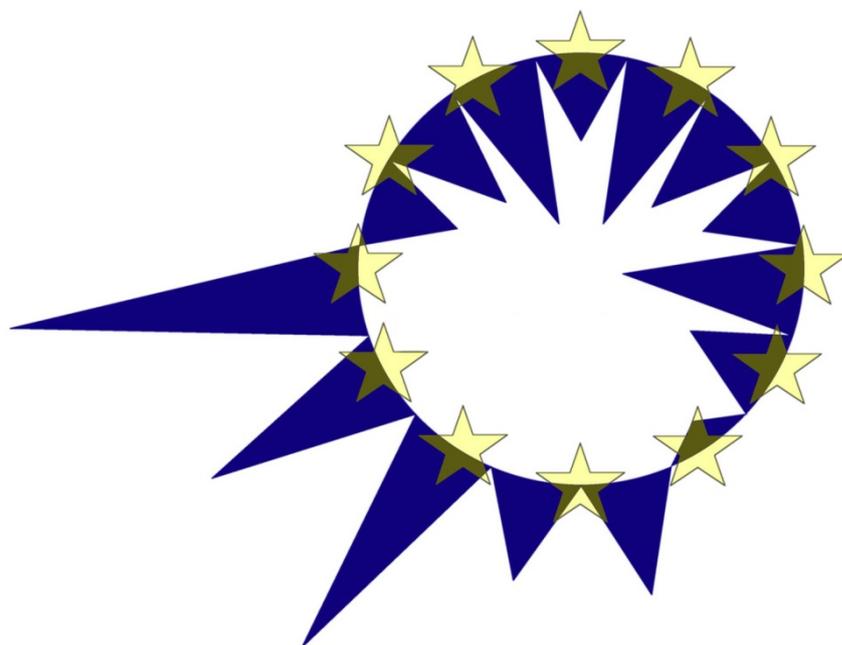


# **EUROMOD**

## **COUNTRY REPORT**



# **CYPRUS**

## **(CY)**

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**29/07/2013**



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 27 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 Cyprus. 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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This report accompanies the release of EUROMOD G1.0. There may be minor differences between the results presented here and those obtained with G1.0 due to further improvements since the report was prepared.

For more information, see: <http://www.iser.essex.ac.uk/research/euromod>

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

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

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

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

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

The information contained in this publication does not necessarily reflect the position or opinion of the European Commission.



## CONTENTS

<b>1.</b>	<b>BASIC INFORMATION</b>	<b>5</b>
1.1	<b>Basic figures</b>	<b>5</b>
1.2	<b>The tax-benefit system</b>	<b>5</b>
1.2.1	Basic information about the tax-benefit system	6
1.3	<b>Social Benefits</b>	<b>7</b>
1.4	<b>Social contributions</b>	<b>11</b>
1.5	<b>Taxes</b>	<b>13</b>
<b>2.</b>	<b>SIMULATION OF TAXES AND BENEFITS IN EUROMOD</b>	<b>14</b>
2.1	<b>Scope of simulation</b>	<b>14</b>
2.2	<b>Order of simulation and interdependencies</b>	<b>17</b>
2.3	<b>Social benefits</b>	<b>19</b>
2.3.1	Public assistance benefit ( <i>bsa_s</i> )	19
2.3.2	Unemployment benefit ( <i>bunct_s</i> )	22
2.3.3	Child benefit ( <i>bch_s</i> )	24
2.3.4	Single parent benefit ( <i>bsalp_s</i> )	27
2.3.5	Students grant ( <i>bedet_s</i> )	28
2.3.6	Birth grant ( <i>bchba_cy</i> )	30
2.4	<b>Social contributions</b>	<b>31</b>
2.4.1	Employee social contributions	31
2.4.2	Employer social contributions	32
2.4.3	Self-employed social contributions	35
2.4.4	Government social contributions	36
2.5	<b>Personal income tax</b>	<b>36</b>
2.5.1	Tax unit	36
2.5.2	Exemptions	37
2.5.3	Tax allowances/deductions	37
2.5.4	Tax base	38
2.5.5	Tax schedule	38
2.5.6	Tax credits	39
2.6	<b>Special contribution for defence</b>	<b>39</b>
2.7	<b>Special contribution of public employees</b>	<b>40</b>
2.8	<b>Special contribution of private employees, self-employed and pensioners who were former private employees</b>	<b>40</b>
2.8.1	Special contribution schedule	41
2.9	<b>Contribution of public employees to Government Employees Pension Plan</b>	<b>41</b>
2.10	<b>Contributions of public employees to the Widows and Orphans Government Fund</b>	<b>42</b>
<b>3.</b>	<b>DATA</b>	<b>42</b>



<b>3.1</b>	<b>General description</b>	<b>42</b>
<b>3.2</b>	<b>Sample quality and weights</b>	<b>43</b>
3.2.1	Non-response	43
3.2.2	Weights	43
3.2.3	Item non-response and under-reporting	43
<b>3.3</b>	<b>Data adjustment</b>	<b>43</b>
<b>3.4</b>	<b>Imputations and assumptions</b>	<b>43</b>
3.4.1	Time period	46
3.4.2	Gross incomes	46
<b>3.5</b>	<b>Updating</b>	<b>46</b>
<b>4.</b>	<b>VALIDATION</b>	<b>48</b>
<b>4.1</b>	<b>Aggregate Validation</b>	<b>48</b>
4.1.1	Non simulated incomes	48
4.1.2	Simulated tax and benefits	54
<b>4.2</b>	<b>Income distribution</b>	<b>59</b>
4.2.1	Poverty	60
4.2.2	Income inequality	63
<b>4.3</b>	<b>Summary of “Health warnings”</b>	<b>66</b>
<b>5.</b>	<b>REFERENCES</b>	<b>67</b>
<b>6.</b>	<b>APPENDIX</b>	<b>68</b>



## 1. BASIC INFORMATION

### 1.1 Basic figures

Table 1. Basic figures

	Pop. (m.)	pop. ≤ 15 (%)	pop. ≥ 65 (%)	Life expect. (years)	Fertility rate	Unemp rate	GDP per head (PPS) <sup>1</sup>
2007	778.7	17.9	12.3	77.2/81.5	1.39	3.9	94
2008	789.3	17.4	12.5	77.9/82.2	1.46	3.7	99
2009	796.9	17.1	12.7	78.0/82.8	1.51	5.4	100
2010	819.1 <sup>b</sup>	16.9	13.1	78.4/83.1	1.44	6.3	97
2011	839.8	16.5	12.8	78.6/82.3	1.35 <sup>b</sup>	7.9	94
2012	862.0	n/a	n/a	n/a	n/a	11.9	91

Source: Eurostat Online Database (Unemployment LFS-adjusted series, [une\_rt\_a], GDP – main components, [t\_nama\_gdp]), Cyprus Statistical Service, <sup>b</sup> break in series, <sup>1</sup> index (EU-27=100).

### 1.2 The tax-benefit system

Table 2. Tax-benefit system and government budget

	Total general gov. revenue % of GDP	Total tax receipts <sup>[1]</sup> % of GDP	Total general gov. expenditure % of GDP	Social protection benefits % of GDP
2007	44.8	40.1	41.3	18.2
2008	43.1	38.6	42.1	19.5
2009	40.1	35.3	46.2	21.2
2010	40.9	35.7	46.2	21.7
2011	39.7	n/a	46.0	n/a
2012	40.0	n/a	46.3	n/a

Notes: [1] Total receipts from taxes and social contributions (including imputed social contributions) after deduction of amounts assessed but unlikely to be collected,

Sources: Eurostat online database, annual government financial statistics – [t\_gov\_a], social protection expenditure – [spr\_exp\_sum]

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

	Sickness/ health care	Disability	Old age	Survivors	Family/ children	Unemployment	Housing	Social exclusion
2007	25.8	4.0	40.0	6.3	10.8	5.9	2.7	4.7
2008	25.2	3.7	40.6	6.1	10.8	4.8	3.5	5.2
2009	24.6	3.7	39.3	6.0	11.4	4.5	4.5	6.1
2010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2011	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2012	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: Eurostat Online Database, social protection expenditure – [spr\_expend].



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

	Personal income tax	Corporate income tax	Social security contributions		Taxes on goods and services
			Employees	Employers	
2007	15.5	16.9	5.2	12.8	46.8
2008	13.0	18.4	5.5	13.7	46.3
2009	11.2	18.4	6.8	16.7	43.6
2010	11.6	17.4	6.9	17.0	43.8
2011	11.9	19.4	6.8	16.8	41.9
2012	n/a	n/a	n/a	n/a	n/a

Source: Taxation Trends in the EU, 2013 Addition, Annex A.

### 1.2.1 Basic information about the tax-benefit system

- The Cyprus tax-benefit system is a unified national system.
- The fiscal year starts on the 1<sup>st</sup> of January and ends on the 31<sup>st</sup> of December.
- The mandatory retirement ages for public servants are: 63 for the public administration, 60 for teachers, 61 for police officers, and between 52 and 60 for military officers. Pensionable age for the private sector is 65 but under certain conditions it may be lowered at 63.
- Minimum school leaving age is at 15.
- There is no universal definition of dependent children. However in most cases children are considered to be dependent if they are under the age of 18 years or aged 18-25 years but servicing his military service or aged between 18-23 years but receiving full-time education or aged between 23-25 years but receiving full time education (only males who have served in the National Guard) or regardless of age if they are permanently deprived of their subsistence capability. In 2011 the Law made narrowed the definition.
- The Law provides for lone parents who are defined as the unmarried father/mother, widowed, separated or divorced from his/her wife/husband.
- The income tax is calculated on an individual basis, with the spouses being assessed independently.
- Taxable income includes employment income, self-employed income, pensions, rents etc. Several allowances and deductions are taken into account in order to derive total taxable income.
- Personal income taxation is progressive, while corporate profits are taxed at a flat rate. Different rules and tax rates apply to gains in regard to real estate property.
- Minimum wage legislation applies only to eight occupation categories: sales staff, clerical workers, auxiliary healthcare staff, auxiliary staff in schools, security guards and caretakers.
- Insurable earnings are divided in basic and supplementary parts. In 2007 the lower band included yearly earnings up to €7,345.<sup>1</sup> (basic insured earnings); earnings above the basic amount (up to a maximum amount) are included in the upper band. The distinction is relevant for the provision of contributory benefits<sup>2</sup> which usually consist of a basic part and a supplementary. Basic part depends on basic insured earnings (but increases with the number of dependants) and

<sup>1</sup> Annual upper limit of basic insured earnings: €7668 (2008); €8012 (2009); €8435 (2010);

<sup>2</sup> See sections 1.3 and 2.3 for more information.



complementary part is calculated on the basis of the insured earnings which are above the basic threshold.

### 1.3 Social Benefits

**Public assistance benefit (δημόσιο βοήθημα):** Social assistance in Cyprus is a means-tested benefit targeted to families with income that is not enough to cover their basic and special needs. Basic needs refer to nutrition, clothing and footwear, water supply, electricity and sanitary living. Special needs refer to rent allowances, medically prescribed diet allowances, home-care, day-care, house equipment, house repairs, allowances for mortgage interest deriving from a house loan, transportation for work or treatment and other specific needs. The Social Welfare Services calculate the amount needed for covering the needs of the recipient family as well as its current income. The difference is paid to the family in the form of a cash benefit.

**Child Benefit (επίδομα τέκνου):** Child benefit is a non-contributory benefit paid to all families with children that reside permanently in Cyprus. It consists of a universal basic part and a supplementary means-tested part. The basic part is paid for each child that lives under the same household, while the supplementary part is payable only to families with annual gross income below a certain threshold which is set by the Law. The benefit rules were reformed in 2011. See section 2.3.3 for more information.

**Students Grant (φοιτητική χορηγία):** Until 2011, it was a universal cash benefit to all students of public and private higher education alike. It consists of a basic and a supplementary party. The basic part is a flat amount and the supplementary party depends on criteria that are discussed in relevant section (2.3.4). After 2011, income criteria were introduced.

**Unemployment benefit (ανεργιακό επίδομα):** Unemployment benefit is a contributory benefit payable to unemployed persons. The benefit consists of a basic part and a supplementary amount. See section 2.3.2 for more information.

**Maternity Benefit (επίδομα μητρότητας):** Maternity benefit is a contributory benefit given to women giving birth (or adopting a child who has not reached the age of 12). The insured mother should be on maternity leave and not receiving her whole salary from her employer during that period.

**Mother Allowance (επίδομα μάνας):** Mother allowance is paid to mothers of four or more children after their youngest child become adult. Children are the legal children who are above 18 years old, and the unmarried children who are not able to support themselves independently of their age. This allowance is not taxable.

**Transportation for disabled benefit (επίδομα διακίνησης αναπήρων):** The benefit is targeted to persons with disabilities who work or study in Cyprus and are permanently disabled. Several forms of disability are covered (paraplegic, tetraplegic, amputation or deformation or weakness of the lower ends in a degree larger than 39% , reduced visual acuity of both eyes). The benefit is not provided to persons that receive old-age pension.

**Missing person allowance (επίδομα αγνοουμένου):** Eligible for missing person allowance are: a) the wife of a missing person<sup>3</sup> who during the year of disappearance satisfied the requirements for old-age pension as long as she was cohabitating with the missing person or was exclusively or mainly supported by him, b) the child whom both parents are missing or one of them is missing and the other died and c) the child of a missing person when the allowance is not given based on 1) and 2) above as long as the missing person, during the year of disappearance, satisfied the contribution requirements.

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<sup>3</sup> Missing person is the person that disappeared during or after the coup of the 15<sup>th</sup> July 1974, due to the circumstances of the 15<sup>th</sup> July 1974 or due to the 20<sup>th</sup> July 1974 Turkish invasion and for which the Government of the Republic of Cyprus had no positive information that he is alive.



**Military Service Grant** (*χορήγηση εθνικής φρονιάς*): Eligible for the military service grant is every soldier and officer cadet during his military service. The military service duration in 2007 was 25 months. Under certain circumstances the duration of military service is reduced.

**Special Grant to blind persons** (*ειδική χορηγία σε τυφλούς*): The grant is provided to blind persons. If the blind person is below 18 years old, then the grant is payable to his/her family. If not, then the grant is paid to the blind person. The grant is not taxable.

**Sickness Benefit** (*επίδομα ασθενείας*): Eligible for the sickness benefit are insured persons between 16 and 63 years old, irrespective of the category of insurance. The requirements for the payment of sickness benefit are: 1) The insured person cannot not work due to sickness and does not take the whole salary from his/her employer during that period, 2) To have passed at least 26 weeks from the day of his/her insurance up to the date that the incapacity for labour begun and during this period the total amount of insured earnings has to be at least equal to 26 times the weekly amount of the basic insured earnings; and 3) To have paid or been credited with contributions during the previous contributions.

**Employment accidents Benefits** (*παροχές εργατικών ατυχημάτων*): As employment accident is considered to be every accident that happens to an employee in the workplace during work time and its causes are job-related. Employment accident is considered also to be any accident that occurs when the employee is going to his/her labour or returns from it.

**Physical injury benefit** (*επίδομα σωματικής βλάβης*): Eligible for physical injury benefit is every employee, independently of age. The requirements for the payment are: a) Not to be able to work due to employment accident or employment disease; and b) Not receiving the whole salary from the employer for the period that he/she is not working. No contributions conditions are required.

**Disability Pension** (*σύνταξη αναπηρίας*): Disability pension is paid to employees with disability caused by employment accidents or diseases and suffer from degree of disability 20% or more. As in the case of physical injury benefit, there are not any contribution conditions.

**Disability Benefit** (*επίδομα αναπηρίας*): Disability benefit is paid to employees with disability degree between 10% and 19% caused by employment accident or employment disease.

**Widow/widower Pension** (*σύνταξη χηρείας*): Widow Pension is paid to the widow of an employee who died from employment accident or employment disease. The requirements to receive widow pension is that the applicant must have lived with her husband until the day of his death or supported by him. In the case of a widower, he must be permanently incapable of self-supporting and prove that he is supported by his wife.

**Orphan Benefit** (*επίδομα ορφάνιας*): Orphan benefit is paid to every underage child<sup>4</sup> that: 1) Both parents died and at least one died from employment accident; 2) The parent who supported the child (if the parents were not cohabitating) died from employment accident; 3) One parent died from employment accident and the other is not allowed to receive widow/widower pension. There are no requirements for contributions as long as one of the parents died from employment accident or employment disease. The benefit is paid until the child satisfies age requirements unless the beneficiary is permanently incapable of working.

**Parent Pension** (*σύνταξη πατρός*): Parent pension is payable to the parents of an employee who died from employment accident or employment disease. The requirements for the payment of a parent pension are that the lost person did not have wife or children and that his/her parent was financially supported by him/her. There are no requirements for contributions for the payment of parent pension.

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<sup>4</sup> Underage child is a child under 15 years old; unmarried son age between 15 and 25 who is under full time education or on military service; unmarried daughter age 15 to 23 who is under full time education and unmarried person independently of age who is permanently incapable for self-supporting.



**Birth Grant (βοήθημα τοκετού):** The birth grant is paid to the mother of a newborn child if she or her husband is insured. The contribution requirements are similar to other contributory benefits. See section 2.3.5 for more information.

**Wedding Grant (βοήθημα γάμου):** The wedding grant is paid to both spouses from half to each one independently of the category of insurance. The usual contribution conditions should be satisfied.

**Funeral Grant (βοήθημα κηδείας):** The funeral grant is paid to the widow or widower of the dead person. If there is no widow or widower then the grant is paid to the person who paid the funeral expenses. The usual contribution conditions should be satisfied. When the insured dies from an employment related accident or disease then the funeral grant is paid irrespective if the contribution conditions hold or not.

**Widow/children pension for public employees (σύνταξη χηρείας/τέκνον για δημόσιους υπάλληλους):** Widow Pension is paid to the spouse from the day of spouse death for lifetime. Widow pension is not paid if the widowed person gets married again after the spouse dead and the pension ends on the day of marriage. Children of a deceased public employee are allowed to receive children pension with the exception of children been born 10 months (or being adopted) after the employee retired from work.

**Old age pension (σύνταξη γήρατος):** Eligible for old age pension are all insured persons if: 1) The insured has reached the pensionable age (65 year of age); 2) at least three years have passed from the day of insurance and the day that the person completed the pensionable age. During this period the applicant should have paid contributions on earnings that on their total are not less than 156 times the monthly amount of basic insurable earnings; and 3) To have weekly mean of paid or credited insured earnings equal to at least 1/4 of the weekly amount of basic insurable earnings.

**Social pension (κοινωνική σύνταξη):** Eligible for social pension are the persons that: 1) Completed the age of 65; 2) After the completion of this age satisfy the requirements for residence in Cyprus; and 3) Are not allowed to receive pension from any other source or any other similar payment equal or higher than the monthly amount of the social pension. The requirements for residence are: 1) Permanent stay in Cyprus during a period of at least 20 years since the day the applicant completed the age of 40 years old; or 2) Permanent stay in Cyprus during a period of 35 years since the day the applicant completed the age of 18 years old.

**Incapacity pension (σύνταξη ανικανότητας):** Incapacity pension is received by insured employees, who are assessed to be incapable for work. In particular, they should not be able to earn from their labor 1/3 of the amount that usually a healthy employee of the same profession/education/region earns (or above half of this amount if the person's age is between 60 and 63).

**Minimum wage (κατώτατος μισθός):** The minimum wage in Cyprus is set at 835 euro at hiring and 887 euro after six months of employment. Starting from 01/04/2012, minimum wage increased to 870 euro at hiring and 924 euro after six months of employment. But not all occupation categories are covered by the Law. Minimum wages are applied only to eight categories: sales staff, clerical workers, auxiliary healthcare staff, auxiliary staff in schools, security guards and caretakers.

