

EUROMOD

COUNTRY REPORT



NETHERLANDS (NL)

2015-2018

Klaas de Vos, Paola De Agostini and Silvia De Poli

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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 covers the 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.

The European Commission is in the process of taking over responsibility for carrying out the annual update and release of EUROMOD. The transfer of responsibility is expected to be complete by the end of 2020 and the transition is being facilitated by close cooperation between the University of Essex and the Joint Research Centre (JRC) of the European Commission as well as Eurostat.

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

EUROMOD director: Matteo Richiardi

EUROMOD executive director: Jack Kneeshaw

EUROMOD coordination assistant: Cara McGenn

EUROMOD developers responsible for the Netherlands: Paola De Agostini (Essex) and Silvia De Poli (JRC)

National team for the Netherlands: Klaas de Vos, Hendri Adriaens

The results presented in this report are derived using EUROMOD version I1.0. EUROMOD is continually being improved and the results presented here may not match those that would be obtained with later versions of EUROMOD. For more information, see:

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

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1. BASIC INFORMATION

1.1 Basic information about the tax-benefit system

- The tax-benefit system is largely a unified, national system. The main exception is the immovable property tax (*Onroerendezaak Belasting, OZB*) collected and determined by local authorities (municipalities).
- The tax system generally changes on 1st January, each year. Main benefit changes happen at the same time, but may also be implemented on 1st July.
- Up to 2012, the state pension age was 65 for men and women. Beginning in 2013, the state pension age is gradually increased to 67 in 2021. After 2021, the state pension age will follow changes in the life expectancy.
- Minimum school leaving age is 16; dependent children are defined as age under 16 or under 18 and (largely) provided for by the parents.
- For benefit purposes lone parents are the parents of resident dependent children; they do not cohabit with a partner (but could live with other family members). For tax purposes a lone parent is a parent of a resident dependent child; here, the only other household members are children aged younger than 27.
- The income tax system is largely an individual system, with the spouses being assessed independently. However, spouses with low or zero taxable income may be entitled to tax credits dependent on the income of a higher earning partner.
- The means-tested benefit system assesses entitlement according to benefit unit income. The benefit unit is the nuclear family - the couple (cohabiting or married) or single adult plus any dependent children.
- Income tax withholdings are usually collected in such a way that the amount due in the financial year is more or less approximated. In principle all tax payers must file a tax return for income tax.
- Capital income taxation amounts to 30% of the assumed rate of return of 4% (taking account of a minimum threshold).
- Most taxation amounts are subject to automatic yearly indexation by the inflation rate. Net benefits are linked to the net minimum wage.
- Most social contributions and state benefits and pensions are assessed and delivered on a monthly basis. Amounts are referred to in monthly terms. The main exception is income tax, where liability is based on annual income and allowances and thresholds are referred to in annual terms. Another exception is child benefit, which is paid out on a three-monthly basis. Furthermore, the municipal property tax is levied annually.
- Self-employed who work a minimum number of hours (1,225 per year) in their own firm are entitled to self-employment deduction. They are not included in unemployment insurance and disability insurance and are subject to separate arrangements with respect to social assistance.

1.2 Social Benefits

Child benefit (*kinderbijslag AKW*): benefit paid to all couples and single parents with dependent children aged below 18. Amount per child depends on age of the child and, to a minor extent, on the number of dependent children. The benefit is not taxable.

Survivor benefit (*nabestaandenuitkering ANW*): paid to surviving spouses aged younger than the state pension age, with a dependent child, a disability or born before 1st January, 1950. The benefit is means tested, income received ‘in relation with work’ (i.e. social insurance benefits) are deducted entirely, but part of income received from work is exempt.

The state old age pension (*ouderdomspensioen, AOW*) is a flat rate benefit paid to all persons aged above the state pension age who were resident in the Netherlands between the ages of 15 and the state pension age. For each year of absence from the Netherlands during that time 2% of the full benefit is deducted. Persons with a spouse younger than the state pension age are entitled to a supplement.

Social assistance (*bijstand*) is paid to households (couples, single parents, single persons) with low income and low assets. Separate arrangements without asset test exist for unemployed persons aged above 50 (*IOAW/IOAZ*) and 60 (*IOW*).

