*Ενιαίος Φόρος Ιδιοκτησίας Ακινήτων, ΕΝΦΙΑ*). The tax is divided into a ‘primary’ and a ‘supplementary’ part.

ΕΝΦΙΑ replaced the emergency property tax and the property tax. The ‘primary’ tax is computed based on an elaborate formula which, amongst other parameters, takes account of the geographic position of the property, its surface, use and age as well as the floor it is located at (where applicable). Accordingly, the law includes a social provision which grants discounts of 50 % or even 100 % on the tax assessed to taxpayers with low family income, families of 3 dependent kids or with members suffering serious disabilities. In particular, tax payers who have annual income up to 12,000 euro (increased by 1,000 euro per dependent member) and own property of a total area of up to 150 square meters are fully exempted. Similarly, tax payers who have annual income up to 9,000 euro (increased by 1,000 euro per dependent member), own property of a total area of up to 150 square meters and the value of this property is up to

⁴ In 2013 the tax was uniformly reduced by 15%.

85,000 euro (150,000 euro for childless couples and lone parents with one child, 200,000 for couples with children and lone parents with two or more children) get a 50% discount.

On the other hand, the ‘supplementary’ tax, is computed based on the value of the full ownership rights, bare ownership and usufruct on buildings and land within the urban plans. It is calculated in proportion of the total value of the property which exceeds €200,000, with rates ranging from 0.1% to 1.15%. In addition, buildings or land which are used for own- business purposes were taxed in 2016 at a tax rate of 0.1%.

- **EUROMOD notes**

In EUROMOD the age factor was set to 1 for all of the tax payers due to lack of information about the age of buildings. The tax rates per square meter used were the average rates for urban and rural/ semi-rural areas according to tax data provided by the Greek authorities (i.e. €3.91 per square meter for those residing in urban areas and €2.63 per square meter for those residing in rural/ semi-rural areas). Note that the supplementary part of the tax has not been simulated in EUROMOD.

3. DATA

3.1 General description

The Greek database is drawn from the Community Statistics on Income and Living Conditions (EU-SILC), in particular from both the national (PDB) and (UDB) versions. EU-SILC is a rotating panel that provides quality, timely cross-sectional information on household incomes and social exclusion.

Commission Regulation 28/2004 defines indicators aimed at measuring unit non-response in EU-SILC final quality reports. For Greece, the overall personal interview non-response rate and the overall household interview non-response rate were 18.25% and 17.61% respectively.⁵

Table 3.1 EUROMOD database description

EUROMOD database	EL_2014_a1
Original name	SILC_2014_RAW_FILES.mdb, SILC_Cross_2014_Flags_free_(06-07-2015).mdb
Provider	El.Stat.
Year of collection	2013
Period of collection	May – June
Income reference period	1.01.2013 - 31.12.2013
Sampling	Stratified multi-stage sampling
Unit of assessment	Households
Coverage	Private household
Sample size	Indiv: 20,932 HH: 8,620

3.2 Data adjustment

This section summarises the most important adjustments performed to make data from both sources (national and European SILC) suitable for the purposes of EUROMOD.

⁵ Source: National Reference Metadata in ESS Standard for Quality Reports Structure: SILC 2014 for Greece, 5 July 2016.

3.3 Imputations and assumptions

3.3.1 Time period

In the SILC user database, the income reference period is a 12-month period. Information on earnings refers to the last tax year (1st January 2013 – 31st December 2013). Similarly, information about pensions and benefits refers to the calendar year before the interview. Self-employment income is based on this reference period too.

EU-SILC's User Database Description clarifies that the interval between the end of the income reference period and the time of the interview for the respondent concerned shall be limited to 8 months as far as possible.

All monetary amounts in the SILC are expressed in annual terms. These are converted into monthly terms (dividing by 12) for the EUROMOD database.

3.3.2 Dropped observations

People with year of birth equal to 2014 (63 cases) were excluded from EUROMOD's database, as they were not born in SILC's income reference period.

3.3.3 Gross incomes

The income information available in the survey used to be net of income tax and social insurance contributions. Since 2007 gross incomes are also provided. However, the latter were not used; in order to obtain gross figures, a procedure has been developed *ad hoc*, taking into account legislation on income tax and social insurance contributions in 2013.

In common with most tax-benefit models, EUROMOD usually works under the default assumption of full compliance (i.e. that taxes are fully adhered to). However, under-reporting of incomes for the purposes of tax evasion is known to be rife in Greece. As a consequence, ignoring this behaviour would seriously undermine the validity of our results.

Hence, in trying to account for tax evasion we use the assumption that individuals reveal their real total net income (say N_i) to survey interviewers, where i = employment income, self-employment income and farming income. Let G_i denote individuals' real gross income (which includes the part of income which is not reported to the tax authorities), and r the rates of income under-reporting. Further, let $T(G_i, r_i)$ denote the personal income tax function for incomes earned in 2013. In the presence of tax evasion, it follows that:

$$G_i = N_i + T((1-r_i) * G_i)$$

The stylised rates of income under-reporting applied here, drawn from ongoing research (Leventi et al. 2013), were as follows:

$r_w = 5\%$ for employment income,

$r_{se} = 35\%$ for self-employment income

$r_f = 80\%$ for farming incomes

By solving this recursive problem iteratively and for each income source separately, we obtain the values of real gross income, G . The rates of under-reporting are then used to separate the reported income ($yemre/ysere$) from the unreported part of gross income ($yemnr/ysenr$). EUROMOD treats the former as subject to income tax and social insurance contributions (and

as used in resource assessment for means-tested benefits), while it adds the latter to individuals' disposable income. However, the input dataset also includes an alternative set of gross earnings variables (*yem/yse*) which is derived assuming full compliance.⁶

3.3.4 Social contributions

As explained earlier, a large number of social insurance funds exist in Greece. The national SILC dataset contains information on the social insurance affiliation to all of them. For this reason, we constructed EUROMOD variable *lpmfc* where contributors were allocated to the largest representative fund of their category. The categories created and the funds selected to represent them are described in Table 2.1. In cases where people stated they were insured in two different funds, the allocation rules used are shown in Table 3.2:

Table 3.2 Allocation of persons insured in two social insurance funds

1 st fund	2 nd fund	Allocated fund
Liberal professions	Own account workers	Own account workers
Liberal professions	Civil servants	Liberal professions
Private sector workers	Own account workers	Own account workers
Private sector workers	Farmers	Private sector workers
Private sector workers	Other self-employed workers	Other self-employed workers
Private sector workers	Banking employees	Private sector workers
Other self-employed workers	Farmers	Other self-employed workers

Several other issues also arise:

- (a) contributors must be allocated to the “old” or to the “new” regime,
- (b) employees must be allocated to “standard” or “hazardous” occupations,
- (c) *OFA*, *TEBE* and *TAE* must be allocated to insurance classes.

