

EUROMOD

COUNTRY REPORT



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2014-2017

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

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

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

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The results presented in this report are derived using EUROMOD version H1.0+. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD. For more information, see:

<https://www.euromod.ac.uk>

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<http://ec.europa.eu/social/easi>

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

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1. BASIC INFORMATION

General remark:

All amounts and qualitative information mentioned below correspond to the year 2014 (as on June 30th, when relevant), unless otherwise stipulated.

1.1 Basic information about the tax-benefit system

Table 1. Basic figures

	Pop. (m.)	Pop. < 15 (%)	Pop. ≥ 65 (%)	Life expect. (years) M / F	Fertility rate	Unemp Rate (not season- ally adjusted data)	GDP per head (PPS, EU27 =100)	Currency
2014	0.550	16.8	14.1	79.4 / 85.2	1.50	6.0	266	Euro
2015	0.563	16.7	14.2	80.0 / 84.7	1.47	6.5	263	Euro
2016	0.576	16.5	14.2	n/a	n/a	6.3	n/a	Euro
2017	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Euro

Source: Eurostat (2017), <http://ec.europa.eu/eurostat/data/database>

Table 2. Tax-benefit system and government budget

	Total general government revenue ^[1] % of GDP	Total tax receipts ^[1] % of GDP	Total general government expenditure ^[1] % of GDP	Social protection ^[2] % of GDP
2014	43.2	38.4	41.8	22.4
2015	42.7	37.0	41.3	n/a
2016	42.7	n/a	41.2	n/a
2017	n/a	n/a	n/a	n/a

Sources: ^[1] OECD (2017) <http://stats.oecd.org/Index.aspx> ; ^[2] Eurostat (2017) <http://ec.europa.eu/eurostat/data/database>

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
2014	25.4	11.2	29.5	8.0	15.6	6.7	1.3	2.2
2015	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2017	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: Eurostat (2017) <http://ec.europa.eu/eurostat/data/database>

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

	Personal income tax	Corporate income tax	Social security contributions		Taxes on goods and services	Other taxes
			Employees*	Employers		
2014	23.2	11.4	16.6	12.2	28.8	8.0
2015	24.5	11.9	16.6	12.3	25.6	9.1
2016	n/a	n/a	n/a	n/a	n/a	n/a
2017	n/a	n/a	n/a	n/a	n/a	n/a

* Includes self-employed

Source: OECD (2017) <http://stats.oecd.org/Index.aspx>

- The tax-benefit system is largely a unified, national system. The main exception is property taxes (*impôt foncier*) which are levied at the local level (*commune*).
- In Luxembourg, the “tax year” runs from 1 January to 31 December.
- State pension age in 2011 was 65. Early retirement pension (*pension de vieillesse anticipée*) from 60 years of age, on condition that 480 months of effective insurance can be proved or assimilated periods can be proved. From 57 years of age, on condition that 480 months of effective insurance can be proved.
- Minimum school leaving age in 2011 was 16. Since 2011, children in higher (tertiary) education are no longer eligible for child benefits. For income tax purposes, dependent children are defined as children aged under 21 on 1 January of the tax year or aged 21 years old and over who are still studying (entitled to family allowances).
- For benefit and tax purposes a lone parent is not legally married (single, divorced or widowed) to anyone and is a parent of a dependent child.
- Luxembourg has a system of compulsory joint taxation (income splitting) for married couples. Cohabiting couples under the “partenariat” law also have the possibility to be taxed jointly.
- The different income sources (commercial profit, agricultural and forestry profit, liberal profession profit, employee income, pension income, capital income, rental income and miscellaneous income) are aggregated to compute the taxable income. Since 2006 Luxembourg has introduced a 10% withholding tax on income from certain savings products for residents of Luxembourg who are not tax residents in another state. This

tax is in full discharge of a person's liability to tax on that income. The rate is 20% since 2017.

- Withholding taxes are levied on some forms of income: income from employment, pensions and some savings and investment incomes are subject to a pay-as-you-earn system. Other income must be declared in an annual tax return, submitted to the Luxembourg Tax Administration. In the case of couples with two earners, they have to fill a tax return.
- Wages and some benefits (pensions, minimum income...) are ordinarily indexed by 2.5% to price development. However, this system has been recently amended by periods to regulate indexation (e.g. postponing or implementing it once a year only).
- Social contributions and state benefits and pensions are usually assessed and delivered on a monthly basis.

About the minimum (social) wage

- Unless exceptional and specific agreements possible in some circumstances, wages are submitted to minimum rates in Luxembourg: €1,921.03/month for non-qualified wage-earners in 2014 for a full time job (40 hours/week). (€11.1042/hour with a basis of 173 hours/month), €1,922.96/month in 2015 and 2016, €1,998.59/month in 2017.
- Those basic amounts are increased by 20% for qualified workers and also modulated based on the age of the wage-earner: 80% of the basic amount if aged 17 or 18, 75% of the basic amount if between 15- and 17-year-old.
- The basic amount is defined as the “Minimum Social Wage” (*salaire social minimum*), hereafter “Minimum Wage” or “MW” and is also an important parameter for the tax-benefit system as a whole: several amounts are defined based on this MW: upper limit of the monthly old-age pension in the general scheme (5 times the MW), ceilings for social contributions, etc.

1.2 Social Benefits

Maternity allowance (*Allocation de maternité*) is paid by the National Fund of Family Allowances (*Caisse Nationale des Prestations Familiales*) to women with no loss of income during their maternity leave. This means that maternity allowance is paid to women (either resident or non-resident working in Luxembourg) who do not benefit from maternity benefit (or receive an amount for such a benefit which is lower than the maternity allowance). The amount is €194.02 per week, payable over a period of 16 weeks. The allowance is not subject to taxation or to social contributions. Since 2006, the amount of this allowance is no longer linked to changes in prices.

This allocation was removed since 1st June 2015.

Birth grant (*Allocation de naissance*) totalling €1,740.09 is available to women resident in Luxembourg, on the condition that both mother and child have the required medical examinations. The grant is not subject to taxation or to social contributions. Since 2006, the amount of this allowance is no longer linked to changes in prices.

Child-raising allowance (*Allocation d'éducation*) is a benefit aimed at recognising financially the upbringing activity. So, for a parent who educates a child under 2 years and either does not have a regular (professional or replacement) income or whose income, cumulated with that of the husband/wife, does not exceed € 5,657.70 month when educating one child;

€7,543.60/month when educating two children; €9,429.50/month when educating three or more. The amount of the allowance is €485.01 per month. The amount is due from the first day that follows either the end of the maternity leave or the end of the eighth week after the birth. The allowance stops on the first day of the month that follows the month during which the child reaches the age of 2. By derogation, the allowance is maintained in favour of any beneficiary who has educated twins or at least 3 children until one of the children is less than 4 years old. By derogation, the age limit for the payment of the allowance in the case of multiple births of more than 2 children is up-rated by 2 years per supplementary child. The allowance is not subject to taxation or to social contributions. Half the allowance is available in the case of part-time employment. Since 2006, the amount of this allowance is no longer linked to changes in prices.

This allocation was removed since 1st June 2015 but all persons who received this allowance continue to receive it.

Child benefit (*Allocations familiales*) is a universal scheme financed by tax. A child's personal rights are related to the residence. Each child brought up continuously in Luxembourg and with a legal residence there is entitled to this child benefit. The age limit is 18 years. For children in vocational training or further education or suffering from a serious infirmity, the age limit is 27 years old. However, since 2011 (from mid-2010 indeed, but implemented in EUROMOD from 2011 on), children in higher (tertiary) education are no longer eligible for child benefits. A reform of the higher education grant, complementary to the change in child benefits, has been implemented. The higher education grant was amended in 2014 again.

Up to 31st July 2016, the monthly amount is uniformly €185.60 for one child, €440.72 for two children, €802.74 for three children and €361.82 for each subsequent child. Child benefit does not vary with income. Child benefit varies with age: children aged 6 and more receive a supplement of €16.17/month and children aged 12 and more receive a supplement of €48.52/month. To this allowance is added the tax bonus (see *Section 2.4.2*) for children with a monthly amount of €76.88 per child. The benefit is not subject to taxation nor to social contributions.

Since 1st August 2016, the child bonus for children is removed and two systems are applied. The changes compared to the previous system are mentioned below. Given the EUROMOD is here building on EU-SILC 2015 from the (income) years 2014 on, with no demographic change taken into account after 2014, those changes are not simulated in the model yet, out of the inclusion of the equivalent of the former tax bonus directly in child benefit.

For children born before 1st August 2016 or the families arrived at Luxembourg before 1st August 2016, the monthly amount is €265.00 for one child, €594.48 for two children, €1,033.38 for three children and €438.70 for each subsequent child (the equivalent of former tax bonus included).

For children born after 1st August 2016 or the families arrived at Luxembourg after 1st August 2016, the monthly amount is €265 per child.

On top of this and in all cases, the supplement for age becomes €20/month (children aged 6 and more) and €50/month (children aged 12 and more).

Supplementary allowance (*Allocation spéciale supplémentaire*) of €185.60/month for each child under 18, with an insufficiency or permanent reduction of at least 50% of physical or mental ability by comparison with that of a child of the same age. The allowance is neither subject to taxation nor to social contributions. Since 1st August 2016 the monthly amount is €200.

New school year allowance (*Allocation de rentrée scolaire*) aims to compensate the costs related to the new school year. This allowance is given to children over 6 years. The amount of this allowance varies with the age and size of the family group.

Since 2006 until 1st August 2016, these monthly amounts were :

For one child:

6 - 11 years: €113.15/year

12 years and more: €161.67/year

For two children (amount per child):

6 - 11 years: €194.02/year

12 years and more: €242.47/year

For three or more children (amount per child):

6 - 11 years: €274.82/year

12 years and more: €323.34/year.

since 2011, children in higher education are no longer eligible.

Since 1st August 2016, this allowance is fixed to € 115 euros/year for a child of more than 6 years old and to € 235 euros/year for a child of more than twelve years old. These amounts are per child.

The higher education grant and/or loan (*Bourse et/ou prêt d'études pour enseignement supérieur*) is mainly provided to students who are registered in a University or a College (tertiary education). In parallel, children in higher education are no longer eligible for benefits related to families.

The higher education grant/loan was reformed since the academic year 2014/2015 by the law of 24 July 2014 (hence later than 30th of June, but given the impact of the change, it is implemented in EUROMOD since 2014 already). It is now depending on the composition and resources of the “household” which the student belongs to and is composed of 4 parts: i) a basic amount (€ 2,000/year, all amounts in 2014), ii) a mobility allowance in case the student is studying abroad and facing housing costs (€2,000/year), iii) a “social” complement depending on the household’s income net of taxes (from €3,000/year if a net income below the Minimum Social Wage for non-qualified workers, down to €500/year for incomes below 4.5 times the Minimum Social Wage, see *Section 2.4.3* for details) and iv) a family supplement if 2 children or more are involved in higher education (€500/year). The “household” to be considered is derived from administrative data and is basically composed of the fiscal unit, including children benefitting from derived rights in terms of health insurance.

The allowance is neither subject to taxation nor to social contributions.

The guaranteed minimum income (*Revenu minimum garanti*) was created by the law of 29 April 1999, which modified the law of July 1986. The principles of this benefit are to fight against social exclusion and to ensure sufficient means for a decent standard of living and measures of professional and social integration. The guaranteed minimum income can be either an integration allowance (*indemnité d'insertion*) or a supplementary allowance aiming at compensating the difference between the highest amounts of the guaranteed minimum income and the sum of the household resources. The eligibility conditions concern i) residence (persons resident in Luxembourg territory and having resided in the country for at least 5 years during the last 20 years. This residence condition is not required for EU or EEA citizens or for refugees); ii) age (with effect from 25 years; exceptions for persons unable to work, those who are looking after a child or an invalid.); iii) willingness to work (to be ready to participate in active measures); iv) should not have abandoned or reduced his work of his own free will, without giving important and real justifications or should not have been dismissed for serious reasons.

The reference minima have been fixed through political decision in comparison with the social minimum wage (*salaire social minimum*) and pension minima. The domestic unit for the calculation of resources is defined by the "de facto" community of all the persons living in the same common household, obviously disposing of a common budget and unable to provide evidence that they live elsewhere. The resources taken into account are the entire gross revenue of the household, possessions and replacement or supplementary social security benefits (excluding family allowances, maternity benefits, long-term care benefits and up to the guaranteed minimum income for a person living alone for the professional income of children less than 25 years old). However, to avoid inactivity traps, up to 30% of the reference minima are disregarded from the professional incomes and replacement incomes to compute the resources.

The guaranteed minimum income is fixed in 2014 at €1,348.18/month for a person living alone or for the first person of the domestic unit (base amount). For the second adult, the base amount is uprated by 50% of €1,348.18/month (€674.09 /month). For each subsequent adult, the base amount is uprated by € 385.73/month. For each child, the base amount is uprated by € 122.56/month.

Before 2016, when a rent is due for an occupied flat, the guaranteed minimum income is increased by the difference between the rent paid and the amount corresponding to 10% of the guaranteed minimum income (*revenu minimum garanti*). The increase is limited to a maximum of €123.95/month. Since 2016, this allowance is becoming a separate benefit (or is completed) under specific circumstances (see "rent allowance" below).

The guaranteed minimum income is subject to taxation and to social contributions for health care and long-term care insurance.

The income for seriously disabled persons (*Revenu pour personnes gravement handicapées*) was created by the law of 12 September 2003. Persons entitled to this benefit must be at least 18 years old, must present a diminution of the ability to work by 30% due to physical, mental, sensorial or psychological disability; the disability has to be obtained before the age of 65. The state of health of the person must be at such a level that it is impossible to adapt a workplace in the ordinary or the protected environment to his needs. The person must be allowed to live in Luxembourg and must live there. Residents from a non-Member state have to show a 5-year long legal residence permit during the last 20 years. The income for a seriously disabled person is fixed at €1,348.18/month. Up to 30% of the reference minima are disregarded from the professional incomes and replacement incomes to compute the resources. The income for seriously disabled persons is subject to taxation and to social contributions for health care and long-term care insurance.

The cost of living allowance (*Allocation de vie chère*) replaced the formerly implemented heating allowance in 2009. This allowance is a means-tested allowance. To be eligible in 2014, the global annual income must not exceed: € 23,069.06/year for a person living alone, € 34,603.59/year for a two-person family, € 41,524.31 year for a three-person family, and € 6,920.72/year for each additional person in the family. The amount of the cost of living allowance is fixed at € 1,320/year for a person living alone, € 1,650/year for a two-person family, € 1,980/year for a three-person family, € 2,310/year for a four-person family and € 2,640/year for a five-person or more family. The allowance is neither subject to taxation nor to social contributions.

The rent allowance (*Subvention de loyer*) was created by the law of 9 December 2015, which modified the laws of February 1979, April 1999 and September 2006. The new allowance is by principle replacing since 2016 the supplement for rental costs embedded in the "guaranteed minimum income" (see above). "Households" whose "total net disposable income" is below a

threshold and facing rental costs higher than a “reference rent” may be awarded a rent allowance. The rental costs must be related to the private sector exclusively. The income threshold, the reference rent and the maximum rent allowance to be considered are all depending on the household composition (see *Section 2.4.7* for details).

The total net disposable income of the household takes basically into account the last known “income after tax” as defined in the law about personal income taxation (Art. 10), family allowances (out of the “new school year allowance”), the “maternity allowance”, the “child-raising allowance”, the “parental leave benefit”, the “maintenance payments” received, the “accident permanent benefit”, the “tax bonus for children” and the “cost of leaving allowance”.

The “household” to be considered is similar to the “domestic unit” defined at the level of the “guaranteed minimum income” which is indeed involving all members of the residence household. A member is considered as “dependent child” if filling conditions in relation with child benefits or benefitting from derived rights in terms of health insurance.

Indeed, the non take-up for this new rent allowance as observed on early 2017 is very high, out of beneficiaries of the guaranteed minimum income who are informed on a more systematic basis and may still benefit from the former system. Therefore, the former support system is maintained in EUROMOD for the year 2016, and the new one taken into account for receivers of the guaranteed minimum income only and up to the extent that the new benefit is higher than the former one.

The allowance is neither subject to taxation nor to social contributions.