Rent allowance (*huurtoeslag*) is a benefit paid to tenants with low income and low assets whose rent exceeds a norm amount (but does not exceed a maximum ‘social rent’ threshold). The benefit is not taxable. Income and assets of the applicant, his/her benefit partner (*‘toeslagpartner’*) and other residents are taken into account.

Unemployment benefit (*werkloosheidsuitkering WW*) is paid to persons younger than the state pension age who lost their job. The benefit amount is a percentage of previous earnings (with a maximum). Entitlement requires a certain minimum employment history as well as active job search. Duration depends on age and employment history.

Disability benefit (*arbeidsongeschiktheidsuitkering, WIA*): two main arrangements, after two years of illness, for working-age persons. *IWA* for persons who fully lost their ability for work (> 80%) with no/small recovery probability, *WGA* for persons who lost their ability for work for 35-80%. *IWA* pays 75% of earnings (with maximum) until age 65. *WGA* depends on rate of disability and extent to which remaining ability is used. Notably, *WIA* was introduced in 2006. Most disability benefit recipients keep the previous benefit (*WAO*). Moreover, separate disability arrangements exist for persons who were already disabled as a child (*Wajong*) and for disabled self-employed (*WAZ*, no new cases accepted).

Care allowance (*zorgtoeslag*) is a benefit paid by the tax authorities to persons with low income to (partly) enable them to pay for their (compulsory) private health insurance. Income and assets of the applicant and his/her benefit partner (*‘toeslagpartner’*) are taken into account.

Child care allowance (*kinderopvangtoeslag*) is a benefit paid by the tax authorities to persons in work or education to (partly) enable them to pay for (professional) child care. The benefit consists of two parts: an income dependent part paid out of the government budget and a part dependent on the actual child care costs, paid for by the employer.

Pregnancy and Childbirth Allowance (*Zwangerschaps- en bevallingsuitkering*). This is a non-contributory benefit for the period of maternity leave. Available to employees, recipients of unemployment and disability benefits and self-employed persons. The allowance is paid for at least 16 weeks (including 4-6 weeks before the childbirth and 10 weeks after the childbirth).

Adoption and Foster care Allowance (*Adoptie- en pleegzorguitkering*). This is a non-contributory benefit available to employees and recipients of unemployment and disability

benefits. The allowance is paid for a maximum of 4 weeks for both parents who adopt a child or become a foster-parent.

Paternity leave, parental leave (*Kraamverlof, ouderschapsverlof*). The partner of the mother is entitled to two days of paid paternity leave and three days of unpaid parental leave per childbirth, if he/she is employee. In addition, both parents are entitled to 26 weeks of unpaid parental leave per child

Child related budget (*kindgebonden budget*) is a means tested benefit paid by the tax authorities to parents with dependent children. The benefit is not taxable. Income and assets of the applicant and his/her benefit partner (*'toeslagpartner'*) are taken into account.

There are a number of specific benefits for specific target groups such as artists, military, war victims 1940-45, persons active in the resistance 1940-45, and there are specific compensations for necessary expenditures by chronically ill and handicapped and e.g. families with children younger than 18 who are in specific types of education not financed by the state. There are also specific social assistance arrangements for the self-employed.

- *Not strictly benefits*

In addition there are components of income that are not strictly part of the benefit system. These include:

Scholarships (*basisbeurs, aanvullende beurs*) are paid to students aged between 18 and 30. The basic scholarship (*basisbeurs*) depends on the level of education and on whether the student lives with his parents or not. The supplementary scholarship (*aanvullende beurs*) depends on the level of education and the income of the parents. The paid amounts also depend on the own income of the student and are conditional on the progress in education. Additionally, student loans are available. Notably, from September 1, 2015 basic scholarships for new students in higher education have been replaced by student loans.

Occupational (employer-provided) pensions are earnings related pensions that for the majority of employees supplement the flat-rate state pension (AOW) after the state pension age. In a decreasing number of cases, the occupational pensions include early retirement arrangements (starting before the state pension age).

In case of **sickness** the employer pays (at least) 70% of the wage for a period of at most two years (*wet uitbreiding loondoorbetalingsverplichting bij ziekte* and *wet verlenging loondoorbetalingsverplichting bij ziekte*).