- **Scope and scale**

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



Table 5. Social benefit: recipients

	2007	2008	2009	2010	2011
<b>Annual expenditure</b>					
contributory benefits recipients as % of total population					
Old-age pension	10.2	10.6	11.0	11.1	11.6
Widow pension	3.7	3.7	3.7	3.6	3.6
Invalidity pension	1.0	1.0	1.0	0.9	0.9
Disability pension	0.2	0.2	0.2	0.1	0.2
Orphan Allowance	0.2	0.2	0.2	0.2	0.1
Missing person's Allowance	0.0	0.0	0.0	0.0	0.0
Unemployment benefit	3.6	3.4	4.5	n/a	n/a
Sickness benefit	5.1	5.2	5.4	n/a	n/a
Maternity benefit	0.8	1.0	1.0	n/a	n/a
Physical injury benefit	0.3	0.3	0.3	n/a	n/a
Marriage grant	0.4	0.5	0.4	n/a	n/a
Birth grant	0.8	1.0	0.9	n/a	n/a
Funeral grant	0.6	0.6	0.6	n/a	n/a
Other old-age benefits	12.6	12.6	12.7	n/a	n/a
non-contributory benefits recipients as % of total population					
Child benefit	13.8	13.8	13.8	13.9	n/a
Subsidy for purchasing a house or flat	0.5	0.5	0.5	0.6	n/a
Student grant	4.5	4.5	4.5	4.6	n/a
Mother's allowance	2.6	2.6	2.6	2.6	n/a
Special grant to blind persons	0.3	0.3	0.3	0.4	n/a
Social pension	2.0	2.0	2.0	1.9	n/a
Fin. assist. for special needs of the disabled	0.0	0.0	0.0	0.0	n/a
Public assistance	3.6	4.2	4.7	5.4	n/a

Source: Social Insurance Services, Grants and Benefit Service and own calculations.



Table 6. Social benefit: expenditure

	2007	2008	2009	2010	2011
<b>Annual expenditure</b>					
contributory benefits and pensions as % of total expenditure					
Old-age pension	17.3	18.0	19.8	19.1	21.2
Widow pension	4.7	4.7	4.9	4.6	4.8
Invalidity pension	1.6	1.6	1.6	1.4	1.5
Disability pension	0.2	0.2	0.2	0.2	0.1
Orphan Allowance	0.1	0.1	0.1	0.1	0.1
Missing person's Allowance	0.0	0.0	0.0	0.0	0.0
Unemployment benefit	1.9	1.7	2.5	n/a	n/a
Sickness benefit	1.0	1.1	1.1	n/a	n/a
Maternity benefit	0.6	0.7	0.8	n/a	n/a
Physical injury benefit	0.0	0.0	0.0	n/a	n/a
Marriage grant	0.0	0.0	0.0	n/a	n/a
Birth grant	0.1	0.1	0.1	n/a	n/a
Funeral grant	0.0	0.0	0.0	n/a	n/a
Other old-age benefits	3.0	3.5	3.5	1.6	n/a
non-contributory benefits as % of total expenditure					
Child benefit	5.60	5.90	6.19	6.11	n/a
Subsidy for purchasing a house or flat	1.40	2.19	2.41	2.78	n/a
Student grant	2.59	3.41	3.27	3.40	n/a
Mother's allowance	0.38	0.60	0.67	0.68	n/a
Special grant to blind persons	0.30	0.35	0.39	0.40	n/a
Social pension	1.81	1.72	1.79	1.65	n/a
Fin. assist. for the sp. needs of the disabled	0.0	0.0	0.0	0.0	n/a
Public assistance	4.63	5.55	7.01	6.78	n/a

Source: Social Insurance Services, Grants and Benefit Service and own calculations.

#### 1.4 Social contributions

**Employee social contributions (ασφαλιστικές εισφορές εργαζομένων):** For employees the total contribution rate is 16.6%, where 6.3% is paid by the employer, 6.3% by the employee and the rest 4% by the state. When the employee is covered by a pension plan from the employer without any contribution from the part of the employee, then the social contribution paid by the employer is 9.4% and by the employee 3.2%. In cases of trainees, the employer has to pay both the contribution of the employer and the employee, that is, a total of 12.6%.

**Self-employed social contributions (ασφαλιστικές εισφορές αυτοεργοδοτούμενων):** The total contribution of self-employed is 15.6% of their insured earnings. From this percentage, 11.6% is paid by the self-employed and the rest 4% by the state. The insured earnings of self-employed, that is, the earnings for which their contributions are calculated, are based on their profession. For every professional category there is an obligatory minimum amount of insured earnings. The self-employed is allowed to pay contributions on a higher amount of insured earnings up to the maximum limit of social earnings. If the real income of a self-employed person is lower than the minimum amount of the corresponding professional category y then he/she can ask to pay contributions based on his/her real income.

**Optionally insured person social contributions (προαιρετικές ασφαλιστικές εισφορές):** The contribution rate of optionally insured persons is 13.5% from which 10% is paid by the optionally insured person and 3.5% by the state. The amount of insured earnings is chosen by the insured person but it cannot be higher than the weekly amount of insured earnings that he/she had during the previous year or the mean insured earnings he/she had during the three previous years.



**Employer social contributions (ασφαλιστικές εισφορές εργοδοτών):** Every employer has to pay contributions to the Funds (Social Insurance, Annual Holidays Fund, Redundancy Fund, Human Resource Development and Social Cohesion Fund) for each of his/her employees whose earnings are at least €1.71 per week or €6.83 per month. For trainees/apprentices the employer has to pay contributions to the Social Insurance Fund even if the employee has no earnings. The liability of the employer for paying contributions to the Social Insurance Fund ceases on the day the employee reaches the pensionable age, i.e. the age of 65. In case that the employee reaches the pensionable age and does not satisfy the contribution conditions for old-age pension, the employer is obliged to continue to pay contributions until the employee is entitled to old-age pension.

**Credited social contributions (πιστωμένες ασφαλιστικές εισφορές):** Besides the periods for which contributions are paid, every insured person is allowed to be credited by insured contributions: 1) For any period after the age of 16 for which he/she studies full time or is attending training courses; 2) For any period he/she receives sickness benefit, unemployment benefit, maternity benefit, physical injury benefit or incapacity pension from the Social Insurance Fund; 3) For any period of declared unemployment or sickness for which the person is not allowed to receive a benefit. In such case the credit period cannot exceed the six months and 4) For the period starting on the 1<sup>st</sup> day of the contributions year prior to the contribution year during which the person was insured and ends the last week before the week the person insured.

**Provident fund contributions (ασφαλιστικές εισφορές ταμείων πρόνοιας):** The legislation of provident fund covers all Provident Funds or Pension Schemes which: a) provide for cash benefits to employed persons in case of termination of employment, permanent incapacity for work, retirement or death, and b) are financed by periodical contributions of the employed persons or the employed persons and their employers. All Funds or schemes which have been established by virtue of a special Law are exempted from the provisions of the Law. The provident fund law does not specify the rate of contribution that should be paid to the Provident Fund. The percentage of contribution and whether the calculation will be based on the whole or part of the wage/salary are agreed upon by the employer and his employees.

- *Scope and scale*

Table 7. Social contributions: contributors (as proportion of population)

	2007	2008	2009	2010	2011
<b>Employees</b>	0.50	0.52	0.53	0.53	0.50
Private sector <sup>1</sup>	0.43	0.45	0.46	0.46	0.43
Public sector	0.07	0.07	0.07	0.07	0.07
Self-employed	0.04	0.04	0.04	0.04	0.03
Optional insured	0.00	0.00	0.00	0.00	0.01

Notes: <sup>1</sup>It includes employees of the semi-public sector

Source: Social Insurance Services

Table 8. Social contributions: (as % of total revenues)

	2007	2008	2009	2010
Private sector employees <sup>1</sup>	43.1	42.3	47.9	49.0
Public sector employees	14.7	13.9	15.9	15.9
Self-employed	4.5	3.9	4.2	4.0
Optionally insured	0.1	0.1	0.1	0.1
State contributions	19.9	19.3	21.6	21.9
Interests	16.0	19.0	8.4	7.1
Other revenues	1.7	1.6	1.9	2.0

Notes: <sup>1</sup>It includes employees of the semi-public sector



Source: Social Insurance Services

## 1.5 Taxes

**Personal Income Tax (φόρος εισοδήματος):** The personal income tax applies to all Cyprus tax residents for their income accrued or derived from all sources in Cyprus and abroad and to individuals who are not tax residents of Cyprus but have income accrued or derived from sources in Cyprus. Subject to personal taxation is income derived from employment, business activities, rents and all pension income except of widow's pensions. The social benefits provided in the form of a lump sum or for a short period of time (i.e. sickness benefit) are not included in the tax base. This is valid since 2003 and onwards due to the fact that the tax credits which were used to be in force have been replaced by the social benefits excluded from the tax base.

**Special Contributions for defence (ειδική εισφορά για την άμυνα):** Special contribution for defence is imposed on the interest, dividend and rental income of tax residents (individuals and legal entities). Dividends are taxed at 15% (17% after 01/09/2011), income from interest (at a rate of 10% which increased at 15% after 01/09/2011). But if total annual income (including income from interest) does not exceed the amount of €1,960 have the right of refunding the amount of the withhold contributions for defence on interest that exceeds the amount that corresponds to the 3%, interest paid or credited from Cypriot savings certificates, Cypriot development bonds and interest from provident fund on a rate of 3% and income from rents at a 3% of the gross rental income (but only 75% of the rental income is subject to the contribution).

**Real Property Tax (φόρος ακίνητης περιουσίας):** Any person who has real property located in the Republic is liable to pay tax on property. Immovable property tax is imposed on the market value of real property.

**Value Added Tax (φόρος προστιθέμενης αξίας):** Value added tax is imposed on the provision of goods and services in Cyprus, on the acquisition of goods from the European Union and on the importation of goods into Cyprus. In most cases, the VAT is 15%, but there are also reduced rates of VAT of 5% and 8% for several basic goods. VAT increased at 17% in 2011.

**Capital Gains Tax (φόρος κεφαλαιακών κερδών):** The capital gain, according to the Capital Gains Tax Law, is taxed at a rate of 20%. Individuals may claim several deductions from the applicable taxable gain (for example if the disposal relates to a private residence, if the disposal is made by a farmer or if it relates to agricultural land).

Taxes: revenues (in '000)

	2007	2008	2009	2010	2011	2012
<b>Annual revenue</b>						
<b>Income tax</b>						
Employees	407,833	450,012	496,787	524,052	573,047	562,145
Self-employed	60,845	62,929	61,660	59,098	55,000	81,353
Legal persons	748,046	821,732	735,101	675,438	762,677	723,349
Immovable property tax	12,512	11,743	10,768	14,123	12,314	23,453
Capital gains tax	467,127	302,350	74,469	86,811	68,563	54,426
Special contribution to defence	314,259	385,342	366,977	395,619	447,545	410,194
Stamp duty	70,345	64,649	42,644	50,082	41,661	35,978
Other taxes	8,993	7,146	8,799	6,386	7,835	7,298

Source: Inland Revenue Department

Note: Tax revenues refer to the revenues collected that particular year of reference.



## 2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

### 2.1 Scope of simulation

EUROMOD model simulates a considerable number of policy instruments. Still several policies remain unsimulated either because they are out of the scope of the model, or because they cannot be simulated meaningfully, due to lack of information. Most of the unsimulated instruments are included in the database as components of output variables. Yet, the user of the model cannot change the rules governing them. Tables 10 and 11 provide information about the treatment of each of the tax-benefit instruments that has been considered in the framework of our analysis. Where appropriate, we explain briefly why the instrument under consideration cannot be fully simulated.

Table 9. Simulation of benefits in EUROMOD

Benefit name	Output variable	Treatment in Euromod						Why not fully simulated?
		2007	2008	2009	2010	2011	2012	
Public assistance benefit	bsa_s	PS	PS	PS	PS	PS	PS	Amount is imperfectly simulated due to lack of info. on special needs.
Unemployment benefit: From SIF	bunct_s	PS	PS	PS	PS	PS	PS	Impossible to define the length of SIC in pr. year and avg. wage and the length of receiving unempl. benefit
Unemployment: other	bunot	I	I	I	I	I	I	No information to define elig.
Maternity benefit	bfamh	I	I	I	I	I	I	Paid SICs cannot be defined perfectly, no available inform.
Child benefit	bch_s	S	S	S	S	S	S	Relevant income may not be defined exactly
Mother allowance	bfamh	I	I	I	I	I	I	Eligibility cannot be defined.
Transportation for disable benefit	pdi	I	I	I	I	I	I	Eligibility cannot be defined.
Missing person allowance	bsa	I	I	I	I	I	I	Eligibility cannot be defined.
Military service grant	bml	I	I	I	I	I	I	Not enough information to define the exact amount of the grant.
Students grant	bedet_s	S	S	S	S	S	S	-
Special grant to blind persons	pdi	I	I	I	I	I	I	Eligibility cannot be defined.
Sickness benefit	bhl	I	I	I	I	I	I	Eligibility cannot be defined.
Physical injury benefit	bhl	I	I	I	I	I	I	Eligibility cannot be defined.
Disability pension	pdi	I	I	I	I	I	I	Eligibility cannot be defined.
Disability benefit	pdi	I	I	I	I	I	I	Eligibility cannot be defined.
Widow/widower pension	psuwd	I	I	I	I	I	I	Depends on the SICs of the deceased.
Orphan benefit	psuor	I	I	I	I	I	I	Eligibility cannot be defined.
Parent pension	psuot	I	I	I	I	I	I	Eligibility cannot



								be defined.
Birth grant	bchba_s	S	S	S	S	S	S	-
Wedding grant	bfamh	I	I	I	I	I	I	Eligibility cannot be defined.
Funeral grant	bfamh	I	I	I	I	I	I	Eligibility cannot be defined.
Benefits for public employees	poa	I	I	I	I	I	I	Eligibility cannot be defined.
Widow pension for public employees	psuwd	I	I	I	I	I	I	Eligibility cannot be defined.
Child pension for public employees	psuor	I	I	I	I	I	I	Eligibility cannot be defined.
Old age pension	poa	I	I	I	I	I	I	The amount of the pension depends on the SICs which are not known.
Social pension	poasp	I	I	I	I	I	I	Eligibility cannot be simulated
Incapacity pension	pdi	I	I	I	I	I	I	Eligibility cannot be defined.
Single parent benefit	bsalp_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.

Table 10. Simulation of taxes and social contributions in EUROMOD

Benefit name	Output variable	Year						Treatment in Euromod
		2007	2008	2009	2010	2011	2012	
Social Insurance Contributions								
Employee social insurance contributions	tscee_s	S	S	S	S	S	S	The social contributions of trainees were not simulated
Employer social insurance contributions	tscer_s	S	S	S	S	S	S	
Employer social insurance contributions: Annual Holidays Fund	tscer00_s	S	S	S	S	S	S	Contributors were identified randomly among non civil servants.
Employer social insurance contributions: Redundancy Fund	tscer01_s	S	S	S	S	S	S	
Employer social insurance contributions: Human Resources Fund	tscer02_s	S	S	S	S	S	S	
Employer social insurance contributions: Social Insurance Fund	tscer03_s	S	S	S	S	S	S	



Employer social insurance contributions: Social Cohesion	tscer03_s	S	S	S	S	S	S	
Self-employed social insurance contributions	tscse_s	S	S	S	S	S	S	
Optionally insured person social insurance contributions	-	E	E	E	E	E	E	Non-sufficient information available from data
Credited social contributions	-	E	E	E	E	E	E	Non-sufficient information available from data
Provident fund contributions	-	E	E	E	E	E	E	Non-sufficient information available from data
Special contr. (public employees)	txcpb_s	-	-	-	-	-	S	
Special contr. (priv. employees)	txceeps_s	-	-	-	-	-	S	
Special contr. (priv. employers)	txcerps_s	-	-	-	-	-	S	
Special contr. (self-employed)	txcseps_s	-	-	-	-	-	S	
Contribution for public pensions	tpipb_s	-	-	-	-	-	S	
Income taxes								
Personal Income Tax	tin_s	S	S	S	S	S	S	
Corporate income tax		E	E	E	E	E	E	Out of scope of the model
Income tax on non-residents	-	E	E	E	E	E	E	No information available on non-residents
Property tax	-	E	E	E	E	E	E	No information about the value of property
Special contribution for defence	txc_s	PS	PS	PS	PS	PS	PS	No information on legal entities
Indirect taxes								
Value Added Tax	-	E	E	E	E	E	E	Out of the scope of the model
Excise duties	-	E	E	E	E	E	E	Out of the scope of the model
Other indirect taxes	-	E	E	E	E	E	E	Out of the scope of the model
Indirect taxes	-	E	E	E	E	E	E	Out of the scope of the model

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.



Table 11. Simulated policies

Section	Description	Year					
		2007	2008	2009	2010	2011	2012
2.3.1	Public assistance benefit	X	X	X	X	X	X
2.3.2	Unemployment benefit	X	X	X	X	X	X
2.3.3	Child benefit	X	X	X	X	X	X
2.3.4	Single parent benefit	-	-	-	-	-	X
2.3.5	Students grant	X	X	X	X	X	X
2.3.6	Birth grant	X	X	X	X	X	X
2.4.1	Employee social insurance contributions	X	X	X	X	X	X
2.4.2	Employer social insurance contributions	X	X	X	X	X	X
2.5	Personal Income Tax	X	X	X	X	X	X
2.6	Special contribution for defence	X	X	X	X	X	X
2.7	Special contribution of public employees	-	-	-	-	-	X
2.8	Special contribution of private employees, self-employed and pensioners	-	-	-	-	-	X
2.9	Contribution of public employees to Government employees Pension Plan	-	-	-	-	-	X
2.10	Contribution of public employees to Widows and Orphans Fund	-	-	-	-	-	X

## 2.2 Order of simulation and interdependencies

The following tables show the order in which instruments of the Cypriot tax-benefit system are simulated. Employee social insurance contributions are simulated first, followed by employer social insurance contributions. Employee's SIC finance the Social Insurance Fund, while employer's SIC finance Annual Holidays Fund, Human Resources Fund, Social Cohesion Fund, as well as the Social Insurance Fund. Income taxes and the special contribution to defence are deducted from income. Next in the simulation order, are the student grant, the birth grant, the public assistance and, finally and the child benefit.

- *Order of simulation in [2007]*

Table 12. EUROMOD Spine: order of simulation, [2007]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed social insurance contributions	tscse_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch	Child benefit	bch_s
bsa	Public Assistance	bsa_s



Note: <sup>a</sup> This policy is switched off in the baseline.

- *Order of simulation in [2008]*

Table 13. EUROMOD Spine: order of simulation, [2008]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed social insurance contributions	tscse_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch	Child benefit	bch_s
bsa	Public Assistance	bsa_s

Note: <sup>a</sup> This policy is switched off in the baseline.

- *Order of simulation in [2009]*

Table 14. EUROMOD Spine: order of simulation, [2009]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed social insurance contributions	tscse_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch	Child benefit	bch_s
bsa	Public Assistance	bsa_s

Note: <sup>a</sup> This policy is switched off in the baseline.

- *Order of simulation in [2010]*

Table 15. EUROMOD Spine: order of simulation, [2010]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed social insurance contributions	tscse_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch_cy	Child benefit	bch_s
bsa_cy	Public Assistance	bsa_s



Note: <sup>a</sup> This policy is switched off in the baseline.

- **Order of simulation in [2011]**

Table 16. EUROMOD Spine: order of simulation, [2011]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed social insurance contributions	tscse_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch_cy	Child benefit	bch_s
bsa_cy	Public Assistance	bsa_s

Note: <sup>a</sup> This policy is switched off in the baseline.