3.3.4.1 Identifying contributors in the “old” and “new” regimes

In order to distinguish the contributors to the “old” regime (i.e. those first employed before 1st January 1993) from contributors to the “new” regime (i.e. those first employed after 1st January 1993), the difference in years between a person's age at the time of the interview and the age he/she began his/her first regular job or business was calculated (*int_lpm*). In view of the above, contributors were allocated to the “old” or to the “new” regime as shown in Table 3.3. Note that this process was only applied to people with missing data information.

⁶ The same procedure was also applied to the 2008 and 2010 EUROMOD datasets. The rates of income under-reporting, drawn from Matsaganis & Flevotomou (2010), were 1% for employment income, 33% for self-employment income and 45% for farming income.

Table 3.3 Contributors in the “old” and the “new” regime (*lpm*)

Contributors first employed	int_lpm	lpm
Before 1 st January 1993 (“old” regime)	>21	0
After 1 st January 1993 (“new” regime)	<=21	1

3.3.4.2 Identifying contributors in hazardous occupations (*lochz*)

In 2008, 32.3% of all *IKA* contributors and a lower proportion of other employees worked in occupations officially designated as “hazardous”. Workers in “hazardous” occupations have the right to retire on a full pension up to five years before others (i.e. those in “standard” occupations). On the other hand, as explained in section 2.5.2.1, workers in “hazardous” occupations (and their employers) pay social contributions at a higher rate. It is for this reason that identifying those contributors is important for the purposes of modelling the tax-benefit system of Greece.

The following conditions were specified to identify workers in “hazardous” occupations:

- person is an active contributor, i.e. “directly insured”,
- social insurance fund is “*IKA*” (*lpmfc=1*) or “banking employees” (*lpmfc=5*) or “public enterprise workers” (*lpmfc=4*),
- labour economic status is “employee” (*les=3*) or “unemployed” (*les=5*),
- occupation is “technician or associate professional” (*loc=3*) or “craft or trades worker” (*loc=7*) or “plant or machine operator” (*loc=8*), or
- occupation is “skilled agricultural” (*loc=6*) or “elementary occupation” (*loc=9*), except when industry is “agriculture” (*lindi=1* was excluded).

Note that this process was only applied to people with missing data information.

3.3.4.3 Allocating self-employed contributors to insurance classes

Since reference earnings are not known in advance in the case of self-employment, social contributions are set at fixed amounts per “insurance class”, according to a schedule revised annually. This is the case with own-account workers (*TEBE*), other self-employed workers (*TAE*) and farmers (*OFA*).

Therefore, before social insurance contributions could be modelled, self-employment earnings were used to allocate contributors to insurance classes. To mimic the quasi-proportional effect intended, the higher one’s earnings the higher their insurance class. Income brackets were chosen so that the resulting distribution of contributors between insurance classes matched the actual one. Note that this process was only applicable to people with missing data information. The 2011-2015 distributions for own own-account workers, other self-employed workers and farmers are presented in the Annex.

3.3.5 Other data issues

For the construction of EUROMOD variables *bmact* (contributory maternity benefits), *bho* (housing benefits) and *bdi* (non-contributory disability benefits) both the national and the European version of SILC were used in order to aggregate all relevant variables in the most accurate way. Hence, the definition of the above variables is as follows:

bmac = maternity allowance + birth grant + parental leave benefit (PDB variables included in *hy050n*)

bho = housing allowances (*hy070n*) + housing benefit for students in tertiary education (PDB variable included in *hy050n*)

bdi = benefit for persons with special needs + care allowance for incapacitated persons + care allowance for incapacitated children + nutrition allowance for people suffering from kidney's disease + other disability benefits/ allowances + disabled child care allowance (PDB variables included in *hy050n* and *py130n*)

Moreover, negative self-employment incomes have been set to zero (36 cases). Note that this adjustment is applied in the model and not in the input dataset and thus can be easily omitted from model calculations by switching off the corresponding function in the policy sheet (i.e. policy *yse_el*).

3.4 Updating

To account for any time inconsistencies between the input dataset and the policy year, updating factors are used. Each monetary variable (i.e. each income component) is updated so as to account for changes in the non-simulated variables that have taken place between the year of the data and the year of the simulated tax-benefit system. Updating factors are generally based on changes in the average value of an income component between the year of the data and the policy year.

As a rule, updating factors are provided both for simulated and non-simulated income components present in the input dataset. Note however that in the case of simulated variables, the actual simulated amounts are used in the baseline rather than the updated original variables in the dataset. Updating factors for simulated variables are provided so as to facilitate the use of the model in cases when the user wishes to turn off the simulation of a particular variable. The list of updating factors as well as the sources used to derive them can be found in Table 3.4.

Table 3.4 Raw indices for deriving EUROMOD uprating factors (2013-2016)

Index	Constant name	Values of raw indices				Source	Income components uprated by the index
		2013	2014	2015	2016		
CPI (non harmonised)	\$f_cpi	108.81	107.38	105.52	104.30	ElStat (2016: average of the first 8 months)	afc, amolv, kivho, xcd, xed, xhcmomi, xhl, xhl01, xht, xog, yds, ypp
GDP	\$f_gdp	0.9746	0.9779	0.9936	0.9936	ElStat	xmpam, xmpot, ydses_o, yds01
employment earnings: all employees	\$f_yem	101.1596	98.8330	99.2283	99.7244	Bank of Greece, 2014 Governors' Report	yem, yemnr, yemre, tad, tis, xpp, yivwg, yem00, yse, ysenr, ysere, ypt, kfb, yot, bmacro, bhl, kfbcc, kcc, yem_a
employment earnings: public enterprises workers	\$f_yem4	94.6670	94.6670	94.6670	95.5190	Bank of Greece, 2014 Governors' Report	yem, yemnr, yemre
employment earnings: banking employees	\$f_yem5	102.3944	95.9436	95.9436	96.8070	Bank of Greece, 2014 Governors' Report	yem, yemnr, yemre
employment earnings: civil servants	\$f_yem7	105.2490	104.4070	105.4511	106.5056	Bank of Greece, 2014 Governors' Report	yem, yemnr, yemre
employment earnings: other private sector employees	\$f_yem189	98.8092	97.4258	98.4001	99.2857	Bank of Greece, 2014 Governors' Report	yem, yemnr, yemre
self-employment income: farming	\$f_yse_farm	76.4362	77.3347	82.8891	82.8891	Bank of Greece, 2014 Governors' Report	yse, ysenr, ysere
property income	\$f_ypr	94.2860	87.0558	83.4640	81.0241	ElStat	ypr
investment income	\$f_yiy	132.5757	129.5413	121.9356	116.5042	ElStat	yyi
social solidarity benefit	\$f_boact	230	230	230	230	EKAΣ upper rate	boact
pensions	\$f_pen	111.446	111.446	111.446	111.446	Ministerial decisions	poa00, poacm, poaot, psuwd, psuor, pdi
social pension	\$f_boanc	360	360	360	360	OGA	boanc
unemployment insurance benefit	\$f_bunct	360	360	360	360		bunct, bunot
family benefits	\$f_famben	108.137	108.137	108.137	108.137		bchlg, bfalg, pfa
disability benefits	\$f_bdi	783.3	783.3	783.3	783.3		bdi
unemployment assistance for long-term unemployed	\$f_bunnc	200	200	200	200		bunnc
civil servants family benefit	\$f_bfac	100	100	100	100		bfacs
income support to families with children	\$f_bched	300	300	300	300		bched