Old-age pension from the general scheme (*Pension de vieillesse du régime général*). A compulsory social insurance scheme financed by contributions with a participation of the State budget for the active population (employees and self-employed) with benefits depending on the duration of the affiliation (flat-rate) and on contributions (earnings-related). The legal retirement age is 65 years but an early retirement pension (*pension de vieillesse anticipée*) is possible from 60 years of age, on condition that 480 months of effective insurance can be proved or assimilated periods can be proved, and from 57 years of age, on condition that 480 months of effective insurance can be proved. The pension comprises two parts: a flat-rate part depending on the number of insurance years of 1/40 per year (max. 40) and an income- (and contributions-) related part. Flat-rate pension part (*majoration forfaitaire*) is computed on the basis of a ratio of a so-called “reference amount”; this part amounts to €453.11 per month for 40 years of insurance. Income-related pension part (*majoration proportionnelle*): 1.838% of total earnings taken into account. Staggered supplements (*majoration échelonnée*): beyond 55 years and with an effective carrier of 38 years, the rate is increased by 0.011% per supplement year in activity (maximum staggers supplements: 2.05%). The upper limit of the monthly old-age pension is 5 times the monthly minimum wage (€ 9,605.15/month). Allowance at the end of the year (*allocation de fin d'année*) of €734.28/year (in the case of a complete career of 40 years; otherwise proportional reduction). The pension is subject to taxation and to social contributions for health care and long-term care.

Since 2013, the rules have been slightly amended. Among other adaptations, the income-related pension part is based on a rate which will decrease through time from 1.85% (in 2013) down to 1.60% in 2052. However, the ratio founding the computation of the flat-rate pension part will increase from 23.5% in 2013 up to 28% in 2052.

Survival pension from the general scheme (*Pension de survie du régime général*). A compulsory social insurance scheme financed by contributions with a participation of the State budget for the active population (employees and self-employed) with benefits depending on the pension (flat-rate and earnings-related) of the deceased person. The pension comprises two parts: a flat-rate part depending on the number of insurance years of 1/40 per year (max. 40) and

an income- (and contributions-) related part. The flat-rate pension part (*majorations forfaitaires*) and the special flat-rate supplements (*majorations forfaitaires spéciales*) equal the total to which the insured has or would have been entitled. The income-related pension part (*majorations proportionnelles*) and the special income-related supplements (*majorations proportionnelles spéciales*) equal $\frac{3}{4}$ of the benefit to which the insured has or would have been entitled. There is an allowance at the end of the year (*allocation de fin d'année*) of €734.28/year (in the case of a complete career of 40 years; otherwise proportional reduction). The pension is subject to taxation and to social contributions for health care and long-term care.

Invalidity pension from the general scheme (*Pension d'invalidité du régime général*). A compulsory social insurance scheme financed by contributions with a participation of the State budget for the active population (employees and self-employed) with benefits depending on the duration of the affiliation (flat-rate) and on contributions (earnings-related). The pension comprises two parts: a flat-rate part depending on the number of insurance years of 1/40 per year (max. 40) and an income- (and contributions-) related part: flat-rate pension part (*majorations forfaitaires*): 453.11 per month for 40 years' insurance; income-related pension part (*majorations proportionnelles*): 1.838% of total wage taken into account. For invalidity before age of 55: special flat-rate supplements (*majorations forfaitaires spéciales*) of 1/40 for each year between commencement of entitlement to pension and age 65 (max. 40 years) and special income-related supplements (*majorations proportionnelles spéciales*) for years remaining from commencement of entitlement until age 55. The rate of the supplement is 1.838% of average salary gained between age 25 and the year of cessation. The pension is subject to taxation and to social contributions for health care and long-term care.

Old-age pension from the statutory scheme (*Pension de vieillesse du régime statutaire*). This scheme concerns civil servants and employees of the State administration, civil servants and employees of the Communes, employees of the CFL (train company) and employees of public institutions and institutions of public interest. One must distinguish the transitory scheme that concerns persons in activity or retired as of 31 December 1998 from the special scheme that concerns persons who started to work after 31 December 1998. For the transitory scheme, a right to old-age pension is open in the following situations: in the case of resignation from the age of 57 and a work duration of 40 years; in the case of resignation from the age of 60 and a work duration of 30 years; in the case of resignation at the age of 65 and a work duration of 10 years. The amount of the pension for the transitory scheme is calculated on the basis of the last wage: 5/6 of the last wage but for the years worked after 1 January 1999 the replacement rate will be progressively taken back to 72%. Nevertheless, civil servants with a complete career (35 or 40 years) at the age of the anticipated retirement (55 or 60 years) can increase their pension by 2.31%/supplement per year worked. The amount of the pension for the special scheme is calculated as for the general scheme except that there is no upper limit. There is an allowance at the end of the year (*allocation de fin d'année*) of €734.28/year (in the case of a complete career of 40 years; otherwise proportional reduction). The pension is subject to taxation and to social contributions for health care and long-term care.

Survival pension from the statutory scheme (*Pension de survie du régime statutaire*). The conditions to be eligible for a survival pension from the statutory scheme are similar to those foreseen for the general scheme and the reversion rates are also similar to those foreseen for the general scheme.

Invalidity pension from the statutory scheme (*Pension d'invalidité du régime statutaire*). The conditions to be eligible and the calculation of the pension for an invalidity pension survival pension from the statutory scheme are similar to those foreseen for the general scheme.

Unemployment benefit (*Indemnité de chômage*). An unemployment allowance scheme financed by the State with benefits related to remuneration previously earned. The main

conditions for being eligible for the unemployment benefit are the following: to be involuntarily unemployed, work not permitted, unless part-time and with anti-accumulation rules applying, to be fit to work, to be available for work, to be aged between 16 and 64, to have registered for employment, to accept suitable employment or an active measure offered, to be resident in Luxembourg when the redundancy occurs; claim for the benefit within 2 weeks. The qualifying period for this benefit is at least 26 weeks of employment during the last year.

The benefit is determined by the salary earned before unemployment starts. The earnings taken are the gross earnings during the 3 months which precede unemployment. The allowance cannot exceed €4,802.58/month (2.5 times the monthly minimum wage) or €3,842.06/month (2 times the monthly minimum wage) in the case that the unemployment exceeds 182 days in a period of 12 months. In case of complementary benefit (when unemployment benefit is allowed after the 365 days of the normal duration of compensation) the ceiling is fixed at €2,881.55/month (1.5 times the monthly minimum wage). The rate of the benefit is 80% of reference earnings, increasing to 85% of earnings if there are dependent children. The duration of payment is 365 calendar days during a reference period of 24 months (without exceeding the duration of working days over the reference period); 182 extra calendar days for persons who are particularly "difficult" to place. For unemployed of 50 years and more, prolongation of 12, 9 or 6 months respectively if 30, 25 or 20 years of affiliation to pension. Loss of allowance for 7 days (30 days if repeated) if the unemployed person refuses to report to the employment office. Accumulation with other social security benefits is not possible. If income from a gainful professional activity exceeds 10% of the maximum threshold of the provided compensation, the unemployment benefit is reduced by the amount exceeding the provided ceiling.

The benefit is subject to taxation and to social contributions for health care, long-term care insurance and pension insurance.

Pre-retirement benefit (Indemnité de préretraite). Pre-retirement compensation (*indemnité de préretraite*) permitting enterprises to dismiss structurally redundant workers and to re-equilibrate the age structure among the workers within an enterprise. Early retirement measures are also applied in the case of night- and shift-work. The indemnity is paid by employers and partially reimbursed by the employment fund.

The eligibility conditions are the following: age 57, and having fulfilled in the 3 following years the conditions for an early retirement pension (*pension de vieillesse anticipée*), and fulfilling certain conditions related to the work record. The pre-retired must not exercise any professional activity other than insignificant or occasional activities.

The rates of the benefit are a percentage of previous gross earnings, as follows: 85% during 1st 12 months, 80% during 2nd 12 months, 75% during 3rd 12 months.

The benefit is subject to taxation and to social contributions for health care, long-term care insurance and pension insurance.

Sickness benefit (Indemnité pécuniaire de maladie). Compulsory social insurance scheme financed by contributions for all active population (employees and self-employed) with earnings-related benefits. The amount of the benefit is the full salary which the insured person would have earned if he had continued to work. The duration of the benefit is maximum 52 weeks. Payment ends if an invalidity pension (*pension d'invalidité*) is granted.

The benefit is subject to taxation and to social contributions for health care, long-term care insurance and pension insurance.

Maternity cash benefit (Indemnité de maternité). Compulsory social insurance scheme financed by contributions for the active population (employees and self-employed, given that

civil servants receive ordinary wage during that period) and the recipients of a social security benefit. Maternity benefit (*prestations en espèces de maternité*): 100% of the salary the insured received during the maternity leave. Maternity cash benefits are subject to taxation and to social contributions for health care, long-term care insurance and pension insurance.

The benefit is subject to taxation and to social contributions for health care, long term care insurance and pension insurance.

Parental leave benefit (*Indemnité pour congé parental*). Both parents are entitled to take parental leave up to the child's fifth birthday providing they have worked for their employer, without a break, for at least one year. Leave can be taken as either 6 months full-time or 12 months part-time, i.e. 20 hours per week, (with employer's agreement) per child and to qualify, the first period of parental leave must start as soon as maternity leave ends. Parents cannot take parental leave simultaneously, e.g. if they both take part-time leave one parent must work in the morning and the other in the afternoon. The amount of the gross full-time parental leave benefit is € 1,778.31/month and the amount of the gross part-time parental leave benefit is € 889.15/month.

The benefit is not subject to taxation or to social contributions except to social contributions for health care (in kind) and long-term care contribution.

Since December 2006 a new law was passed that gave parents the right to unpaid parental leave up to the child's fifth birthday should parental leave not have been taken immediately after maternity or adoption leave.

Since 1st December 2016, there is a new system for the parental leave. This new system aims at making it more flexible, more attractive financially and accessible, for the largest number of people and in particular for the fathers.

The parents can choose to stop working:

- A full-time parental leave of 4 or 6 months
- A part-time parental leave of 8 or 12 months.

The parental leave can also be “split”, that is a full-time person can reduce its activity at the rate of :

- 20 % a week (1 day a week) during a period of 20 months or;
- 4 periods of one month for a maximum period of 20 months

It is necessary to obtain the agreement of the employer to benefit from the flexible parental leave.

The parental leave benefit becomes a “replacement income”, which is calculated on the basis of the applicant's income.

For a full-time, this income corresponds at least to the monthly minimum wage (€1,922.96 in 2016, €1,998.59 in 2017) and is limited at €3,204.93 in 2016 and at €3,330.98 in 2017.

Long-term care cash benefit (*Prestation en espèce en cas de dépendance*). Compulsory long-term care social insurance financed by a special contribution from the insured and by the State, covering all persons bound by a sickness insurance, with in kind and cash benefits. Benefits in kind can be combined or replaced by cash benefits. Cash benefits remunerate persons who are not working on behalf of a professional services network. The amount of the benefits totals half of the value of the benefit in kind. Benefit amount per hour: €25. Maximum cash benefits amount per week: €262.50.

Benefits are not subject to taxation or to social contributions.

Care allowance (*Allocation de soins*). The law concerning this allowance has been abrogated, with effect from 1 January 1999, by the law concerning long-term care insurance. However, recipients of this allowance at 31 December 1998 continue to receive this allowance. But as soon as long-term care insurance is granted, the care allowance is cancelled. In June 2014 the amount of this allowance was €691.76/month.

Seriously disabled persons allowance (*Allocation spéciale pour personnes handicapées*). The law concerning this allowance has been abrogated, with effect from 1 January 1999, by the law concerning long-term care insurance. However, recipients of this allowance at 31 December 1998 continue to receive this allowance. But as soon as long-term care insurance is granted, the seriously disabled persons allowance is cancelled. In June 2014 the amount of this allowance was €691.76/month.

- *Scope and scale*

Table 5. Social benefits: resident recipients (as % of population)

	2014	2015	2016	2017
Maternity allowance	0.23	0.10	n/a	n/a
Birth grant	1.28	1.22	n/a	n/a
Child-raising allowance	0.91	0.72	n/a	n/a
Child benefit	20.55	20.27	n/a	n/a
Supplementary allowance	n/a	n/a	n/a	n/a
New school year allowance	13.57	13.28	n/a	n/a
Seriously disabled persons benefit			n/a	n/a
Guaranteed minimum income	3.56	3.47	n/a	n/a
Income for seriously disabled persons	0.12	0.11	n/a	n/a
Cost of living allowance	4.21	3.27	n/a	n/a
Higher education grants	n/a	n/a	n/a	n/a
Old-age pension from general scheme	9.95	10.08	n/a	n/a
Survival pension from general scheme	3.48	3.42	n/a	n/a
Invalidity pension from general scheme	1.73	1.67	n/a	n/a
Old-age pension from statutory scheme	2.09	2.24	n/a	n/a
Survival pension from statutory scheme	0.80	0.85	n/a	n/a
Invalidity pension from statutory scheme	0.18	0.20	n/a	n/a
Unemployment benefit	3.44	3.26	n/a	n/a
Pre-retirement benefit	0.20	0.20	n/a	n/a
Sickness benefit	n/a	n/a	n/a	n/a
Benefit for family reasons	n/a	n/a	n/a	n/a
Maternity cash benefit	0.63	0.61	n/a	n/a
Parental leave benefit	0.42	0.46	n/a	n/a
Long-term care cash benefit, care allowance and heavily handicapped person benefit	n/a	n/a	n/a	n/a
Permanent accident benefit	1.39	1.33	n/a	n/a

Notes: The % concerns only resident recipients. Recipients living abroad are excluded from the table.

Sources: www.isog.public.lu , STATEC, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

Table 6. Social benefits: expenditure (resident recipients only)

	2014	2015	2016	2017
Annual expenditure (in millions €)	5,235.61	5,390.80	n/a	n/a
as % of total expenditure				
Maternity allowance	0.07	0.03	n/a	n/a
Birth grant	0.23	0.22	n/a	n/a
Child-raising allowance	0.64	0.57	n/a	n/a
Child benefit	6.20	6.02	n/a	n/a
Boni for children	1.93	1.87	n/a	n/a
Supplementary allowance	0.07	0.07	n/a	n/a
New school year allowance	0.30	0.29	n/a	n/a
Seriously disabled persons benefit	n/a	n/a	n/a	n/a
Guaranteed minimum income	3.15	3.07	n/a	n/a
Income for seriously disabled persons	0.80	0.80	n/a	n/a
Cost of living allowance	1.10	1.08	n/a	n/a
Higher education grants	1.20	1.16	n/a	n/a
Old-age pension from general scheme	37.67	37.96	n/a	n/a
Survival pension from general scheme	10.03	9.74	n/a	n/a
Invalidity pension from general scheme	4.70	4.63	n/a	n/a
Old-age pension from statutory scheme	15.44	16.48	n/a	n/a
Survival pension from statutory scheme	3.30	3.46	n/a	n/a
Invalidity pension from statutory scheme	2.48	2.53	n/a	n/a
Unemployment benefit	4.33	3.86	n/a	n/a
Pre-retirement benefit	1.21	1.20	n/a	n/a
Sickness benefit	1.34	1.17	n/a	n/a
Benefit for family reasons	n/a	n/a	n/a	n/a
Maternity cash benefit	1.35	1.33	n/a	n/a
Parental leave benefit	0.71	0.75	n/a	n/a
Long-term care cash benefit, care allowance and heavily handicapped person benefit	0.88	0.87	n/a	n/a
Permanent accident benefit	0.87	0.82	n/a	n/a

Notes: The annual expenditure and the % concern only resident recipients. For some benefits no distinction is made between residents and non-residents in raw data; for these cases we have estimated the amounts received by residents. The annual expenditure is equal to the sum of the different components present in the table. According to the statistics produced by the Social Security, the annual expenditure for cash benefits (residents and non-residents) was equal to €7,619 million in 2014, out of which about 21% was transferred abroad, meaning that the annual expenditure for cash benefits towards the residents must be around €6,018 million in 2014.

Sources: www.isog.public.lu, STATEC, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

1.3 Social contributions

Social contribution for health care - cash benefits (*Cotisations sociales pour soins de santé – prestations en espèce*) finance sickness and maternity cash benefits. All employees from the private sector are entitled to these social contributions. Civil servants who benefit from continuation of the salary in the case of sickness or maternity do not have to pay this social contribution. The contribution basis is composed of the professional income, i.e., the gross pay including all the advantages even if they are in kind but excluding occasional allowances and bonuses. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

Since 2009, a uniform status (*statut unique*) has been introduced for blue- and white-collar workers. Since the "statut unique", both white-collar and blue-collar workers continue to receive pay - imposed on the employer for the month in which the sickness occurs and for the following three months.

The employer's contribution rate involves a fix part (0.25% for all employers since 2009) and a variable part funding the so-called *Mutualité des employeurs* and depending on the "class of risk" regarding absenteeism within the firm. The corresponding variable part of rate was comprised between 0.47% and 2.63% in 2014. However, given lack of data and for simplicity reasons, we have implemented an average variable rate only, changing through time: 1.55% in 2014, 1.78% in 2015, 1.70% in 2016 and 1.72% in 2017.