1.3 Social contributions

Many benefits are largely or wholly paid for by social contributions. A difference can be made between employees insurances (unemployment insurance, *Werkloosheidswet (WW)* and disability insurance, *Wet Werk en Inkomen naar Arbeidsvermogen (WIA)*) where the contributions are shared between employee and employer or paid by the employer, and peoples insurances (basic state pension: *Algemene Ouderdomswet (AOW)*, survivor benefit *Algemene Nabestaandenwet (ANW)* and long term health care costs: *Wet Langdurige Zorg (WLZ)*) which are collected by the tax authorities in combination with income tax. In addition, all residents are obliged to take out private health insurance, which is partly paid for by amounts determined by the insurance companies and partly by income related amounts which are paid by the employer, if any (health care insurance act, *Zorgverzekeringswet (ZVW)*).

Employees insurances:

Unemployment insurance contribution (*werkloosheidswet, WW*) is partly paid by the employer and partly by the employee. A distinction can be made between a national component and a component which differs by sector.

Disability insurance contribution (*Wet Werk en Inkomen naar Arbeidsvermogen (WIA)*) is paid by the employer. Unemployment and disability insurance have the same tax base and the same ceiling determining the maximum contribution and the maximum benefit).

Peoples insurances:

Basic state pension contribution (*Algemene Ouderdomswet (AOW)*) is paid by all persons with taxable income from work and/or accommodation under the state pension age. It is calculated as a percentage up to a maximum.

Survivor benefit contribution (*Algemene Nabestaandenwet (ANW)*) is paid by all persons with taxable income from work and/or accommodation. It is calculated as a percentage up to a maximum.

Act on long term health care cost contribution (*Wet Langdurige Zorg (WLZ)*) is also paid by all persons with taxable income from work and/or accommodation. It is also calculated as a percentage up to a maximum.

Other:

Health insurance contribution (*Zorgverzekeringswet ZVW*): all residents have to insure privately and pay health insurance premiums to health insurance companies. In addition, an income related contribution is levied up to a maximum; this contribution is usually paid by the employer or benefit agency in the case of earnings and most benefits (not: old age pensions).

1.4 Taxes

Personal Income Tax (*inkomstenbelasting*): income is taxed at the individual level, but tax credits of partners with a low income may depend on the income of the higher earning spouse. The base of the income tax is relatively broad. The main exceptions are child benefit and child support, and rent allowance, care allowance and child care allowance. Mortgage interest payments for the main residence are deductible from taxable income but imputed rent is taxed. Apart from the main residence, (returns from) properties and assets are taxed by a separate schedule. Income tax is largely collected at source (*loonbelasting*) but the final assessment is made on the basis of tax returns sent in after the end of the tax year (= calendar year).

Corporate Income Tax (*vennootschapsbelasting*) is taxed on the profits of (larger) firms.

Dividend Tax (*dividendbelasting*): companies paying dividends to their shareholders have to pay a fixed percentage as dividend tax. For shareholders who also pay income tax the dividend tax withheld by the company is deducted from the income tax due.

Inheritance tax (*successierecht*): It is charged using flat tax rates. There are exemptions and deductions as well as different rates, dependent on the type of relationship the individual has/had with the deceased and the nature of the donation or bequest.

Value Added Tax (*belasting toegevoegde waarde*): there are two rates: 6 percent for books, magazines and newspapers, food and non-alcoholic beverages, agricultural products and services, personal transport, rent of holiday homes and campings, access to cultural and sports events, services of hair dressers, repairs of clothing, shoes and bicycles, medicines; and 21 percent for other goods and services. Immovable property older than two years, medical

services, education, sports services to club members, socio-cultural services and products, child care, care and housekeeping services, most bank services and services by composers, writers and journalists are exempt.

Excise duties (*accijnzen*): are charged on alcohol and alcoholic beverages, beer, tobacco, and fuels. Soft drinks are subject to a separate consumption tax (*verbruiksbelasting*).

Motor vehicle tax (*motorrijtuigenbelasting*) is charged on owners of motor vehicles.

Tax of passenger cars and motorcycles (*belasting personenauto's en motorrijwielen*) is charged on new and/or imported cars and other motor vehicles.

A **Transfer tax (*overdrachtsbelasting*)** of 2% is charged when one buys an immovable property (except newly built properties).

Energy tax (*energiebelasting*) is charged on the use of electricity, natural gas, and various fuels.

Immovable property tax (*onroerend zaak belasting*): is levied by municipal authorities on the owned residence. Municipalities determine the tax as a percentage of the estimated value of the house.