- **Order of simulation in [2012]**

Table 17. EUROMOD Spine: order of simulation, [2012]

Policy	Description	Main output
tscee_cy	Employee social insurance contributions	tscee_s
tscer_cy	Employer social insurance contributions	tscer_s
tscse_cy	Self-employed SICs	tscse_s
txcbp_cy	Special contribution of public employees	txcbp_s
txcps_cy	Special contribution of private sector	txcps_s
txcpe_cy	Special contribution on pensions	txcpe_s
tpipb_cy	Contribution to government employees plan	tpipb_s
tin_cy	Income Tax	tin_s
txc_cy	Special contribution to defense	txc_s
bedet_cy	Student grant	bedet_s
bchba_cy	Birth grant	bchba_s
bunct_cy	Unemployment benefit (from SIF) <sup>a</sup>	bunct_s
bch_cy	child benefit	bch_s
bsa_cy	public assistance	bsa_s
bsalp_cy	single parent benefit	bsalp_s

Note: <sup>a</sup> This policy is switched off in the baseline.

## 2.3 Social benefits

### 2.3.1 Public assistance benefit (*bsa\_s*)

- **Definitions**

The public assistance benefit is a non-contributory benefit designed to compensate any person legally residing in Cyprus, whose income is not enough to cover his/her basic or special needs and satisfies the conditions set by the Public Assistance Law,

- **Eligibility conditions**

Recipients should be legal residents of Cyprus, as well as belonging to the following special categories of third country nationals: asylum seekers, recognized refugees, immigrants granted



protection for humanitarian reasons and victims of sexual harassment or human trafficking. The recipient should satisfy the following requirements:

- 1) He or she should be either unemployed, work part-time or economically inactive. In case of a couple, both spouses should be unemployed, work part-time or economically inactive.
- 2) The family income should be below a minimum threshold set annually by the law.

Before 31/05/2012, the single parents and the disabled were exempted from the above employability condition, namely they could work full time and still be eligible for the benefit. Starting from 01/06/2012, and according to the 2012 reform of the Public Assistance Law, single parents are not anymore eligible for the public assistance since a new benefit has been introduced, that specifically targets mono-parental families.

If the public assistance recipient or his/her spouse/cohabitant becomes employed after a period of at least six months in unemployment, then the recipient will continue to receive public assistance benefit for the next year as follows: full amount for the first 4 months after the day of employment; 2/3 of the amount for the next 4 months and the 1/3 for the last 4 months.

Under some conditions (which cannot be simulated) related with the health/disability conditions or the schooling needs of the children, recipients do not lose their right for public assistance benefit even if they do not satisfy some of the eligibility conditions.

The benefit is not paid: for every period that the applicant is employed full-time, except if the person is disabled or single parent (do not apply for single parents after the 2012 reform i.e. after 01/06/2012) or gets special exemption from the Director of the Service. Also the benefit is not paid to voluntary unemployed or underemployed persons or to those that refuse to attend training programs or take gainful employment. Also, the benefit can be paid in kind in cases where it is suspected that cash would not be spent to satisfy basic needs.

Finally, the Public Assistance Law defines as dependents: a) the unmarried children aged under 18, b) the unmarried children in military service and c) the unmarried children enrolled in higher education (only for the normal duration of studies).

**Notes on Euromod Implementation:** due to difficulties in checking all above requirements, this benefit is attributed; (1) to families if both of the spouses are either non-employed or work part-time, (2) single-parents even if they work full-time (until 2011), (3) single person households if the recipient is non-employed or work part-time. Also, the gradual reduction of the public assistance after the recipient becomes employed is not simulated in the model.

- *Income test*

In order to compute the family income for the purposes of the means-testing, the Social Welfare Services do not take into account the following income components:

1. Net monthly income up to 85 euro when it comes from employment of the recipient or up to 513 euro when it comes from employment and the recipient or his/her spouse is a disable person or up to 170 euro when it comes from employment and the recipient is above the age of 63 or mentally ill;
2. Income of dependent children (this exception does not apply after the 2012 reform i.e. after 01/06/2012);
3. The wedding benefit;



4. Benefits received according to the Suffering Persons' Relief Law<sup>5</sup>;
5. Any contribution of the children of the recipient that stay abroad or contribution of a charity institution;
6. 50% of the net income from employment of the recipient or up to 256 euro, whichever is the larger, if the recipient is a single parent and has dependent children (this exception does not apply after the 2012 reform i.e. after 01/06/2012);
7. The severe mobility disability benefit;
8. The transport benefit offered to disable persons;
9. The special honorary grant paid to incapable persons of the spirit and arts;
10. The special grant paid to blind persons;
11. Any compensation paid due to harm or damage from an accident, excluding the interests from these compensations; and
12. The child benefit (this exception does not apply after the 2012 reform i.e. after 01/06/2012);

**Notes on Euromod implementation:** The income list for the means-testing of the public assistance benefit includes; primary income net of taxes and social insurance contributions, alimonies, military grant, unemployment benefit, widows, orphans and other survivor benefits, student grant, education related benefits, mother allowance (plus other family-related benefits) and old-age pensions. Note also that the model includes child benefit (in 2012) and student grant in the income list despite that social assistance, in principle, is included in the means-testing of these benefits, too. This is a plausible treatment as the attribution rules of the benefits refer to different income periods: social assistance refers to current income, while child benefit asks for the income acquired three years before (note that this changed in 2012, see section 2.3.3 for further details). Finally, student grant rules ask for the income acquired the year before. Since social assistance is designed as an instrument of the last resort (after all other components of the social protection system have contributed to family income), this treatment appears to be realistic.

- *Benefit amount*

The amount of the benefit is equal to the positive difference between the minimum threshold set by the law and the family income.

Monthly minimum threshold

Year	Head	Dependent >14	Dependent <14
July 1 <sup>st</sup> 2007 - June 30 <sup>th</sup> 2008	€79.31	€89.66	€13.79
July 1 <sup>st</sup> 2008 - June 30 <sup>th</sup> 2009	€125	€12.5	€27.5
July 1 <sup>st</sup> 2009 - June 30 <sup>th</sup> 2010	€152	€26	€35.6

<sup>5</sup> Eligible for these benefits are persons considered as “suffering” by the Suffering Persons' Relief Law and have obtained the relevant certificate issued by the Committee for the Relief of Suffering Persons (spouses or offspring of persons that fall during the anti-Colonial struggle or the 1974 Turkish invasion, soldiers that were severely injured during their military service and other special cases).



July 1 <sup>st</sup> 2010 - June 30 <sup>th</sup> 2011	€452	€226	€135.6
July 1 <sup>st</sup> 2011 - June 30 <sup>th</sup> 2012	€452	€226	€135.6
July 1 <sup>st</sup> 2012 - June 30 <sup>th</sup> 2013	€452	€226	€135.6

The amount of public assistance benefit cannot be less than €5.54 euro per month. If it is estimated less than €5.54 then €5.54 is paid to the recipient.

Single parents who receive public assistance benefit for the period 01/01/2012-31/05/2012 are not eligible for the newly introduced single parent benefit given from the Ministry of Finance.

### 2.3.2 Unemployment benefit (*bunct\_s*)

- **Definitions**

The unemployment benefit is payable to insured employees or voluntary contributors that work abroad in the services of a Cypriot employer. Insured persons should be between 16 and 63 years old in order to be eligible for the benefit. Yet, the age limit of 63 can be expanded to 65 years old, in case that the applicant is not eligible for old-age pension. Any insured person may apply for unemployment benefit for the days he/she is unemployed, able to work and willing to accept employment. But he/she is not considered to be unemployed:

1. When he/she is incapable for work due to sickness;
2. On Sundays;
3. When he/she is on leave
4. The days during which he/she works in any occupation that he/she practiced in addition to his/her usual work and from which he/she receives salary at least equal to 1/12 of the amount of basic insurable earnings.
5. On any day for which the employer pays for employee's contributions.

Dependents of the insured person are considered: the spouse, the children aged below 15, unmarried daughter aged 15-23 if she is student, unmarried son age 15-25 if he is student or soldier, unmarried child if he/she is permanently incapable of self-support independently of his/her age, the disabled spouse if he/she is supported by the spouse, the father/mother of the insured person if he/she is incapable of employment and financially supported by him or her and the underage younger brother or sister if he/she is financially supported by the insured person.

- **Eligibility conditions**

The requirements needed for the payment of unemployment benefit are:

1. At least 26 weeks must have passed between the day when the person became insured and the day on which he or she became unemployed. During that period, the total amount of insured earnings has to be at least equal to 26 times the weekly amount of the basic insured earnings.



2. The applicant has paid<sup>6</sup> or been credited<sup>7</sup> with contributions in previous contributions year<sup>8</sup>. During this period insured earnings should not be lower than 20 times the weekly amount of basic insurable earnings.

In the requirements mentioned above the contributions of the self employed are not taken into consideration while the contributions of optionally insured persons are taken into consideration only if they are for work abroad with a Cypriot employer.

The benefit is payable for 156 working days in each period of interruption of employment.

Unemployed person who has exhausted his right to unemployment benefit can be allowed to it again if he/she works and pay contributions on earnings that on their total are not less than 26 times the weekly amount of basic insured earnings and at least 26 weeks have passed since the last day that the person received the benefit.

In the case where the unemployed person is above 60 years old and is not allowed to pension from any professional plan, he/she gains the right to unemployment benefit if he/she worked and has paid contributions on earnings that on their total are not less than 26 times the weekly amount of basic insured earnings and at least 13 weeks have passed since the last day that the person received the unemployment benefit.

The applicant loses entitlement of the unemployment benefit for up to six weeks if he/she:

- a. Loses his/her employment by his/her own blame or abandons it without excuse;
- b. Refuses or omits to submit application for proper employment or to accept proper employment offer to him/her;
- c. Fails or neglects to be employed in a suitable job;
- d. Refuse or omits, without excuse, to attend professional training lessons.

- ***Income test***

- ***Benefit amount***

The amount of the unemployment benefit is calculated on the basis of the weekly mean of paid and credited insured earnings of the insured person during the previous contribution year. The unemployment benefit includes a basic and a supplementary benefit. The weekly amount of the basic benefit is equal to 60% of the weekly mean of the basic insurable earnings of the beneficiary during the previous contribution year and increases by 1/3 for the dependent spouse and by 1/6 for every child or other dependant<sup>9</sup> (the maximum number of dependent children/ other dependants is 2)<sup>10</sup>. The

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<sup>6</sup> The paid insured earnings are the earnings for which contributions had been paid.

<sup>7</sup> Every insured person is allowed to be credited with insured earnings for every period of full time education after the age of 16, for the period under military service and for the period for which he/she is receiving sickness benefit, unemployment benefit, maternity benefit, physical injury benefit or incapability pension from the Social Insurance Fund and for the period that he/she is absent from his/her employment with parental leave or leave due to force majeure.

<sup>8</sup> For the first semester of every year, the previous contributions year is the penultimate calendar year and for the second semester is the last calendar year, i.e. for the first semester of 2006 the previous contributions year is 2004 while for the second semester of 2006 is the 2005.

<sup>9</sup> Other dependants refer to the cases of a) recipient's younger brothers, b) recipient's parent(s) if he/she or they are incapable of work. In both cases a) and b) the dependants should prove that they are financially supported by the recipient.

<sup>10</sup> The usual definition of dependent child applies.



increase for the dependent spouse is paid only when the earnings of the spouse from his/her work or the level of the benefit that the dependent spouse is getting for the Social Insurance Fund does not exceed the amount that corresponds to the increase of the benefit for dependants. In case that both spouses are allowed to receive unemployment benefits, the increase for dependents is paid only to the spouse that is allowed the highest increase. The weekly amount of the complementary benefit is equal to 50% of the weekly mean of insurable earnings of the beneficiary that exceeds the basic insured earnings, but the complementary benefit should not be higher than the weekly amount of basic insured earnings.

In case that the insured person is entitled not only to unemployment benefit but also to other provisions of the Social Insurance Fund, then only the benefit with the higher rate is paid. This rule does not hold if the beneficiaries are entitled to unemployment benefit and widow pension or missing person allowance. In that particular case, both provisions are paid to the person.

**Notes on Euromod implementation:** The benefit is not simulated in the baseline specification, i.e. it is switched off and the amount of unemployment benefit reported in SILC is used in the simulation. The model allows, however, to use the simulated unemployment benefit instead of the reported one switching “on” the relevant policy in the spine. In this case, it should be noted that the benefit is partly simulated in EUROMOD. In particular, if someone is a recipient of unemployment benefit in the EU-SILC data then it is assumed that the above eligibility conditions are met. The amount of the benefit is calculated using information on previous earnings (yempv), derived “reversing the rule” used for the calculation of the unemployment benefit entitlement. The quality of the simulation is, however, not yet satisfactory. More effort will be put in the derivation of the variable on previous earnings in the future.

Those currently not receiving the unemployment benefit are, by default, not entitled to receive unemployment benefit. However, it is possible to make them entitled in case the user wants to perform analyses aimed at calculating “replacement rates”. In this case it should be noted that the model controls for the condition 1 using the available information on working history and for condition 2 using information on the amount of current employment income. Moreover, the simulation does not take into account the conditions on having a mixed spells of employment-unemployment, the condition on having more than 60 years and not being covered by professional pension plan and those concerning the lost of entitlement (a-d) . Finally it should be noted that dependants other from children of spouse and children of the recipient are not taken into account in the implementation. However, these cases are very rare in practice [see, footnote (9)].

### 2.3.3 Child benefit (*bch\_s*)

- *Definitions*

Child benefit is granted in accordance with the provisions of the Child Benefit Law to families which had their usual residence in Cyprus the last three years, at least. The benefit is conditional to the presence of children. The Law, until the 2012 reform, considered as “dependent children” the persons aged:

- (1) up to 18 years old,
- (2) up to 25 years old, provided that they are serving in National Guard.
- (3) up to 23 years old, provided that they are enrolled in higher education.
- (4) up to 25 years old who are still enrolled in higher education for as much as they have served in National Guard.
- (5) regardless of age, if permanently deprived of the ability to maintain themselves.

The 2012 reform changed the definition of dependent children. From 2012 onwards, “dependent children”, for the purposes of the child benefit, are persons aged:



- (a) up to 18 years old,
- (b) up to 19 years old, provided that they attend secondary education,
- (c) up to 21 years old, provided that they are serving in the National Guard.
- (d) regardless of age, if permanently deprived of the ability to maintain themselves.

The amount of the benefit depends on the number of children and the total gross annual family income. It consists of a basic part and a supplementary part. The benefit is paid to the mother or, in absence of the mother, to the father or the person who is in charge of the child(ren) in case that both parents are dead. Finally, the child benefit is not taxable.

- **Eligibility conditions**

Before 2012 every family with children that has its residence in Cyprus was eligible for the child benefit. In 2012 the Child Benefit Law was reformed. A family is entitled to the benefit only if its total gross family income does not exceed:

- €19,000 for families with only one dependent child
- €9,000 for families with two, three or four dependent children
- €9,000 €10,000 euro for each additional dependent child for families with more than four children. For example, for a family with six dependent children the maximum limit of family income is set at €19,000.

The 2012 reform introduced asset criteria, too. A family is not eligible for the benefit if its total property assets including real estate property, shares, bonds, securities and deposits exceed 1,200,000 euro.

- **Income test**

For the purposes of the calculation of the supplementary part of the child benefit the Child Benefit Law considers the total annual gross income acquired three years before the application for the benefit. Primary income, alimonies, military grant, unemployment benefit, widows, orphans and other survivor benefits, student grant, education related benefits, mother allowance (plus other family-related benefits) and old-age pensions are included in the income test. The child benefit is paid annually and it is not taxable. The benefit rates are updated yearly by the Grants and Benefits Services of the Ministry of Finance.

After the 2012 reform the total annual gross income acquired one (instead of three) years before the application for the benefit is used. Eligible families with total gross income above 49,000 euro do not receive the supplementary part of the benefit.

- **Benefit amount**

The amount of the benefit for 2007 is shown in the table that follows:

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2004:	
		Up to 17.086 euro	Between 17.086 and 34.172
1 child	382,59	95,65	47,82
2 children	765,20	382,59	286,94
3 children	2295,56	860,84	717,36
4+ children	1147,79 per child	382,59 per child	239,12 per child



The amount of the benefit for 2008 is shown in the table that follows:

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2005:	
		Up to 17,086 euro	Between 17,086 and 34,172
1 child	391.70	97.92	48.96
2 children	783.41	391.70	293.77
3 children	2,250.20	881.34	734.43
4+ children	1,292.62 per child	430.86 per child	269.29 per child

The amount of the benefit for 2009 is shown in the table that follows:

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2006:	
		Up to 17,086 euro	Between 17,086 and 34,172
1 child	409.99	102.49	51.25
2 children	820.00	409.98	307.49
3 children	2459.94	922.50	768.72
4+ children	1,352.98 per child	450.99 per child	281.87 per child

The amount of the benefit for 2010 is shown in the table that follows:

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2007:	
		Up to 18,367 euro	Between 18,367 and 36,734
1 child	411.30	102.82	51.41
2 children	822.62	411.30	308.47
3 children	2,467.83	925.44	771.18
4+ children	1,357.31 per child	452.43 per child	282.77 per child

The amount of the benefit for 2011 is shown in the table that follows:

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2008:	
		Up to 19,500 euro	Between 19,501 and 39,000
1 child	421.29	105.33	52.67
2 children	842.61	421.29	315.97
3 children	2527.80	947.91	789.90
4+ children	1,390.29 per child	463.43 per child	289.64 per child

The amount of the benefit for 2012 is shown in the tables that follow:

- For families with total gross family income up to 49,000 euro

No of dep. children	Basic annual benefit (in euro)	Supplementary annual benefit for families with gross income during 2011:	
		Up to 19,500 euro	Between 19,500 and 39,000
1 child	420 per child	105 per child	50 per child
2 children	420 per child	210 per child	155 per child
3 children	840 per child	315 per child	260 per child
4+ children	1,390 per child	460 per child	290 per child



- For families with total gross family income above 49,000 euro

Family income in 2011	Number of dependent children			
	2 children	3 children	4 children	5+ children
49,000-59,000	380 per child	760 per child	1,250 per child	1,250 per child
49,000-69,000	335 per child	675 per child	1,110 per child	1,110 per child
69,000-79,000	295 per child	590 per child	970 per child	970 per child
79,000-89,000	250 per child	505 per child	835 per child	835 per child
89,000-99,000	210 per child	420 per child	695 per child	695 per child
above 99,000*	0	0	0	695 per child

\*for families with more than 4 dependent children the maximum limit for total gross family income is increased by 10,000 euro for each additional child beyond the fourth child and the child benefit is 695 euro per child.

**Notes on Euromod implementation:** Current values of relevant income are used for the implementation. The benefit is given to the head of the tax unit. Also, student grant is considered for the means-testing of the benefit, while the opposite is not true. Social assistance is not included in the income list.

### 2.3.4 Single parent benefit (bsalp\_s)

- *Definitions*

Until 31st of May 2012, public assistance provided income support to mono-parental families. From June 2012, a new single-parent benefit substituted this provision. The benefit is given only to mono-parental families which already receive the child benefit. Namely, if a family is eligible for the child benefit, it is also for the single-parent benefit.

Mono-parental families consist of one parent who cohabits with at least one dependent child. The same definition of dependent child as in the child benefit applies. The single parent may be unmarried, widowed or divorced. The benefit is not taxable.

- *Eligibility conditions*

The recipients should be eligible for the child benefit. The definition of mono-parental family is as described above. The recipients can be either Cypriots or EU citizens who reside in Cyprus at least for the last three years.

- *Income test*

The benefit is means-tested. The gross family income (acquired one year before the application for the benefit) is used. The definition of family income is the same as for the child benefit. The value of the benefit depends on the value of the gross family income.



- **Benefit amount**

The amount of the benefit for 2012 is determined as follows:

Family income in 2011	Monthly amount of the benefit
0 - 39,000	200 per child
39,000-49,000	180 per child
49,000-59,000	160 per child
49,000-69,000	140 per child
69,000-79,000	120 per child
79,000-89,000	100 per child
above 99,000	0

**Notes on Euromod implementation:** Since the benefit is implemented in June 2012, the 2012 system allows both to simulate benefits given to lone parents both with the old regime (e.g. receiving social assistance benefit) and new regime (e.g. receiving the benefit for single parents). The “new regime” is the default, but the old regime can be simulated simply switching off the policy *bsalp\_cy*.