Social contribution for health care - benefits in kind (*Cotisations sociales pour soins de santé- prestations en nature*). The contribution basis is composed of the professional incomes defined above, including occasional allowances and bonuses, pensions and all replacement incomes subject to social contributions. The contribution rate is 5.6% in total in 2014: 2.8% for the insured and 2.8% for the employer. For the contribution basis there is a ceiling that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

Social contribution for long-term care insurance (*Cotisations sociales pour l'assurance dépendance*). The contribution basis is composed of professional incomes, replacement incomes and wealth incomes. The contribution rate amounts to 1.40 % for employees (there is no employer contribution). No maximum is applied to the contribution basis. The monthly contribution basis is reduced by 25% of the minimum wage for persons receiving a wage or a replacement income from the social security.

Social contribution for pension insurance (*Cotisations sociales pour pension*). The contribution basis is composed of professional incomes or the following replacement incomes (unemployment benefit, sickness benefit, maternity benefit, parental leave benefit). The contribution rate is 24% in total: 8% for the insured, 8% for the employer and 8% for the State. For the contribution basis there is a ceiling (except for the civil servants) that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

Employer social contributions for accident (*Cotisations sociales de l'assurance accident*). These contributions are paid exclusively by the employer. All industrial firms are ranged in 22 risk classes. Since 2011, the rate is uniform with a level of 1.10% in 2014 and 2015, 1.00% in 2016 and 2017. For the contribution basis there is a minimum that corresponds in principle to the minimum wage. In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

Concerning the agricultural or forestry sector, the contributions are calculated according to the size of the land, the vineyard or the forest.

Social contributions for family allowances (*Cotisations sociales pour les prestations familiales*). These contributions are paid neither by the employees nor by the employers but by the State.

- *Scope and scale*

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

	2014	2015	2016	2017
Social contributions				
Social contribution health care	33.41	33.26	n/a	n/a
- cash benefits				
Social contribution health care	59.00	58.87	n/a	n/a
- benefits in kind				
Social contribution long-term care insurance	59.00	58.87	n/a	n/a
Social contribution for pension insurance	n/a	n/a	n/a	n/a
Social contribution for accident insurance	36.93	37.14	n/a	n/a
Social contribution for family allowances	n/a	n/a	n/a	n/a

Notes: The % concern only resident contributors.

Sources: www.isog.public.lu, STATEC, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

Table 8. Social contributions: revenue

	2014	2015	2016	2017
Social contributions (millions of €)	3,181.72	3,271.24	n/a	n/a
as % of total revenue				
Social contribution health care - Total	29.71	29.70	n/a	n/a
Social contribution health care - cash benefits (employee and employer)	1.33	1.32	n/a	n/a
Social contribution health care - benefits in kind (employee and employer)	28.39	28.38	n/a	n/a
Social contribution long-term care insurance (employee and employer)	6.65	6.59	n/a	n/a
Social contribution for pension insurance (employee and employer)	58.40	58.47	n/a	n/a
Social contribution for accident insurance (employer)	3.89	3.89	n/a	n/a
Social contribution for family allowances (employer and self-employed)	1.35	1.34	n/a	n/a

Notes: The % and amounts concern only resident contributors.

Sources: www.isog.public.lu, STATEC, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

1.4 Taxes

Personal income tax (*Impôt sur le revenu des personnes physiques*): taxed jointly at the family units. The family unit is defined by the marriage or the legal consensual union and children less than 18 years old on 1 January of the tax year. However, wages received by a child less than 18 years old are not covered by the joint taxation.

Tax payers are granted a tax class according to their family status. Married taxpayers (even in the case of a wedding or divorce during the calendar year), widowed persons for the 3 years following the year in which they became widowed, divorced or separated individuals for the 3 years following the year of divorce or separation and civil partners who live together for a full tax year and elect to file jointly, belong to tax class 2.

Widowed persons not included in tax class 2, individuals aged at least 65 on 1 January and single parents belong to tax class 1a.

All other individuals belong to tax class 1.

For tax class purposes, a child is less than 21 years old on 1 January of the tax year or 21 years old and more continuing to study.

In Luxembourg, the tax year corresponds to the calendar year. Income tax rates are progressive. They vary from 0% to 40% (19 brackets) in 2014, 2015 and 2016, up to 42% since 2017 (23 tax brackets).

Since 2011, a surcharge for the unemployment fund is applied. Since 2013, it is either 7% or 9%, depending on the level and tax class of income.

As from 1 January 2015, a new tax is introduced on the income of individuals (residents and non-residents), called “budget balancing temporary tax”. The rate of this tax is fixed at 0.5%. The tax base is constituted by the professional income, the replacement income and the income from capital. This contribution was removed in 2017.

There are eight categories of taxable income which, added together over the year, determine the total taxable income: Commercial/business profits; Profits from agriculture and forestry; Profits derived from self-employed professions (*profession libérale*); Net income from employment; Net income from pensions and/or annuities; Net income from investments (movable capital); Net income from rental of property and Other net income (including capital gains).

Withholding taxes are levied on some of the incomes above. Income from employment, pensions and some savings and investment incomes are subject to a pay-as-you-earn system. Other income must be declared in an annual tax return, submitted to the Luxembourg Tax Administration.

The income subject to tax according to the tax schedule (*revenu imposable ajusté*) is equal to the net income of the different categories of incomes after deduction of operating expenses, accusation costs, exemptions and several deductions.

The salary of a child less than 18 years old is taxed individually but parents are eligible to a tax reduction for this child. All other types of income received by a child less than 18 years old are added together with the parent’s incomes.

Children aged 18 to 21 years are taxed individually but parents are eligible to a tax reduction for children.

Property tax (*Impôt foncier*): the property tax is a communal tax that applies to all the constructed or non-constructed real properties. The amount of this tax is very low.

Value Added Tax (*Taxe sur la valeur ajoutée*): there are 4 different tax rates: normal rate at 17%, a reduced rate at 8%, a super-reduced rate at 3% and an intermediate rate at 14%.

Excise duties (*Accises et taxes assimilées*): These taxes are levied on alcohol and alcoholic beverages, beer, tobacco, petrol, gas and electrical energy.

- *Scope and scale*

Table 9. Taxes: taxpayers (as % of population)

No information is available to estimate taxpayers as % of population

Table 10. Taxes: revenue

	2014	2015	2016	2017
Annual revenue (millions of €)	13,325	13,689	n.a.	n.a.
Direct taxes				
Taxes on income and profits, on Individuals (then out of corporate)	4,355	4,714	n.a.	n.a.
Personal income tax	n.a.	n.a.	n.a.	n.a.
Solidarity income tax increase for persons	n.a.	n.a.	n.a.	n.a.
Withholding personal tax	n.a.	n.a.	n.a.	n.a.
Recurrent taxes on immovable property	34	35	n.a.	n.a.
Indirect taxes				
VAT	3,622	3,411	n.a.	n.a.
Excise duties	1,563	1,374	n.a.	n.a.

Notes: The annual revenue numbers reported in the first line are exclusive of revenue from social insurance contributions. The numbers reported in Table 10 include tax paid by non-residents.

Source: OECD Revenue Statistics 1965-2016 – details of tax revenue, Luxembourg

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

General remark:

All amounts and qualitative information mentioned below correspond to the year 2014 (as on June 30th, when relevant), unless otherwise stipulated.

2.1 Scope of simulation

Tables 11 and 12 present the different benefits (Table 11) and taxes (Table 12) covered in EUROMOD.

Table 11. Simulation of benefits in EUROMOD

	Variable name(s)	Treatment in EUROMOD (2014-2017)	Why not fully simulated ? / Remarks
Care allowance	bca01	I	No data on the level of dependency
Long-term care cash benefit	bca02	I	No data on the level of dependency
Child credit	bch00_s	S	
New school year allowance	bched01_s	S	
Child-raising Allowance	bched04_s	PS	Copied from input up to 2014 (No precise information on the contribution history before the child is 2 years old). Benefit dropped since 1st June 2015, but allocations already “engaged” are maintained => hence still copied in 2015 and 2016, dropped afterwards
Allowance for looked after children in families	bched05	I	Target cannot be identified
Higher education grants	bed_s	S	
Seriously disabled persons benefit	bdisv	I	No information on disability
Parental leave benefit	bfapl	I	No data on the intention to take the parental leave
Child benefit	bfauc_s	S	
Sickness benefit	bhl	I	No data on contribution history and on sickness
Rent allowance	bho_s	S	/ Introduced in 2016
Maternity Allowance	bmals_s	I	Copied from input up to 2014 (no precise information on the contribution history just before the birth) - “0” from 2015 on (benefit dropped)
Birth grant	bmaba	I	No information on medical examinations
Maternity cash benefit	bmawk	I	No data on contribution history
Guaranteed minimum income	bsacm_s	S	/ Full take-up considered
Heating allowance / Cost of living allowance	bsaht_s	S	

Unemployment benefit	bunss or bunss_s	PS	No data on contribution history / Simulation possible according to the fact that the wage preceding the unemployment benefit has been estimated in the input database (yempv) using the reverse function of the unemployment benefit rules
Pre-retirement benefit	byr	I	No data on contribution history
Invalidity pension	pdi00	I	No data on contribution history and on disability
Old-age pension from general scheme	poaps	I	No data on contribution history
Old-age pension from statutory scheme	poapu	I	No data on contribution history
Survival pension from general scheme	psups	I	No data on contribution history
Survival pension from statutory scheme	psupu	I	No data on contribution history

Notes: “-”: policy did not exist in that year; “E”: *excluded* from the model as it is neither included in the micro-data nor simulated; “I”: *included* in the micro-data but not simulated; “PS” *partially simulated* as some of its relevant rules are not simulated; “S” *simulated* although some minor or very specific rules may not be simulated.

Table 12. Simulation of taxes and social contributions in EUROMOD

	Variable name(s)	2014-2017	Why not fully simulated?
Personal income tax	tin_s	S	
Tax credit for employees	tintceent_s	S	
Tax credit for lone parents	tintclpnt_s	S	
Tax credit for retired	tintcpent_s	S	
Tax credit for self employed	tintcsent_s	S	
Contribution to unemployment fund	tinui_s	S	
Budget balancing temporary tax	tinxt_s	S	In 2015 and 2016 only
Credited social contributions for replacement income and pensions – health care	tsccthl_s	S	
Credited social contributions for replacement income - pension insurance	tscctpi_s	S	
Credited social contributions for social assistance – health care	tscctsi_s	S	
Social contributions on social assistance – long term care insurance	tsceebeot_s	S	
Employee social contribution for health care - benefits in kind	tsceehl_s	S	

Employee social contribution for long-term care insurance	tsceeot_s	S	
Employee social contribution for pension insurance (civil servant)	tsceepbpi_s	S	
Employee social contribution for pension insurance (non civil servant)	tsceepi_s	S	
Employee social contribution for health care - cash benefits	tsceesi_s	S	
Employer social contribution for accident insurance	tscerac_s	S	
Employer social contribution for health care - benefits in kind	tscerhl_s	S	
Employer social contribution for pension insurance	tscerpi_s	S	
Employer social contribution for health care - cash benefits	tscersi_s	S	
Self-employed social contribution for accident insurance	tscseac_s	S	
Self-employed social contribution for health care - benefits in kind	tscsehl_s	S	
Self-employed social contribution for long-term care insurance	tscseot_s	S	
Self-employed social contribution for pension insurance	tscsepi_s	S	
Self-employed social contribution for health care - cash benefits	tscsesi_s	S	
Excise duties		E	No information on expenditures
Property tax		E	No information on the way the administration estimates the value of the property
Value added tax		E	No information on expenditures

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

- **Structural changes between 2014 and 2015**

As from 1 January 2015, a new tax is introduced on the income of individuals (residents and non-residents), called “budget balancing temporary tax”. The rate of this tax is fixed at 0.5%. The tax base is constituted by the professional income, the replacement income and the income from capital.

Since 2015, the maternity allowance is removed.

- *Structural changes between 2015 and 2016*

A new rent allowance is introduced.

- *Structural changes between 2016 and 2017*

Since 2016, a new “Housing benefit” has been implemented.

Since August 2016, an additional system for “Child benefits” is introduced, to become progressively effective.

Since 1st December 2016, a new system for the “Parental leave” is introduced.

Since 2017, the “Budget balancing temporary tax”, the “Education allowance” and the “Child credit” are removed, the last benefit being integrated in the general child benefit scheme.

Since 2017, the “Tax system” is significantly reformed, with more brackets and a maximum marginal tax rate fixed to 42% (40% formerly). Several “Tax credits” are also becoming dependent on the level of income with regard the rate to be applied.

Finally, the “Higher education grant” policy has been reformed.

2.2 Order of simulation and interdependencies

- *Order of simulation in 2014-2017*

The following table shows the order in which the main elements of the Luxembourg system in 2014-2017 are simulated. As the Luxembourg system has few structural changes within this period, we use a single table to display policy simulations over the four year span. In general, the spine structure is identical for all four analysed years.

Table 13. EUROMOD Spine: order of simulation, 2014-2017

Policy	Description	Main output
bunss_lu	Unemployment benefit	bunss_s
bsacm_lu	Guaranteed minimum income (RMG)	bsacm_s
tscee_lu	Employee social contribution	tscee_s
tscer_lu	Employer social contribution	tscer_s
tsct_lu	Credited social contributions	tsct_s
tsce_lu	Self-employed social contributions	tsce_s
tsceebeot_lu	Long term care contribution related to RMG	tsceebeot_s
tsctsi_lu	Credited social contributions for social assistance	tsctsi_s
bch00_lu	Child tax credit (since 2008 only)	bch00_s
bfauc_lu	Child benefit	bfauc_s
bched01_lu	New school year allowance	bched01_s
bsaht_lu	Heating allowance	bsaht_s
tin_lu	Personal income tax	tin_s
bedsim_lu	Scholarship for higher education (2011 on)	bed_s
bho_lu	Rent allowance (since 2016)	
tintcee_lu	Tax credit for employees (since 2009 only)	tintceent_s

tintcpe_lu	Tax credit for retired (<i>since 2009 only</i>)	tintcpent_s
tintcse_lu	Tax credit for self employed (<i>since 2009 only</i>)	tintcsent_s
tintclp_lu	Tax credit for lone parent (<i>since 2009 only</i>)	tintclpnt_s

2.3 Policy switches

None.

2.4 Social benefits

2.4.1 Child benefit (*Allocations familiales*) (*bfauc_lu*)

- *Definitions*

The unit of analysis is the family (*tu_cb_lu*), which is composed of parents and their dependent children (see Eligibility conditions below). To form a family, parents do not necessarily have to be married.

- *Eligibility conditions*

The child benefit is a universal scheme. A child's personal rights are related to the residence. Each child brought up continuously in Luxembourg and with a legal residence there is entitled to this child benefit. The age limit is 18 years. For children in vocational training or further education or suffering from a serious infirmity the age limit is 27 years.

Since 2011, children in higher education are no longer eligible (see *Section 1.3*).

- *Income test*

The child benefit does not vary with income.

- *Benefit amount*

Up to 31st July 2016, the monthly amount is uniformly €185.60 for one child, €440.72 for two children, €802.74 for three children and €361.82 for each subsequent child. Child benefit does not vary with income. Child benefit varies with age: children aged 6 and more receive a supplement of €16.17/month and children aged 12 and more receive a supplement of €48.52/month.

Since 1st August 2016, two systems are applied and the changes compared to the previous system are mentioned below. Given the EUROMOD is here building on EU-SILC 2015 from the (income) years 2014 on, with no demographic change taken into account after 2014, those changes are not simulated in the model yet.

For children born before 1st August 2016 or the families arrived at Luxembourg before 1st August 2016, the monthly amount is € 265.00 for one child, €594.48 for two children, €1,033.38 for three children and €438.70 for each subsequent child.

For children born after 1st August 2016 or the families arrived at Luxembourg after 1st August 2016, the monthly amount is €265 per child.

On top of this and in all cases, the supplement for age becomes €20/month (children aged 6 and more) and €50/month (children aged 12 and more).

2.4.2 Tax bonus for children (*Boni pour enfant*) (*bch00_lu*)

- **Definitions**

The tax bonus has been introduced in 2008, it replaced the tax reduction for children and it is paid by the family allowance fund. That is why the tax bonus is classified in the benefit section rather in the tax credit section. The unit of analysis is the same as that used for the personal tax (see “tu_tin_lu” in Section 2.6.1).

- **Eligibility conditions**

The tax bonus for children is awarded in favour of each child for whom the child benefits are paid. Children to whom the child benefits are no longer paid, are not eligible for the tax bonus for children. These children continue to be eligible for the tax reductions for children. Since 1st August 2016, the tax bonus for children is removed.