2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

2.1 Scope of simulation

Most of the taxes and benefits mentioned in the previous section are simulated by EUROMOD, but not all. Some of the taxes or benefits are beyond its scope (i.e. indirect and business taxation), others cannot be simulated based on the available data, and therefore are excluded from further simulations or imputations into the model. If feasible, though, they are included in the EUROMOD database either as individual or/and aggregate income sources. When possible, the output includes both the simulated and the original survey reported variables.

Table 2.1 and Table 2.2 list the main tax-benefit instruments in the Netherlands, as discussed in Section 1, and provide a brief explanation in which format the instruments are included in the EUROMOD database or why they are not (fully) simulated. The benefits that are simulated in EUROMOD include family benefits that depend on the number of children and their age. Furthermore, simulations are possible for a number of contributory (social insurance based) benefits, such as the state pension and non-contributory benefits such as social assistance assigned to low income households. A number of benefits with entitlement rights dependent on contribution history (i.e. unemployment, etc.) are only partially simulated due to the lack of data on previous employment history and salaries received.

Most of the direct income taxes and social insurance contributions are simulated (except some minor ones). Nevertheless, application of some income tax allowances or estimation of some income taxation is not possible or not accurate enough due to the lack of more detailed information on a person's disability degree, economic activity type or other specific socio-economic information that is not collected in the EU-SILC database. In such cases, basic tax allowance levels or other general income taxation rules are applied.

Table 2.1 Simulation of benefits in EUROMOD

	Variable name(s)	Treatment in EUROMOD				Why not fully simulated?
		2015	2016	2017	2018	
State pension	poa_s	S	S	S	S	
Survivor benefit	psu_s	S	S	S	S	
Other pensions	poacm	I	I	I	I	Insufficient information on contributions/rules etc
Contributory Unemployment benefit	bunct	PS	PS	PS	PS	Insufficient information on unemployment history
Other unemployment benefit	bunst	I	I	I	I	Insufficient information
Disability benefit	pdi	I	I	I	I	Insufficient information on earnings history, extent of disability etc
General Social assistance	bsa00_s	S	S	S	S	
Other taxable social assistance	bsaot	I	I	I	I	Insufficient information
Other nontaxable social assistance	bched	I	I	I	I	Insufficient information
Scholarships etc	bed	I	I	I	I	Insufficient information
Sickness benefit	bhl	I	I	I	I	Insufficient information
Care allowance	bhlmt_s	S	S	S	S	
Child benefit	bfa_s	S	S	S	S	
Child allowance	bch_s	S	S	S	S	
Pregnancy allowance	bcbma01	I	I	I	I	Insufficient information
Childbirth allowance	bcbma02	I	I	I	I	Insufficient information
Housing benefit	bho_s	S	S	S	S	

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

Table 2.2 Simulation of taxes and social contributions in EUROMOD

	Variable name(s)	Treatment in EUROMOD				Why not fully simulated?
		2015	2016	2017	2018	
Personal Income Tax	tin_s	S	S	S	S	
Corporate Income Tax		E	E	E	E	Insufficient information
Inheritance tax		E	E	E	E	Insufficient information
Immovable Property tax		E	E	E	E	Insufficient information
Other direct taxes		E	E	E	E	Insufficient information
Value Added Tax		E	E	E	E	Insufficient information
Excise duties		E	E	E	E	Insufficient information
Other indirect taxes		E	E	E	E	Insufficient information
Unemployment insurance employees	tsceeu_i_s	S	S	S	S	
Unemployment insurance employers	tscerui_s	S	S	S	S	
Disability insurance Employers	tscerdi_s	S	S	S	S	
Health insurance	tschl_s	S	S	S	S	
Peoples insurance:	tsceepi_s	S	S	S	S	
AOW	Temp_PIpension	S	S	S	S	
WLZ	Temp_PHealth	S	S	S	S	
ANW	Temp_PSurvivor	S	S	S	S	

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

• *Structural changes between 2015 and 2016*

- 1) State pension
 - a) The state pension age has been increased by 3 months to 65 years and 6 months.
- 2) Unemployment benefit
 - a) For new cases, the maximum duration of the unemployment benefit is reduced by one month per quarter. As from April 2019, the maximum duration will be 24 months.
- 3) Income tax
 - a) The general tax credit is fully income dependent. It is reduced to zero for high incomes
 - b) The old age asset allowance for the taxation of capital income (Box 3) has been abolished