### 2.3.5 Students grant (*bedet\_s*)

- **Definitions**

Student grant is a universal benefit given to families having children in higher education. It is supplied by the Grants and Benefits Services of the Ministry of Finance

Students should be either Cypriot citizens or EU citizens that have their permanent residence in Cyprus. In case that the student is a non-EU citizen, then he/she is eligible for the grant if at least one of his/her parents is Cypriot or EU citizens. Furthermore, he/she should have graduated from a secondary school in Cyprus.

Permanent residence is considered for persons that had been staying in Cyprus for at least 30 months the last 3 years before the beginning of their studies

The student grant is given to the parents of the student to the person who pays the student’s expenses.

The Law considers the following family units:

1. Couples and their children
2. Lone father (irrespective of the marriage condition) and his children.
3. Lone mother (irrespective of the marriage condition) and her children.
4. Any adult person and abandoned child/children if the former can prove that he/she supports financially the child/children.
5. Orphans.

Children should either live under the same household with their parents or live separately but are financially supported by their parents.

- **Eligibility conditions**

The student should be enrolled in a recognized higher education institution. The grant is paid only for the normal duration of studies which may vary across faculties, but the period of payment may be extended in special cases (health reasons). Note that the student grant is not paid for student that:



1. Attend language learning programmes that are prerequisites for entering the educational institution;
2. Attend tertiary foundation certificate or similar courses
3. Attend distance learning courses or open university courses;
4. Attend courses as external students and not as normal students;
5. Are in PhD program (for the academic year 2011/12 and afterwards) ;

In academic year 2011/12 and afterwards, total gross family income shall be considered for the provision of the grant.

#### ***Income test***

In academic year 2006/07 and afterwards, income acquired in the public or private sector or from teaching or research work should be below €17,086 in order to be eligible for the grant. In the academic year 2011/12 and afterwards, instead of the income of the student from employment, the total gross family income acquired in the year before the 1<sup>st</sup> of January of the current academic year, is used for defining eligibility. For the computation of the total gross family income, the incomes of all family members acquired in the previous year (parents and children) from employment, self-employment, pensions, rents, interests, dividends, alimony, public assistance benefit, unemployment benefit, maternity benefit, other benefits from social security fund (birth grant, wedding grant, widows, orphans, survivors benefits) and military grant are considered.

Families with students are eligible for the grant if they have total gross annual family income less than 100,000 euro (with up to two children) and for families with more than two children the maximum amount increases by 10,000 euro for each additional child.

- ***Benefit amount***

Until the academic year 2010/11 the annual amount of the grant is €1708 per student during the normal period of studies. If the student pays fees then the grant is increased by €854.30, annually. Multi-child families also receive a supplementary amount of €854.30. Since 1<sup>st</sup> September 2007, 3-children families are also eligible for the supplementary amount. The definition of children for the identification of multi-child families is the one used for the calculation of child benefit. From 2011/12 and afterwards the annual amount of the grant and the supplementary part depend on the total gross family income.

If the student ends his/her studies during the first semester of the year then the family is allowed to half of the grant and half of the grant paid for fees. No grant is paid for studies smaller in duration than one semester (6 months).

In cases of part time studies the grant is paid when the period for a full time study that corresponds to one year of normal study is completed.

Year	Annual student grant (in euro)	Additional amount equal to	
		If pay fees	If multi-child family
2007	1708	854.30	854.30 (if 4+ children)
2008	1708	854.30	854.30 (if 3+ children)
2009	1708	854.30	854.30 (if 3+ children)
2010	1708	854.30	854.30 (if 3+ children)
2011	1708	854.30	854.30 (if 3+ children)



The following table shows the income brackets and the amount of student grant (main and supplementary) in 2012.

Family income in 2011	Annual amount of the student grant, per student	Additional amount for tuition payment or/and families with more than 3 dependent children
0 - 40,000	1,710	855
40,000-50,000	1,580	790
50,000-60,000	1,450	725
60,000-70,000	1,320	660
70,000-80,000	1,190	590
80,000-90,000	1,020	510
90,000-100,000	850	425
above 100,000*	850	425

\*for families with more than 2 dependent children the maximum limit for total gross family income is increased by 10,000 euro for each additional child beyond the second child.

**Note on Euromod implementation:** The model cannot fully control for the provisions of the Law. According to the implementation, the grant is attributed to families with dependent children that attend an educational programme that corresponds to the ISCED values 5 or 6. Since it is not possible to control for the payment of any fees, the only additional amount simulated is the one for multi-child families. Note also that child benefit and social assistance are not taken into account in the calculation of family income.

### 2.3.6 Birth grant (bchba\_cy)

- *Definitions*
- *Eligibility conditions*

The birth grant is paid to the mother of a newborn (if she or her husband is insured), independently of the category of insurance (employee, self-employed, optionally insured).

The requirements for the payment of the birth grant are:

1. The birth of an alive child or a child born dead after at least 28 weeks of pregnancy;
2. The applicant has to be insured for not less than 26 weeks. The total amount of insured earnings has to be at least equal to 26 times the weekly amount of the basic insured earnings.
3. The applicant has paid or been credited with contributions in the previous contribution year. During this period, the insured earnings should not be lower than 20 times the weekly amount of the basic insurable earnings.

- *Income test*
- *Benefit amount*

The amount of the birth grant (per child in the case of twins) in 2007 was €427.15 and increased at €446, €466 and €491 in 2008, 2009 and 2010, respectively.



## Amount of birth grant

Year	Amount
2007	€427.15
2008	€446
2009	€466
2010	€491
2011	€521
2012	€533

**Notes on Euromod implementation:** this benefit is given to all heads of families with children aged 0 where at least one of the parents has working history at least equal to 6.5 months (26 weeks) and annual earnings equal at least to 20 times the weekly amount of basic insured earnings.

## 2.4 Social contributions

The participation in the Social Insurance Scheme is mandatory for all working population. The insured persons are divided into two categories: the employees and the self-employed. Voluntary insurance is allowed to persons that are willing to continue insurance after a prescribed period of compulsory insurance.

The social insurance contributions are estimated as a proportion of insurable earnings. Insurable earnings are earnings on which contributions are calculated and include any remuneration from employment as well as contributions paid to the Central Holiday Fund. The insured person, the employer and the state each pay a portion of the overall contribution.

The obligation for social insurance contribution payment (both for the employee and the self-employed) stops the day the insured person reaches pensionable age, i.e. 65 years. An insured person who has completed the age of 65 and still does not satisfy the contribution requirements for old-age pension can continue to pay contributions till the age of 68.

Every year the pertinent public services calculate the general increase of earnings in the economy; if this found to be at least 5% then the insured earnings increase by this percentage and the provisions are calculated on the increased earnings.

### 2.4.1 Employee social contributions

In case of employed persons the social insurance contribution is 16.6% on their insurable earnings, of which 6.3% is paid by the employer, 6.3% by the employee and 4% by the state. When the employee is covered by a pension plan from the employer without any contribution from the employee, then 9.4% of the contribution is paid by the employer and 3.2% by the employee. Liability for paying contributions arises, when the employed person receives no less than €1.71 in the contribution week (or equivalently no less than €6.83 in the calendar month).

Since 1<sup>st</sup> April 2009 the total contribution rate increased at 17.9% of insurable earnings, of which 6.8% is paid by the employer, 6.8% by the employee and the rest 4.3% by the state. When the employee is covered by a pension plan from the employer without any contribution from the part of



the employee then the social security contribution paid by the employer is 10.15% and by the employee 3.45%. In cases of trainees working without earnings, the employer has to pay both the contribution of the employer and the employee, i.e. 12.6%.

Employees in the broad public sector are covered by a pension plan from their employer, the Government Employees Pension Scheme. Though all individual started their employment in the public sector after 01/10/2011 are not covered by the Government Employees Pension Scheme anymore and thus pay the normal employee social contributions. Furthermore, all broad public sector employees pay a contribution to the Widows and Orphans Government Fund. The terms of this contribution are displayed in section 2.10 of the document.

The insurable earnings of the employee include anything paid to the employee for his/her labour, i.e. basic salary, cost of living allowance, overtime, commissions, 13<sup>th</sup> salary, 53<sup>rd</sup>/56<sup>th</sup> week, the contribution of the employer to the Central Holiday Fund and holiday unions' funds etc. Only ex gratia payments are not included.

Also, the Law sets a maximum amount of earnings for contribution purposes which is revised annually. In 2007, the maximum amount was €885 per week or €836 per month. In 2008, 2009 and 2010 the maximum amount was €885, €924 and €973 euro per week or €836, €4004 and €4216 per month respectively. In 2011 and 2012 the maximum amount was €1,002 and €1,025 euro per week or €4,342 and €4,442 per month respectively. In case that the employee's earnings are higher than the maximum amount then contributions are not paid for the extra amount.

Maximum amount of earnings for contribution purposes

Year	Monthly	Weekly
2007	€3,671.78	€847.47
2008	€836	€885
2009	€4,004	€924
2010	€4,216	€973
2011	€4,342	€1,002
2012	€4,442	€1,025

**Notes on Euromod implementation:** From the data is not possible to understand if the employee is covered by a pension plan from the employer. For this reason the reduced contribution of 3.2% is applied only to civil servants.

## 2.4.2 Employer social contributions

Every employer has to pay contributions to the Funds (Social Insurance, Annual Holidays with Pay, Redundancy, Human Resource Development and Social Cohesion) for every one of his/her employees whose earnings are at least €1.71 per week. As far as trainees and apprentices are concerned, the employer has to pay contributions to the Social Insurance Fund even if the employee has no earnings.

The liability of the employer for paying contributions to the above Funds exists even if the employee is working for another employer or as a self-employed person at the same time.

The liability of the employer for paying contributions to the Social Insurance Fund ceases on the day the employee reaches pensionable age, i.e. the age of 65. In the case the employee does not satisfy the contribution conditions for old age pension when he/she reaches pensionable age, the employer is obliged to continue to pay contributions until the employee is entitled to old-age pension. Under no circumstances contributions are payable after the age of 68.

The employer is obliged to pay contributions to the Central Holiday Fund, the Redundancy Fund, the Human Resource Development Fund and the Social Cohesion Fund even if the employee receives old age pension and irrespective of his age.



The employer is not obliged to pay contributions to the Central Holiday Fund if he obtains exemption from the Minister of Labour and Social Insurance, after the employer has filed an application. Exemption is granted in the cases where the employer provides annual holidays to his employees on more favourable terms than those provided under the Annual Holidays with Pay legislation.

The earnings taken into consideration for the purpose of payment of contributions to the Social Insurance, Annual Holidays with Pay, Redundancy and Human Resource Development Funds have a maximum that is revised annually. For the Social Cohesion Fund the total earnings are taken into consideration without a maximum. Earnings include the basic salary, the cost of living allowance, commissions, the 13th and 14th salary or the 53rd/56th week, overtime etc. For the purpose of payment of contributions, the gross amount of earnings (i.e. before the deduction of taxes and contributions) is taken into consideration.

The amount of contributions paid by the employer to the Central Holiday Fund is considered as part of the earnings for the purpose of payment of contributions to the Social Insurance Fund, the Redundancy Fund, the Human Resource Development Fund and the Social Cohesion Fund.

Earnings payable to the employee for periods exceeding one week or one month, such as the 13th salary, earnings of the 54th week, commissions etc., are taken into consideration for the purpose of payment of contributions to the Social Insurance, Central Holiday, Redundancy and Human Resource Development and Social Cohesion Funds, up to the amount that when added to the earnings of the employee for the period in question, these are not higher than the maximum amount for that period.

Contributions payable by the employers to the above mentioned Funds are calculated as a percentage on the earnings of the employee as explained below:

**(a) Social Insurance Fund**

- For the rate of 12.6% the employer and employee pay 6.3% each. In case an employer implements an occupational pension scheme without payment of contributions by the employees, then the employer pays 9.4% and the employee 3.2%. Since 1<sup>st</sup> April 2009 the respective percentages are 13.6%, 6.8%, 6.8%, 10.15% and 3.45%.



### (b) Central Holiday Fund

- The rate of contribution to the Central Holiday Fund varies according to the length of annual leave to which the employed person is entitled, as shown in Tables

Rate of contribution to the Central Holiday Fund for employees with a 5-day working week	
Duration of annual leave	Rate of contribution (%)
20	8
21	8.5
22-23	9
24	9.5
25	10
26	10.5
27-28	11
29	11.5
30	12
31	12.5
32-33	13
34	13.5
35	14
36	14.5
37-38	15
39	15.5
40	16
Rate of contribution to the Central Holiday Fund for employees with a 6-day working week	
Duration of annual leave	Rate of contribution (%)
24	8
25-26	8.5
27	9
28-29	9.5
30	10
31-32	10.5
33	11
34-35	11.5
36	12
37-38	12.5
39	13
40-41	13.5
42	14
43-44	14.5
45	15
46-47	15.5
48	16

The rate of contributions for leave longer than 40 days for 5-days working week and 48 days for 6-days working week are increased accordingly.

The contribution to the Central Holiday Fund is payable wholly by the employer.

**Notes on Euromod implementation:** The same contribution rate (8%) was used for all the employers.

### (c) Redundancy Fund

- The contribution to the Redundancy Fund (rate 1.2%) is payable wholly by the employer.



#### (d) Human Resource Development Fund

- The contribution to the Human Resource Development Fund (rate 0.5%) is payable wholly by the employer.

#### (e) Social Cohesion Fund

- It was introduced on 1.1.2003. The contribution to the Social Cohesion Fund (rate 2%) is payable wholly by the employer.

The contributions under A, B, C, and D are computed on earnings up to the maximum amount specified above. The contributions under E are computed on actual earnings without any upper limit.

The rates under C, D, and E apply to trainees with low earnings and are applied to their actual earnings.

**Notes on Euromod implementation:** From the data is not possible to understand if the employee is covered by a pension plan from the employer. For this reason the reduced contribution of 9.4% to the social insurance fund is applied only to civil servants. The eligibility to pay contribution to the Central Holiday Fund is randomly simulated among the non-civil servants (According to external statistics 22% of employees are covered by the Central Holiday Fund<sup>11</sup>). Since trainees cannot be identified in the dataset, the special rules applying to them are not simulated.

### 2.4.3 Self-employed social contributions

The total contribution of self-employed persons is 15.6% of their insured earnings. From this percentage, 11.6% is paid by the self-employed and 4% by the state. Since 1<sup>st</sup> April 2009 the total contribution of self-employed is 16.9% of their insured earnings. From this percentage, 12.6% is paid by the self-employed person and the rest 4.3% by the state.

The insured earnings of the self-employed (the earnings for which their contributions are calculated) are set on the basis of their profession and workplace. Furthermore, the self-employed should be younger than 65.

For each professional category a compulsory minimum amount of insured earnings is prescribed, but the self-employed is allowed to pay contributions on a higher amount of insured earnings up to a maximum. If the real income of a self-employed is lower than the minimum corresponding to his/her professional category then he/she can ask to pay contributions based on his/her real income.

When an insured person is simultaneously working as an employee and a self-employed then he has to insure him/herself for both. In case where the insured person has two or more professions as self-employed then he/she can be insured only for the profession with the higher amount of insured earnings.

The minimum amounts of insured earnings for the self-employed differ by professional category (doctors, managers, teachers, farmers etc.) and are used in the simulation as maximum amounts, since we assume that if the real income of a self-employed is lower than the minimum corresponding to his/her professional category pays contributions based on his/her real income and if his/her real income is higher than the minimum amount then the paid contributions are based on the minimum amounts reported in the following table.

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<sup>11</sup> Archived Statistical Data of Social Insurance Services.

Link: [http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical\\_Archive\\_en?OpenForm](http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical_Archive_en?OpenForm)



#### Minimum weekly amount of insured earnings for the self-employed

Year	Weekly Amount
2007	€10.97
2008	€25
2009	€40
2010	€58
2011	€69
2012	€77

**Notes on Euromod implementation:** The minimum amounts used in the implementation are calculated as the mean of the professional category specific minima.

#### 2.4.4 Government social contributions

The Social Insurance Scheme is also financed by contributions paid by the State. In both cases of employed and self-employed persons, the contribution paid by the government is 4.0% on their insurable earnings. Since 1<sup>st</sup> April 2009, the contribution rate paid by the State increased at 4.3% of insurable earnings. Note also that contributions to the Annual Holidays Fund are part of the earnings that are considered for the estimation of government contributions.

#### 2.5 Personal income tax

Every citizen of the Republic of Cyprus is subject to income tax for incomes from sources inside and outside the country that concern:

1. profits or other benefits from any company for any time period that the company operates;
2. profits or other benefits from any paid services;
3. dividends and interests;
4. pension, incomes paid from a will or contract and annual incomes;
5. incomes, copyrights, patents rights and other incomes from ownership; and
6. any amount or counter-provision for reputation and goodwill decreased by any amount paid for buying such reputation and goodwill.

Persons permanently settled in the Republic can choose to be treated as citizens of the Republic as concerns income taxation. Note also that contributions paid by the employer to the Annual Holidays Fund are part of the tax base.

##### 2.5.1 Tax unit

Income tax in Cyprus is individual.



## 2.5.2 Exemptions

The following types of income are exempt from income tax:

1. the official salary of the President of the Republic, the pension of the President of the Republic, part of the pension of the President of the Parliament, any benefit paid to the President of the Republic and the President of the Parliament and representation expenses of the Ministers and the President of the Parliament;
2. the benefit paid to public employees for service abroad;
3. the pensions and benefits paid according to the Suffering Relief Law;
4. widow pensions paid from Social Insurance;
5. any amount paid as lump sum, pension, compensation due to death or physical injury;
6. income from scholarship or any other educational grant;
7. payments to persons arising from tax deductions;
8. earnings of foreign officers of any institution that operates in the Republic;
9. income of any religious, charitable or educational institution with a public character;
10. income of a registered cooperative bank arising from transactions with its members;
11. income of any Local Administration authority;
12. income of any Insurance Fund of the Republic;
13. income of a company that operates in order to promote art, science or sports;
14. earnings of foreign diplomatic representatives; and
15. whole income from interests and 50% of the income of a company from interests.

**Notes on Euromod implementation:** the tax base is computed as the sum of employment income, income from self-employment, pensions and 80% of rent income<sup>12</sup>.

## 2.5.3 Tax allowances/deductions

In order to find taxable income the following amounts are deducted from a person's income:

1. any amount spent for the repair of premises, machines, plants and transport equipment or for the renewal or repair or transformation of any tool, utensil or other objects used in order to raise income;
2. the annual contributions paid by the employee to the various Funds;
3. Bad debts;
4. expenditure for scientific research;
5. expenditure in order to acquire a patent or copyright;
6. charity payments or contributions to educational institutions or payments for other charity purposes;

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<sup>12</sup> See Tax allowances section



7. expenditures for the maintenance of a building for which a maintenance order is issued and for the maintenance of an ancient monument;

An amount equal to 20% is deducted from the income acquired from renting buildings before anything else is deducted from this.

Deductions are offered for the decrease of value and damages on assets due to usage from personal income from the operation of a company.

An amount equal to the annual amount of the paid premiums and contributions is deducted in order to find the taxable income of any person who has:

1. insured his/her life or the life of the spouse for an amount payable on his/her death;
2. paid contributions to a pension, widow and orphan fund;
3. paid contributions to a pension or provident or any other insurance fund;
4. paid premia or any other contributions to an insurance company for the issuance of a specific insurance contract;
5. paid premia or any other contributions to an insurance company for a pension or the medical plan; and
6. paid contributions to the general health plan;

In the case of a life insurance contract where the insured person will receive a payment of a predetermined amount on his/her death then the amount of the deduction cannot exceed 7% of this amount. The total deduction for contributions and premiums cannot exceed 1/6 of the taxable income. In case of encashment of a life insurance contract within 3 years from the date of the contract then 30% of the premium paid for which a deduction was given is added to the income of the person. This is reduced to 20% if the encashment is made on the 4<sup>th</sup> or 5<sup>th</sup> or 6<sup>th</sup> year of the contract.