Since 2011, children in higher education are no longer eligible (see Section 1.3).

- **Income test**

The tax bonus for children does not vary with income.

- **Benefit amount**

Since 2008, the monthly amount is €76.88 (€922.56/year) per child. The benefit is not subject to taxation or to social contributions and is not linked to changes in prices, meaning that the amounts are similar for the years 2008 up 2016. It is “0” since 2017.

EUROMOD Notes: The condition of being a child not eligible for the tax bonus but who continues to be eligible for the tax reduction for children is not simulated. It concerns very few cases.

2.4.3 Higher education grant and/or loan (*Bourse et/ou prêt d'études pour enseignement supérieur*) (*bedsim_lu*)

- **Definitions**

The higher education grant and/or loan (*bourse et/ou prêt d'études pour enseignement supérieur*) is basically awarded to students who are registered in a University or a College (tertiary education). It has been reformed in 2014 with some new adaptation in 2016. The unit of analysis is “education grant”-related family (*tu_edugrant_lu*).

- **Eligibility conditions**

The grant is basically awarded to students who are registered in a University or a College (tertiary education), under common conditions (recognized programme, minimum number of credits, etc) or, in special cases, to students in technical secondary education (and who are allowed to complete their training abroad).

- **Income test**

The level of grant depends on the income net of taxes of the student’s “household” (since 2014). Nevertheless, if the student’s personal income exceeds the social minimum wage. The “household” to be considered is derived from administrative data and is basically composed of the fiscal unit, including children benefitting from derived rights in terms of health insurance.

- **Benefit amount**

See *Section 1.2* for basic information. The mobility allowance has been upgraded in 2016 to €2,450 (law of July 2016).

Monthly household's income, net of taxes	Social complement (per year)	
	2014-2015	2016-2017
<= "Minimum Social Wage for non-qualified workers" (MSW)	€3,000	€3,800
from MSW to 1.5 MSW	€2,650	€3,200
from 1.5 MSW to 2 MSW	€2,250	€2,650
from 2 MSW to 2.5 MSW	€1,800	€2,150
from 2.5 MSW to 3 MSW	€1,400	€1,650
from 3 MSW to 3.5 MSW	€1,000	€1,150
from 3.5 MSW to 4.5 MSW	€500	€550
> 4.5 MSW	No complement	No complement

Since 1 Aug 2017, all those amounts will be adapted to the so-called "*échelle mobile des salaires*" (close to automatic indexation of wages) each academic year following an academic year where this index will have been changed (law of July 2016).

2.4.4 New school year allowance (*Allocation de rentrée scolaire*) (*bched01_lu*)

- **Definitions**

The unit of analysis is the family (*tu_cb_lu*, see *Section 2.4.1*). The new school year allowance (*Allocation de rentrée scolaire*) aims to compensate costs related to the new school year.

- **Eligibility conditions**

This allowance is given to children over 6 years. Except for the age condition, the eligibility conditions are similar to those for the child benefit.

- **Income test**

This allowance does not vary with income.

- **Benefit amount**

Until 1st August 2016, the amount of this allowance varies with the age and the size of the family group.

For one child:

6 - 11 years: €113.15/year

12 years and more: €161.67/year

For two children (amount per child):

6 - 11 years: €194.02/year

12 years and more: €242.47/year

For three or more children (amount per child):

6 - 11 years: €274.82/year

12 years and more: €323.34/year. Since 2006, the amount of this allowance is no longer linked to changes in prices, meaning that the amount is similar for the years 2007 up to 1st August 2016.

Since 1st August 2016, the amount of this allowance varies only with the age. These monthly amounts are € 115 euros/year for a child of more than 6 years old and to € 235 euros/year for a child of more than 12 years old. These amounts are per child.

2.4.5 Social assistance (*Revenu minimum garanti*) (*bsacm_lu*)

- **Definitions**

The guaranteed minimum income can be either an integration allowance (*indemnité d'insertion*) or a supplementary allowance aiming to compensate the difference between the highest amounts of the guaranteed minimum income and the sum of the household resources. The simulation concerns only the supplementary allowance, the most current situation. The integration allowance can be considered as a salary.

The domestic unit for the calculation of resources is defined by the "de facto" community of all the persons living in the same common household, obviously disposing of a common budget and unable to provide evidence that they live elsewhere (*tu_bsa_lu*).

For social assistance a dependent child is defined as a person less than 18 years old or less than 27 years old and in education or disabled.

- **Eligibility conditions**

The eligibility conditions concern i) residence (persons resident on Luxembourg territory and having resided in the country for at least 5 years during the last 20 years. This residence condition is not required for EU or EEA citizens or for refugees); ii) age (with effect from 25 years; exceptions for persons unable to work, those who are looking after a child or an invalid); iii) willingness to work (to be ready to participate in active measures); iv) should not have abandoned or reduced his work of his own free will, without giving important and real justifications or should not have been dismissed for serious reasons.

- **Income test**

The resources taken into account are the entire gross revenue of the household, possessions and replacement or supplementary social security benefits. Family allowances, maternity benefits, long-term care benefits and professional income of children less than 25 years old up to the guaranteed minimum income for a person living alone (€1,348.18/month, €1,401.18/month in 2017) are not taken into account. However, to avoid inactivity traps, up to 30% of the reference minima are disregarded from the professional incomes and replacement incomes to compute the resources.

The resources of wealth are also taken into account. These resources are defined by conversion into a life annuity of the global value of the wealth through multipliers that have to be defined by the State. The real estate value of property situated in Luxembourg is defined according to the unit values fixed by the tax administration. Due to lack of information, the resources of wealth are not simulated.

- **Benefit amount**

The guaranteed minimum income is fixed at €1,348.18/month (€1,401.18/month in 2017) for a person living alone or for the first person of the domestic unit (base amount). For the second adult, the base amount is uprated by 50% of €1,348.18/month (€ 674.09 /month). For each subsequent adult, the base amount is uprated by € 385.73/month. For each child, the base amount is uprated by € 122.56/month. Those monthly amounts become respectively € 700.59/month, €400.93 and €127.37 in 2017.

Before 2016, where rent is due for an occupied flat, the difference between the rent paid and the amount corresponding to 10% of the guaranteed minimum income (*revenu minimum garanti*) is granted additionally. Maximum: €123.94/month. Since 2016, this allowance is becoming a separate benefit. However, given circumstances related to the “new” rent allowance introduced in 2016, the present supplement is still taken into account up to a certain extent. Cf. (*) in the Table below and EUROMOD Notes in Section 2.4.7.

The supplementary allowance is subject to taxation and to social contributions for health care and long-term care insurance.

	First adult	Second adult	Subsequent adult	Child	Maximum supplement in case of tenant
2014	1348.18 €	674.09 €	385.73 €	122.56 €	123.95 €
2015	1348.18 €	674.09 €	385.73 €	122.56 €	123.95 €
2016	1348.18 €	674.09 €	385.73 €	122.56 €	123.95 € (*)
2017	1401.18€	700.59€	400.93€	127.37€	123.95 € (*)

2.4.6 Expensive life allowance (*Allocation de vie chère*) (*bsaht_lu*)

NB: formerly (prior to 2009) “Heating allowance”, hence policy name

- **Definitions**

The expensive life allowance (*Allocation de chauffage*) aims to support the cost of living for low income families. The unit of analysis is the household (*tu_household_lu*).

- **Eligibility conditions**

The eligibility conditions concern residence (persons resident on Luxembourg territory).

- **Income test**

This allowance is a means-tested allowance. To be eligible the global annual income must not exceed: €23,069.06/year for a person living alone, €34,603.59/year for a two-person family, €41,524.31/year for a three-person family, €48,445.03/year for a four-person family and €55,365.75/year for a five-person or more family.

- **Benefit amount**

	One-person household		Two-person household		Three-person household		Four-person household		Five-person household and more	
	Upper limit €year	Ben. €year	Upper limit €year	Ben. €year	Upper limit €year	Ben. €year	Upper limit €year	Ben. €year	Upper limit €year	Ben. €year
2014	23,069.06	1,320	34,603.59	1,650	41,524.31	1,980	48,445.03	2,310	55,365.75	2,640
2015	23,162.08	1,320	34,743.12	1,650	41,691.74	1,980	48,640.36	2,310	55,588.98	2,640
2016	23,162.08	1,320	34,743.12	1,650	41,691.74	1,980	48,640.36	2,310	55,588.98	2,640

2017 24,026.89 1,320 36,040.33 1,650 43,248.40 1,980 50,456.47 2,310 57,664.54 2,640

The amount of the expensive life allowance is fixed at €1,320/year for a person living alone, €1,650/year for a two-person family, €1,980/year for a three-person family, €2,310/year for a four-person family and €2,640/year for a five-person or more family.

The allowance is not subject to taxation or to social contributions.

Persons with an income higher than the limits defined in the “income test” paragraph are entitled to a reduced allowance that corresponds to the difference between the amounts of the expensive life allowance and the part of the annual income that exceeds the income limits.

2.4.7 New rent allowance (*Subvention de loyer*), since 2016 (*bho_lu*)

- **Definitions**

The rent allowance (*Subvention de loyer*) is by principle replacing since 2016 the supplement for rental costs embedded in the “guaranteed minimum income” (see *Sections 1.2 and 2.4.5* above). The unit of analysis is the “rent allowance”-related household (*tu_bho_lu*) which is indeed involving all members of the residence household with specific conditions to be considered for dependent children (see *Section 1.2*).

- **Eligibility conditions**

The eligibility conditions concern residence (persons resident on Luxembourg territory) and rental costs to related to the private sector exclusively.

- **Income test**

This allowance is a means-tested allowance. Before 2016, the rent allowance is embedded in the “guaranteed minimum income” (see *Sections 1.2 and 2.4.5* above). Since 2016, only households whose the “total net disposable income” (made explicit in *Section 1.2*) is below a threshold may be awarded a rent allowance.

The threshold for net disposable income depends on the composition of the household: one-person household (1A), 2-person household without a child (2A), household with 1/2/3/4/5/6 child(ren) (A1C, A2C, A3C, A4C, A5C, A6C) or household with 7 children or more (A7C+). The thresholds corresponding to each configuration are mentioned in the table just below (in EUR/month).

	1A	2A	A1C	A2C	A3C	A4C	A5C	A6C	A7C+ (per child above 6th)
2016	1,768	2,652	3,183	3,713	4,244	4,774	5,304	5,835	+ 531
2017	1,874	2,811	3,374	3,936	4,498	5,060	5,622	6,185	+563

- **Benefit amount**

Households who satisfy the eligibility condition, the income test and which are facing rental costs (related to the private sector) lower than a “reference rent” may be awarded a rent allowance.

The reference rent to be considered is depending on the household composition (1A to A7C+) and mentioned in the table just below (in EUR/month).

	1A	2A	A1C	A2C	A3C	A4C	A5C	A6C	A7C+ (per child above 6th)
2016	846	927	1,089	1,249	1,463	1,816	2,034	2,170	+ 125
2017	846	927	1,089	1,249	1,463	1,816	2,034	2,170	+ 125

Finally, the rent allowance to be considered is computed as follows:

$$\text{Reference rent} - (0.33 * \text{Net disposable income})$$

It can of course not be negative and is upper-limited, based on a maximum amount also depending on the household composition (1A to A7C+) and mentioned in the table just below (in EUR/month).

	1A	2A	A1C	A2C	A3C	A4C	A5C	A6C	A7C+ (per child above 6th)
2016	124	124	149	174	199	224	248	273	0
2017	124	124	149	174	199	224	248	273	0

EUROMOD Notes:

The last known “income after tax” is basically referring to a year anterior to the simulation period. We do not transfer those amounts across years in EUROMOD and therefore consider here the “income after tax” corresponding to the “present” period (the one presently simulated), which may deviate somewhere from reality. This is the reason why the new policy is implemented after income taxation in the simulation spine, which may make the “interaction” between the former rental allowance (necessarily embedded in the minimum guaranteed income computation) and the new one rather complex if all possible feedbacks had to be taken into account, what is not done in the present version of the model for sake of simplicity (anyway, the expected noise is low).

Moreover, the non take-up for this new rent allowance as observed in April 2016 appears to be very low, out of beneficiaries of the guaranteed minimum income scheme who are informed on a more systematic basis and may still benefit from the former system. Therefore, we choose to implement the new system for the beneficiaries of the guaranteed minimum income exclusively, maintain the former system in EUROMOD in 2016 and 2017, compute the new one and simply

add to benefits at large the difference between the two amounts, provided that there is a positive difference (otherwise maintaining the former level of support).

2.4.8 Unemployment benefit (*Indemnité de chômage*) (*bunss_lu*)

- *Definitions*

The unemployment benefit (*indemnité de chômage*) is a benefit related to remuneration previously earned. The unit of analysis is the individual (*tu_individual_lu*).

- *Eligibility conditions*

The main conditions for being eligible for the unemployment benefit are the following: to be involuntarily unemployed, work not permitted, unless part-time and with anti-accumulation rules applying, to be fit to work, to be available for work, to be aged between 16 and 64, to have registered for employment, to accept suitable employment or an active measure offered, to be resident in Luxembourg when the redundancy occurs; claim for the benefit within 2 weeks. The qualifying period for this benefit is at least 26 weeks of employment during the last year.

- *Income test*

None.

- *Benefit amount*

The benefit is determined by the salary earned before unemployment starts. The earnings taken are the gross earnings during the 3 months which precede unemployment. The allowance cannot exceed 2.5 times the minimum wage (€4,802.58/month) or 2 times the minimum wage (€3,842.06/month) in the case that the unemployment exceeds 182 days in a period of 12 months. For the period of complementary benefit (in case of unemployment benefit is allowed after the 356 days of the normal duration of compensation) the ceiling is fixed at 1.5 times the minimum wage (€2,881.55/month). The rate of the benefit is 80% of reference earnings, increasing to 85% of earnings if there are dependent children. The duration of payment is 365 calendar days during a reference period of 24 months (without exceeding the duration of working days over the reference period); 182 extra calendar days for persons who are particularly "difficult" to place. For unemployed of 50 years and more, prolongation of 12, 9 or 6 months respectively if 30, 25 or 20 years of affiliation to pension. Loss of allowance for 7 days (30 days if repeated) if the unemployed person refuses to report to the employment office. Accumulation with other social security benefits is not possible (*). If income from a gainful professional activity exceeds 10% of the maximum threshold of the provided compensation, the unemployment benefit is reduced by the amount exceeding the provided ceiling (*). The benefit is subject to taxation and to social contributions for health care, long-term care insurance and pension insurance.

EUROMOD Notes: No information concerning the salary earned before unemployment starts and other eligibility conditions is available. To make it possible to simulate unemployment benefit, an inverse function of the unemployment benefit for the current recipients of the benefit has been implemented in order to estimate the salary earned before unemployment starts. From the estimated salary earned before unemployment starts it is then possible to estimate the unemployment benefit using the 80% or 85% replacement rate. Concerning the ceiling of the benefit, it is only possible to use 2.5 times the minimum wage. (*) Moreover, due to difficulty of implementation, both the accumulation rule with other social security benefit and the rule on benefit reduction if income from professional activity exceed 10% of the benefit amount are not simulated yet in the present version.

2.5 Social contributions

Social contributions are compulsorily paid by insured persons and, if appropriate, by their employers. Social contributions are calculated on the basis of the professional incomes (or replacement incomes) through an equal contributions rate independently from the individual situation (age, gender, family situation, health status) but depending on the risks insured (health, sickness and maternity, pension, long-term care, accident) and the socio-professional categories (blue-collar, white collar, civil servant, self-employed, farmers...). Unlike in many other countries, unemployment benefits are not financed by social contributions but by income tax.

2.5.1 Employee social contributions (*tscee_s*)

Employee social contributions are composed of social contributions for health care – cash benefits (*tsceesi_s*), social contributions for health care – benefits in kind (*tsceehl_s*), social contributions for pension (*tsceepi_s* and *tsceepbi_s*) and social contributions for long-term care (*tsceoot_s*). Social contributions are paid on an individual basis (*tu_individual_lu*).

Social contribution for health care - cash benefits (*Cotisations sociales pour soins de santé – prestations en espèce*) finance sickness and maternity cash benefits. All employees from the private sector are entitled to these social contributions. Civil servants who benefit from continuation of the salary in the case of sickness or maternity do not have to pay this social contribution. The contribution basis is composed of the professional income, i.e., the gross pay including all the advantages even if they are in kind but excluding occasional allowances and bonuses. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

Since 2009, a uniform status (*statut unique*) has been introduced for blue- and white-collar workers. Since the "statut unique", both white-collar and blue-collar workers continue to receive pay - imposed on the employer for the month in which the sickness occurs and for the following three months.