- *Structural changes between 2016 and 2017*

- 1) State pension
 - a) The state pension age has been increased by 3 months to 65 years and 9 months.
- 2) Income tax
 - a) The general tax credit is fully income dependent. It is reduced to zero for high incomes
 - b) Tax brackets have been introduced in the taxation of capital income (Box 3)

- *Structural changes between 2017 and 2018*

- 1) State pension
 - a) The state pension age has been increased by 3 months to 66 years.
- 2) Unemployment benefit
 - a) A new law allows sectors/firms to privately insure their employees against the reduction of the maximum duration of the unemployment benefit to 24 months.

2.2 Order of simulation and interdependencies

The following table shows the order in which the main elements of the Dutch system are simulated. Notably, although yem_nl is switched on, the minimum wage is not implemented (see section 4.3) in the baseline. Social assistance is calculated after all other benefits that are included in the means test have been simulated (bsanet_nl, bsa_gross_nl). The final calculation of social assistance also includes the recalculation of income tax and social insurance contributions. Care allowance and housing benefit are calculated at the end because they depend on taxable income.

Table 2.3 EUROMOD Spine: order of simulation

Policy	Description	2015	2016	2017	2018
uprate_nl	Definition of uprating factors	on	on	on	on
ildef_nl	Definition of income lists	on	on	on	on
tundef_nl	Definition of tax units	on	on	on	on
constdef_nl	Definition of constants	on	on	on	on
InitVar_nl	Definition of variables	on	on	on	on
yem_nl	Minimum wage	on	on	on	on
yse_nl	Recode negative income from self-employment to zero	on	on	on	on
bfa_nl	Child Benefit	on	on	on	on
bunct_nl	Unemployment ins. benefit	on	on	on	on
psu_nl	Survivor pension	on	on	on	on
poa_nl	State pension	on	on	on	on
eestic_nl	Employee social ins. contr.	on	on	on	on
tschl_nl	Health ins. contr.	on	on	on	on
tin_nl	Gross income tax (box1)	on	on	on	on
tinkt_nl	Gross income tax (box3)	on	on	on	on
peoplesic_nl	Gross people insurance contribution	on	on	on	on
tintc_nl	Income tax credits	on	on	on	on

chall_nl	Child allowance	on	on	on	on
bsanet_nl	Social assistance benefit (net)	on	on	on	on
bsagross_nl	Social assistance benefit (gross)	on	on	on	on
bhlmt_nl	Care allowance	on	on	on	on
ersic_NL	Employer social ins. contr.	on	on	on	on
bho_nl	Housing benefit	on	on	on	on
	Output policies	on	on	on	on

2.3 Policy switches

Currently, there is one policy switch¹ used in the Dutch EUROMOD model. This switch (FYA_nl) allows the user to choose between modelling policies as of 30th June (switch set to off, the default) and modelling annual policies (switch set to on), which takes into account within-year policy changes. Other policies can be switched on or off by changing the relevant parameters. A case in point is the minimum wage policy (see also section 4.3). This is switched off in the baseline but can be switched on by changing the value of the final function of the yem_nl policy from ‘off’ to ‘on’ (from within the model).

2.4 Social benefits

2.4.1 Child benefit (*bfa_s*)

- *Brief description*

Benefit targeted to all benefit units with children aged below 18.

- *Definitions*

Unit of analysis is the benefit unit consisting of the head, spouse or cohabitant partner and children under 16 or under 18 years if they are in education (at least 213 hours per quarter), or unemployed, or at least 45% disabled. Eligible children living in the household, but without parents (i.e. so called “loose children”), are also counted as dependent children.

- *Eligibility conditions*

Parents (including foster-parents) are eligible for child benefits for children aged less than 18 but eligibility for children aged above 15 and less than or equal to 17 requires that they are in education, or unemployed, or at least 45% disabled. In EUROMOD, the condition that children aged 16 and 17 are in education is assumed to be met if *dec* (current education) > 0, or if *les* = 6 (self-defined economic status = pupil, student, further training, unpaid work experience).

- *Income test*

For children aged 16 or 17, the parents should contribute to the sustenance of the children to an important extent, which translates to the condition that the income of the children in this age group should be less than €1,266 + 1,300/4 net per quarter (or €30.33 per month).