For 2006 income up to 17086 euro is not taxable.

**Notes on Euromod implementation:** due to data limitations, the only deductions taken into account in the implementations are those of the social insurance contributions, as well as the contributions to individual private pension plans up to an amount that cannot exceed 1/6 of the taxable income.

#### 2.5.4 Tax base

The tax base is defined as taxable income minus the various deductions. Taxable income is total income minus the various exemptions.

#### 2.5.5 Tax schedule

Income taxation is progressive, with higher marginal tax rates applying to higher income brackets. The tax rates and income tax brackets are shown in the following table. In 2006 income up to €7,086 was not taxable, while income between €7,086 and €25,629 euro was taxed at a 20% rate, income between €25,629 and €34,172 euro at a 25% rate and income above €34,172 euro at a rate of 30%. In 2007 income thresholds changed. Corresponding changes are shown in the table. From 2008 up to 2010, the system remained the same, while in 2011 income above 60,001€ is taxed with a rate of 35%.



## Tax rates and income tax brackets

Tax rate	Year					
	2007	2008	2009	2010	2011	2012
0%	0 – 18,367	0 – 19,500	0 – 19,500	0 – 19,500	0 – 19,500	0 – 19,500
20%	18,367 – 26,910	19,501 – 28,000				
25%	26,910 – 35,197	28,001 – 36,300				
30%	35,197 -	36,301 -	36,301 -	36,301 -	36,301 – 60,000	36,301 – 60,000
35%					60,001-	60,001-

There are specific categories of income which are taxed differently. Income that stems from ship management is taxed at 4.25% and no deductions or exemptions are allowed, the income of a Cypriot resident from a pension offered from abroad that exceeds the amount of €3,417 is taxed with a rate of 5%; the income from patents, copyrights and compensations acquired in the Republic from a person not residing in the Republic is taxed with a rate of 10%; the income acquired in the Republic from a person not residing in the Republic and stems from entertainment activities is taxed with a rate of 10%. These special cases are not simulated in the model.

### 2.5.6 Tax credits

Tax credits exist in case of double taxation and are not considered in the simulations within Euromod.

## 2.6 Special contribution for defence

Every person residing in the Republic of Cyprus is obliged to pay special contribution for defence as follows:

1. 15% on income from dividends (since August 2011, the rate increased at 17%)
2. 10% on income from interest (paid or credited). Since August 2011, the rate increased at 15%. Interest received by a person from the normal operation of his/her company is not considered as interest. Persons with annual income (including interest) not exceeding 11960 euro (12000 euro from 1/1/2008 and onwards) have the right to be refunded amounts withheld as contribution for defence on interest income above 3% of this income.
3. 3% on income from Cypriot savings certificates, Cypriot development bonds and interest from provident fund.
4. 3% on gross rents decreased by 25%.

Money paid as special contribution for defence is taxable.

**Notes on Euromod implementation:** contributions under point 1 and 3 are not simulated. The contributions of legal entities are out of the scope of the model; therefore special contributions for defence are partly simulated.



## 2.7 Special contribution of public employees

Public sector employees as well as former public employees who receive pension from the government employees' pension plan, starting from 1/09/2011, have to pay a special contribution to the Government. This policy is part of the measures the Cypriot government has taken in the framework of fiscal consolidation.

The special contribution is applied on gross monthly income from employment in the broad public sector and on the gross monthly amount from pensions paid from the government employees' pension plan. After the 1<sup>st</sup> of January 2012, pensions paid from the Social Insurance Fund (to pensioners who were employed in the public sector) are also included in the calculation. Gross income is defined as income before any tax and contributions (including contributions to Annual Holiday Fund).

Special contribution of public employees is progressive, with higher contribution rates applying to higher income brackets. The contribution rates and income contribution brackets are shown in the following table:

Contribution rates and income brackets

Contribution rate	Period	
	1/09/2011-31/12/2011	1/01/2012-31/12/2013
0%	0-1,500	0-2,500
1.5%	1,501-2,500	-
2.5%	2,501-3,500	2,501-3,500
3.0%	3,501-4,500	3,501-4,500
3.5%	4,501-	4,501-

After 01/01/2012, the special contribution is exempted from income tax. The special contribution from public employees and pensioners are paid for the period 01/09/2011 - 31/12/2013.

**Notes on Euromod implementation:** Since EUROMOD models the system as it is at the 30<sup>th</sup> of June of a given year, only the 2012 system contains simulation of such contributions. The simulated rules are those relative to the period 1/01/2012-31/12/2013

## 2.8 Special contribution of private employees, self-employed and pensioners who were former private employees

This law is in effect from 01/01/2012 (up to 31/12/2012) and refers to private sector employees, self-employed and pensioners of the private sector. It is part of the fiscal consolidation package that the government of Cyprus implemented in an effort to contain public debt. The contribution is calculated:

a) on the gross monthly income of private sector employees that includes wages, salaries, overtime compensation, tips and other benefits paid as a compensation for the employee's services.



b) on the gross monthly income of self-employed persons. The income of the self-employed cannot be lower than the minimum monthly amount of insured earnings for the self-employed as defined from Social Insurance Services.

c) on the gross monthly income from pensions, including old age public pensions, private pensions, survivor and disability pensions.

### 2.8.1 Special contribution schedule

The special contribution schedule is progressive, characterized by higher contribution rates as income increases. The contribution rates and respective income brackets are shown in the following table. The contribution is calculated on gross wage before any taxes or contributions (including contributions to Annual Holiday Fund).

Contribution rates and income brackets

	Period
Contribution rate	1/01/2012-31/12/2013
0%	0-2,500
2.5%	2,501-3,500
3.0%	3,501-4,500
3.5%	4,501-

In the case of private employees the amount of special contribution is paid 50% by the employer and 50% by the employee. There is no upper limit on the income on which the special contribution is applied. Finally, the special contribution is exempted from the income tax.

**Notes on Euromod implementation:** Since it is not possible to disentangle between pensioners who were previous public employees and those who were working in the private sector, the special contribution from both types of pensioner are simulated together in the policy `txcpe_cy`. Since the contribution schedule is the same, the choice does not affect the quality of the simulation.

### 2.9 Contribution of public employees to Government Employees Pension Plan

All broad public sector employees who are covered by the Government Employees Pension Plan (Note that employees hired in the public sectors after 30/09/2011 are not covered by the scheme anymore), starting from 01/10/2011, pay 3% of their gross employment income to the Government as a support to the Government Employees Pension Plan. Typically, these payments are not considered as contributions to the Government Employees Pension Plan (since the pension benefits from the Government Employees Pension Plan do not depend on the amount of this payment). If the employee has contributed over 400 monthly social insurance contributions then he is exempted from the contribution.

**Notes on Euromod implementation:** The distinction between public sector employees who started before or after 1/10/2011 is done through the imputed variable `lcs10`. See Data section for further



information on the variable. The exemption of those who contributed for over 400 months is simulated making use of employment history.

## 2.10 Contributions of public employees to the Widows and Orphans Government Fund

All broad public sector employees pay a contribution to the Widows and Orphans Government Fund. Before 01/10/2011, the contribution was equal to 0.75% of the gross wage. In case that the gross wage exceeded the maximum amount of insurable earnings then a rate of 1.75% was applied to the part of the gross wage which exceeded the maximum amount. Example: if gross wage is 5000€, then the contribution was calculated as follows:

Contribution= 0.75% \* 4,442 (maximum amount of insurable earnings in 2012) + 1.75% \* (5,000-4,442).

Since 01/10/2011 the rules simplified. The contribution increased to 2% of the gross wage without any minima/maxima. If the employee has contributed over 400 monthly social insurance contributions then he is exempted from the contribution.

**Note to Euromod Implementation:** This instrument is implemented within the policy `tscee_cy` and included in the employees social insurance contribution variable `tscee_s`. The exemption of those who contributed for over 400 months is simulated making use of employment history.

## 3. DATA

### 3.1 General description

The Cypriot database is the European version (UDB) of the Community Statistics on Income and Living Conditions (EU-SILC). EU-SILC is a rotating panel representative of the population and provides cross-sectional information on household incomes and social exclusion. The sampling units are the households selected using simple random sampling within strata (9 strata based on districts). The sample consists of 3335 households or 9998 individuals. The response rate was high at 92%. Table 17 provides a short description of the database.

Table 18. EUROMOD database description

Year 2006	
Euromod Database	CY_2008_A1.txt
Original name	UDB_c08_ver 2008-1 from 01-03-10
Provider	EUROSTAT
Year of collection	2008
Period of collection	March-July
Income reference period	1.01.2007-31.12.2008
Sampling	Stratified simple random sampling
Unit of assessment	Households
Coverage	Private Households
Sample size	3335 households or 9998 individuals
Response rate	92%



## 3.2 Sample quality and weights

### 3.2.1 Non-response

Overall non-response rate was calculated at 8%, whereas averaged across all countries is equal to 22%. Non-response at the three stages (address contact, household interview and personal interview) composes to the overall response rate. The address contact rate (the ratio of the number of addresses successfully contacted, to the number of valid addresses selected) was 100%, the household response rate (the ratio of the number of households interviews completed to the number of eligible households at the contacted addresses) was 92% and finally the individual response rate (the ration of the number of personal interviews completed to the number of eligible individuals in completed households) was 100%.<sup>13</sup>

### 3.2.2 Weights

The sample consists of 3,335 households and 9,998 individuals. The weights provided by the survey are household weights and are projected to a reference population of 787,700 individuals. In the sample, no income unit was found with zero income and a re-weighting process was not necessary. The following table reports several descriptive statistics for the grossing-up weight variable (dwt).

Table 19. Descriptive Statistics of the grossing-up weight

Number	9,998
Mean	78.26
Median	71.16
Maximum	189.77
Minimum	1.59
Max/Min	119.35
Decile 1	16.10
Decile 9	148.25
Dec 9 / Dec1	9.2

### 3.2.3 Item non-response and under-reporting

According to the Statistical Service of Cyprus, the average gross monthly earnings from employment were €1702 in 2007. When broke down by gender, the average gross monthly earnings for males were €1884 and for females €1472. The respective EU-SILC estimates are €1689, €2003 and €1332. There is an indication of over-reporting for males and under-reporting for females, however there is not enough information about the strict comparability of administrative records and EU-SILC income variables.

## 3.3 Data adjustment

Few adjustments were done. All monetary values in the EU-SILC database are expressed in annual terms. For the purposes of the EUROMOD database, all the annual amounts were converted into monthly basis for the purposes of EUROMOD model. Finally, children born after the income-reference period were dropped from the sample.

## 3.4 Imputations and assumptions

The variables shown in Table 21 were imputed from SILC aggregated variables.

<sup>13</sup> Comparative Intermediate EU Quality Report 2007, Version 5-October 2009.



In EU-SILC data, soldier's allowance (bml) is recorded as employee cash or near cash income, (variable py010g). We set bml equal to py010g/12 if the individual has never work as employee, spend a positive number of months in compulsory military service and has employee cash or near cash income. For individuals who spend a positive number of months working as employees and in compulsory military service we set bml equal to the basic monthly soldier's allowance (120 euro) times the months spend in the army divided by 12.

Table 20. List of imputed variables

<u>Variable name</u>	<u>Description</u>
bml	BENEFIT/PENSION : Soldier allowance
psuwd	BENEFIT/PENSION : Survivors : widow
psuor	BENEFIT/PENSION : Survivors : orphan
psuot	BENEFIT/PENSION : Survivors : other
bedet	BENEFIT/PENSION : Education : student grant
bedsl	BENEFIT/PENSION : Education : scholarship
bch	BENEFIT/PENSION : child benefit
bchba	BENEFIT/PENSION : Maternity : birth grant
bfamh	BENEFIT/PENSION : Family : Family related allowances
poasp	BENEFIT/PENSION : Social Pension - Old Age
poatx	BENEFIT/PENSION : Taxable old Age
poant	BENEFIT/PENSION : Non taxable old Age
bunct	BENEFIT/ SIC: unemployment benefit
bunot	BENEFIT: Other unemployment benefit
yempv	INCOME: monthly wage from previous work
lcs	LABOUR MARKET : Civil Servant
lcs10	LABOUR MARKET : Newly hired (in the last 12 months) Civil servant
lc01	LABOUR MARKET : Military

In EU-SILC all survivor's benefits are included in one variable (py110g). We split this variable into three parts, survivor's benefit to widow (psuwd), survivor's benefit to orphan (psuor) and other survivor's benefits (psuot). We set psuwd equal to py110g/12 if py110g is positive, the marital status (pb190) of the individual's is widow(er) or if individual is married but with no partner's id (rb240) recorded in the data. We set psuor equal to py110g/12 if py110g is positive, the individual is not a widow(er) and is aged less than 25. Finally we set psuot equal to py110g/12 if py110g is positive and both psuwd and psuot are zero.

In EU-SILC variable py140g includes all education related allowances for tertiary education (student grant and scholarships). Based on this variable we impute two variables, one for student grant (bedet) which is given to parents with children in tertiary education and scholarships (bedsl) which are received by the students. If the individual with positive py140g is a tertiary student means that this is an income from scholarships and thus bedsl is equal to py140g. On the other hand, if the individual with positive py140g is not a tertiary student i.e. is the parent of a tertiary student then bedet is equal to py140g.



All child and family related variables are recorded in variable hy050g. We split this variable into child benefit (bch), birth grant (bchba) and other family related allowances (bfamh). We impute the received family birth grant by multiplying the amount of birth grant (420 euro) with the number of children in family aged less than 1. If the imputed birth grant is lower or equal to hy050g then we set bchba equal to the imputed birth grant. In case that the imputed birth grant is higher than hy050g then we set bchba equal to hy050g. The imputation of child benefit (bch) is based on the child benefit policy for eligibility and amount. We simulate the amount of child benefit for each eligible family and we compare it with the hy050g excluding the bchba amount received by the family. If hy050g (subtracting bchba) is more than the simulated child benefit then bch is set equal to the simulated child benefit. If hy050g (subtracting bchba) is less than the simulated child benefit then bch is set equal to hy050g-bchba. We set bfamh equal to hy050g minus bch minus bchba .

All old aged benefits are included in variable py100g. We split this variable into three parts, the social pension (poasp), the taxable old aged pension (poatx) and the non-taxable old aged pension (poant). We set poasp equal to py100g if the amount of py100g is close to the amount of social pension (347.93 euro per month). For imputing poatx and poant we compare the net and gross amount of py100 variable. The difference of py100g and py100n give us the tax paid and by reversing the income tax policy we found the taxable amount. Given that the individual has poasp=0, we set poatx equal to this taxable amount and the difference of py100g and the taxable amount is set equal to poant (poant=py100g-poatx).

In EU-SILC data the unemployment benefits are recorded in variable py090g. We split this variable into two parts the unemployment benefits paid by the Social Security Fund (bunct) and from other sources (bunot). Using the unemployment benefit policy we find the maximum monthly amount an individual with positive py090g can receive as unemployment benefit. We compare this maximum unemployment benefit amount with the monthly unemployment benefits reported in the data i.e. py090g divided by the reported numbers of months in unemployment but constraining this duration to be up to six months (individual can receive unemployment benefits for up to six months). If the maximum monthly unemployment benefit amount is lower than reported monthly unemployment benefit then we set bunot equal to the difference of the two amounts (multiplied with the duration of unemployment and divided by 12) and bunct equal to the maximum monthly unemployment benefit amount (multiplied with the duration of unemployment and divided by 12). If the maximum monthly unemployment benefit amount is equal or higher than the reported monthly unemployment benefit then we set bunot equal to zero and bunct equal to the reported monthly unemployment benefit (multiplied with the duration of unemployment and divided by 12). Since now we know the unemployment benefits paid by the Social Security Fund (bunct) we can reverse the unemployment benefit policy to find the monthly wage before unemployment (yempv).

In EU-SILC data we do not have the information whether someone is a civil employee or private employee. We impute if someone is a civil servant (variable lcs) using the economic activity (pl110) and status in employment. If the individual is employee working in the sector of Public administration and defense, compulsory social security or in the sector of Education then we assume he/she is a civil servant.

Based on the already available information, we also construct a variable indicating whether a civil servant had been hired in the public sector during the last 12 months (variable lcs10). For the imputation we used information whether someone is a civil servant (lcs=1) and about his/hers work history in number of months (liwwh). Thus, if someone is a civil servant and has work history less than 12 months then we assume that he/she was hired in the public sector in the last 12 months. The indicator variable for soldier (l01) is created based on the information provided by individuals about their current activity status in the labour market (variable pl030). When pl030=7 then individual is in compulsory military service.



### 3.4.1 Time period

The income reference period is the year. Information on income refers to the calendar year before the interview (1<sup>st</sup> January 2007-31<sup>st</sup> December 2007). Accordingly, the same reference period applies for taxes on income and social insurance contributions, as well as taxes on wealth.

### 3.4.2 Gross incomes

The EU-SILC survey contains information on gross monetary income. In the very few cases where gross income was impossible to collect, net income was recorded and converted to gross by applying the tax as well as social insurance contributions rules of the system<sup>14</sup>.

### 3.5 Updating

The following table reports the factors that were used to update monetary variables from 2007 to 2012. The dataset used is the EU-SILC 2008, which provides information on income, pensions and benefits of the previous calendar year (2007). Therefore, all the update factors for 2007 are equal to unity. Update factors for the other years are provided in the respective columns.

Table 21. Updating factors

Index	Income Source/index type	2007	2008	2009	2010	2011	2012
yivwg	INCOME : Imp. value : Wage/Salary	1.0000	1.0600	1.1010	1.1270	1.1580	1.1710
yem	INCOME : Employment	1.0000	1.0600	1.1010	1.1270	1.1580	1.1710
ypp	INCOME: Pension Private	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
yse	INCOME: Employment Self	1.0000	1.0418	1.0671	1.0945	1.1016	1.1016
yi	INCOME : Investment	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
ypr	INCOME : Property	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
ypt	INCOME:Private Transfers	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
yot	INCOME : Other	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
yds	INCOME : Disposable	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
bch	BENEFIT/PENSION: Child	1.0000	1.0238	1.0716		1.1011	1.0978
bhl	BENEFIT/PENSION : Health	1.0000	1.0240	1.0710	1.0760	1.1032	1.1051
bsa	BEN/PENSION: Social Assistance	1.0000	1.0820	1.1800	1.2160	1.2160	1.2160
bho	BENEFIT/PENSION : Housing	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
pdi	BENEFIT/PENSION : Disability	1.0000	1.0438	1.0907	1.1484	1.1826	1.2097
tpr	TAX : Property tax	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
tad	TAX : Repayments/Receipts	1.0000	1.0568	1.0950	1.1214	1.1483	1.1596
tis	TAX : Income tax and SICs	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
tpr	TAX : Property tax	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375

<sup>14</sup> Eurostat, Comparative Intermediate EU Quality Report 2007, Version 5-October 2009.



kfb	IN KIND : Fringe Benefit	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
kivho	IN KIND : Imputed value : Housing	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
afc	ASSETS : Financial Capital	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xmp	EXPEND.: Maintenance Payment	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xpp	EXPEND.: Private Pension (voluntary)	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xhc	EXPENDITURE : Housing cost	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xhct	EXPENDITURE : Housing cost : Rent	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xhcmomi	EXP. Housing cost : Mortg. Payment:	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
xhcot	EXPENDITURE : Housing cost : Other	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
bml	BENEFIT/PENSION: military grant	1.0000	1.1429	1.2246	1.2247	1.2247	1.2247
psuwd	BEN/PENSION: survivors: widows	1.0000	1.0438	1.0907	1.1484	1.1826	1.2097
psuor	BEN/PENSION: survivors: orphans	1.0000	1.0439	1.0908	1.1485	1.1827	1.2098
psuot	BENEFIT/PENSION : Survivors : other	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
bedet	BEN/PENS: education: student grant	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
bedsl	BEN/PEN: educ.: student scholarship	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
bfamh	BEN/PEN: Family related allowances	1.0000	1.0467	1.0500	1.0756	1.1109	1.1375
bchba	BEN/PENSION: Maternity : birth grant	1.0000	1.0441	1.0910	1.1495	1.2202	1.2482
poasp	BEN/PEN : Social Pension - Old Age	1.0000	1.0438	1.0907	1.1484	1.1826	1.2097
poatx	BEN/PENSION : Taxable old Age	1.0000	1.0439	1.0908	1.1485	1.1827	1.2098
poant	BEN/PENSION: Non taxable old Age	1.0000	1.0439	1.0908	1.1485	1.1827	1.2098
yempv	Inc.-monthly wage from previous work	1.0000	1.0380	1.1000	1.1430	1.1700	1.2030
bunct	BENEFIT/PENSION : SIF unemployment benefit	1.0000	1.0600	1.1010	1.1270	1.1580	1.1710
bunot	BENEFIT/PENSION : Other unempl.ben	1.0000	1.0600	1.1010	1.1270	1.1580	1.1710

Sources: Statistical Service of Cyprus, EUROSTAT, Social Insurance Services, Grants and Benefits Service.