	Rate for blue-collar workers	Rate for white-collar workers	Minimum contributory amount	Maximum contributory amount	Value of the minimum wage (MW)
2014	0.25%		MW	5 x MW	1,921.03€/month
2015	0.25%		MW	5 x MW	1,922.96€/month
2016	0.25%		MW	5 x MW	1,922.96€/month
2017	0.25%		MW	5 x MW	1,998.59€/month

EUROMOD Notes: The contribution basis is composed of the professional income, i.e., the gross pay including all the advantages even if they are in-kind but excluding occasional allowances and bonuses. However, for the simulation we consider only the gross pay and not the fringe benefits.

Social contribution for health care - benefits in kind (*Cotisations sociales pour soins de santé- prestations en nature*). The contribution basis is composed of the professional incomes defined above including occasional allowances and bonuses, the pensions and all replacement incomes subject to social contributions. The contribution rate is 5.6% in total in 2015: 2.8% for the insured and 2.8% for the employer. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (for a full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. The minimum is

increased by 30% for persons receiving a pension. If the pension does not reach the minimum, the contribution basis is the effective amount of the pension and the institution that pays the pension will pay the difference. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: 5 x €1,921.03/month = €9,605.15/month.

	Rate	Minimum contributory amount*	Maximum contributory amount	Value of the minimum wage (MW)
2014	2.8%	MW	5 x MW	1,921.03€/month
2015	2.8%	MW	5 x MW	1,922.96€/month
2016	2.8%	MW	5 x MW	1,922.96€/month
2017	2.8%	MW	5 x MW	1,998.59€/month

*MW+30% for pensioners

Social contribution for long-term care insurance (*Cotisations sociales pour l'assurance dépendance*). The contribution basis is composed of the professional incomes, the replacement incomes and the wealth incomes. The contribution rate amounts to 1.40 % for employees (there is no employer contribution). No maximum is applied to the contribution basis. The monthly contribution basis is reduced by 25% of the minimum wage for persons receiving a wage or a replacement income from the social security.

	Rate	Amount disregarded for wage earner or recipients of a replacement income from the social security	Value of the minimum wage (MW)
2014	1.4%	25% MW	1,921.03€/month
2015	1.4%	25% MW	1,922.96€/month
2016	1.4%	25% MW	1,922.96€/month
2017	1.4%	25% MW	1,998.59€/month

Social contribution for pension insurance (*Cotisations sociales pour pension*). The contribution basis is composed of the professional incomes or by the following replacement incomes (unemployment benefit, sickness benefit, maternity benefit, parental leave benefit). The contribution rate is 24% in total: 8% for the insured, 8% for the employer and 8% for the State. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (for a full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: 5 x €1,921.03/month = €9,605.15/month. Nevertheless, there is no ceiling for civil servants.

	Rate	Minimum contributory amount	Maximum contributory amount	Value of the minimum wage (MW)
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2014	8%	MW	5 x MW	1,921.03€/month
2015	8%	MW	5 x MW	1,922.96€/month
2016	8%	MW	5 x MW	1,922.96€/month
2017	8%	MW	5 x MW	1,998.59€/month

2.5.2 Employer social contributions (*tscer_s*)

Employer social contributions are composed of social contributions for health care – cash benefits (*tscersi_s*), social contributions for health care – benefits in kind (*tscerhl_s*), social contributions for pension (*tscerpi_s*) and social contributions for an accident (*tscerac_s*). Except for the contributions for an accident, the rules for the other employer social contributions are exactly the same as those concerning employee social contributions.

Social contribution for health care - cash benefits (*Cotisations sociales pour soins de santé – prestations en espèce*) Regarding health care – cash benefits, the participation of the employers to the "Mutualité des employeurs" has been made compulsory since 2009, due to the new "statut unique". The employer's contribution rate involves a fix part (0.25% for all employers since 2009) and a variable part funding the so-called *Mutualité des employeurs* and depending on the "class of risk" regarding absenteeism within the firm. The corresponding variable part of rate was comprised between 0.47% and 2.63% in 2014.

Rate (1)	
2014	0.25% + 1.55%
2015	0.25% + 1.78%
2016	0.25% + 1.70%
2017	0.25% + 1.72%

(1) **EUROMOD Notes:** Given lack of data and for simplicity reasons, we have implemented an unweighted average variable rate only, changing through time: 1.55% in 2014, 1.78% in 2015, 1.70% in 2016 and 1.72% in 2017.

Social contribution for health care - benefits in kind (*Cotisations sociales pour soins de santé- prestations en nature*). See "Employee social contributions", Section 2.5.1.

Employer social contributions for accident (*Cotisations sociales de l'assurance accident*). These contributions are paid exclusively by the employer. All industrial firms are ranged in 22 risk classes. Since 2011, the rate is uniform with a level of 1.10% in 2014 and 2015, 1.00% in 2016 and 2017. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (for a full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: 5 x € 1,921.03/month = € 9,605.15/month. Concerning the agricultural or forestry sector, the contributions are calculated according to the size of the land, the vineyard or the forest.

Rate	
2014	1.10%

2015	1.10%
2016	1.00%
2017	1.00%

2.5.3 Self-employed social contributions (*tscse_s*)

Self-employed social contributions are composed of social contributions for health care – cash benefits (*tscsesi_s*), social contributions for health care – benefits in kind (*tscsehl_s*), social contributions for pension (*tscsepi_s*), social contributions for long-term care (*tscseot_s*) and social contributions for accident (*tscseac_s*). Social contributions are paid on an individual basis (*tu_individual_lu*).

Social contribution for health care - cash benefits (*Cotisations sociales pour soins de santé – prestations en espèce*) finance sickness and maternity cash benefits. The contribution basis is composed of the professional income of the insured person. For the self-employed, excluding agricultural activity, the professional income corresponds to the net income defined by the tax law. For the agricultural self-employed, the professional income is fixed on the basis of the production. The contribution rate is 0.50% since 2009. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (for a full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

EUROMOD Notes: As it is impossible to obtain information on the production of the agricultural self-employed, we use the professional income as for the other self-employed.

Social contribution for health care - benefits in kind (*Cotisations sociales pour soins de santé- prestations en nature*). The contribution basis is composed of the professional incomes defined above. The contribution rate is 5.6%. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means June 2014: $5 \times \text{€}1,921.03/\text{month} = \text{€}9,605.15/\text{month}$.

	Rate	Minimum contributory amount	Maximum contributory amount	Value of the minimum wage (MW)
2014	5.6%	MW	5 x MW	1,921.03€/month
2015	5.6%	MW	5 x MW	1,922.96€/month
2016	5.6%	MW	5 x MW	1,922.96€/month
2017	5.6%	MW	5 x MW	1,998.59€/month

Social contribution for long-term care insurance (*Cotisations sociales pour l'assurance dépendance*). The contribution basis is composed of the professional incomes. The contribution rate amounts to 1.40 %. No maximum is applied to the contribution basis.

	Rate
2014	1.4%
2015	1.4%
2016	1.4%
2017	1.4%

Social contribution for pension insurance (*Cotisations sociales pour pension*). The contribution basis is composed of the professional incomes. The contribution rate is 16%. For the contribution basis there is a minimum that corresponds in principle to the minimum wage (full-time job). In the case of a part-time job, the minimum is reduced proportionally regarding the duration of the job. There is also a ceiling for the contribution basis that corresponds to 5 times the minimum wage, which means for June 2014: 5 x € 1,921.03/month = € 9,605.15/month. Nevertheless, there is no ceiling for civil servants.

	Rate	Minimum contributory amount	Maximum contributory amount	Value of the minimum wage (MW)
2014	16%	MW	5 x MW	1,921.03€/month
2015	16%	MW	5 x MW	1,922.96€/month
2016	16%	MW	5 x MW	1,922.96€/month
2017	16%	MW	5 x MW	1,998.59€/month

Self-employed social contributions for accident (*Cotisations sociales de l'assurance accident*).

Same configuration and implementation as for “Employer social contributions”, Section 2.5.2.

2.5.4 Social contributions on social assistance (*tsceebeot_s*)

Two types of social contributions are levied on the social assistance benefit (*revenu mimum garanti*): the social contribution for health-benefit in kind that is calculated in the module “Employee social contributions (section 2.4.1)” and the social contribution for long-term care (*tsceebeot_s*).

The rules for calculating these two social contributions are exactly the same as those described above for employees. The contribution basis is the gross amount of the social assistance.

2.5.5 Credited social contributions (*tscct_s*)

Credited social contributions are composed of social contributions for health care – benefits in kind (*tsccthl_s*) and social contributions for pension (*tscctpi_s*). The rules for these social contributions are exactly the same as those concerning employee social contributions. The contribution basis is the replacement income or the pension income.

2.5.6 Credited social contributions for social assistance (*tscctsi_s*)

Credited social contributions for social assistance are composed of social contributions for health care – benefits in kind. The rules for these social contributions are exactly the same as those concerning employee social contributions. The contribution basis is the gross amount of the social assistance.

2.6 Personal income tax

2.6.1 Tax unit

Personal income tax (*Impôt sur le revenu des personnes physiques*) is taxed jointly at the family unit (*tu_tin_lu*).

The family unit is defined by the marriage or the legal consensual union and children less than 18 years old on 1 January of the tax year without a salary.

Taxpayers are granted a tax class according to their family status. Married taxpayers (even in the case of a wedding or divorce during the calendar year), widowed persons for the 3 years following the year in which they became widowed, divorced or separated individuals for the 3 years following the year of divorce or separation and civil partners who live together for a full tax year and elect to file jointly, belong to tax class 2.

Widowed persons not included in tax class 2, individuals aged at least 65 on 1 January and single parents belong to tax class 1a.

All other individuals belong to tax class 1.

For tax class purposes, the definition of a child is different from that used in the tax unit. A child is less than 21 years old on 1 January of the tax year or 21 years old and more continuing to study.

	Without children	With children	More than 64 years old on 1 January
Single	1	1a	1a
Married/ Legal consensual union*	2	2	2
Separated**	1	1a	1a
Divorced**	1	1a	1a
Widow**	1a	1a	1a

* If the persons in legal consensual union ask to be taxed jointly, the rules concerning married couples are applied

** These taxpayers continue to benefit from splitting (tax class 2) during the 3 years after the separation, the divorce or being widowed.

2.6.2 Exemptions

We define exemptions following Verbist (2004): “income components (that) are part of pre-tax income, but do not have to be declared to the tax authorities, and thus are not included in the concept of taxable income (e.g. child benefits in most countries)”.

Exemptions concern child benefit, new school year benefit, education benefit, maternity benefit, birth benefit, parental leave benefit, heating allowance benefit, 30% of the wage of the

agricultural worker, additional wages for night work, Sunday work and bank holiday work, payment for additional hours, and severance pay.

EUROMOD Notes: additional wages for night work, Sunday work and bank holiday work, and payment for additional hours could not be identified in EUROMOD. The exemption of 30% of the wage of agricultural worker is simulated like an allowance in EUROMOD.

2.6.3 Tax allowances

Here, we define tax allowances as any amount subtracted from pre-tax income (including social insurance contributions). Unlike Verbist (2004), there is no distinction between those that are fixed amounts (tax allowances) and those whose level is a function of pre-tax income (deductions).

There are many allowances in the Luxembourg income tax regime. According to the data available in the input data, it is impossible to simulate all of them. The table below presents the main allowances present in the personal income tax regime. Three types of allowances can be distinguished: acquisition costs, special expenses and allowances.

Acquisition costs (*frais d'obtention*) correspond to expenses in order to earn income. For wage earners, the acquisition costs correspond to a lump-sum of €540/year (this lump-sum can be replaced by the allowable expenses if they are higher – no information about allowable expenses in Euromod, hence basic lump-sum is used-) and travelling costs: a minimum of €0/ and a maximum of €2,574/year depending on the distance home-workplace (no information about the distance home-workplace in Euromod, hence the minimum is used). For recipients of pensions, the acquisition costs correspond to a lump-sum of €300/year. When married couples jointly taxed receive each one a wage and/or a pension, the two members of the couple are entitled to these acquisition costs. For persons having income from a movable asset, acquisition costs correspond to a lump-sum of €25/year (doubled in case of joint taxation). The acquisition costs for rental income correspond to 35% of the gross annual rentals. The rental value of a dwelling occupied by an owner-occupier is regarded as taxable (the value of the rent is calculated by the tax administration. The value is unknown in Euromod but it is very low) and the interest repayments on mortgage for the acquisition of the dwelling are considered as acquisition costs. For 2014, 2015 and 2016, these costs are fixed per annum per family member for the first five years of occupation at €1,500, for the next five years at €1,125 and for the next years at €750 (no information about the year of occupation in Euromod – we use the value that corresponds to 6-10 years of occupation). Since 2017, these amounts are respectively €2,000 / €1,500 / €1,000.

Special expenses (*dépenses spéciales*) correspond to the compulsory social contributions (except social contributions for long-term care insurance) and other expenses. They are several other expenses but all taxpayers benefit at least from a lump-sum of €480/year without any justification (time two in case of joint taxation and both members of the couple have a salaried occupation). In case of higher expenses than the lump-sum, taxpayers can deduct the amount of the expenses instead the lump-sum (no information about expenses in Euromod – lump-sum is used). Next to the lump-sum, other expenses can be deducted. The most common are i) interest expenses (excluded the mortgage interests of the main residence that are considered as acquisition costs – see above) up to €336/year in 2014, 2015 and 2016 (amount multiplied by the number of persons in the tax unit), ii) insurance payment up to €672/year in 2014, 2015 and 2016 (amount multiplied by the number of persons in the tax unit), iii) private pension contributions (3rd pillar) up to €1,500/year for a person less than 40 years old and up to €3,200/year for a person aged between 55 and 74 years old up to 2016 (since 2017 the age is not considered any more and the amount is to €3,200/year in all cases) and iv) maintenance payments up to €24,000/year since 2011. Since 2017, interest expenses i) and insurance

payment ii) are merged into a single category with a amount maximum deductible of €672/year. This amount is increased by its own amount for the spouse and for each child in the household.

Other allowances (*abattements*) are obtained to reduce the taxable income. The most common allowances are i) allowance for extraordinary burden (childcare costs, domesticity costs...); the allowance is maximum equal to €3,600/year and cannot exceed the real costs (no information about these costs in EUROMOD – not simulated); since 2017 this amount is to €5,400/year and ii) Extra-professional allowance equal to €4,500/year applicable to married couples jointly taxed if both of them are working (wage earners or self-employed), iii) 50% of pensions from private pension plans (3rd pillar),

Allowances (yearly amounts, in €)		2014-2016	2017
Acquisition costs (<i>Frais d'obtention</i>)			
Income from a salaried occupation		540	540
Travelling costs (depending on the distance home-workplace)	Min	0	0
	Max	2,574	2,574
Income resulting from a pension		300	300
Income from a movable asset		25	25
Rental income		35% of the rent	35% of the rent
Interest repayments on mortgage for the main residence	Max	2,700 per building	2,700 per building
	1-5 years after first occupation	1,500 per member of the HH	2,000 per member of the HH
	6-10 years after first occupation	1,125 per member of the HH	1,500 per member of the HH
	11 and more years after first occupation	750 per member of the HH	1,000 per member of the HH
Special expenses (<i>Dépenses spéciales</i>)			
Compulsory social contributions (except social contributions for long- term care insurance)		No limit	No limit
For lack of higher expenses, lump-sum (times two in case of joint taxation and both members of the couple have a salaried occupation)		480	480
Interest expenses (amount multiplied by the number of persons in the tax unit)		336	672

Insurance payment (amount multiplied by the number of persons in the tax unit)		672	
Private pension contributions	Max	From 1,500 to 3,200 depending on age	3,200 independent of age
Maintenance payment (*)	Max	24,000	24,000
Allowances (<i>Abattements</i>)			
Allowance for extraordinary burden (childcare costs, domesticity costs...); the allowance cannot exceed the real costs		3,600	5,400
Extra-professional allowance		4,500	4,500
Transfer or termination allowance		10,000	10,000
Pensions from private pension plans (3 rd pillar)		50% of the pension	50% of the pension

Notes: Allowances in grey could not be implemented in the simulation

(*) These are paid amounts ; private inter-households transfers (received) are part of taxable income (included in “other net income”, see *Section 1.2*) up to a maximum level identical to the one mentioned here for maintenance payments

2.6.4 Tax base

The tax base is called “income to tax according to the schedule” (*revenu à imposer suivant barème*), which is equal to the sum of the eight categories of taxable income: Commercial/business profits; Profits from agriculture and forestry; Profits derived from self-employed professions (*profession libérale*); Net income from employment; Net income from pensions and/or annuities; Net income from investments (movable capital); Net income from rental of property and Other net income (including capital gains). By net income we mean the difference between the receipts and the costs of obtaining these receipts (*dépenses d'exploitation et frais d'obtention*) (for example, travelling costs). Social contributions except for social contributions for long-term care and several allowances (*dépenses spéciales et abattements*) are finally deducted from the net income to obtain the adjusted tax base.