¹ Policy switches are denoted with “switch” in the policy spine (for given policy year), while their default values (on or off) are set in a separate dialogue box in the model.

Table 2.4 Child benefit: income limits

Income limits	2015	2016	2017	2018
Amount per quarter	1,266	1,266	1,266	1,266
+	1,300/4	1,300/4	1,300/4	1,300/4
= per month	530.33	530.33	530,33	530,33

- **Benefit amount**

The base amount is €191.65 per quarter per child. Different multipliers apply depending on the age of the child:

Table 2.5 Child benefit: base amounts

	2015	2016	2017	2018
Base amount	191.65	197.67	198.38	201.05

Table 2.6 Child benefit: multipliers

AGE	
<6	1
6 to 11	1.2143
12 to 18	1.4286

In 2015 a household with 4 children: 1 aged 3, 1 aged 10, 1 aged 14 and 1 aged 17 would be entitled to $(1 + 1.2143 + 2 \cdot 1.4286)$ times the base amount per three months.

No taxes/contributions are payable on child benefit. It is not included in the means test for the calculation of social assistance, housing benefit and other benefits.

2.4.2 Survivor benefit (*psu_s*)

- **Brief description**

Benefit for surviving spouse younger than the state pension age (see section 2.4.3).

- **Definitions**

Unit of analysis is the benefit unit - consisting of the head, spouse or cohabitant partner and own children under 18 years - if it consists of a surviving spouse with or without children.

- **Eligibility conditions**

Entitlement to the survivor benefit exists for the survivor younger than the state pension age who:

- has an unmarried child younger than 18 who does not belong to somebody else's household or
- is disabled for work for at least 45% or
- was born before 1st January 1950

Entitlement to the survivor benefit stops if the survivor repartners, but not if he/she starts living with two or more adults.

- **Income test**

The survivor benefit is income dependent: income received 'in relation with' work (i.e. social insurance benefits) is deducted entirely, but a part of income received from work (earnings, profits, private pensions (A)) is exempt ($0.5 * \text{the minimum wage of } \text{€}1,501.80 \text{ per month (B)}$), plus a third of the remainder). In other words, the disregard equals: $\max(0, \min(A, 0.5*B) + 0.333*\max(A - 0.5*B, 0))$. As a result, the benefit is paid in full if income from work is below €750.90, and zero if income from work is above €2,457.92. Notably, all these amounts are net of holiday allowance.

Table 2.7 Survivor benefit: relevant thresholds

	2015	2016	2017	2018
Minimum wage (B)	1,501.8	1,524.6	1,551.6	1,578
Full benefit paid below (A)	750.9	762.3	775.8	789
No benefit paid above	2,457.92	2,488.67	2,523.14	2,556.57

- **Benefit amount**

Survivor benefit: maximum: €1,238.33 = €1,138.01 + €83.56 holiday allowance + €16.65 extra allowance per month

As of 2007, recipients of the survivor benefit are awarded an extra allowance².

Table 2.8 Survivor benefit: base amounts

	2015	2016	2017	2018
Amount	1,138.01	1,150.91	1,164.89	1,178.38
Holiday allowance	83.56	85.55	85.73	85.47
Extra allowance	16.65	16.74	16.79	16.92
Total	1,238.22	1,253.20	1,267.41	1,280.77

The survivor benefit is taxable. It is included in the means test for social assistance and other benefits.

- **EUROMOD notes**

In EUROMOD, it is assumed that a holiday allowance of 8% is already included in income from work and benefit income. The holiday allowance added to the survivor benefit is reduced by the same percentage by which the survivor benefit is reduced as a result of the means test.

In EUROMOD, private pensions received by males younger than 60 and females younger than 65³ are assumed to be private survivor pensions, and, as such, not counted as income. Private

² The extra allowance is an addition to the regular allowance. It is added to maintain the purchasing power of the benefit separate from the normal indexation.

pensions received by males aged between 60 and 65 are assumed to be old-age pensions, and counted as income received from work.

Notably, the current survivor benefit act ('Algemene Nabestaandenwet', ANW) was introduced on 1st July 1996. Special rules apply for persons who were already survivor before that date, and for persons born between 1st January 1950 and 1st July 1956 who lost their partner before 1st July 1999. These special cases are not taken into account in EUROMOD. Entitlement to ANW may also apply to divorcees if the ex-spouse dies. This is also not taken into account in EUROMOD.