## 4. VALIDATION

### 4.1 Aggregate Validation

Tables 23-28 and tables 28-32 compare non-simulated incomes and simulated instruments with external data provided from various administrative sources. In general, the results of the simulation are in accordance with external statistics but in several cases they should be interpreted with caution as we explain in the next paragraph.

Several disparities emerge between EU-SILC variables and administrative data. These are attributed to a lack of comparability between EU-SILC figures and external data. Disparities arise also between simulated instruments and administrative data. Overestimation or underestimation of means-tested benefits may be partly the result of administrative practices that cannot be simulated or an indication of targeting errors. An example of an administrative practice that is very difficult to simulate is that usually the assessment of the applications of the potential beneficiaries is based on incomes earned two years before the application. Obviously, this practice is very difficult to simulate. Furthermore, imperfect targeting may explain differences between simulated results and administrative data. Welfare programs are usually plagued by Type I and Type II errors (as they are termed in the relevant literature). Type I errors arise from “false” negatives, meaning that the benefit is not attributed to an eligible individual or household. On the other hand, Type II errors arise from “false” positives, when the benefit is attributed to non-eligible persons.

#### 4.1.1 Non simulated incomes

Tables 23-28 report the number of recipients and total amounts of non-simulated benefits and incomes for years 2007, 2008, 2009, 2010, 2011 and 2012, while tables 28-32 report the same statistics but they focus on simulated benefits.

The comparison between EM estimates and the external source reveals how well the database conforms to administrative data. Yet, attention should be given on several caveats. The statistics on old-age pensions are not strictly comparable. In particular, the EM variable (poa) is calculated using the EU-SILC variable py100g, which includes widows pensions, disability pensions and invalidity pensions if the recipient is older than 63 in all cases. If the recipient is below 63, the relevant pension is included in the survivors' benefits (py110g). However, the administrative data do not separate recipients according to age. Furthermore, the administrative data include only pensions provided by the Social Insurance Fund, while the EU-SILC data include, also, other pensions and lump-sums received by public employees.

Lastly, data on housing allowances are not strictly comparable, since this category consists of several benefits for some of which there was not available information.



Table 22. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2007]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1690	1699	0.99
Average gross earnings (m)				2003	1875	1.07
Average gross earnings (f)				1333	1474	0.90
Unemployment benefit	23.64	27.9	0.85	98.97	80.91	1.21
Unempl. benefit: (from SIF)	23.64	27.9	0.85	47.64	54.90	0.87
Unempl. benefit: other	2.38	2.7	0.88	51.33	27.90	1.90
Military grant	12.32	8	1.54	15.23	14.92	1.02
Education related benefits	42.06	33.4	1.26	117.24	69.8	1.68
Educ. related scholarship	7.04	n/a	n/a	25.82	n/a	n/a
Family related allowances	32.47	32.98	0.98	54.92	35.24	1.56
Sickness benefits	5.72	41.6	0.14	13.28	32.2	0.41
Housing allowances	9.13	2.7	3.38	32.85	37.6	0.87
Old age pensions	112.35	95.5	1.18	1296.0	552.3	2.34
Taxable old age pensions	61.59	n/a	n/a	738.0	n/a	n/a
Social pension	15.64	16	0.98	78.61	52.3	1.5
Non-taxable old-age pension	39.53	n/a	n/a	478.8	n/a	n/a
Windows pension	5.01	28.9	0.18	42.9	134.9	0.32
Orphan allowance	0.4	1.53	0.26	0.78	3.33	0.23
Survivor benefits	5.96	30.43	0.20	47.2	132.2	0.34
Other Survivor benefits	0.55	n/a	n/a	3.53	n/a	n/a
Disability benefit	15.46	12.1	1.28	109.1	105.48	1.03
Regular Tax on wealth	159.04	n/a	n/a	14.28	n/a	n/a

Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 23. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2008]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1790	1870	0.99
Average gross earnings (m)				2124	1980	1.07
Average gross earnings (f)				1413	1573	0.90
Unemployment benefit	23.64	26.6	0.85	104.9	71.24	1.47
Unempl. benefit: (from SIF)	23.64	26.6	0.85	50.5	53.44	0.94
Unempl. benefit: other	2.38	2.12	1.12	54.41	17.80	3.06
Military grant	12.32	8.38	1.54	17.4	16.97	1.03
Education related benefits	42.06	35.7	1.26	117.25	92.0	1.27
Student grant	35.02	35.7	1.05	91.43	92.0	0.99
Educ. related scholarship	7.04	n/a	n/a	25.81	n/a	n/a
Family related allowances	32.47	44.2	0.98	57.48	50.3	1.14
Sickness benefits	5.72	43	0.14	14.28	36	0.39
Housing allowances	9.13	3.94	3.38	34.38	58.9	0.58
Old age pensions	112.35	99.4	1.18	1356.0	618.7	2.19
Taxable old age pensions	61.59	n/a	n/a	770.4	n/a	n/a
Social pension	15.64	16	0.98	82.06	54.2	1.51
Non-taxable old-age pension	39.53	n/a	n/a	499.2	n/a	n/a
Windows pension	5.01	29	0.18	44.77	146.8	0.31
Orphan allowance	0.4	1.55	0.26	0.81	3.61	0.22
Survivor benefits	5.96	30.55	0.20	49.27	150.41	0.33
Other Survivor benefits	0.55	n/a	n/a	3.7	n/a	n/a
Disability benefit	15.46	12.05	1.28	113.91	114.84	0.99
Regular Tax on wealth	159.04	n/a	n/a	14.28	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 24. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2009]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1860	1870	0.99
Average gross earnings (m)				2206	2090	1.07
Average gross earnings (f)				1467	1649	0.89
Unemployment benefit	23.64	35.7	0.66	110.84	96.51	1.15
Unempl. benefit: (from SIF)	23.64	35.7	0.66	53.34	77.91	0.68
Unempl. benefit: other	2.38	2.13	1.12	57.48	21.07	3.09
Military grant	12.32	8.38	1.50	18.64	17.3	1.08
Education related benefits	42.06	36.2	1.16	117.25	88.2	1.33
Educ. related scholarship	7.04	n/a	n/a	25.81	n/a	n/a
Family related allowances	32.47	44.2	0.73	57.69	53.8	1.07
Sickness benefits	5.72	45.1	0.13	13.28	39.25	0.38
Housing allowances	9.13	4.38	2.08	32.85	64.9	0.53
Old age pensions	112.35	103.7	1.08	1412.45	676	2.09
Taxable old age pensions	61.59	n/a	n/a	804.76	n/a	n/a
Social pension	15.64	16.1	0.97	85.75	56.1	1.53
Non-taxable old-age pension	39.53	n/a	n/a	521.96	n/a	n/a
Windows pension	5.01	29.5	0.17	46.8	153.5	0.30
Orphan allowance	0.4	1.61	0.26	0.84	3.68	0.23
Survivor benefits	5.96	31.11	0.19	51.35	157.18	0.33
Other Survivor benefits	0.55	n/a	n/a	3.71	n/a	n/a
Disability benefit	15.46	12.25	1.26	118.97	125.86	0.95
Regular Tax on wealth	159.04	n/a	n/a	14.28	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 25. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2010]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1904	1915	0.99
Average gross earnings (m)				2256	2090	1.08
Average gross earnings (f)				1467	1700	0.88
Unemployment benefit	23.64	46.06	0.51	111.53	113.7	0.98
Unempl. benefit: (from SIF)	23.64	42.83	0.55	53.7	85.80	0.63
Unempl. benefit: other	2.38	3.23	0.74	57.8	27.9	2.07
Military grant	12.32	n/a	n/a	18.64	n/a	n/a
Educ. related benefits	42.06	n/a	n/a	117.25	n/a	n/a
Educ. related scholarship	7.04	n/a	n/a	25.81	n/a	n/a
Family related allowances	32.47	n/a	n/a	59.07	n/a	n/a
Sickness benefits	5.72	n/a	n/a	14.97	42.1	0.36
Housing allowances	9.13	n/a	n/a	35.33	n/a	n/a
Old age pensions	112.35	104.45	1.08	1488.0	753.3	1.98
Taxable old age pensions	61.59	n/a	n/a	847.2	n/a	n/a
Social pension	15.64	15.1	1.04	90.29	59.80	1.51
Non-taxable old-age pension	39.53	n/a	n/a	549.58	n/a	n/a
Windows pension	5.01	28.5	0.18	49.27	166.0	0.30
Orphan allowance	0.4	1.5	0.27	0.89	3.9	0.23
Survivor benefits	5.96	30.0	0.20	53.94	169.9	0.32
Other Survivor benefits	0.55	n/a	n/a	3.8	n/a	n/a
Disability benefit	15.46	n/a	n/a	125.26	n/a	n/a
Regular Tax on wealth	159.0	n/a	n/a	14.28	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 26. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2011]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1957	1968	0.99
Average gross earnings (m)				2320	2142	1.08
Average gross earnings (f)				1543	1758	0.88
Unemployment benefit	23.64	51.0	0.46	114.6	129.3	0.89
Unempl. benefit: (from SIF)	23.64	47.3	0.50	55.2	98.4	0.56
Unempl. benefit: other	2.38	3.7	0.64	59.4	30.9	1.92
Military grant	12.32	n/a	n/a	18.65	n/a	n/a
Educ. related benefits	42.06	36.94	1.14	117.25	91.5	1.28
Educ. related scholarship	7.04	n/a	n/a	25.81	n/a	n/a
Family related allowances	32.47	n/a	n/a	61.04	n/a	n/a
Sickness benefits	5.72	n/a	n/a	15.63	n/a	n/a
Housing allowances	9.13	n/a	n/a	36.49	n/a	n/a
Old age pensions	112.35	n/a	n/a	1531.53	n/a	n/a
Taxable old age pensions	61.59	n/a	n/a	872.6	n/a	n/a
Social pension	15.64	n/a	n/a	92.97	59.8	1.53
Non-taxable old-age pension	39.53	n/a	n/a	565.95	n/a	n/a
Windows pension	5.01	n/a	n/a	50.74	n/a	n/a
Orphan allowance	0.4	n/a	n/a	0.92	n/a	n/a
Survivor benefits	0.55	n/a	n/a	3.93	n/a	n/a
Other Survivor benefits	5.96	n/a	n/a	55.58	n/a	n/a
Disability benefit	15.46	n/a	n/a	128.99	n/a	n/a
Regular Tax on wealth	159.04	n/a	n/a	14.28	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 27. EUROMOD validation: income sources and taxes and benefits included but not simulated, [2012]

	Recipients/Payers ('000)			Expenditure/Revenue (millions)		
	EM	Ext Source	Ratio	EM	Ext Source	Ratio
Average gross earnings				1979	1990	0.99
Average gross earnings (m)				2320	2160	1.09
Average gross earnings (f)				1543	1786	0.87
Unemployment benefit	23.64	n/a	n/a	115.9	n/a	n/a
Unempl. benefit: (from SIF)	23.64	n/a	n/a	55.8	n/a	n/a
Unempl. benefit: other	2.38	n/a	n/a	60.1	n/a	n/a
Military grant	12.32	n/a	n/a	18.65	n/a	n/a
Educ. related benefits	42.06	n/a	n/a	117.2	n/a	n/a
Educ. related scholarship	7.04	n/a	n/a	25.81	n/a	n/a
Family related allowances	32.47	n/a	n/a	62.47	n/a	n/a
Sickness benefits	5.72	n/a	n/a	15.55	n/a	n/a
Housing allowances	9.13	n/a	n/a	37.37	n/a	n/a
Old age pensions	112.35	n/a	n/a	1572.0	n/a	n/a
Taxable old age pensions	61.59	n/a	n/a	892.8	n/a	n/a
Social pension	15.64	n/a	n/a	95.1	n/a	n/a
Non-taxable old-age pension	39.53	n/a	n/a	579.6	n/a	n/a
Windows pension	5.01	n/a	n/a	51.9	n/a	n/a
Orphan allowance	0.4	n/a	n/a	0.94	n/a	n/a
Survivor benefits	0.55	n/a	n/a	4.0	n/a	n/a
Other Survivor benefits	5.96	n/a	n/a	56.84	n/a	n/a
Disability benefit	15.46	n/a	n/a	132.0	n/a	n/a
Regular Tax on wealth	159.0	n/a	n/a	14.28	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.

#### 4.1.2 Simulated tax and benefits

Tables 29-34 compare aggregate figures of recipients and total amounts between the simulated instruments and the external data. In general, the model estimates are in accordance with administrative data, however several discrepancies do exist.

The model overestimates the number of student grant recipients, as well as the total expenditure for the grant. Yet, it should be noted that this benefit is also overestimated according to our splitting from the original EU-SILC dataset.

Both number of recipients and total expenditures for the birth grant are overestimated for 2007, while the comparison with external statistics looks fine for the next years. Yet it should be noted that external statistics refer to the number of applications processed in a given year. According to Ministry of Labour and Social Insurance the number of applications received in 2007 was largely in line with those received in 2006 and 2008 and the discrepancy observed in 2007 data is attributed to reasons not related with the simulation of the instrument.

The model underestimates substantially the total expenditures for public assistance. There are three reasons that explain this discrepancy. First, the model simulates only the part of the public assistance which covers the basic needs of the household. However, in several cases the public assistance may be given in order to cover special needs of the households. The special needs component of the public



assistance benefit depends on the particular circumstances of the applicant. It can include a rent allowance, a medically prescribed diet allowance, home-care, day-care, house equipment, house repairs, allowance for mortgage interest deriving from a house loan, transportation for work or treatment, etc. Obviously, these special cases cannot be simulated. Second, there are several categories of recipients of the public assistance that are not covered by the survey, namely asylum seekers, recognized political refugees, immigrants granted subsidiary protection and victims of sexual harassment or human trafficking. Lastly, there is the possibility that part of the discrepancy between EUROMOD and administrative data may be attributed to targeting errors. Possibly, the benefit is subject to Type II errors that arise from false positives (i.e. the benefit is attributed to non-eligible persons). Evidence of imperfect targeting is found in Koutsampelas (2011) whose empirical analysis reveals that a number of recipients are located above the poverty threshold.

Regarding child benefit, EUROMOD slightly overestimates the number of recipients, but underestimates total expenditures. Child benefit consists of two parts: a basic part which is universal and a supplementary part which is means-tested. Administrative data refer to total amounts (basic parts and supplementary parts are aggregated) and therefore we cannot conclude whether the supplementary part (which is income related) is the cause of underestimating the total spending for the benefit. However, the result is in line with our expectations: according to the law, means-testing is based on family income acquired three years before the day of application. On the contrary, EUROMOD model uses current income. Since current income is likely to be higher than past income, the model is likely to underestimate the supplementary part of the benefit and hence the aggregated amount.

The number of employees paying social insurance contributions is overestimated when compared to external statistics, while the aggregate amount of contributions is in line with the official figures. It should be noted that the EUROMOD database contains 330.8 thousand people with positive employment income, and that this number is already smaller than the number of social insurance contribution payers reported in the external statistics. The EU-Labour force survey reports a number of employees even smaller, just above 300 thousand<sup>15</sup>. Hence, it is likely that external statistics on the number of social insurance contributors are not entirely comparable to the EUROMOD simulation.

Income taxes appear to be largely overestimated. However, it should be noted that the external data for income taxes are not directly comparable to model estimates (for further details see the report on external data). Apart from comparability issues, other factors explaining the overestimation of income taxes are:

- a) The model does not take into account tax evasion. Both anecdotal and empirical evidence show that tax evasion is rife in Cyprus (Pashardes and Polycarpou, 2008)
- b) EU-SILC data did not contain adequate information for the simulation of a number of tax allowances and deductions.

Yet, we find that the sum of income taxes and social insurance contributions simulated by the Euromod model is in line with EU-SILC.

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<sup>15</sup> Source: EU-LFS (table lfsa\_eggais).

[http://epp.eurostat.ec.europa.eu/portal/page/portal/labour\\_market/introduction](http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/introduction)



Table 28. EUROMOD validation: taxes and benefits simulated, [2007]

	Recipients/Payers ('000)			Expenditure/Revenue (million)		
	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	43.45	33.4	1.30	93.0	69.8	1.33
Birth grant	8.28	5.9	1.40	3.7	2.66	1.40
Social Assistance	18.04	29.6	0.61	59.6	133.9	0.44
Child benefit	124.04	107.8	1.15	115.7	150.9	0.77
Child benefit (basic part)	50.78	n/a	n/a	13.0	n/a	n/a
Child benefit (suppl. part)	124.04	n/a	n/a	102.7	n/a	n/a
Income Tax	191.71	n/a	n/a	614.7	477.1	1.29
Special Contr. to defence	77.74	n/a	n/a	15.3	314	0.05
Employee SIC	330.32	385.84	0.86	337.9	310.6	1.09
Self-Employed SIC	74.32	34.5	2.16	94.5	55.1	1.72
Employer SIC	333.81	385.84	0.87	806.4	715.9	1.13
Annual Holidays Fund	67.72	80.9	0.83	90.9	89.1	1.02
Redundancy Fund	333.81	385.84	0.87	78.0	73.87	1.06
Human Resources Fund	333.81	385.84	0.87	32.5	31.1	1.05
Social Insurance Fund	330.32	385.84	0.86	475.0	399.2	1.19
Social Cohesion Fund	333.81	385.84	0.87	130.0	122.6	1.06
Government SIC	380.45	420.32	0.91	290.6	244.6	1.19

Sources: Data derived from various administrative data

Table 29. EUROMOD validation: taxes and benefits simulated, [2008]

	Recipients/Payers ('000)			Expenditure/Revenue (million)		
	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	43.13	35.7	1.21	95.9	92	1.04
Birth grant	8.28	7.8	1.06	3.9	3.6	1.08
Social Assistance	17.93	33.6	0.53	60.6	174.7	0.34
Child benefit	124.04	108.9	1.14	117.3	158.9	0.74
Child benefit (basic part)	45.36	108.9	1.21	12.0	n/a	n/a
Child benefit (suppl. part)	124.04	n/a	1.06	105.3	n/a	n/a
Income Tax	194.12	n/a	n/a	644.4	525.7	1.23
Special Contrib. to defence	77.74	n/a	n/a	16.4	385	0.04
Employee SIC	330.32	413	0.80	375.6	351	1.07
Self-Employed SIC	74.32	33.1	2.24	98.7	60	1.64
Employer SIC	333.81	413	0.81	853.2	805.8	1.06
Annual Holidays Fund	67.2	93.8	0.72	96.2	102.1	0.94
Redundancy Fund	333.81	413	0.81	82.5	83	0.99
Human Resources Fund	333.81	413	0.81	34.4	34.9	0.99
Social Insurance Fund	330.32	413	0.80	502.8	448	1.09
Social Cohesion Fund	333.81	413	0.81	139.0	137.8	1.03
Government SIC	380.45	446.1	0.85	307.2	274.6	1.10

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.