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in compulsory education							
minor family benefits	\$f_bfaot	100	100	100	100		bfaot
housing benefits	\$f_bho	109.5	109.5	109.5	109.5	OEK subsidy dates	bho
education allowances	\$f_bed	100	100	100	100		bed
minor social assistance benefits	\$f_bsaot	100	100	100	100		bsaot
property tax	\$f_tpr	100	100	100	100	EIStat	tpr
housing cost (rent)	\$f_xhcrt	94.2860	87.0558	83.4640	81.0241	EIStat	xhcrt, xchenhrt
housing cost	\$f_xhc	132.5757	129.5413	121.9356	116.5042	EIStat	xhc, xhcot
harmonised CPI	\$HICP	121.56	119.87	118.56	118.24	EIStat (2016: average of the first 8 months)	

4. VALIDATION

4.1 Aggregate Validation

EUROMOD results are validated against external benchmarks. Detailed comparisons of the number of people receiving a given income component and total yearly amounts are shown in Annex 2. Both market incomes and non-simulated taxes and benefits in the input dataset as well as simulated taxes and benefits are validated against external official data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1 Components of disposable income

In this section, the main differences between the definition of disposable income in EUROMOD and EU-SILC are presented. According to EU-SILC, company car is included in the definition of disposable income and pension from individual private plans is not included. The former is not included in EUROMOD whereas the latter is included.

Table 4.1 Components of disposable income

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

4.1.2 Validation of incomes inputted into the simulation

In Table 4.1 of Annex 2 the number of employed and unemployed people in EUROMOD is validated with respect to the official statistics. EUROMOD findings seem to slightly underestimate the number of employed people in all the examined years and specifically by 4%

in 2013 and 2014 and by 6% in 2015. With respect to the number of unemployed persons, in 2013 EUROMOD's underlying dataset overestimates it by only 2%. The slight decrease in unemployment since then has resulted in EUROMOD overestimating the number of unemployed in 2014 and 2015 by 7% and 13% respectively.

In Tables 4.2 and 4.3 of Annex 2 selected market incomes are validated with respect to people in receipt and aggregate yearly amounts. Due to lack of external statistics on the number of recipients, the validation is only possible for annual amounts. EUROMOD input data underestimate gross employment earnings by 39%. However, as the external statistics also include employers' social insurance contributions that are approximately 20% of total earnings, SILC underestimation of gross employment income is narrowed down to 19%.

The number of recipients and total expenditure of non-simulated benefits are shown in Tables 4.4-4.5 of Annex 2. Due to a severe lack of official external statistics, the validation was possible for a limited number of non-simulated benefits. Survivors' pension recipients are relatively well reported since they are overestimated by 9% in 2013 and 2% in 2014. Main old age pension recipients are also overestimated by around 10% in 2013. Finally, non-contributory disability benefit recipients seem to be heavily underreported (by around 75%). With respect to the annual amount of disability pension, in 2013 and 2014 EUROMOD's dataset underestimates it by as much as 60%. On the other hand, the annual amount of main old age pensions was underreported by only 5% in 2013.

4.1.3 Validation of outputted (simulated) incomes

In Tables 4.6 and 4.7 of Appendix 2 simulated benefits, taxes and social insurance contributions are validated separately with respect to recipient and payer numbers, followed by a comparison of figures on aggregate expenditure. Expenditure estimates are generally in line with the estimates of recipient numbers and are thus not commented. Again, due lack of official external statistics, the validation was only made possible for a limited number of benefits and taxes.

Compared to the official data on the number of pensioners' social solidarity benefit (EKAS) recipients, EUROMOD overestimates recipients by 33% in 2013 and 12% in 2014. On the other hand, social pension recipients are underreported by 38% in 2013 and 19% in 2014. Both benefits are highly underreported in the original EU-SILC dataset. It is very likely that for the case of social pension this is due to the fact that many social pension recipients are reported as *OIA* basic pension recipients in the original dataset. Note that for all later years EUROMOD does not account for changes in the structure of the population of pensioners.

Child benefit recipients as well as large family benefit recipients seem to be largely overestimated in EUROMOD (the former by 49% in 2013, 43% in 2014 and 59% in 2015, while the latter by 30% in 2013). The underestimation of large family benefit is mostly attributed to the dataset's misrepresentation of these household types, whereas a factor that might be driving this result for the child benefit is the possibility of benefit non take-up for people who are eligible for the lowest amount (i.e. €13.3 per dependent child).

Moreover, EUROMOD seems to largely overestimate the number of unemployment insurance benefit recipients in 2013-2015. Since this benefit is part-simulated (i.e. eligibility is directly taken from the input data for the whole period considered) recipients in 2014 and 2015 are overestimated due to the drop in the number of benefit recipients depicted in the administrative data.

The number of recipients of unemployment assistance benefit, food stamps, rent allowance and social dividend is simulated with a satisfactory degree of accuracy due to the non-take-up

adjustments and point systems that have been implemented in EUROMOD. These adjustments are taking into account the official statistics on benefits receipt.

As far as simulated taxes are concerned, the (adjusted for tax evasion) model simulates satisfactorily receipts of personal income tax and the number of pensioners paying social insurance contributions. Revenue collected from the solidarity contribution is underestimated by approximately 40% in 2013 and 2014. This suggests that high income earners are underrepresented in the original data. EUROMOD underestimates receipts from both property taxes, namely emergency property tax (by around 50% in 2013) and joint tax on ownership of real estate (about 70% in 2014). This can be attributed to the lack of information about the age of the buildings, properties other than individuals' primary residence (that are also subject to tax), as well as to the (average) tax rates per square meter that were used in the simulation of the tax. The underestimation is more severe for the joint tax on ownership of real estate since its base is much wider than the information contained in the EU SILC. Finally, receipts from the self-employed and liberal professions contribution are estimated with a satisfactory degree of accuracy.