2.4.3 State pension (*poa00_s*)

- *Brief description*

Flat rate state pension for all residents aged 65⁴ or above.

- *Definitions*

Unit of analysis is the individual.

- *Eligibility conditions*

All residents aged 65 or above are entitled to the flat rate State Pension (AOW). If both spouses are above 65 they both receive (in net terms) slightly more than half the (net) minimum wage, whilst single persons receive about 70% of the minimum wage. Persons with a spouse younger than 65 years old receive 50% of the minimum wage, with a supplement of at most 50% of the minimum wage. The supplement depends on the means of the younger spouse.

For every year between age 15 and 65 the pensioner lived abroad the State Pension is reduced by 2% (however, reductions are not taken into account in EUROMOD).

- *Income test*

The only means to be taken into account in the calculation of the State Pension are the means of the younger spouse (if aged < 65). When both spouses are 65 or older, they are both entitled to the full flat rate State Pension, irrespective of their income.

Means = max(0, Income 'in relation with' work (i.e. benefits))

+ max(0, 2/3 * max (0, Income from work(A) - 0.15*gross minimum wage(B)).

In other words, there is a disregard of: max (0, min(A, 0.15*B) +1/3 * (max(0, A - 0.15 * B))

Gross minimum wage equals €1,485.60 in 2014. Notably, these amounts are net of holiday allowance. In EUROMOD, it is assumed that in income from work and benefit income a

³ We try to distinguish (private) survivor pensions from (early-retirement) old-age pensions. Relatively few women are working up to their early retirement age; therefore we assume that their pensions are survivor pensions (if they are survivor). On the other hand most men receiving pensions between age 60 and age 65 would be entitled to old age pensions based on their own work history. If younger than 60, the likelihood that they are already receiving an early retirement pension is small, and hence we assume that the pension they receive is a survivor pension if they are survivor.

⁴ From 2013 the official pension age is gradually increased to 67 in 2021. Wherever relevant, age 65 in this section should be replaced by 'the official pension age'. For the time being, the increased pension age is not taken into account in EUROMOD.

holiday allowance of 8% is included. The holiday allowance added to the supplement of the state pension is to be reduced by the same percentage as the supplement.

Private pensions are counted as income in relation with work.

- **Benefit amount**

Amounts for the state pension (per month):

Single, 65+: €1,086.20 + €69.32 holiday allowance + €25.35 extra allowance= €1180.87.

Married/cohabiting, 65+: €740.60 + €49.51 + €25.35 = €815.46 (per person)

Supplement if spouse < 65: at most €740.60 + €49.51 = €790.11

Table 2.9 State pension: benefit amounts

	2015	2016	2017	2018
Single person	1,086.20	1,112.67	1,127.79	1,148.40
Holiday allowance	69.32	71.56	71.61	71.42
Extra allowance	25.35	25.48	25.56	24.93
Married/cohabiting	740.60	758.39	769.03	782.95
Supplement	740.60	758.39	769.03	782.95
Holiday allowance	49.51	51.12	51.15	51.01
Supplement holiday allowance	49.51	51.12	51.15	51.01
Extra allowance	25.35	25.48	25.56	24.93

Supplement = max (0, maximum supplement - means of younger spouse)

The latter amounts are valid for pensions started from 1st July 1996. For pensions started earlier, rules for persons with a spouse aged < 65 differ to some extent (not taken into account in EUROMOD). If the pension started between 1/2/1994 and 1/6/1996, the person with a spouse < 65 receives €1,086.20 + €69.32 holiday allowance + €25.35 extra allowance a supplement of max. €395 + €29.70. If the pension started before 1/2/1994 these amounts are also valid, but no distinction between income from work and other means of the younger spouse is made in the calculation of the supplement: all income is counted as income from work. Starting in 2015, the supplement for pensioners with a younger spouse is abolished for pensioners who did not receive this supplement previously.

Since 2007, recipients of the state pension are awarded an extra allowance. This extra allowance does not affect the calculation of the supplement.

The state pension is taxable. It is included in the means test for social assistance and other benefits.

In addition to the state pension, many pensioners who were previously employed receive additional occupational pensions (included in *poacm*), administered by sector- or employer specific pension funds. These pensions usually aim to supplement the flat rate state pension to 70% of average earnings of the employee.