2.6.5 Tax schedule

In 2017, the tax brackets and marginal tax rates have been significantly reshaped, with a maximal rate of 42% for annual incomes greater than € 200,004 (40% if an income above € 100,000 before 2017).

For taxpayers in tax class 1, tax is determined by applying the tax schedule presented in the table below to the adjusted taxable income.

For taxpayers in tax class 1a and before 2017, tax is determined by applying the tax schedule presented in the table below to the adjusted taxable income (ATI) less half of its so-called “complement to €45,060” on condition that the marginal tax rate does not exceed 40%. The “complement to €45,060” is defined as “ATI-(€45,060 -ATI)/2” and serves as a tax base for the

computation of the tax. Since the taxation system is progressive, this specific tax base is decomposed in the appropriate band, such that income up to K_0 is not taxed, income between K_1 and K_0 is taxed at t_1 rate, etc. and income above K_n is taxed at the tax rate t_n . For each taxpayer, at the margin the tax will be $(ATI - (\text{€}45,060 - ATI)/2) - K_{k-1}) * t_k$. The marginal tax rate will be hence equal to the derivative of this function with respect to ATI, that is $t_k * 3/2$. Before 2017, the upper limit for the marginal tax rate is fixed to 40%, which means that the maximum rate applicable the ATI is equal to 26% ($26\% * 3/2 = 39\%$, whereas $28\% * 3/2$ would exceed 40%). Therefore, ATIs above €35,250, corresponding to “complements to €45,060” greater than €30,345, will be taxed based on a 40% marginal rate.

For taxpayers in tax class 1a in 2017, the marginal tax rate cannot exceed 39% for ATIs between €37,842 and €100,002, 40% for ATIs between €100,002 and €150,000, 41% for ATIs between €150,000 and €200,004 and 41% if ATI is greater then €200,004. Those rules imply that ATIs exceeding €37,842 will be taxed following the marginal rates of the “class 1” tax payers. ATIs below €37,842 will be taxed based on the rules defined for “class 1a” tax payers before 2017. The marginal tax rate for ATI is 39%, corresponding to a rate of 26% to be applied to the “complement to €45,060”, hence a limit for tax bracket of €34,233 (those limits have been changed in 2017) which in turn gives an ATI of €37,842. Q.E.D.

For taxpayers in tax class 2, tax is determined by applying the tax schedule presented in the table below to the adjusted taxable income divided by 2 and then the tax obtained is multiplied by 2.

Finally, a surcharge is added as a contribution to the unemployment fund (see *Section 1.4*). This surcharge is fixed to 7% if yearly adjusted tax base (*revenu ajusté*) is lower than €150,000 for tax classes 1 and 1a or €300,000 if the tax class is 2. In other cases, the surcharge is 9%.

As from 1 January 2015, a new tax is introduced on the income of individuals (residents and non-residents), called “budget balancing temporary tax”. The rate of this tax is fixed at 0.5%. The tax base is constituted by the professional income, the replacement income and the income from capital. Since 2017, this tax is removed.

Years	2014-2016			2017		
Bracket number	Lower Limit (€year)	Upper Limit (€year)	Rate	Lower Limit (€year)	Upper Limit (€year)	Rate
1	0	11265	0 %	0	11265	0 %
2	11265	13173	8%	11265	13137	8%
3	13173	15081	10%	13137	15009	9%
4	15081	16989	12%	15009	16881	10%
5	16989	18897	14%	16881	18753	11%
6	18897	20805	16%	18753	20625	12%
7	20805	22713	18%	20625	22569	14%
8	22713	24621	20%	22569	24513	16%
9	24621	26529	22%	24513	26457	18%
10	26529	28437	24%	26457	28401	20%
11	28437	30345	26%	28401	30345	22%

12	30345	32253	28%	30345	32289	24%
13	32253	34161	30%	32289	34233	26%
14	34161	36069	32%	34233	36177	28%
15	36069	37977	34%	36177	38121	30%
16	37977	39885	36%	38121	40065	32%
17	39885	41793	38%	40065	42009	34%
18	41793	100000	39%	42009	43953	36%
19	100000		40%	43953	45897	38%
20				45897	100002	39%
21				100002	150000	40%
22				150000	200004	41%
23				200004		42%

2.6.6 Tax credits

Since 2009, three refundable tax credits were introduced by the Government (to replace former tax allowances): the tax credit for employees (*crédit d'impôt pour salariés*), the tax credit for the retired (*crédit d'impôt pour pensionnés*), the tax credit for the self employed (*crédit d'impôt pour travailleurs indépendants*) and the tax credit for lone parents (*crédit d'impôt monoparental*).

Four different policies have been created to simulate these three tax credits.

- **Tax credit for employees (*tintcee lu*):** the unit of analysis is the individual (*tu_individual_lu*). Amount: € 25 per month or € 300 per year from 2009 until 2016 if employment-related income is above some threshold.

Since 2017, the amount of tax credit for employees varies with the employee's annual gross income.

For a gross income amounting between € 936 and € 11,265 : the amount is $[300 + (\text{gross income} - 936) * 0,029]$ euros per year.

For a gross income amounting between € 11,266 and € 40,000 : the amount is € 600 per year.

For a gross income between € 40,001 and € 79,999 : the amount is $[600 - (\text{gross income} - 40,000) * 0,015]$ euros per year.

For a gross income lower to € 936 or exceeding € 80,000, the amount is 0.

- **Tax credit for self employed (*tintcse lu*):** the unit of analysis is the individual (*tu_individual_lu*). Amount: € 25 per month or € 300 per year from 2009 until 2016.

Since 2017, the amount of tax credit for self-employed depends on annual net profit.

For a net profit lower to € 936, the amount is € 300.

For a net profit amounting between € 936 and € 11,265 : the amount is $[300 + (\text{net profit} - 936) * 0,029]$ euros per year.

For a net profit amounting between € 11,266 and € 40,000 : the amount is € 600 per year.

For a net profit between € 40,001 and € 79,999 : the amount is $[600 - (\text{net profit} - 40,000) * 0,015]$ euros per year.

For a net profit exceeding € 80,000, the amount is 0.

This tax credit cannot be cumulated with tax credit for employees and retired.

- **Tax credit for retired (*tintcpe lu*):** the unit of analysis is the individual (*tu_individual_lu*). Amount: €25 per month from 2009 until 2016.
Since 2017, the amount of tax credit for retired varies with the annual gross pension.
For a gross pension amounting between €300 and €936 : the amount is €300 per year.
For a gross pension amounting between €936 and €11,265 : the amount is $[300 + (\text{gross pension} - 936) * 0,029]$ euros per year.
For a gross pension between €11,266 and €40,000 : the amount is €600 per year.
For a gross pension between €40,001 and €79,999 : the amount is $[600 - (\text{gross pension} - 40,000) * 0,015]$ euros per year.
For a gross pension lower to €300 or exceeding €80,000 the amount is 0. This tax credit cannot be cumulated with tax credit for employees or self-employed.
- **Tax credit for lone parent (*tintclp lu*):** the unit of analysis is the tax household (*tu_tin_lu*). Amount: €62.5 per month or €750 per year from 2009 until 2016.
Since 2017, the maximum amount of the tax credit for lone parent is increased to €1,500 for single-parent taxpayers who have an adjusted taxable income less than €35,000.
From an adjusted taxable income exceeding €35,000 the tax credit decreases linearly from €1,500 to reach the amount applicable before 2017 (€750) as soon as the adjusted taxable income is €105,000. The computation is (in €): $1,875 - \text{adjusted taxable income} * 750 / 70,000$

2.7 (Social) Minimum wage

Unless exceptional and specific agreements possible in some circumstances, wages are submitted to minimum rates in Luxembourg: €1,921.03/month for non-qualified wage-earners in 2014 for a full time (40 hours/week) job (€11.1042/hour with a basis of 173 hours/month), €1,922.96/month in 2015 and 2016. €1,998.59/month in 2017.

Those basic amounts are increased by 20% for qualified workers and also modulated based on the age of the wage-earner: 80% of the basic amount if aged 17 or 18, 75% of the basic amount if between 15- and 17-year-old.

The basic amount is defined as the “Minimum Social Wage” (*salaire social minimum*), hereafter “Minimum Wage” or “MW” and is also an important parameter for the tax-benefit system as a whole : several amounts are defined based on this MW : upper limit of the monthly old-age pension in the general scheme (5 times the MW), ceilings for social contributions, etc.

EUROMOD Notes: Only the basic amount is simulated in EUROMOD.

3. DATA

3.1 General description

3.1.1 The underlying data base

The Luxembourg database consists of the Luxembourgish part of the 2013 wave (operation 2015) of the European Union Statistics on Income and Living Conditions (EU-SILC). The database is a representative cross-sectional sample of the Luxembourgish population living in private households. It is constructed from four sources:

- The first sample consisted of 3,250 people who agreed to participate for the first time in the tenth wave of the survey (operation 2012). At the end of this initial wave, these individuals were distributed among 1,236 households.
- A second sample consisted of 3,311 people who agreed to participate for the first time in the eleventh wave of the survey (operation 2013). At the end of this wave, these individuals were distributed among 1,251 "dwelling" households.
- A third sample consisted of 3,307 people who agreed to participate for the first time in the twelfth wave of the survey (operation 2014). At the end of this wave, these individuals were distributed among 1,303 "dwelling" households.
- In addition to the three sampling frames (one base for each of the longitudinal samples mentioned above), a fourth sampling frame was built by the General Inspectorate of Social Security (IGSS). The sampling unit is the so-called "fiscal" household, which consists only of an insured person (or two insured persons for married couples who are married or pensioners) and persons covered by the sickness fund ("co-insured"). Taking into account only the individual incomes that are the subject of social security contributions, the reference person (or principal beneficiary) is the one who contributes the most to the income of the "fiscal" household. The new sample composed initially of 5,751 "tax" households.

The survey takes place mostly in the first half of the year following the income reference year. The unit of assessment is the sociological household, defined as the persons living at the same address. The response rate for the total sample is defined as (number of addresses successfully contacted / number of valid addresses contacted) x (number of household interviews completed and accepted for the database / number of eligible households at contacted addresses) = 40.15%. The response rate is "comparatively high" due to the fact that 2015 corresponds with the 13th wave of a long-term panel. For information, the response rate of the 1st wave was only 37.62%. Table 14 provide the descriptive statistics of EUROMOD database LU_2015_a2.

Table 14. EUROMOD database description

EUROMOD database		LU_2015_a1
Original name		PSELL3/EU-SILC wave 13
Provider		LISER and STATEC
Year of collection		2015
Period of collection		January 2015 to July 2015
Income reference period		2014
Sampling		Stratified sampling
Unit of assessment		Fiscal household
Coverage		Private households
Sample size	3,474 households and 7,204 persons aged 16 years and more	
Response rate		40.15%

The Data Base on which the EUROMOD database is based is provided by LISER and STATEC. Contrary to the User Data Base provided by Eurostat the Data Base provided by LISER and STATEC is more detailed, especially concerning the income components.

3.1.2 Sample quality and weights

The sampling unit is the so-called "fiscal" household, which consists only of an insured person (or two insured persons for married couples who are married or pensioners) and persons covered by the sickness fund ("co-insured"). Taking into account only the individual incomes that are the subject of social security contributions, the reference person (or principal beneficiary) is the one who contributes the most to the income of the "fiscal" household. This sampling frame is indirectly related to the target population (private households "dwelling"). The relationship

between these two populations ("fiscal" households and "housing" households) is ensured, during the various weighting phases, by the Generalized Method of Weight Sharing:

Table 15. Descriptive statistics of the grossing-up weight

Number	8,714
Mean	58.575
Median	50.833
Maximum	376.742
Minimum	1.556
Max/Min	242.12
Decile 1	17.097
Decile 9	107.285
Dec 9 / Dec1	6.275

Note: the numbers in the table correspond to the adjusted dataset (see Section 3.3, Data adjustment).

Before imputation, item non-response especially concerns income variables and more particularly some income components like interest income or self-employed income. Because of the fact that all income components having item non-response have been imputed, the PSELL3/EU-SILC dataset does not have item non-response for the income variables. Item non-response for other variables is very low. Concerning under-reporting, the only way to assess if households have under- (versus over-) reported some income components is to compare the survey data with administrative data (see Table 15).

3.3 Data adjustment

Adjustments to variables are kept to a minimum. Some minor data cleaning is done to make sure that the households and relationships of individuals within households are coherent (for example, that young children are not living alone or family relations are coherent).

In order to guarantee consistency between demographic variables and income variables which refer to the previous year (and on which the EUROMOD simulation is based), all children born between the end of the income reference period and the date of interview have been dropped from the sample.

Households with at least one international civil servant have been dropped from the PSELL3/EU-SILC dataset. International civil servants have a specific tax-benefit system different from the national one. The PSELL3/EU-SILC dataset contains 8,767 observations. After having dropped the persons living in a household with at least one international civil servant (262 cases) and all the children born between the end of the income reference period and the date of interview (53 cases), the dataset contains 8,452 observations.

3.4 Imputations and assumptions

3.4.1 Time period

- Reference period of socio-demographic, labour, economic characteristics corresponds to the time of data collection (January-July 2012). However, some labour information (monthly main activity) corresponds to the time of income reference period (2011).
- Information on incomes refers to the calendar year 2011.
- For the following income components, information about how many number of months they were paid is present: employment income (*yemmy*), self-employment income

(*ysemy*), unemployment income (*bunmy*), fringe benefit (*kfbmy*), invalidity income (*pdimy*), old-age pension (*poamy*) and survivor pension (*psumy*).

3.4.2 Gross incomes

The PSELL3/EU-SILC survey contains information on both gross and net monetary incomes. Both incomes are collected during the fieldwork.

3.4.3 Disaggregation of harmonized variables

Since Luxembourg uses the national version of EU-SILC with detailed information on income components, no specific imputation has been done to disaggregate the income component present in the EU-SILC UDB.

In order to simulate the unemployment benefit, the variable *yempv* (previous year income) has been derived reversing the rule for the calculation of unemployment benefit.

3.5 Updating

To account for any time inconsistencies between the input dataset and the policy year, updating factors are used. Each monetary variable (i.e. each income component) is updated so as to account for changes in the non-simulated variables that have taken place between the year of the data and the year of the simulated tax-benefit system. Updating factors are generally based on changes in the average value of an income component between the year of the data and the policy year. For detailed information about the construction of each updating factor as well as the sources that have been used, see Annex 1 (and DRD).

Updating factors are provided for non simulated monetary components present in the input dataset only. No other updating adjustments are employed. Thus the distribution of characteristics (such as employment status and demographic variables), and the distribution of each income source that is not simulated, remain as they were in 2014.

4. VALIDATION

4.1 Aggregate Validation

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

Often, the results are good. The discrepancies observed between the EUROMOD and external sources numbers can be partially explained by seven main factors: *i)* persons living in collective households are present in external sources and not in EUROMOD, *ii)* the definition of some income components may differ slightly from one source to another, *iii)* for some components, we had to hypothesise concerning the share of resident recipients and the % expenditure/revenue concerning specifically residents, *iv)* income variables in external administrative sources are sometimes indirectly derived from social contributions rather than directly registered/observed as in SLC data, *v)* a few income components are not well understood during the survey, *vi)* we hypothesize full take-up of several simulated benefits in EUROMOD Luxembourg (which is especially significant for social assistance) and *vii)* households with at least one international civil servant have been dropped from the PSELL3/EU-SILC dataset before the simulation (*Section 3.3*).

Remark

The results below are derived from an initial version of the model for Luxembourg. This version recently appeared to involve a slightly wrong implementation of the “Higher education grant” policy, updated since in the model itself. Fortunately, the error induced little deviations in the simulation (hence the validation) outcomes only, compared to what is presented here.

4.1.1 Components of disposable income

Table 16. Components of disposable income

	EUROMOD 2011	EU-SILC [2012 / income 2011]
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution	0	0
<i>Company car</i>	0	+
Contributions to individual private pension plans	0	0
Cash benefits or losses from self-employment	+	+
Pension from individual private plans	+	0
Unemployment benefits	+	+
Old-age benefits	+	+
Survivor' benefits	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
Family/children related allowances	+	+
Social exclusion not elsewhere classified	+	+
Housing allowances	+	+
Regular inter-household cash transfer received	+	+
Interests, dividends, etc.	+	+
Income received by people aged under 16	+	+
Regular taxes on wealth	-	-
Regular inter-household cash transfer paid	-	-
Tax on income and social contributions	-	-
<i>Repayments/receipts for tax adjustment</i>	0	+

Source: EUROMOD and EU-SILC/PSELL3 (2015)

4.1.2 Validation of incomes inputted into the simulation

Tables 4.2 to 4.6 present a comparison between EUROMOD *non-simulated* income components recipients/payers and expenditure/revenue and external sources for the years 2014 and 2015 (no sufficient external data available for 2016 and 2017). Ratio to external source corresponds to EUROMOD numbers divided by the numbers from external sources.