4.2 Income distribution

All income distribution results presented here are computed for individuals according to their household disposable income (HDI) equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

4.2.1 Income inequality

As a whole, EUROMOD estimates on income inequality seem to be generally in line with the existing external source estimates for all years. Compared to the EU-SILC figures, EUROMOD estimates slightly lower income inequality indices. The higher income share of the bottom decile in EUROMOD can explain most of this discrepancy.

4.2.2 Poverty rates

As a whole, EUROMOD estimates on poverty seem to be generally in line with, albeit slightly (i.e. about 10%) lower than the external source estimates for the period 2013-2014. This is mostly related to the simulation of a series of benefits that are heavily underreported in the original SILC data (such as pensioners' social solidarity benefit, social pension and unemployment assistance benefit).

With the poverty line set at 60% of median HDI, poverty rates (as estimated by EUROMOD) decline slightly from 19.95% in 2013 to 19.28% in 2014. This is mostly due to the provision of the social dividend in 2014. The EUROSTAT estimates display a similar pattern: poverty falls from 22.10% in 2013 to 21.40% in 2014.

4.3 Validation of minimum wage

The impact of simulating the minimum wage regulations is presented in Table 4.10 of Annex 2.

Adjustments for minimum wage increase reported earnings by almost 0.6% per year for all the examined years. The impact on poverty and inequality is (very) mildly reducing, with poverty

declining by nearly 0.5% in 2015 and inequality declining by approximately 0.3% in all the assessed years.

4.4 Validation of full compliance scenario

In this section we give a brief overview of what is the impact of assuming full compliance in the net-to-gross income process and tax-benefit modeling in EUROMOD (i.e. no income under-reporting).

As we can see in Table 4.11 of Annex 2, adjustments for tax evasion decrease reported earnings by 7% on average. Personal income tax and employees SIC are also decreased by almost 30% and 5% respectively on average. The Gini index and poverty rates do not exhibit any significant discrepancies (note that tax evasion adjustments were done assuming that everyone reports the same proportion of income for a given income source).

4.5 Summary of “health warnings”

A certain amount of caution is called for when interpreting the above results. The severe crisis that the country is currently undergoing has had a serious impact on the availability of data needed for macrovalidation purposes. The reduction of resources has led to major delays in the publication of administrative statistical data, while some of the publications (such as the Social Budget and *ΟΓΑ*'s statistical bulletin) have been completely abandoned.

Our approach to accounting for tax evasion, drawing on ongoing research (Leventi et al., 2013), is a clear improvement on standard practice. Nevertheless, it remains simplistic; assuming that everyone's income from a given source is under-reported by the same rate leaves much to be desired. In addition, simulations may be imperfect when e.g. income tax rules are too complex to be accurately simulated, or when eligibility for means-tested benefits depends on income in previous years.

Uprating incomes from an earlier date to the present amounts to assuming that everybody's income from a given source has risen by the same rate over the relevant period. This assumption clearly understates distributional changes. Moreover, uprating some incomes (e.g. self-employed earnings, incomes from farming etc.) is subject to an even greater degree of uncertainty due to the lack of reliable information.

Finally, the underlying dataset's misrepresentation of some population groups (such as families with three or more children and disability benefit recipients) has to be taken into account when trying to interpret EUROMOD's baseline results.

5. REFERENCES

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Leventi C., Matsaganis M., Mitrakos T. and Tsakloglou P. (2009) "Poverty targeting and the design of policies towards groups at high risk of social exclusion", Report submitted to the Greek Ministry of Labour and Social Security, Athens (in Greek).

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Matsaganis and Flevotomou M. (2010) " Distributional implications of tax evasion in Greece", Hellenic Observatory Papers on Greece and Southeast Europe GreeSE Paper no.31, The Hellenic Observatory, LSE, London, UK.

INE-ΓΣΕΕ Journal (2002) "The salaries of civil servants in EU countries", issue 79.

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

Sites of various social insurance funds and benefit agencies:

www.ika.gr

www.oaee.gr

www.oaed.gr

www.oga.gr

www.tapote.gr

www.tsay.gr

- ***Other sources of data***

www.ec.europa.eu/eurostat/en

www.statistics.gr

ANNEX 1: POLICY EFFECTS IN 2015-2016

In this section we analyse the direct tax-benefit policy effect on household disposable income in Croatia between 2015 and 2016. We try to understand how changes (or non-changes) to tax-benefit policies have affected household incomes in the two periods, abstracting from changes in the population characteristics (e.g. increased unemployment) and the distribution of market/original gross incomes (e.g. reduction in wages). It should be noted that tax-benefit policies in a given year are taken as of 30th of June.

Table A1 and Figure A1 show the policy effect measured in real terms by income component and income decile group. The effect is estimated as the difference between simulated household net income under the 2016 tax-benefit policies (deflating the tax-benefit monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2015 policies, as a percentage of mean equivalised household disposable income in 2015. Households are ranked based on their equivalised household disposable income. The total policy effect on household incomes is decomposed into the different components: public pensions, means-tested benefits, non-means-tested benefits, employees and pensioners' social insurance contributions (SIC), self-employed SIC and direct taxes. We isolate the policy effect from changes in market/original income, i.e. changes to market/original incomes are not considered as part of the policy effect and so, they have no effect on disposable income.