Table 30. EUROMOD validation: taxes and benefits simulated, [2009]

	Recipients/Payers ('000)			Expenditure/Revenue (million)		
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	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	43.13	36.2	1.19	95.7	88.2	1.09
Birth grant	8.28	7.2	1.15	4.1	3.42	1.19
Social Assistance	19.06	38.0	0.50	71.1	219.7	0.32
Child benefit	124.04	110.1	1.13	123.6	166.72	0.74
Child benefit (basic part)	42.66	n/a	n/a	11.8	n/a	n/a
Child benefit (suppl. part)	124.04	n/a	n/a	111.3	n/a	n/a
Income Tax	199.07	n/a	n/a	697.2	571.3	1.22
Special Contr. to defence	77.74	n/a	n/a	16.5	n/a	0.05
Employee SIC	330.32	419.96	0.79	418.8	391.1	1.07
Self-Employed SIC	74.32	31.4	2.37	111.4	58.3	1.91
Employer SIC	333.81	419.96	0.79	927.6	856.41	1.08
Annual Holidays Fund	67.2	95.7	0.70	100.0	101.3	0.99
Redundancy Fund	333.81	419.96	0.79	85.8	82.6	1.04
Human Resources Fund	333.81	419.96	0.79	35.7	34.7	1.03
Social Insurance Fund	330.32	419.96	0.79	564.0	500.7	1.11
Social Cohesion Fund	333.81	419.96	0.79	142.8	137.1	1.04
Government SIC	380.45	451.35	0.84	343.2	302.5	1.13

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.

Table 31. EUROMOD validation: taxes and benefits simulated, [2010]

	Recipients/Payers ('000)			Expenditure/Revenue (million)		
	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	43.13	36.94	1.17	95.5	88.2	1.04
Birth grant	8.28	8.17	1.01	4.3	4.06	1.06
Social Assistance	19.56	43.50	0.45	77.3	219.7	0.31
Child benefit	124.04	111.32	1.11	124.8	166.7	0.76
Child benefit (basic part)	46.77	n/a	n/a	13.0	n/a	n/a
Child benefit (suppl. part)	124.04	n/a	n/a	111.6	n/a	n/a
Income Tax	209.49	n/a	n/a	741.6	593.0	1.25
Special Contr. to defence	77.74	n/a	n/a	17.0	395.6	0.04
Employee SIC	330.32	424.79	0.78	430.8	415.8	1.04
Self-Employed SIC	74.32	30.09	2.47	116.2	58.55	1.99
Employer SIC	333.81	424.79	0.79	954.0	900.3	1.06
Annual Holidays Fund	67.2	95.48	0.70	102.7	103.9	0.99
Redundancy Fund	333.81	424.79	0.79	88.2	85.81	1.03
Human Resources Fund	333.81	424.79	0.79	36.7	36.0	1.02
Social Insurance Fund	330.32	424.79	0.78	579.6	532.2	1.09
Social Cohesion Fund	333.81	424.79	0.79	146.4	142.4	1.03
Government SIC	380.45	454.87	0.84	352.8	319.7	1.10

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 32. EUROMOD validation: taxes and benefits simulated, [2011]

	Recipients/Payers ('000)			Expenditure/Revenue (million)		
	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	42.97	36.7	1.17	95.2	91.5	1.04
Birth grant	8.28	8.00	1.04	4.5	4.25	1.06
Social Assistance	19.34	n/a	n/a	75.8	n/a	n/a
Child benefit	124.04	108.6	1.14	128.4	167.2	0.77
Child benefit (basic part)	51.07	n/a	n/a	14.4	n/a	n/a
Child benefit (suppl.part)	124.04	n/a	n/a	114.4	n/a	n/a
Income Tax	211.69	n/a	n/a	805.2	628.1	1.25
Special Contr. to defence	77.4	n/a	n/a	17.3	447.5	0.04
Employee SIC	330.32	426.80	0.77	442.8	n/a	n/a
Self-Employed SIC	74.32	28.50	2.61	119.1	n/a	n/a
Employer SIC	333.81	426.80	0.78	980.4	n/a	n/a
Annual Holidays Fund	67.2	n/a	n/a	105.5	n/a	n/a
Redundancy Fund	333.81	426.80	0.78	90.6	n/a	n/a
Human Resources Fund	333.81	426.80	0.78	37.8	n/a	n/a
Social Insurance Fund	330.32	426.80	0.77	595.2	n/a	n/a
Social Cohesion Fund	333.81	426.80	0.78	151.2	n/a	n/a
Government SIC	380.45	455.30	0.84	362.4	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.



Table 33. EUROMOD validation: taxes and benefits simulated, [2012]

	Recipients/Payers (‘000)			Expenditure/Revenue (million)		
	EM	Ext source	Ratio	EM	Ext source	Ratio
Student grant	43.64	n/a	n/a	77.2	n/a	n/a
Birth grant	8.28	n/a	n/a	4.6	n/a	n/a
Social Assistance	14.66	n/a	n/a	54.7	n/a	n/a
Child benefit	91.00	n/a	n/a	93.0	n/a	n/a
Child benefit (basic part)	44.6	n/a	n/a	12.2	n/a	n/a
Child benefit (suppl.part)	91.0	n/a	n/a	80.8	n/a	n/a
Single parent benefit	10.2	n/a	n/a	71.0	n/a	n/a
Income Tax	206.5	n/a	n/a	758.5	n/a	n/a
Special Contr. to defence	77.74	n/a	n/a	23.8	n/a	n/a
Employee SIC	330.32	n/a	n/a	649.5	n/a	n/a
Self-Employed SIC	74.32	n/a	n/a	120.9	n/a	n/a
Employer SIC	333.81	n/a	n/a	993.2	n/a	n/a
Annual Holidays Fund	67.2	n/a	n/a	106.9	n/a	n/a
Redundancy Fund	333.81	n/a	n/a	91.8	n/a	n/a
Human Resources Fund	333.81	n/a	n/a	38.2	n/a	n/a
Social Insurance Fund	330.32	n/a	n/a	603.6	n/a	n/a
Social Cohesion Fund	333.81	n/a	n/a	153.0	n/a	n/a
Government SIC	380.45	n/a	n/a	367.5	n/a	n/a
Sp. contr. Pub. empl.	41.9	n/a	n/a	18.7	n/a	n/a
Sp. contr. Priv. empl.	43.6	n/a	n/a	10.4	n/a	n/a
Sp. contr. employer	43.6	n/a	n/a	10.4	n/a	n/a
Sp. contr. Self-empl.	14.9	n/a	n/a	7.2	n/a	n/a
special contribution from pensioners (private and public)	11.3			9.0		
Contr. to pub. pensions	77.7	n/a	n/a	10.4	n/a	n/a

Sources: Sources: a) Social Insurance Services, Archived Statistical Data, Ministry of Labour and Social Insurance; b) Grants and Benefits Services, Ministry of Finance; c) Inland Revenue Department, Ministry of Finance.

## 4.2 Income distribution

All income distribution results presented here are based on distributions of equivalized disposable income. The “modified OECD” equivalence scale was used for converting nominal incomes to equivalized. Household disposable income is calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

EUROMOD estimates on income inequality, as reflected on deciles shares and Gini index, are very close to those reported by the EUROSTAT database. Income share ratios (presented in Table 53-58) are very close to unity with the exception of poorest decile whose income share appears to be overestimated. Gini ratio fluctuates slightly above 0.90. Comparisons of poverty estimates reveal larger discrepancies that vary according to the choice of the poverty line. The largest differences are observed for extreme values of the poverty line. On the contrary, the model appears to provide accurate estimates of poverty rates when “normal” poverty lines are chosen. Regarding child and elderly poverty, children are defined as persons aged below 18 and the elderly as those aged above 64. The simulated values appear to be very close to those from other sources when standard poverty lines are adopted. Partly, the observed differences between the model and the other statistics are due to the



fact that no adjustments were made for tax evasion and non take-up. These methodological treatments are likely to affect disproportionately more the very bottom of the distribution, resulting to larger differences between Euromod estimates and other sources only when we adopt extreme poverty lines (for example, when poverty lines computed at 40 per cent of the median).

The later deserves special attention. Tax non-compliance is a common problem of tax authorities in most countries. Cyprus is no exemption. According to Pashardes and Polycarpou (2008) the size of black economy in Cyprus is around 6.7% - 8.1% of GDP. Income from self-employment is under-reported by 44.8% and capital income by 40.3%, while the highest under-reporting rate was estimated for agricultural income (59.9%). Inescapably, tax evasion has distributional consequences at the extent that high income earners evade taxes more in relative terms than low-income earners. Most probably, measures of poverty and inequality that do not take into account tax evasion underestimate the actual level of poverty and inequality.

When compared with external statistics, we observe deterioration on our estimates on elderly poverty rates. This can be explained by elderly income being relatively inelastic to the effects of the crisis (mostly pensions and old-age benefits), while working-age population experiencing large income fall due to wage reductions, but most of all due to unemployment. In that sense, the elderly gradually improve their relative position in the income distribution (albeit their well-being is deteriorating in absolute terms). Given that unemployment climbs to unprecedented levels, our estimates for years 2011, 2012 (or 2013 for the upcoming versions) are becoming less precise.

#### 4.2.1 Poverty

Table 34. EUROMOD validation: poverty rates at different poverty lines, [2007]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.022	0.036	0.61
50% of median equivalent income	0.073	0.089	0.82
60% of median equivalent income	0.147	0.155	0.95
70% of median equivalent income	0.223	0.231	0.97

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 35. EUROMOD validation: poverty rates at different poverty lines, [2008]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.023	0.032	0.72
50% of median equivalent income	0.074	0.075	0.99
60% of median equivalent income	0.148	0.159	0.93
70% of median equivalent income	0.225	0.230	0.98

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 36. EUROMOD validation: poverty rates at different poverty lines, [2009]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.022	0.030	0.73
50% of median equivalent income	0.071	0.081	0.88
60% of median equivalent income	0.146	0.158	0.92
70% of median equivalent income	0.225	0.244	0.92

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]



Table 37. EUROMOD validation: poverty rates at different poverty lines, [2010]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.021	0.033	0.64
50% of median equivalent income	0.065	0.078	0.83
60% of median equivalent income	0.142	0.151	0.94
70% of median equivalent income	0.224	0.228	0.98

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 38. EUROMOD validation: poverty rates at different poverty lines, [2011]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.020	0.028	0.71
50% of median equivalent income	0.063	0.077	0.82
60% of median equivalent income	0.142	0.145	0.98
70% of median equivalent income	0.226	0.232	0.97

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 39. EUROMOD validation: poverty rates at different poverty lines, [2012]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.019	n/a	n/a
50% of median equivalent income	0.056	n/a	n/a
60% of median equivalent income	0.131	n/a	n/a
70% of median equivalent income	0.218	n/a	n/a

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 40. EUROMOD validation: child poverty rates at different poverty lines, [2007]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	0.021	0.33
50% of median equivalent income	0.041	0.058	0.71
60% of median equivalent income	0.12	0.124	0.97
70% of median equivalent income	0.203	0.208	0.98

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 41. EUROMOD validation: child poverty rates at different poverty lines, [2008]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	0.019	0.37
50% of median equivalent income	0.042	0.051	0.82
60% of median equivalent income	0.121	0.140	0.86
70% of median equivalent income	0.207	0.222	0.93

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 42. EUROMOD validation: child poverty rates at different poverty lines, [2009]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	0.012	0.58
50% of median equivalent income	0.041	0.054	0.76
60% of median equivalent income	0.118	0.123	0.96
70% of median equivalent income	0.207	0.244	0.85

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]



Table 43. EUROMOD validation: child poverty rates at different poverty lines, [2010]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	0.023	0.30
50% of median equivalent income	0.04	0.051	0.78
60% of median equivalent income	0.117	0.123	0.95
70% of median equivalent income	0.205	0.206	1.00

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 44. EUROMOD validation: child poverty rates at different poverty lines, [2011]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	0.021	0.33
50% of median equivalent income	0.04	0.055	0.71
60% of median equivalent income	0.12	0.119	0.98
70% of median equivalent income	0.209	0.209	1.00

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 45. EUROMOD validation: child poverty rates at different poverty lines, [2012]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.007	n/a	n/a
50% of median equivalent income	0.034	n/a	n/a
60% of median equivalent income	0.102	n/a	n/a
70% of median equivalent income	0.191	n/a	n/a

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 46. EUROMOD validation: Elderly poverty rates at different poverty lines, [2007]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.09	0.128	0.70
50% of median equivalent income	0.285	0.341	0.84
60% of median equivalent income	0.481	0.506	0.95
70% of median equivalent income	0.589	0.598	0.98

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 47. EUROMOD validation: Elderly poverty rates at different poverty lines, [2008]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.092	0.097	0.95
50% of median equivalent income	0.291	0.249	1.17
60% of median equivalent income	0.488	0.463	1.05
70% of median equivalent income	0.595	0.587	1.01

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 48. EUROMOD validation: Elderly poverty rates at different poverty lines, [2009]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.088	0.097	0.91
50% of median equivalent income	0.27	0.247	1.09
60% of median equivalent income	0.477	0.464	1.03
70% of median equivalent income	0.584	0.570	1.02

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]



Table 49. EUROMOD validation: Elderly poverty rates at different poverty lines, [2010]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.08	0.075	1.07
50% of median equivalent income	0.235	0.223	1.05
60% of median equivalent income	0.463	0.405	1.14
70% of median equivalent income	0.574	0.546	1.05

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 50. EUROMOD validation: Elderly poverty rates at different poverty lines, [2011]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.077	0.057	1.35
50% of median equivalent income	0.22	0.193	1.14
60% of median equivalent income	0.455	0.372	1.22
70% of median equivalent income	0.571	0.536	1.07

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

Table 51. EUROMOD validation: Elderly poverty rates at different poverty lines, [2012]

percentage of individuals below:	EUROMOD	Ext source	Ratio
40% of median equivalent income	0.066	n/a	n/a
50% of median equivalent income	0.182	n/a	n/a
60% of median equivalent income	0.417	n/a	n/a
70% of median equivalent income	0.548	n/a	n/a

Sources: Eurostat Online Database, monetary poverty – [ilc\_ip]

#### 4.2.2 Income inequality

Table 52. EUROMOD validation: income inequality, [2007]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.269	0.298	0.90
Decile Shares			
1	4.5	3.8	1.3
2	5.6	5.2	1.1
3	6.3	6.4	1.0
4	7.2	7.4	1.0
5	8.2	8.4	1.0
6	9.2	9.5	1.0
7	10.3	10.5	1.0
8	11.7	12.0	1.0
9	14.1	14.1	1.0
10	22.9	22.8	0.9
Mean income (equivalised)	1573.24	1571	1.00
Median income (equivalised)	1404.33	1394	1.01

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.

Sources: Eurostat Online Database, distribution of income – [ilc\_di].



Table 53. EUROMOD validation: income inequality, [2008]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.270	0.29	0.96
Decile Shares			
1	4.5	3.6	1.3
2	5.6	5.1	1.1
3	6.3	6.2	1.0
4	7.2	7.2	1.0
5	8.2	8.2	1.0
6	9.2	9.1	1.0
7	10.3	10.3	1.0
8	11.8	11.7	1.0
9	14.0	13.9	1.0
10	22.9	24.7	0.9
Mean income (equivalised)	1657.6	1571	1.06
Median income (equivalised)	1480.3	1394	1.06

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.

Sources: Eurostat Online Database, distribution of income – [ilc\_di].

Table 54. EUROMOD validation: income inequality, [2009]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.269	0.295	0.91
Decile Shares			
1	4.5	3.7	1.2
2	5.6	5.1	1.1
3	6.3	6.1	1.0
4	7.2	7.2	1.0
5	8.2	8.1	1.0
6	9.2	9.2	1.0
7	10.4	10.4	1.0
8	11.7	11.9	1.0
9	14.0	14.2	1.0
10	22.9	24.2	1.0
Mean income (equivalised)	1706.2	n/a	n/a
Median income (equivalised)	1521.1	n/a	n/a

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

Sources: Eurostat Online Database, distribution of income – [ilc\_di].



Table 55. EUROMOD validation: income inequality, [2010]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.268	0.298	0.90
Decile Shares			
1	4.6	3.6	1.3
2	5.7	5.1	1.1
3	6.3	6.1	1.0
4	7.2	7.1	1.0
5	8.1	8.0	1.0
6	9.2	9.1	1.0
7	10.4	10.3	1.0
8	11.6	11.8	1.0
9	14.0	14.5	1.0
10	22.9	24.2	0.9
Mean income (equivalised)	1748.6	n/a	n/a
Median income (equivalised)	1561.6	n/a	n/a

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

Sources: Eurostat Online Database, distribution of income – [ilc\_di].

Table 56. EUROMOD validation: income inequality, [2011]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.267	0.291	0.92
Decile Shares			
1	4.6	3.7	1.2
2	5.7	5.2	1.1
3	6.3	6.1	1.0
4	7.2	7.3	1.0
5	8.2	8.1	1.0
6	9.2	9.2	1.0
7	10.3	10.4	1.0
8	11.6	12.0	1.0
9	14.0	14.6	1.0
10	22.8	23.6	1.0
Mean income (equivalised)	1784	n/a	n/a
Median income (equivalised)	1594.4	n/a	n/a

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

Sources: Eurostat Online Database, distribution of income – [ilc\_di].



Table 57. EUROMOD validation: income inequality, [2012]

percentage of individuals below:	EUROMOD	Ext source	Ratio
Gini Coefficient	0.262	n/a	n/a
Decile Shares			
1	4.7	n/a	n/a
2	5.7	n/a	n/a
3	6.4	n/a	n/a
4	7.3	n/a	n/a
5	8.2	n/a	n/a
6	9.2	n/a	n/a
7	10.3	n/a	n/a
8	11.6	n/a	n/a
9	13.9	n/a	n/a
10	22.7	n/a	n/a
Mean income (equivalised)	1758	n/a	n/a
Median income (equivalised)	1573.1	n/a	n/a

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

Sources: Eurostat Online Database, distribution of income – [ilc\_di].

### 4.3 Summary of “Health warnings”

The model simulates a variety of policy instruments of the tax-benefit system of Cyprus. It is a valuable tool that enables the user to estimate the first-round distributional and fiscal effects of potential policy reforms. Nevertheless the following caveats should be taken into consideration in order to interpret the results meaningfully:

- Issues of data comparability

The validation of the model requires the comparison of both simulated and non-simulated policy instruments with external information provided by administrative or other sources. In some cases the observed disparities between EU-SILC variables, EUROMOD estimations and administrative data are the result of differences in the methodological settings between the various administrative sources and the model. These cases are discussed separately in the report on external data.

- Partly simulated instruments

Several instruments were not fully simulated due to data limitations. For example, the model simulates only the part of the public assistance which is designed to cover the basic needs of the recipient household. However, in several cases the public assistance may be given in order to cover special needs of the households (rent allowance, a medically prescribed diet allowance, home-care, day-care, house equipment, house repairs, allowance for mortgage interest deriving from a house loan, transportation for work or treatment, etc.). In other cases, it was not possible to fully simulate the administrative practices of an instrument. For example, a common contribution condition of the Social Insurance Scheme refers to insurable earnings of the previous contribution year<sup>16</sup>. Special notes in the document explain how each case was practically treated by the model.

- Imperfect targeting and tax evasion

<sup>16</sup> Contribution year differs from calendar year. For example, for the first semester of 2006 the previous contribution year is the year 2004 and for the second semester of 2006 is the year 2005.



The model does not take into account imperfect targeting of social benefits and tax evasion, thus we implicitly assume perfect targeting and tax compliance. This may cause differences between simulated and actual values. In practice, welfare programmes are subject to Type I and Type II errors. Type I errors arise from “false” negatives, meaning that the benefit is not attributed to an eligible recipient. On the other hand, Type II errors arise from “false” positives, that is the benefit is attributed to non-eligible persons. Lastly, the existence of tax evasion may cause a downward bias to distributional statistics assuming that high income earners tax evade more than low income earners do.