EUROMOD numbers of recipients/payers are always the same (for *non-simulated* variables) in 2014-2017 as in 2014 (no demographic update). But the expenditure/revenue figures are updated using the income updating factors.

Most discrepancies observed between the EUROMOD and external sources can be explained by the factors listed in *Section 4.1*. Some of them are now illustrated for inputting incomes. For example, in Luxembourg the concept of early retirement (*préretraite*) coexists with the concept of anticipated retirement (*retraite anticipée*). It seems that some persons confused these two concepts which may explain why the number of recipients of the early retirement benefit is close to 4 times higher in EUROMOD than in external sources (*Table 4.5*). A large discrepancy can also be observed for recipients of “permanent accident benefit” and “long-term care benefit”; however, the outcome for amounts may appear to be better, for example as soon as those benefits are aggregated (they sometimes cannot be disentangled), which might be seen as a complementary illustration of factor *v*) (*Table 4.6*). But factors *iii*), *iv*) and *vii*) are certainly not to be underestimated either. In particular, these may lead to the discrepancies observed between EUROMOD and external sources for employment and self-employment recipients and amounts (*Table 4.3* and *4.4*). Finally, differences in survivor pensions between EUROMOD and external sources are striking, maybe due to factor *i*), part of survivors (mainly women) living in collective households ; however, such an hypothesis is certainly to be explored further before concluding.

4.1.3 Validation of outputted (simulated) incomes

Tables 4.7 and *4.8* present a comparison between EUROMOD *simulated* components and external sources for the years 2014 and 2015 (no sufficient external data available for 2016 and 2017). Ratio to external source corresponds to EUROMOD numbers divided by the numbers from external sources.

Except for social assistance and heating allowance, two components subject to non take-up (see factor *vi* in *Section 4.1*), and a few other amounts (e.g. amounts for self-employed social contribution for accident) the results are satisfactory.

Out of non take-up phenomenon, the discrepancies observed between the EUROMOD and external sources numbers can be partially explained by the factors *i*) to *v*) emphasized in *Section 4.1*. For example, in Luxembourg external sources do not always provide taxes and benefits components paid/received by residents and by non-residents. For some components, we had to hypothesise concerning recipients and the % expenditure/revenue concerning residents only. For *tin_s* and the sum of the contributions for healthcare, we hypothesise that residents pay 65% of the income tax (the ratio between all kinds of resident "workers" and pensioners and the same population whatever the residence status). For other components, ratios are derived based on the target resident population/amount compared to the whole target population/amount (for example, 52% for family benefits in 2014). If unknown, a share is derived from similar components (see *bch00_s* below).

For *bch00_s* (boni for children), we do not have the number of recipients for residents only from external source. We hypothesise, that the number is the same than for *bfauc_s*. Since 2009 and the introduction of a uniform status (*statut unique*) for blue-collar and white-collar workers, there is a discrepancy between external sources and EUROMOD outcome regarding the social contributions for health payment from “employers” (including self-employed and “credited”) due lack of external information regarding the “Mutualité des employeurs” which has been made compulsory and is benefitting from a greater part of contributions than earlier.

Social assistance and the heating allowance benefit show a remarkable gap between values as simulated through EUROMOD and derived from external sources. Ratios between 1.47 and

2.22 (regarding recipients, all years, *Table 4.7*) and between 1.40 and 1.78 (for the amounts, *Table 4.8*) certainly largely result from a non take-up attitude, on top of the various discrepancy factors mentioned earlier. Considering such an attitude as the dominant factor would lead to an indication of take-up ratios which roughly correspond to what literature is emphasizing for Luxembourg and countries around, with higher values for recipients (about 40% in 2009) compared to amounts (around 60% in 2009) when social assistance is considered. It is also worth to mention that significant changes in external sources (for example with regard the number of recipients for heating allowance between 2014 and 2015) can be explained by administrative reasons (treatments of new demands that may be postponed through time).

Finally, the number of recipients of Higher education grants and total amounts as simulated through EUROMOD are much closer external sources than what can be observed from raw SILC data, where both amounts are surprisingly and certainly too low.

4.2 Income distribution

All income distribution results presented in *Table 4.9* are computed for individuals according to their household disposable income (HDI) equivalised by the “modified OECD” equivalence scale. HDI are calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the OECD equivalence are: first adult=1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

Differences between EUROMOD computations and EU-SILC (“external”) derivations can be partially explained by a non-fully consistency between the definitions of disposable income on both sides (“ils_dispy” for EUROMOD, “hy020” for EU-SILC, cf. *Table 16*). Moreover, the coverage of EUROMOD input data differs from that of SILC 2015 because international civil servants (high income) have been excluded from the EUROMOD input data. But a third factor is playing an important role, as explained below.

4.2.1 Income inequality

Table 4.9 compares income inequality indicators issued from EUROMOD with the income inequality produced from EU-SILC 2015.

Inequalities seem lower when measured through EUROMOD computations. This can be partially explained by the explicit hypothesis of full take-up for social benefits in the model. Another source might be the discrepancy between the target populations, international civil servants being dropped in the EUROMOD simulations (not in SILC data).

4.2.2 Poverty rates

Table 4.10 compares poverty rates issued from EUROMOD with the official poverty rates produced from EU-SILC 2015. The EUROMOD rates are clearly below the SILC rates. This difference can be explained the same way as mentioned in the previous paragraphs, in particular taking into account full take-up for social benefits as they are simulated through EUROMOD presently.

4.3 Summary of “health warnings”

This final section summarises the main findings in terms of particular aspects of the LU part of EUROMOD or its database that should be borne in mind when planning appropriate uses of the model and in interpreting results.

- *The input database contains only residents affiliated to the national social security system. That means that international civil servants who have their own social security system and their own tax system have been excluded from the sample. In Luxembourg, a small country with several international institutions, they represent around 4% of the resident active population. Care should be taken in comparing EUROMOD outputs with EU-SILC outputs. One must know that international civil servants earn mid to high wages.*
- *Around 40% of the labour force is composed by cross-border workers in Luxembourg. They are not included in the database because the sample covers only residents. Care should be taken in comparing some EUROMOD outputs with external statistics. External statistics do not always make the difference between residents and cross-border workers.*
- *External statistics about income tax are extremely rare in Luxembourg. It is impossible to know the numbers of persons or fiscal households who pay income tax and the aggregate amount of income tax does not make the difference between residents and cross-border workers. So, the validation for income tax is difficult to achieve.*

5. REFERENCES

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ANNEX 1: UPRATING FACTORS

Table A1.1-Uprating factors values and sources

Index	Constant name	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Source
National Consumer Price index (IPCN)	\$f_IPCN	105.04	108.61	109.01	111.49	115.29	118.37	120.42	121.18	121.75	122.10	124.17	STATEC / IPCN http://www.statistiques.public.lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=eng&MainTheme=5&FldrName=5&RFPPath=109
Annual average of the personal minimum pension	\$f_upr2	645.49	665.64	689.14	707.08	723.32	739.32	761.00	775.17	775.17	779.03	805.85	IGSS / Social parameters - "nombre indice" & "Facteur de réajustement des pensions" (from 2013 on)/"Facteur de revalorisation' (before 2013), Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
Annual average care allowance	\$f_upr3	596.54	608.96	624.19	634.56	646.40	662.56	679.12	691.76	691.76	691.76	709.05	IGSS / Social parameters - Care allowance, Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
Annual average long term care allowance	\$f_upr4	52.44	53.26	56.92	59.27	61.58	63.63	65.22	66.43	66.43	67.90	71.51	IGSS / Social parameters - Long-term care allowance, Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
No Uprating	\$f_NoUpr	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Annual average minimum wage	\$f_upr5	1570.28	1602.99	1675.92	1703.79	1768.54	1812.75	1885.90	1921.03	1922.96	1922.96	1998.59	IGSS / Social parameters, Minimum social wage, Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
Annual average of the Cost of living allowance	\$f_upr6	600.00	660.00	1320.00	1320.00	1320.00	1320.00	1320.00	1320.00	1320.00	1320.00	1320.00	IGSS / Social parameters - Cost of living allowance, Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
Annual average minimum wage lagged by 1 year	\$f_upr7	1506.55	1570.28	1602.99	1675.92	1703.79	1768.54	1812.75	1885.90	1921.03	1922.96	1922.96	IGSS / Social parameters, Minimum social wage, Yearly average (http://www.mss.public.lu/publications/parametres_sociaux/index.html) & Own calculations
HICP	\$HICP	85.45	88.94	88.95	91.44	94.85	97.59	99.25	99.94	100.00	100.04	102.41	STATEC / HICP http://www.statistiques.public.lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=eng&MainTheme=5&FldrName=5&RFPPath=109

Table A1.2-Uprating indexes usage

National Consumer Price index (IPCN)	\$f_ipcn	afc, bched02, bched03, bed, bhl, bho, tad, tis, tpr, xhc, xhcmomi, xhcot, xhcrt, xmp, xpp, yds, yiy, yot, ypp, ypr, ypt, yse, ysv, kfb, kivho, kfbcc, ydses_o, bched05
Annual average of the personal minimum pension	\$f_upr2	bacpm, bdisv, pdi00, poacc, poacm, poamr, poaps, poapu, poawr, poaxp, psups, psupu
Annual average care allowance	\$f_upr3	bca01
Annual average long term care allowance	\$f_upr4	bca02
No Uprating	\$f_noupr	bched01, bched04, bfapl, bfauc, bmaba, bmals
Annual average minimum wage	\$f_upr5	bmawk, bsacm, bsaot, bunss, byr, yem, yivwg
Annual average of the Cost of living allowance	\$f_upr6	bsaht
Annual average minimum wage lagged by 1 year	\$f_upr7	yempv
HICP	\$hicp	

ANNEX 2: VALIDATION TABLES

Table 4.2-Number of employed and unemployed

	EUROMOD	External				Ratio			
	2014	2014	2015	2016	2017	2014	2015	2016	2017
Number of employed	225.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Number of unemployed	9.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

	EUROMOD	External				Ratio			
	2014	2014	2015	2016	2017	2014	2015	2016	2017
Employment income	231.3719	212.826	217.37	n/a	n/a	1.09	1.06	N/A	N/A
Self-employment income	17.58818	20.294	20.76	n/a	n/a	0.87	0.85	N/A	N/A
Rent income	41.9632	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Investment income	192.6551	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A

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

	EUROMOD				External				Ratio			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Average employment income	46989.27	47036.48	47036.48	48886.42	59522.85	61227.26	n/a	n/a	0.79	0.77	N/A	N/A
Employment income	10872	10882.92	10882.92	11310.95	12668.01	13308.97	n/a	n/a	0.86	0.82	N/A	N/A
Self-employment income	728.0824	731.5071	733.6101	746.0472	838.475	865.4742	n/a	n/a	0.87	0.85	N/A	N/A
Rent income	463.2602	465.4392	466.7775	474.6907	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Investment income	217.3281	218.3512	218.9791	222.6895	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A

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

	EUROMOD	External				Ratio			
	2014	2014	2015	2016	2017	2014	2015	2016	2017
Benefits, Taxes and Social Insurance contributions									
Early retirement benefit	4.28164	1.108146	1.153155	n/a	n/a	3.86	3.71	N/A	N/A
Disability benefit	13.33371	9.753	9.635	n/a	n/a	1.37	1.38	N/A	N/A
Old-age pension for having educated children	9.61123	20.644	20.07	n/a	n/a	0.47	0.48	N/A	N/A
Additional pension, 2nd pillar	0.78959	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Supplementary pension for minors	n/a	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Old-age pension from private sector	61.58131	56.007	58.1	n/a	n/a	1.10	1.06	N/A	N/A
Old-age pension from public sector	16.49216	11.783	12.885	n/a	n/a	1.40	1.28	N/A	N/A
War pension	n/a	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
End-of-year allowance for pensioners	28.56534	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Survivor pension from private sector	13.93924	19.608	19.7005	n/a	n/a	0.71	0.71	N/A	N/A
Survivor pension from public sector	4.09755	4.528	4.887	n/a	n/a	0.90	0.84	N/A	N/A
Permanent accident benefit	2.37467	7.797497	7.659022	n/a	n/a	0.30	0.31	N/A	N/A
Care allowance	0.79971	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Long-term care benefit	2.69124	6.764	6.608	n/a	n/a	0.40	0.41	N/A	N/A
Heavily handicapped person benefit	0.64132	0.667	0.637	n/a	n/a	0.96	1.01	N/A	N/A
Subsidy for primary and post-primary school	0.24842	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Communal subsidy for school	1.46709	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Allowance for children in placement	0.1143975	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Parental leave benefit	3.90114	2.37953	2.660965	n/a	n/a	1.64	1.47	N/A	N/A
Antenatal, birth, postnatal benefit	4.582638824	7.204	7.008	n/a	n/a	0.64	0.65	N/A	N/A
Maternity payment	3.66667	3.530323	3.502903	n/a	n/a	1.04	1.05	N/A	N/A
Other benefit from FNS	4.36727	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Unemployment benefit	12.32209	19.362	18.806	n/a	n/a	0.64	0.66	N/A	N/A
Health payment	2.16749	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Fringe Benefit	28.65307	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Pension from private pension plans	1.05138	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Severance pay	0.8561	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Education-related allowances	7.26419	16.38016	n/a	n/a	n/a	0.44	N/A	N/A	N/A
Other income received by children under 16	0.72414	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Regular inter-household cash transfers received	8.10488	n/a	n/a	n/a	n/a	N/A	N/A	N/A	N/A
Family allowances unconditional	96.00071	115.692	116.8	n/a	n/a	0.83	0.82	N/A	N/A

Sources: EUROMOD computations, STATEC, IGSS, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

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

	EUROMOD				External				Ratio			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Benefits, Taxes and Social Insurance contributions												
Early retirement benefit	157.85	158.01	158.01	164.23	63.19	64.45	n/a	n/a	2.50	2.45	n/a	n/a
Disability benefit	292.13	292.13	293.59	303.69	245.90	249.84	n/a	n/a	1.19	1.17	n/a	n/a
Old-age pension for having educated children	27.98	27.98	28.11	29.08	41.91	40.61	n/a	n/a	0.67	0.69	n/a	n/a
Additional pension, 2nd pillar	8.91	8.91	8.95	9.26	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Supplementary pension for minors	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Old-age pension from private sector	2048.7	2048.7	2058.9	2129.8	1972.1	2046.0	n/a	n/a	1.04	1.00	n/a	n/a
Old-age pension from public sector	1076.8	1076.8	1082.1	1119.4	808.5	888.4	n/a	n/a	1.33	1.21	n/a	n/a
War pension	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
End-of-year allowance for pensioners	20.25	20.25	20.35	21.05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Survivor pension from private sector	329.44	329.44	331.08	342.48	525.36	525.19	n/a	n/a	0.63	0.63	n/a	n/a
Survivor pension from public sector	120.24	120.24	120.84	125.00	172.74	186.70	n/a	n/a	0.70	0.64	n/a	n/a
Permanent accident benefit	22.89	22.89	23.00	23.79	45.54	44.40	n/a	n/a	0.50	0.52	n/a	n/a
Care allowance	5.72	5.72	5.72	5.86								
Long-term care benefit	22.64	22.64	23.14	24.37	46.27	47.15	n/a	n/a	0.79	0.78	n/a	n/a
Heavily handicapped person benefit	8.34	8.34	8.38	8.67								
Subsidy for primary and post-primary school	0.04	0.04	0.04	0.04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Communal subsidy for school	0.04	0.04	0.04	0.04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Allowance for children in placement	1.57	1.58	1.59	1.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Parental leave benefit	30.87	30.87	30.87	30.87	37.28	40.68	n/a	n/a	0.83	0.76	n/a	n/a
Antenatal, birth, postnatal benefit	5.40	5.40	5.40	5.40	12.02	11.85	n/a	n/a	0.45	0.46	n/a	n/a
Maternity payment	54.56	54.61	54.61	56.76	70.57	71.8	n/a	n/a	0.77	0.76	n/a	n/a
Other benefit from FNS	39.92	39.96	39.96	41.53	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Unemployment benefit	149.74	149.89	149.89	155.79	226.95	207.9	n/a	n/a	0.66	0.72	n/a	n/a
Health payment	25.38	25.50	25.57	26.00	54.00	56.35	n/a	n/a	0.47	0.45	n/a	n/a
Fringe Benefit	94.20	94.64	94.91	96.52	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pension from private pension plans	4.05	4.07	4.08	4.15	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Severance pay	24.57	24.69	24.76	25.18	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Education-related allowances	37.67	37.85	37.96	38.60	72.6741	n/a	n/a	n/a	0.52	n/a	n/a	n/a
Other income received by children under 16	3.75	3.77	3.78	3.85	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Regular inter-household cash transfers received	47.71	47.94	48.07	48.89	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Family allowances unconditional	318.73	318.73	318.73	318.73	362.64	364.55	n/a	n/a	0.88	0.87	n/a	n/a