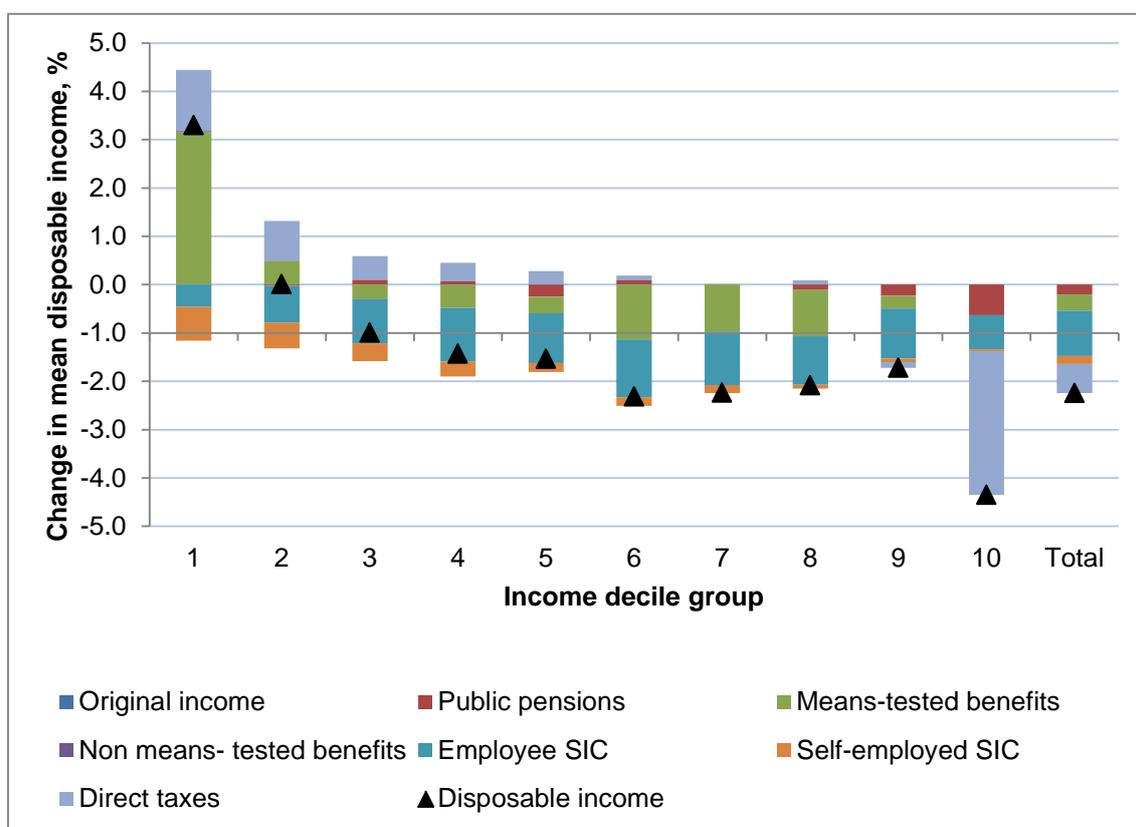
Policy changes in 2016 had a progressive effect on the income distribution. Although households in general saw an overall decrease of 2.24% in their disposable income, the lowest income decile reported gains equal to 3.3% of disposable income. This increase was mainly driven by the two means-tested benefits that were introduced in April 2015, food stamps and housing allowance; these were provided for a period of 9 months in 2015 whereas in 2016 they were provided for the whole year. The important tax reform that took place in May 2016 changing the income brackets and tax rates of the personal income tax schedule also had a positive effect on the income of the poorest income deciles. On the other hand, changes in pensioners', employees' and self-employed social insurance contributions (SIC) had a negative impact throughout the income distribution due to increases in the SIC paid by pensioners for health (from 4% to 6%), the increase in the rate of employees' SIC for supplementary pensions (from 3% to 3.5%) and the increase in the amounts of farmers' SIC. The stricter eligibility rules that were applied in 2016 in the provision of the means-tested pensioners' social solidarity benefit (EKAS) also had a negative impact on the disposable income of households belonging to deciles 3 to 9. Finally, households located at the top income decile were negatively affected (a) by the increase in the rates of the solidarity contribution, a tax which only applies to individuals with taxable incomes exceeding €12,000 per year and (b) by the introduction of an upper limit of €2,000 per month which was set on every gross pension received by existing pensioners.

Table A1: Policy effects in 2015-2016, using the CPI-indexation, %

Decile	Original income	Public pensions	MTB	Non MTB	Employee SIC	Self-empl. SIC	Direct taxes	Disp. income
1	0.00	0.01	3.15	0.02	-0.46	-0.70	1.26	3.30
2	0.00	-0.02	0.49	0.01	-0.77	-0.53	0.82	0.01
3	0.00	0.10	-0.30	0.00	-0.91	-0.37	0.49	-0.99
4	0.00	0.07	-0.48	0.00	-1.11	-0.31	0.38	-1.43
5	0.00	-0.25	-0.34	0.01	-1.03	-0.19	0.27	-1.53
6	0.00	0.09	-1.13	0.00	-1.20	-0.18	0.10	-2.31
7	0.00	0.01	-0.97	0.00	-1.11	-0.16	0.00	-2.23
8	0.00	-0.11	-0.96	0.01	-1.00	-0.08	0.08	-2.08
9	0.00	-0.23	-0.26	0.00	-1.04	-0.07	-0.12	-1.72
10	0.00	-0.63	0.00	0.00	-0.71	-0.04	-2.97	-4.35
Total	0.00	-0.20	-0.34	0.00	-0.94	-0.16	-0.60	-2.24

Notes: MTB: Means-tested benefits, Non MTB: non means-tested benefits. Employees SIC also include pensioners' SIC.

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

Figure A1: Policy effects in 2015-2016, using the CPI-indexation, %


ANNEX 2 VALIDATION STATISTICS

Table 4.1-Number of employed and unemployed

	EUROMOD	External				Ratio			
	2013	2013	2014	2015	2016	2013	2014	2015	2016
Number of employed	3,377,678	3,507,800	3,528,400	3,603,568		0.96	0.96	0.94	
Number of unemployed	1,357,805	1,330,300	1,274,000	1,197,000		1.02	1.07	1.13	

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

Source: EUROSTAT (LFS adjusted series)

Table 4.2-Market income in EUROMOD -Number of recipients

	EUROMOD				External				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
reported earnings	2,489,139	2,489,139	2,489,139	2,489,139								
reported self-employed earnings	1,257,518	1,257,518	1,257,518	1,257,518								
non-reported earnings	2,489,139	2,489,139	2,489,139	2,489,139								
non-reported self-employment income	1,149,732	1,149,732	1,149,732	1,149,732								
private pension	1,895	1,895	1,895	1,895								
income from rent	977,684	977,684	977,684	977,684								
other income	515	515	515	515								
private transfers received	357,792	357,792	357,792	357,792								
investment income	353,757	353,757	353,757	353,757								

Table 4.3-Market income in EUROMOD -Annual amounts (in mil.)

	EUROMOD				External				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
reported earnings	34,458	34,006	34,329	34,642								
non-reported earnings	1,490	1,470	1,484	1,498	59,320	58,160	59,021		0.61	0.61	0.61	
reported self-employed earnings	12,654	12,395	12,508	12,566								
non-reported self-employment earnings	6,855	6,769	6,940	6,963								
private pension	4	4	4	4								
income from rent	2,747	2,536	2,431	2,360								
other income	2	2	2	2								
private transfers received	1,489	1,454	1,460	1,467								
investment income	372	363	342	327								

Notes: 1. Eurostat gross wages and salaries also include employers' contributions and remuneration in kind.