## 5. REFERENCES

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## 6. APPENDIX

### 6.1 EUROMOD TECHNICAL NOTE: Report on Administrative Data

Euromod model simulates a number of cash benefits, income taxes and social insurance contributions. Aggregate estimates of recipients/payers and expenditures/revenues for each simulated instrument are compared with external statistics in the so-called ‘macrovalidation’ process. The aim of macrovalidation is twofold. At the stage of implementation of the model, it helps us to spot errors and correct them, accordingly. Once the model is finalized, it is useful to know to what extent, and for what reasons, the results of the model do not correspond to other data sources. Yet, the procedure of macrovalidation is not always straightforward. Most importantly, administrative data are not compiled to correspond to the purposes of a scientific endeavour such as microsimulation modelling but rather to serve the specific informational needs of public administration. Despite the presence of incomparability issues between the various sources of information the macrovalidation of the model is very valuable for the potential users of the models, as long as the sources of non-comparability are clear. The following sections describe the external information which was gathered for the purpose of validating the Cypriot version of EUROMOD model as well as highlight the caveats of the macrovalidation procedure.

The Social Insurance Fund of the Ministry of Labour and Social Insurance and the Grants and Benefit Services of the Ministry of Economics and Finance are responsible for the administration of the majority of cash benefits in Cyprus. The Social Insurance Fund provides for the following social benefits: marriage grant, maternity grant, funeral grant, maternity allowance, sickness benefit, unemployment benefit, missing person’s allowance and employment injury benefits. The aforementioned benefits are contributory, i.e. their entitlement depends upon the contributory record of the beneficiary. Besides contributory benefits, the Cypriot welfare state provides for a number of non-contributory benefits. Responsible for their administration are the Grants and Benefit Services. These are; the child benefit, the student grant, mother’s allowance, the financial assistance to multi-child families for purchasing a car, the special grant to blind persons, the transportation benefit for the disabled and other special grants or benefits. Finally, a small number of occupational-based benefits are given from other Ministries and public authorities (e.g. transportation benefits to army officers) but are not significant at the macro-level and therefore were left out of the scope of the model.

Social Insurance Services publish in an annual basis a collection of statistics in its web-page<sup>17</sup>. It should be noted that most statistics are usually publicly available two years after the year of reference. For example, total spending on public assistance in 2010 is available in 2012. In some cases the figures are available sooner but for internal use. Whether they would be provided or not to external users, depends on the discretion of the pertinent officers. Most documents are published only in Greek. Grants and Benefits Services are not committed on regularly publicizing statistics regarding aggregate figures of beneficiaries and allocated amounts. But interested parties (universities, research organizations, and the media) can demand them officially. In some cases, this procedure is time consuming, for the public services do not respond always timely due to their own time constraints and priorities. The following Table reports a variety of statistics which we have collected over the last years and used for the purposes of macrovalidation. In parentheses, we report the official labels of the benefits in Greek language.

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<sup>17</sup>For further information see,  
[http://www.mlsl.gov.cy/mlsl/sid/sid.nsf/dmlstatistical\\_gr/dmlstatistical\\_gr?OpenDocument](http://www.mlsl.gov.cy/mlsl/sid/sid.nsf/dmlstatistical_gr/dmlstatistical_gr?OpenDocument).



Table A.1: Total number of recipients (only benefits given by Social Insurance Services)

	2006	2007	2008	2009	2010	2011
Old-age pension ( <i>Σύνταξη Γήρατος</i> )	76,115	79,532	83,440	87,596	89,354	93,670
Widow pension ( <i>Σύνταξη Χηρείας</i> )	28,626	28,854	29,036	29,458	28,541	28,682
Invalidity pension ( <i>Σύνταξη Ανικανότητας</i> )	7,804	8,004	8,046	8,161	7,102	6,930
Disability pension ( <i>Σύνταξη Αναπηρίας</i> )	1,152	1,219	1,187	1,204	1,067	1,052
Orphan benefit ( <i>Επίδομα Ορφάνιας</i> )	1,532	1,530	1,548	1,607	1,544	1,519
Missing Allowance ( <i>Επίδομα Αγνοούμενου</i> )	292	284	276	273	229	220
Death related benefit ( <i>Παροχή λόγω θανάτου</i> )	336	334	332	342	325	322
Unemployment benefit ( <i>Επίδομα Ανεργίας</i> )	29,653	27,900	26,556	35,368	42,825	47,285
Sickness benefit ( <i>Επίδομα Ασθενείας</i> )	37,900	39,463	40,670	43,014	45,533	45,141
Maternity allowance ( <i>Επίδομα Μητρότητας</i> )	7,102	6,296	7,673	7,943	6,918	6,831
Physical injury benefit ( <i>Επίδομα Σωματικής Βλάβης</i> )	2,409	2,135	2,325	2,152	2,042	1,681
Marriage grant ( <i>Βοήθημα Γάμου</i> )	3,698	2,878	3,873	3,424	3,993	3,639
Birth grant ( <i>Βοήθημα Τοκετού</i> )	7,794	5,881	7,826	7,217	8,174	7,997
Funeral grant ( <i>Βοήθημα Κηδείας</i> )	4,603	4,457	4,499	4,495	4,579	4,208
Redundancy fund ( <i>Ταμείο Πλεονάζοντος Προσωπικού</i> )	4,635	2,854	2,190	2,126	3,231	3,679
Central Holiday Fund ( <i>Κεντρικό Ταμείο Αδειών</i> )	76,565	79,568	85,555	93,860	95,481	101,993
Social pensions ( <i>Κοινωνική Σύνταξη</i> )	16,289	16,054	16,010	16,091	15,189	15,370
Special grant to poor elderly ( <i>Ειδική Χορηγία</i> )	97,164	98,364	99,679	101,208	42,025	32,691
Public assistance ( <i>Δημόσιο Βοήθημα</i> )	25,663	28,584	33,567	38,000	43,457	-

Source: Social Insurance Service: [http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical\\_gr/dmlstatistical\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical_gr/dmlstatistical_gr?OpenDocument).



Table A.2: Total expenditures (only benefits given by Social Insurance Services), amounts in '000s.

	2006	2007	2008	2009	2010	2011
Old-age pension ( <i>Σύνταξη Γήρατος</i> )	456,456	499,888	564,533	619,854	693,504	770,523
Widow pension ( <i>Σύνταξη Χηρείας</i> )	129,051	134,919	146,765	153,516	166,029	173,013
Invalidity pension ( <i>Σύνταξη Ανικανότητας</i> )	44,035	46,988	49,834	50,580	52,135	53,478
Disability pension ( <i>Σύνταξη Αναπηρίας</i> )	4,348	4,643	4,812	4,971	5,005	5,105
Orphan benefit ( <i>Επίδομα Ορφάνιας</i> )	3,185	3,326	3,609	3,685	3,867	4,315
Missing Allowance ( <i>Επίδομα Αγνοούμενου</i> )	1,151	1,098	1,208	1,170	1,131	1,099
Death related benefit ( <i>Παροχή λόγω θανάτου</i> )	2,014	2,158	2,278	2,457	2,508	2,567
Unemployment benefit ( <i>Επίδομα Ανεργίας</i> )	57,025	54,812	54,291	77,870	85,809	98,390
Sickness benefit ( <i>Επίδομα Ασθενείας</i> )	28,321	30,104	33,655	36,846	42,111	36,353
Maternity allowance ( <i>Επίδομα Μητρότητας</i> )	17,170	17,026	23,283	25,499	31,158	29,481
Physical injury benefit ( <i>Επίδομα Σωματικής Βλάβης</i> )	2,282	2,096	2,281	2,428	1,841	2,002
Marriage grant ( <i>Βοήθημα Γάμου</i> )	2,116	1,687	2,334	2,133	2,606	2,496
Birth grant ( <i>Βοήθημα Τοκετού</i> )	3,249	2,657	3,610	3,417	4,061	4,249
Funeral grant ( <i>Βοήθημα Κηδείας</i> )	2,282	2,257	2,465	2,601	2,790	2,586
Redundancy fund ( <i>Ταμείο Πλεονάζοντος Προσωπικού</i> )	26,357	15,755	17,817	18,638	27,871	30,891
Central Holiday Fund ( <i>Κεντρικό Ταμείο Αδειών</i> )	66,834	72,595	81,927	94,502	96,623	100,879
Social pensions ( <i>Κοινωνική Σύνταξη</i> )	51,031	52,306	54,214	56,131	59,800	62,593
Special grant to poor elderly ( <i>Ειδική Χορηγία</i> )	79,050	87,773	108,568	109,960	58,500	41,448
Public assistance ( <i>Δημόσιο Βοήθημα</i> )	110,349	133,996	174,695	219,683	245,748	-

Source: Social Insurance Services: [http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical\\_gr/dmlstatistical\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical_gr/dmlstatistical_gr?OpenDocument).



Table A.3: Total number of recipients (Grants and Benefits Services)

	2006	2007	2008	2009	2010	2011
Child benefit ( <i>Επίδομα Τέκνου</i> )	106,866	107,828	108,875	110,096	111,320	108,613
Financial Assist. for purchasing a house ( <i>Χορηγία για Αγορά/Ανέγερση Κατοικίας</i> )	505	2655	3940	4380	5,016	3,874
Students grant ( <i>Ειδική Χορηγία για Φοιτητές</i> )	31,628	33,433	35,725	36,221	36,946	36,700
Mothers' allowance ( <i>Επίδομα Μάνας</i> )	11,923	12,979	19,749	20,719	21,189	20,833
Special grant to the blinds ( <i>Ειδική Χορηγία σε Τυφλούς</i> )	2,345	2,887	2,848	2,753	2,866	-
Fin. Assist. to the disabled for purchasing a car ( <i>Οικ. Βοήθεια σε ανάπηρους για αγορά αυτοκινήτου</i> )	249	229	264	286	291	-
Fin. Assist. to multi-child families for purchasing a car ( <i>Οικ. Βοήθ.σε πολυτέκ.για αγορά αυτοκινήτου</i> )	477	404	561	477	367	367
Transportation benefit for the disabled ( <i>Επίδομα διακίνησης Αναπήρων</i> )	300	320	331	406	418	-

Source: Grants and Benefits Services

Table A.4: Total expenditures (only benefits from Grants and Benefits Services), in 000s of euros

	2006	2007	2008	2009	2010	2011
Child benefit ( <i>Επίδομα Τέκνου</i> )	147,418	150,877	158,920	166,725	164,698	167,207
Financial assistance for purchasing a house ( <i>Ειδική Χορηγία για Αγορά/Ανέγερση Κατοικίας</i> )	7,259	37,582	58,864	64,926	75,027	58,745
Students grant ( <i>Ειδική Χορηγία για Φοιτητές</i> )	60,505	69,824	91,920	88,178	91,470	92,208
Mothers' allowance ( <i>Επίδομα Μάνας</i> )	9,199	10,314	16,107	17,971	18,201	18,758
Special grant to the blinds ( <i>Ειδική Χορηγία σε Τυφλούς</i> )	6,863	8,065	9,436	10,420	10,694	11,342
Financial assistance to the disabled for purchasing a car ( <i>Οικ. βοήθ.σε ανάπηρους για αγορά αυτ.</i> )	3,042	1,872	2,445	2,683	2,503	1,588
Financial assistance to multi-child families for purchasing a car ( <i>Οικ. βοήθεια σε πολυτέκνους για αγορά αυτοκινήτου</i> )	1,630	1,384	2,539	2,201	1,669	1,420
Transportation benefit for the disabled ( <i>Επίδομα διακίνησης Αναπήρων</i> )	0,197	0,207	0,221	0,313	0,388	0,455

Source: Grants and Benefits Services



A careful inspection of the figures reveals a small number of data discontinuities. For example, the number of recipients of the birth grant decreased, rather abruptly, from 7,794 in 2006 to 5,881 in 2007. In similar fashion, total expenditures reduced from €3,248,991 to €2,656,627 during the same period. Both figures (number of recipients and total expenditures) increased back to normal levels in 2008. The 2007 Demographic Report<sup>18</sup>, conducted by the Statistical Service of Cyprus, shows that the number of births during that period followed a normal trend and does not explain the discontinuity observed in birth grant data. According to our communication with Grants and Benefits Services, this data discontinuity is most likely due to administrative reasons. Possibly, a number of applications submitted in 2007, due to work overload, were actually processed in the next year. The pertinent officer also checked the number of applications (i.e. the sum of successful and unsuccessful application forms) throughout the period and did not figure out an unusual fluctuation in their total number. Thus we conclude that this disparity in the data is due to administrative (or accounting reasons) and consequently it is irrelevant to the attribution patterns of the benefit and the interpretation of the results of the validation<sup>19</sup>.

External statistics regarding student grant beneficiaries appear to have also a similar problem. In particular, total spending for the grant increased from €70 million to €90 million between 2007 and 2008, while the number of recipients increased by a slower pace. Yet during that period certain policy reforms as well as other institutional changes in the field of tertiary education help explain the observed increase in total expenditures. The student grant consists of a basic part and a supplementary part which is given to multi-child families, as well as to students enrolled in private institutions. During that period, the government extended the definition of multi-child family to families with three children. Most importantly, during that period, a number of private higher education institutions<sup>20</sup> were recognized as equivalent to public universities. Possibly, this development led several students to enroll in a private university (thus avoiding to study abroad). Students who enroll in private universities or colleges pay fees and according to the law are eligible for the supplementary part of the student grant which is given on top of the basic part, therefore explaining altogether with the expansion of the definition of multi-child family the increase in the aggregate cost of the benefit. Finally, other minor discontinuities observed in the figures of Tables A.1-A.4 refer to non-simulated instruments (e.g. marriage grant, mother allowance and financial assistance for purchasing a house) and were not thoroughly investigated since these benefits are out of the scope of the model.

## Income taxes

The Inland Revenue Department of the Ministry of Finance publishes annually data regarding the total amount of collected taxes. The following Table summarizes data on income taxation (i.e. personal income taxes from employees<sup>21</sup> and self-employed).

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<sup>18</sup>[http://www.mof.gov.cy/mof/cystat/statistics.nsf/populationcondition\\_21main\\_puparchive\\_en/populationcondition\\_21main\\_puparchive\\_en?OpenForm&yr=2009](http://www.mof.gov.cy/mof/cystat/statistics.nsf/populationcondition_21main_puparchive_en/populationcondition_21main_puparchive_en?OpenForm&yr=2009)

<sup>19</sup> A possible treatment of the problem would be to substitute the official value reported for 2007 with an imputed value computed as the arithmetic mean between 2006 and 2008 (for both total number of recipients and expenditures).

<sup>20</sup> Nowadays, four private universities operate in Cyprus; the University of Nicosia, the European University of Cyprus, Neapolis University and the Frederick University.

<sup>21</sup> Pensioners are included in the categories of employees and self-employed according to their prior working status.



Table A.5: Income Taxation (in millions of euro)

Year	Income taxes collected (employees)	Income taxes collected (self-employed)	Total Income Taxes collected
2007	407.8	60.8	468.6
2008	450.0	62.9	512.9
2009	496.8	61.7	558.5
2010	524.1	59.1	583.2
2011	573.0	55.0	628.1
2012	-	-	-

Source: Inland Revenue Department<sup>22</sup>

EUROMOD model appears to overestimate considerably the aggregate amount of income taxes (by about 30 per cent). Unfortunately the statistics are not directly comparable, for Inland Revenue Department (IRD) estimates refer to taxes collected during a particular year which may refer to taxes levied on the incomes of previous years. After communicating with the IRD, the pertinent officers asserted that it is not possible to provide us with statistics which fit better to the needs of the model. A possible remedy to cure that problem would be to use the following formula;

*Income Taxes of a particular year = moving average of that year and next year's collected tax.*

It is likely that this calculation could provide a more realistic estimate of the total income tax revenues corresponding to the incomes of each financial year. Yet, we note that overestimating income taxes is rather typical in most microsimulation models due to tax evasion. Not much is known for the extent and nature of tax evasion in Cyprus, Pashardes and Polycarpou (2008). However there is a lot of anecdotal evidence (as well as media reports) that tax evasion is rife in the island, especially among the self-employed. In order to treat the problem, we have to adjust incomes for tax evasion using appropriate techniques. At the present time, there is no plan for upgrading the Cyprus version of EUROMOD model in order to take note of tax evasion.

### Social Insurance Contributions

The following two Tables report administrative data on social insurance contributions (total number of contributors and total amount of contributions). EUROMOD appears to underestimate the number of contributors by about 20 per cent. This seemingly disparity is due to a different definition of the contributor between the model and administrative data. In particular, Social Insurance Fund statistics count as contributors all the employed persons who paid for contributions at least for one working day during the year of reference. This treatment may overestimate the number of contributors vis-a-vis the EUROMOD's underlying dataset. The number of self-employed also appears to be overestimated by the model.

<sup>22</sup>

[http://www.mof.gov.cy/mof/ird/ird.nsf/dmlannualreports\\_en/dmlannualreports\\_en?OpenDocument](http://www.mof.gov.cy/mof/ird/ird.nsf/dmlannualreports_en/dmlannualreports_en?OpenDocument)



Table A.5: Total number of contributors (in 000s of euros)

	2007	2008	2009	2010	2011
Employee	385.8	413	420.0	424.8	426.8
Self-Employed	34.5	33.1	31.4	30.1	28.5
Annual Holidays Fund	80.9	93.8	95.7	95.5	-
Redundancy Fund	385.84	413	420.0	424.8	426.8
Human Resources Fund	385.84	413	420.0	424.8	426.8
Social Insurance Fund	385.84	413	420.0	424.8	426.8
Social Cohesion Fund	385.84	413	420.0	424.8	426.8

Source: Archived Statistical Data of Social Insurance Services<sup>23</sup>

Table A.6: Total revenues from social insurance contributions, in million of euros.

	2007	2008	2009	2010	2011
Employee SIC	310.6	351	391.1	-	-
Self-Employed SIC	55.1	60	58.3	58.5	-
Annual Holidays Fund	89.1	102.1	101.3	103.9	-
Redundancy Fund	73.9	83	82.6	85.1	-
Human Resources Fund	31.1	34.9	34.7	-	-
Social Insurance Fund	399.2	448	500.7	-	-
Social Cohesion Fund	122.6	137.8	137.1	-	-

Source: Archived Statistical Data of Social Insurance Services, see link above.

### Distributional Statistics

Distributional statistics, namely poverty and inequality indicators as well as quintile-based statistics, are typically derived from income surveys. In that regard, these statistics cannot serve as a definite yardstick of how well the model behaves, for they are subject to measurement error, too. Cyprus Country report refers to indicators announced by Eurostat which cannot be literally regarded as ‘external information’. In essence we compare Euromod estimates with its original source. The alternative source of information is Cyprus Family Expenditure Survey (CyFES) which is conducted every four years. The most recent version of the survey has year of reference 2009. Any disparities observed between Eurostat indicators and model estimates are due to simulated instruments that depart from the self-reported values of the survey.

### Concluding remarks

In general, the results of the model appear to match external statistics. Especially as regards distributional statistics we do not trace discrepancies compared to other sources that could have cast questions on the accuracy of the model. Nevertheless, a number of disparities between external data and euromod estimates are observed. In some cases this is expected due to the fact that the model, as it stands, does not control for tax evasion and imperfect targeting of social benefits. In other words, the model assumes full compliance of the rules of the tax-benefit system. Another factor that confounds the process of macrovalidation stems from the imperfect comparability between administrative data and model estimates. Furthermore, we note that both quality and quantity of data differs among countries as several state bureaucracies have developed very sophisticated statistical procedures that provide an abundant supply of data fit

<sup>23</sup>[http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical\\_en/dmlstatistical\\_en?OpenDocument](http://www.mlsi.gov.cy/mlsi/sid/sid.nsf/dmlstatistical_en/dmlstatistical_en?OpenDocument)



for scientific purposes. Public administration in Cyprus has greatly improved during the last decade, but still has not developed the full capacity of other European states in providing and disseminating public data.