Sources: EUROMOD computations, STATEC, IGSS, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

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

	EUROMOD				SILC	Ratio	External				Ratio			
	2014	2015	2016	2017	2014	2014	2014	2015	2016	2017	2014	2015	2016	2017
Benefits														
Unemployment benefit	12.32	12.32	12.32	12.32	12.32	1.00	19.36	18.81	n/a	n/a	0.64	0.66	n/a	n/a
Social assistance	20.32	20.41	20.33	20.73	7.00	2.90	9.21	9.20	n/a	n/a	2.21	2.22	n/a	n/a
Heating allowance	34.83	35.02	34.97	35.06	13.60	2.56	23.71	18.86	n/a	n/a	1.47	1.86	n/a	n/a
Child benefit	64.50	64.50	64.50	64.50	96.00	0.67	67.51	68.40	n/a	n/a	0.96	0.94	n/a	n/a
New year school allowance	45.04	45.04	45.04	45.04	63.51	0.71	44.41	44.75	n/a	n/a	1.01	1.01	n/a	n/a
Education allowance	3.12	3.12	3.12	0.00	3.12	1.00	5.13	4.18	n/a	n/a	0.61	0.75	n/a	n/a
Scholarship for higher education	13.89	13.89	13.89	13.84	7.26	1.91	16.38	n/a	n/a	n/a	0.85	n/a	n/a	n/a
Rent allowance, part of bsacm_s	58.42	58.42	58.42	58.37	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Housing benefit, since 2016	n/a	n/a	7.49	7.38	33.71	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Maternity allowance	1.04	n/a	n/a	n/a	1.04	1.00	1.28	0.55	n/a	n/a	0.82	n/a	n/a	n/a
Boni for children, since 2008	64.87	64.87	64.87	n/a	n/a	n/a	67.51	68.40	n/a	n/a	0.96	0.95	n/a	n/a
Taxes and Social Insurance contributions														
Income tax	237.33	238.96	239.28	239.15	n/a	n/a	233.12	238.13	n/a	n/a	1.02	1.00	n/a	n/a
Employee social contributions for healthcare	313.85	313.85	313.85	313.85	n/a	n/a	315.08	321.98	n/a	n/a	1.00	0.97	n/a	n/a
Employer social contributions for healthcare	205.89	205.89	205.89	205.89	n/a	n/a	315.08	321.98	n/a	n/a	1.05	1.03	n/a	n/a
Credited social contributions for healthcare	124.45	124.45	124.45	124.45	n/a	n/a								
Self-employed social contributions for healthcare	17.59	17.59	17.59	17.59	n/a	n/a	17.08	17.24	n/a	n/a	1.03	1.02	n/a	n/a
Employee social contributions for health payment	189.19	189.19	189.19	189.19	n/a	n/a	171.01	174.44	n/a	n/a	1.11	1.08	n/a	n/a
Employer social contributions for health payment	189.19	189.19	189.19	189.19	n/a	n/a	171.01	174.44	n/a	n/a	1.11	1.08	n/a	n/a
Self-employed social contributions for health payment	17.59	17.59	17.59	17.59	n/a	n/a	17.08	17.24	n/a	n/a	1.03	1.02	n/a	n/a
Credited social contributions for health payment	20.32	20.41	20.33	20.73	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Civil servant social contributions for pension	26.55	26.55	26.55	26.55	n/a	n/a	28.07	28.04	n/a	n/a	0.95	0.95	n/a	n/a
Employee from the private sector social contributions for pension	212.87	212.87	212.87	212.87	n/a	n/a	213.93	218.67	n/a	n/a	1.08	1.05	n/a	n/a
Self-employed social contributions for pension	17.59	17.59	17.59	17.59	n/a	n/a								
Employer social contributions for pension	231.37	231.37	231.37	231.37	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Credited social contributions for pension	21.72	21.72	21.72	21.72	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Employee social contribution for long-term care	322.26	322.26	322.26	322.17	n/a	n/a								
Social assistance recipient social contribution for long-term care	12.97	13.25	13.25	13.50	n/a	n/a	315.08	321.98	n/a	n/a	1.06	1.04	n/a	n/a
Self-employed social contribution for long-term care	17.59	17.59	17.59	17.59	n/a	n/a	17.08	17.24	n/a	n/a	1.03	1.02	n/a	n/a
Employer social contribution for accident	231.37	231.37	231.37	231.37	n/a	n/a	207.91	213.99	n/a	n/a	1.20	1.16	n/a	n/a
Self-employed social contribution for accident	17.59	17.59	17.59	17.59	n/a	n/a								

Sources: EUROMOD computations, STATEC, IGSS, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

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

	EUROMOD				SILC	Ratio	External				Ratio			
	2014	2015	2016	2017	2014	2014	2014	2015	2016	2017	2014	2015	2016	2017
Benefits														
Unemployment benefit	149.48	152.24	152.39	152.45	149.74	1.00	226.96	207.95	n/a	n/a	0.66	0.73	n/a	n/a
Social assistance	192.90	196.95	196.39	208.43	80.61	2.39	121.53	123.32	n/a	n/a	1.59	1.60	n/a	n/a
Heating allowance	57.51	58.12	57.88	58.22	17.96	3.20	41.11	32.65	n/a	n/a	1.40	1.78	n/a	n/a
Child benefit	324.61	324.61	324.61	428.87	318.73	1.02	362.64	364.56	n/a	n/a	0.90	0.89	n/a	n/a
New year school allowance	15.55	15.55	15.55	12.79	16.06	0.97	18.72	18.80	n/a	n/a	0.83	0.83	n/a	n/a
Education allowance	13.38	13.38	13.38	0.00	13.38	1.00	33.34	30.76	n/a	n/a	0.40	0.44	n/a	n/a
Scholarship for higher education	62.53	62.51	59.75	59.63	37.67	1.66	72.67	n/a	n/a	n/a	0.86	n/a	n/a	n/a
Housing benefit, since 2016	n/a	n/a	n/a	n/a	39.62	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Maternity allowance	7.87	n/a	n/a	n/a	7.87	1.00	3.85	1.73	n/a	n/a	2.05	n/a	n/a	n/a
Boni for children, since 2008	101.04	101.04	101.04	n/a	n/a	n/a	114.43	115.25	n/a	n/a	0.88	0.88	n/a	n/a
Taxes and Social Insurance contributions														
Income tax	2765.98	2815.61	2823.69	2723.36	n/a	n/a	2575.11	2720.95	n/a	n/a	1.07	1.03	n/a	n/a
Employee social contributions for healthcare	382.76	383.22	383.75	398.25	n/a	n/a								
Employer social contributions for healthcare	257.22	257.48	257.48	267.60	n/a	n/a	903.14	928.25	n/a	n/a	0.88	0.85	n/a	n/a
Credited social contributions for healthcare	120.23	120.31	120.86	124.90	n/a	n/a								
Self-employed social contributions for healthcare	32.00	32.12	32.19	32.91	n/a	n/a								
Employee social contributions for health payment	19.04	19.06	19.06	19.80	n/a	n/a								
Employer social contributions for health payment	53.69	58.89	57.10	59.81	n/a	n/a	42.22	43.33	n/a	n/a	1.92	1.99	n/a	n/a
Self-employed social contributions for health payment	2.86	2.87	2.87	2.94	n/a	n/a								
Credited social contributions for health payment	5.40	5.51	5.50	5.84	n/a	n/a								
Civil servant social contributions for pension	139.29	139.43	139.43	144.92	n/a	n/a	196.15	208.60	n/a	n/a	0.71	0.67	n/a	n/a
Employee from the private sector social contributions for pension	735.87	736.82	736.84	765.31	n/a	n/a								
Self-employed social contributions for pension	91.43	91.77	91.97	94.02	n/a	n/a	1661.90	1704.21	n/a	n/a	1.02	1.00	n/a	n/a
Employer social contributions for pension	844.35	845.20	845.20	878.44	n/a	n/a								
Credited social contributions for pension	30.95	31.20	31.22	31.93	n/a	n/a								
Employee social contribution for long-term care	184.26	184.43	184.70	191.61	n/a	n/a								
Social assistance recipient social contribution for long-term care	1.38	1.44	1.43	1.53	n/a	n/a	211.46	215.67	n/a	n/a	0.93	0.91	n/a	n/a
Self-employed social contribution for long-term care	10.19	10.24	10.27	10.44	n/a	n/a								
Employer social contribution for accident	115.52	115.64	105.12	109.26	n/a	n/a	123.84	127.40	n/a	n/a	0.98	0.96	n/a	n/a
Self-employed social contribution for accident	6.29	6.31	5.75	5.88	n/a	n/a								

Sources: EUROMOD computations, STATEC, IGSS, Ministry of Labor and Employment, SNAS, ADEM and own computations from IGSS Data warehouse

Table 4.9 - Distribution of equivalised disposable income

	EUROMOD				External				Ratio			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
D1	4.91	4.92	4.95	4.86	3.50	N/A	N/A	N/A	1.40	N/A	N/A	N/A
D2	5.76	5.77	5.73	5.75	5.30	N/A	N/A	N/A	1.09	N/A	N/A	N/A
D2	5.76	5.77	5.73	5.75	5.30	N/A	N/A	N/A	1.09	N/A	N/A	N/A
D3	6.63	6.63	6.62	6.63	6.30	N/A	N/A	N/A	1.05	N/A	N/A	N/A
D4	7.55	7.61	7.62	7.52	7.30	N/A	N/A	N/A	1.03	N/A	N/A	N/A
D5	8.54	8.54	8.49	8.53	8.30	N/A	N/A	N/A	1.03	N/A	N/A	N/A
D6	9.57	9.50	9.62	9.58	9.40	N/A	N/A	N/A	1.02	N/A	N/A	N/A
D7	10.56	10.59	10.50	10.69	10.60	N/A	N/A	N/A	1.00	N/A	N/A	N/A
D8	11.94	11.94	11.96	11.95	12.20	N/A	N/A	N/A	0.98	N/A	N/A	N/A
D9	14.05	14.05	14.06	14.09	14.50	N/A	N/A	N/A	0.97	N/A	N/A	N/A
D10	20.49	20.45	20.45	20.41	22.70	N/A	N/A	N/A	0.90	N/A	N/A	N/A
Median	35263.12	35195.79	35245.36	37096.68	35270	N/A	N/A	N/A	1.00	N/A	N/A	N/A
Mean	38973.84	38868.71	38908.47	40939.50	39707	N/A	N/A	N/A	0.98	N/A	N/A	N/A
Gini	24.01	23.95	23.96	24.06	28.50	N/A	N/A	N/A	0.84	N/A	N/A	N/A
S80/S20	3.24	3.23	3.23	3.25	4.30	N/A	N/A	N/A	0.75	N/A	N/A	N/A

Source : Euromod, EU-SILC

Table 4.10 - Poverty rates by gender and age

	EUROMOD				External				Ratio			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
40% median HDI												
Total	0.22	0.22	0.21	0.36	3.90	0.00	N/A	N/A	0.06	N/A	N/A	N/A
Males	0.27	0.27	0.26	0.41	3.90	0.00	N/A	N/A	0.07	N/A	N/A	N/A
Females	0.17	0.17	0.16	0.31	3.80	0.00	N/A	N/A	0.04	N/A	N/A	N/A
50% median HDI												
Total	1.83	1.83	1.87	2.06	8.20	0.00	N/A	N/A	0.22	N/A	N/A	N/A
Males	2.17	2.17	2.18	2.46	8.40	0.00	N/A	N/A	0.26	N/A	N/A	N/A
Females	1.49	1.49	1.56	1.66	7.90	0.00	N/A	N/A	0.19	N/A	N/A	N/A
60% median HDI												
Total	9.91	9.66	9.52	10.29	15.30	0.00	N/A	N/A	0.65	N/A	N/A	N/A
Males	10.27	10.03	10.00	10.75	15.00	0.00	N/A	N/A	0.68	N/A	N/A	N/A
Females	9.54	9.28	9.05	9.84	15.70	0.00	N/A	N/A	0.61	N/A	N/A	N/A
70% median HDI												
Total	22.13	22.02	22.12	22.15	23.90	0.00	N/A	N/A	0.93	N/A	N/A	N/A
Males	21.84	21.74	21.87	21.85	23.50	0.00	N/A	N/A	0.93	N/A	N/A	N/A
Females	22.43	22.31	22.36	22.45	24.30	0.00	N/A	N/A	0.92	N/A	N/A	N/A
60% median HDI												
0-15 years	13.32	13.06	12.07	14.22	21.00	0.00	N/A	N/A	0.63	N/A	N/A	N/A
16-24 years	18.40	18.21	18.49	18.89	22.10	0.00	N/A	N/A	0.83	N/A	N/A	N/A
25-49 years	9.15	8.86	8.85	9.56	14.70	0.00	N/A	N/A	0.62	N/A	N/A	N/A
50-64 years	8.71	8.52	8.65	8.82	12.40	0.00	N/A	N/A	0.70	N/A	N/A	N/A
65+ years	2.54	2.31	2.22	2.54	7.90	0.00	N/A	N/A	0.32	N/A	N/A	N/A

Source: Euromod, EU-SILC

ANNEX 3: POLICY EFFECTS IN 2016-2017

Table A1 and Figure A1 show the effect of 2017 policies on the mean equivalised household disposable income by income component and income decile group, as a percentage of mean equivalised household disposable income in 2016. The effect is estimated as a difference between simulated household net income under the 2017 tax-benefit policies (deflating monetary parameters by *projected* Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2016 policies.

The analysis of the effects of policy changes between 2016 and 2017 shows that the overall mean disposable income has increased by 2.11%. The largest positive contribution being attributable to direct taxes and public pensions (increase by 2.00% and 0.29% respectively). The largest negative impact is generated by non means-tested benefits at -0.22%.

There were numerous changes affecting direct taxation that helped to increase disposable income. Around a fifth of the impact resulted from removal of the budget balancing temporary tax that was in effect for only 2015 and 2016. The majority of the impact however came from the extensive reshaping of the tax brackets and marginal tax rates for personal income tax and from reworking the different tax credits.

Public pensions went through a generous indexation that was above the rate of inflation.

The gains from means-tested benefit mostly resulted from increasing the amounts of expensive life allowance.

There were also large changes affecting non means-tested benefits but those changes mostly cancelled out resulting in a slight decrease of disposable income. There was a large positive impact from increasing the child benefit amounts that was offset by the negative impact from abolishing the tax bonus for children and from decoupling the new school year allowance amount from the number of children.

Table A1: Policy effects for LU in 2016-2017, using the CPI indexation [1.0237] on dataset LU_2015_a1, %

Decile	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee SIC	Self-employed SIC	Direct taxes	Disposable income
1	0.00	0.11	1.07	-0.87	-0.04	0.00	1.42	1.68
2	0.00	0.24	0.48	-0.84	-0.02	0.00	1.59	1.44
3	0.00	0.25	0.12	-0.41	-0.01	0.00	1.79	1.73
4	0.00	0.30	-0.01	-0.22	-0.01	0.00	2.01	2.08
5	0.00	0.36	0.00	-0.45	-0.01	0.00	2.12	2.01
6	0.00	0.37	-0.01	-0.16	-0.02	0.00	2.30	2.48
7	0.00	0.37	0.00	-0.12	-0.02	0.00	2.35	2.57
8	0.00	0.28	-0.01	-0.08	-0.02	0.00	2.38	2.56
9	0.00	0.31	-0.01	-0.05	-0.03	0.00	2.23	2.46
10	0.00	0.25	0.00	-0.03	-0.05	-0.02	1.54	1.68
Total	0.00	0.29	0.08	-0.22	-0.03	0.00	2.00	2.11

Notes: Shown as a percentage change in mean equivalised household disposable income by income component and income decile group. Income decile groups are based on equivalised household disposable income in 2016, using the modified OECD equivalence scale. Each policy system has been applied to the same input data, deflating monetary parameters of 2017 policies by Eurostat's Harmonized Index of Consumer Prices (HICP).

Figure A1: Policy effects in 2016-2017, using the CPI-indexation, %