2. External statistics include both reported and non-reported earnings.

Sources: Eurostat, National Accounts (compensation of employees).

Table 4.4-Tax benefit instruments included but not simulated in EUROMOD -Number of recipients/ payers

	EUROMOD	External				Ratio			
	2013	2013	2014	2015	2016	2013	2014	2015	2016
Benefits									
disability benefits	41,975	170,827	159,379			0.25	0.26		
education allowances for students	11,988								
minor family benefits	40,151								
sickness benefits	26,909								
housing benefits	7,167								
maternity benefits	12,169								
minor social assistance benefits	76,387								
other unemployment benefits	28,575								
disability pension	107,651	231,700	231,500			0.46	0.47		
lifetime pension for mothers of many-children									
main old age pension	2,236,865	2,040,297	1,990,520			1.10	1.12		
supplementary old age pension	411,730								
minor old age pensions	75,010								
survivors' pensions	412,019	377,409	403,142			1.09	1.02		
orphan's pension	15,307								
income support to families with children in compulsory education	5,635								

- Notes:
1. Minor old age pensions include early retirement pensions due to resignation, national resistance pensions, deputy/ mayor pensions etc.
 2. Minor family benefits include unprotected child benefit, marriage grant, OAEΔ family allowance etc.
 3. Sickness benefits include pay sick leave, benefit for working accidents, assistance of movement of sick persons, benefit for spa therapy, airing etc.
 4. EUROMOD estimates include only disability pension recipients below 65, while administrative data include all disability pension recipients.
 5. Minor social assistance benefits include emergency social help, special allowance for released prisoners/ repatriated Greeks/ drug addicts/ alcoholics, benefit for households in less favoured areas etc.

Source: Own elaboration of data derived from various administrative sources.

Table 4.5-Tax benefit instruments included but not simulated in EUROMOD -Annual amounts (in mil.)

	EUROMOD				External				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Benefits												
disability benefits	163	163	163	163	740	732			0.22	0.22		
education allowances for students	34	34	34	34								
minor family benefits	68	68	68	68								
sickness benefits	23	22	23	23								
housing benefits	9	9	9	9								
maternity benefits	22	22	22	22								
minor social assistance benefits	66	66	66	66								
other unemployment benefits	71	71	71	71								
disability pension	684	684	684	684	1,730	1,729			0.40	0.40		
main old age pension	21,326	21,326	21,326	21,118	22,375	20,688			0.95	1.03		
supplementary old age pension	1,273	1,273	1,273	1,273								
minor old age pensions	567	567	567	567								
survivors' pensions	3,017	3,017	3,017	3,017	3,208	3,293			0.94	0.92		
orphan's pension	71	71	71	71								
income support to families with children in compulsory education	5	5	5	5								

Notes: 1. Minor old age pensions include early retirement pensions due to resignation, national resistance pensions, deputy/ mayor pensions etc.

2. Minor family benefits include unprotected child benefit, marriage grant, OAEΔ family allowance etc.

3. Sickness benefits include pay sick leave, benefit for working accidents, assistance of movement of sick persons, benefit for spa therapy, airing etc.

4. EUROMOD estimates include only disability pension recipients below 65, while administrative data include all disability pension recipients.

5. Minor social assistance benefits include emergency social help, special allowance for released prisoners/ repatriated Greeks/ drug addicts/ alcoholics, benefit for households in less favoured areas etc.

Source: Own elaboration of data derived from various administrative sources.

Table 4.6-Tax benefit instruments simulated in EUROMOD -Number of recipients/ payers (in thousands)

	EUROMOD				SILC	Ratio	External				Ratio			
	2013	2014	2015	2016	2013	2013	2013	2014	2015	2016	2013	2014	2015	2016
Benefits														
child benefit	1,099,342	1,110,968	1,100,349	1,101,190	432,932	2.54	738,182	776,164	693,299		1.49	1.43	1.59	
pensioners' social solidarity benefit	423,968	426,134	502,652	292,162	122,008	3.47	319,891	380,000			1.33	1.12		
social pension	25,087	25,087	25,087	22,603	1,065	23.56	40,300	31,000			0.62	0.81		
unempl. assistance benefit	43,745	39,139	19,423	19,423	6,338	6.90	42,351	36,490	21,350		1.03	1.07	0.91	
rent allowance	-	-	18,964	17,920	-	-	-	-	19,707		-	-	0.96	
food stamps	-	-	147,941	148,951	-	-	-	-	147,733		-	-	1.00	
unempl. insurance benefit	244,475	244,475	244,475	244,475	244,475	1.00	168,675	118,389	120,403		1.45	2.07	2.03	
large family benefit	154,916	155,353	154,916	154,688	112,745	1.37	118,755				1.30			
social dividend	-	625,921	-	-	-	-	-	720,000	-	-	-	0.87	-	-
Taxes and Social Insurance contributions														
self-employed SIC	669,285	669,285	669,285	669,285										
farmers SIC	490,136	490,136	490,136	490,136										
employers' SIC	1,763,547	1,763,547	1,763,547	1,763,547										
employees' SIC	2,352,815	2,352,815	2,352,815	2,352,815										
contributions by people on pension benefits: sickness	2,703,199	2,703,199	2,703,649	2,703,649			2,649,406	2,625,162			1.02	1.03		
personal income tax	3,982,576	4,027,977	4,046,559	3,790,466										
interest income tax	353,757	353,757	353,757	353,757										
additional tax on rental income	970,774	-	-	-										
pensioners' solidarity contributions	360,388	360,388	360,388	360,388										
tax on high pensions	831,083	831,083	831,083	831,083										
solidarity contribution	1,823,148	1,893,568	1,896,108	2,195,499										
self-employed and liberal professions contribution	589,028	589,028	589,028	589,028										
emergency property tax	3,677,201	-	-	-										
property tax (ENFIA)	-	3,853,174	3,853,174	3,865,048										

- Notes: 1. Personal income tax payers: persons paying non-zero income tax.
 2. The number of pensioners' social insurance contributors includes both main and supplementary pension recipients.
- Sources: Own elaboration of data derived from various administrative sources.

Table 4.7-Tax benefit instruments simulated in EUROMOD -Annual amounts (Mil.)

	EUROMOD				SILC	Ratio	External				Ratio			
	2013	2014	2015	2016	2013	2013	2013	2014	2015	2016	2013	2014	2015	2016
Benefits														
child benefit	638	643	636	637	294	2.17								
pensioners' social solidarity benefit	868	842	1,102	754	281	3.09	795	950			1.09	0.89		
social pension	108	108	108	98	2	53.45	161	130			0.67	0.83		
unemployment assistance for long-term unemployed	100	86	43	43	11	9.41								
housing benefits	-	-	26	33	9									
food stamps	-	-	198	265										
unemployment insurance benefit	613	613	613	613	698	0.88								
large family benefit	188	189	188	187	251	0.75								
social dividend	-	456	-	-				463				0.98		
Taxes and Social Insurance contributions														
contributions by people on pension benefits: sickness	1,027	1,027	1,078	1,604										
personal income tax	6,167	6,101	6,290	6,406			7,225	6,922			0.85	0.88		
interest income tax	56	54	51	49			800	590			0.07	0.09		
additional tax on rental income	42	-	-	-										
pensioners' solidarity contributions	349	349	349	313										
tax on high pensions	1,510	1,510	1,510	1,430										
solidarity contribution	529	537	483	929			876	873			0.60	0.62		
self-employed & liberal prof. contribution	383	383	383	383			323	418			1.19	0.92		
emergency property tax	756	-	-	-			1,441				0.52			
employee contributions	7,191	7,103	6,987	7,728										
self-employed contributions	2,976	2,941	2,942	3,041										
employer contributions	6,206	6,122	5,550	5,719										
property tax (ENFIA)	-	727	731	744				2,671				0.27		

Sources: Own elaboration of data derived from various administrative sources.

Table 4.8-Distribution of equivalised disposable income

	EUROMOD				External				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
D1	2.42	2.56	2.63	2.75	2.2	1.9			1.10	1.35		
D2	4.40	4.60	4.49	4.59	4.2	4.3			1.05	1.07		
D3	5.73	5.85	5.81	5.86	5.6	5.7			1.02	1.03		
D4	6.79	6.82	6.77	6.84	6.7	6.9			1.01	0.99		
D5	7.98	8.00	8.01	8.03	7.9	8			1.01	1.00		
D6	9.23	9.26	9.35	9.28	9.3	9.3			0.99	1.00		
D7	10.59	10.55	10.62	10.65	10.6	10.7			1.00	0.99		
D8	12.34	12.24	12.30	12.40	12.4	12.5			1.00	0.98		
D9	15.02	14.92	14.94	15.04	15.4	15.4			0.98	0.97		
D10	25.50	25.21	25.08	24.56	25.6	25.3			1.00	1.00		
Median	8.167	8.150	8.259	8.093	7.680	7.520			1.06	1.08		
Mean	9.526	9.463	9.529	9.338	8.879	8.682			1.07	1.09		
Gini	33.6	32.9	32.9	32.2	34.5	34.2			0.97	0.96		
S80/S20	5.9	5.6	5.6	5.4	6.5	6.5			0.91	0.86		

Notes: Based on household disposable income (HDI) equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions; computed at the individual level.

Source: Eurostat

online

database.

Table 4.9-Poverty rates by gender and age

	EUROMOD				External				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
40% median HDI												
Total	9.12	8.57	8.62	7.77	10.40	10.10			0.88	0.85		
Males	9.42	8.79	8.97	8.08	10.70	10.70			0.88	0.82		
Females	8.83	8.37	8.28	7.47	10.10	9.50			0.87	0.88		
50% median HDI												
Total	14.18	12.95	13.73	13.16	15.80	15.00			0.90	0.86		
Males	14.34	13.11	13.84	13.31	16.00	15.50			0.90	0.85		
Females	14.02	12.79	13.62	13.00	15.60	14.40			0.90	0.89		
60% median HDI												
Total	19.95	19.28	20.41	19.47	22.10	21.40			0.90	0.90		
Males	19.87	19.41	20.37	19.35	22.20	21.50			0.89	0.90		
Females	20.03	19.15	20.44	19.59	22.00	21.20			0.91	0.90		
70% median HDI												
Total	27.32	26.25	27.61	26.74	28.90	27.90			0.95	0.94		
Males	27.35	26.48	27.76	26.80	28.80	28.00			0.95	0.95		
Females	27.28	26.02	27.47	26.68	28.90	27.80			0.94	0.94		
60% median HDI												
0-15 years	24.19	23.43	24.19	22.42	25.30	26.10			0.96	0.90		
16-24 years	30.30	29.47	31.31	29.34	32.00	30.10			0.95	0.98		
25-49 years	21.75	21.21	22.31	21.15	23.20	22.50			0.94	0.94		
50-64 years	18.13	18.30	19.55	18.67	20.70	20.00			0.88	0.92		
65+ years	10,95	9,34	10,38	10,87	14,90	13,70			0,73	0,68		

Notes: Computed for individuals according to their household disposable income (HDI) equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The external statistics provided by EUROSTAT are shifted by one year in order to align with EUROMOD’s income reference periods.

Sources: Eurostat online database.

Table 4.10-Minimum wage validation

	Baseline				Min Wage Incl.				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
equivalised disposable income reported earnings	68,980	68,581	69,022	67,562	69,154	68,764	69,201	67,731	1.00	1.00	1.00	1.00
personal income tax	34,458	34,006	34,329	34,642	34,661	34,224	34,538	34,844	0.99	0.99	0.99	0.99
employee contributions	6,167	6,101	6,290	6,406	6,169	6,103	6,292	6,411	1.00	1.00	1.00	1.00
employer contributions	7,191	7,103	6,987	7,728	7,217	7,131	7,012	7,752	1.00	1.00	1.00	1.00
Poverty rate (60% median HDI)	6,206	6,122	5,550	5,719	6,247	6,166	5,588	5,756	0.99	0.99	0.99	0.99
Gini coefficient	19.95	19.28	20.41	19.47	19.95	19.23	20.30	19.45	1.00	1.00	1.01	1.00
	33.6	32.9	32.9	32.2	33.5	32.8	32.8	32.1	1.00	1.00	1.00	1.00

Table 4.11- No correction for tax evasion - validation

	Baseline				No correction for tax evasion Incl.				Ratio			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
equivalised disposable income reported earnings	68,980	68,581	69,022	67,562	68,491	68,260	68,674	66,222	1.01	1.00	1.01	1.02
personal income tax	34,458	34,006	34,329	34,642	36,875	36,392	36,738	37,073	0.93	0.93	0.93	0.93
employee contributions	6,167	6,101	6,290	6,406	9,148	8,785	9,019	9,351	0.67	0.69	0.70	0.69
employer contributions	7,191	7,103	6,987	7,728	7,607	7,513	7,386	8,142	0.95	0.95	0.95	0.95
Poverty rate (60% median HDI)	6,206	6,122	5,550	5,719	6,607	6,518	5,909	6,090	0.94	0.94	0.94	0.94
Gini coefficient	19.95	19.28	20.41	19.47	20.50	20.05	20.96	19.67	0.97	0.96	0.97	0.99
	33.6	32.9	32.9	32.2	34.0	33.2	33.2	31.5	0.99	0.99	0.99	1.02

ANNEX 3 - OAEE SOCIAL INSURANCE CONTRIBUTIONS

Table A3.1 OAEE social contributions simulated (2013-16, €/per year)

Case 1: contributors to the “old” regime			
Insurance class	Pension insurance	Sickness insurance	Total
1	1,828.92	1,113.48	2,942.40
2	2,233.68	1,113.48	3,347.16
3	2,666.40	1,113.48	3,779.88
4	2,910.96	1,113.48	4,024.44
5	3,357.72	1,113.48	4,471.20
6	3,787.08	1,113.48	4,900.56
7	4,049.52	1,113.48	5,163.00
8	4,378.80	1,113.48	5,492.28
9	4,674.60	1,113.48	5,788.08
10	4,970.64	1,113.48	6,084.12
11	5,266.44	1,113.48	6,379.92
12	5,562.24	1,113.48	6,675.72
13	5,858.28	1,113.48	6,971.76
14	6,154.20	1,113.48	7,267.68

Case 2: contributors to the “new” regime			
Insurance class	Pension insurance	Sickness insurance	Total
1	1,828.92	699.60	2,528.52
2	2,233.68	854.40	3,088.08
3	2,666.40	1,019.88	3,686.28
4	2,910.96	1,113.48	4,024.44
5	3,357.72	1,284.36	4,642.32
6	3,787.08	1,448.52	5,235.60
7	4,049.52	1,548.96	5,598.48
8	4,378.80	1,694.84	6,053.64
9	4,674.60	1,788.00	6,462.60
10	4,970.64	1,901.28	6,871.92
11	5,266.44	2,014.44	7,280.88
12	5,562.24	2,127.60	7,689.84
13	5,858.28	2,240.76	8,099.04
14	6,154.20	2,353.92	8,508.12

Note: Since August 2011 all TEBE contributors pay an additional amount of €10 per month for unemployment insurance.

TΣAY social insurance contributions

Table A3.3 TΣAY social contributions simulated (2013-2016, €per month)

Social insurance contributions (SIC)	Contributors first employed before 1 January 1993		Contributors first employed after 1 January 1993	
	<5 years	>5 years	<5 years	>5 years
Length of service				
Case 1: employees				
A. contributions paid as % of reference earnings				
Primary pension	0.00	0.00	4.00	6.67
Sickness insurance	5.00	5.00	2.55	2.55
Additional benefits	0.00	0.00	4.00	4.00
Total	5.00	5.00	10.55	13.22
B. contributions paid as a lump sum (€per month)				
Primary pension	113.00	188.30	0.00	0.00
Sickness insurance	2.00	2.00	2.00	2.00
Additional benefits	2.93	2.93	0.00	0.00
Total	117.93	193.23	2.00	2.00
Case 2: self-employed (€per month)				
Primary pension	126.87	202.17	83.20	138.70
Sickness insurance	51.21	51.21	46.70	46.70
Additional benefits	5.70	5.70	27.70	27.70
Total	183.78	259.08	157.60	213.10

Note: Since August 2011 all TΣAY self-employed contributors pay and additional amount of €10 per month for unemployment insurance.

OΓA social insurance contributions

Table A3.6 OΓA social contributions simulated (2013-2014, €per year)

Insurance class	Pension insurance	Sickness insurance	Additional benefits	Total
1	408.84	319.68	23.76	752.28
2	506.88	319.68	23.76	850.32
3	609.84	319.68	23.76	953.28
4	752.52	319.68	23.76	1,095.96
5	895.20	319.68	35.64	1,250.52
6	1,036.92	370.33	35.64	1,442.89
7	1,177.56	420.57	35.64	1,633.77

Table A3.7 OΓA social contributions simulated (2015, €per year)

Insurance class	Pension insurance	Sickness insurance	Additional benefits	Total
1	408.84	319.68	24.60	753.12
2	506.88	319.68	24.60	851.16
3	609.84	319.68	24.60	954.12
4	752.52	319.68	24.60	1,096.80
5	895.20	319.68	36.96	1,251.84
6	1,036.92	370.33	36.96	1,444.21
7	1,177.56	420.57	36.96	1,635.09

Table A3.8 OΓΑ social contributions simulated (2016, €per year)

Insurance class	Pension insurance	Sickness insurance	Additional benefits	Total
1	584.12	319.68	24.60	928.40
2	724.04	319.68	24.60	1,068.32
3	871.26	319.68	24.60	1,215.54
4	1,075.10	319.68	24.60	1,419.38
5	1,278.94	319.68	36.96	1,635.58
6	1,481.35	370.33	36.96	1,888.64
7	1,682.23	420.57	36.96	2,139.76

Note: The 2016 contributions are applicable since July 2015.

Distributions of self-employed contributors

Table A3.8 Distribution of OAEE contributors by insurance class (2013-2014)

Case 1: Contributors to the “old” regime				
Insurance class	2013	%	2014	%
1	43,546	11	37,771	11
2	29,848	8	28,077	8
3	19,030	5	21,654	6
4	62,843	17	54,049	16
5	41,237	11	44,075	13
6	39,308	10	32,443	10
7	131,829	35	108,848	33
8	782	0	1,008	0
9	550	0	359	0
10	5,749	2	4,542	1
11	69	0	33	0
12	65	0	43	0
13	17	0	11	0
14	4,056	1	2,456	1
Total	378,929	100	335,369	100
Case 2: Contributors to the “new” regime				
Insurance class	2013	%	2014	%
1	138,137	35	163,002	41
2	90,445	23	79,122	20
3	58,449	15	68,360	17
4	35,691	9	34,006	9
5	26,250	7	23,934	6
6	20,845	5	13,092	3

7	20,686	5	18,277	5
8	79	0	78	0
9	30	0	30	0
10	45	0	42	0
11	18	0	14	0
12	5	0	4	0
13	2	0	1	0
14	66	0	49	0
Total	390,748	100	400,011	100

Note: No data available for *OAAE*'s distributors in 2015 and 2016. Hence, 2014 data were used for the allocation of self-employed workers to insurance classes in 2015 and 2016.

Table A3.9 Distribution of *OFA* contributors by insurance class (2009)

2009		
Insurance class	No. of contributors	%
1	567,407	81.6
2	26,689	3.8
3	28,781	4.1
4	17,849	2.6
5	12,304	1.8
6	3,218	0.5
7	39,190	5.6
Total <i>OFA</i>	695,438	100.0

Note: No data available for *OFA*'s 2013-2016 distributions. Hence, 2009 data were used for the farmers' allocation to insurance classes in 2013-2016.