2.4.4 Social assistance (*bsa00_s*)

- *Brief description*

A means tested benefit for benefit units lacking other sources of income.

- *Definitions*

Unit of analysis is the benefit unit consisting of the head, spouse or cohabitant partner and children under 16 or under 18 years if they are in education (at least 213 hours per quarter), or unemployed, or at least 45% disabled. Eligible children living in the household, but without parents (i.e. so called “loose children”), are also counted as dependent children.

- *Eligibility conditions*

A benefit unit (couple, single person, lone parent) is eligible for social assistance if:

- they are not a student and
- if single, assets are less than single asset limit of €5,895
- if married/cohabiting/lone parent, assets are less than married asset limit of €11,790
- aged 18 or over or
- a parent (Note: Even if a parent, persons below 18 are not generally entitled)

Self-employed persons with (temporary) low incomes (which includes those in receipt of the separate social assistance benefit (*Besluit Bijstandsverlening Zelfstandigen* BBZ) for self-employed) are not entitled to the regular social assistance benefit (*Wet Werk en Bijstand* WWB, as of 1-1-2016 included in *Participatiewet*), indicated as BSA in this report.

Table 2.10 Social assistance: Asset test amounts

	2015	2016	2017	2018
Single persons	5,895	5,920	5,940	6,020
Couples, lone parents	11,790	11,840	11,880	12,040

Assets include financial assets (savings, cash, shares) of all members of the benefits unit but also the value of cars, motorcycles, caravans, boats, houses. The local authorities (municipalities) have some discretionary power in taking into account the value of cars, motorcycles and caravans (if not extremely expensive, they may be excluded). Debts are subtracted if the recipient of social assistance can show that the debt in question has to be repaid. Homeowners are usually excluded from social assistance (they have to 'eat' their house first).⁵

⁵ In EUROMOD we approximate financial capital afc on the basis of investment income yiy. Similarly, we could have imputed the value of property on the basis of property income ypr. However, ypr may be income from the rental of rooms in the (rented) house it should be counted as income in the means test. For the time being we count ypr as income in the means test, and do not include an imputed value of property in the asset test.

- **Income test**

The income base for the means test consists of all other employment income⁶, benefits and pensions except child benefits and allowances such as rent allowance and care allowance. Because the benefit is calculated as a net (after tax) amount, this requires the calculation of the taxes and social insurance contributions on all other income components before the entitlement to Social Assistance can be calculated. Notably, Social Assistance is subject to social insurance contributions and income tax as well. It is paid out as a net amount, on top of which the municipalities pay taxes and social insurance contributions directly to the relevant authorities.

So, to obtain net means, income taxation and social insurance contributions payable on gross means have to be calculated. In EUROMOD, the policy modules designed to compute income taxation and social insurance contributions are also used for the purpose of calculating the means taken into account for the calculation of social assistance. The withdrawal rate is 100%.⁷

In the case of a couple, the resulting net BSA amount is supposed to be shared equally among both spouses.

Next, gross social assistance is approximated, by applying grossing-up factors to net BSA: gross BSA = *factor1* * net BSA

Table 2.11 Social assistance: Factor 1

	2015	2016	2017	2018
age < 65	1.574803	1.576044	1.576044	1.576044
age >= 65	1.05097	1.05820	1.05820	1.05988

Finally, income taxation and social insurance contributions payable on gross social assistance are calculated and added to the amounts calculated earlier.

Notably, this procedure leads to incorrect results when the total amount of income tax and peoples' insurance contributions calculated for the BSA recipient (single person, single parent or couple) is negative. In these cases a revised calculation of net means applies in which income tax, people's insurance contributions and tax credits are not taken into account.

- **Benefit amount**

- a) Couples with children

€1,372.62 (if both aged 21-64)

€1,471.68 (if both 65+)

⁶ Employment income of dependent children is not taken into account.

⁷ In exceptional cases (not taken into account in EUROMOD) (persons 57.5 - 64, single parents with child younger than 5, persons who are deemed to be dependent on part-time jobs for medical or social reasons) municipalities may allow that (for at most six months) min (0.25*inc, 196) per month is not taken into account when calculating the BSA. Furthermore the interest received on assets below the asset-limit is not taken into account. Some lump sum benefits for necessary education and for accepting a job are not taken into account. In addition, the child tax credit is not taken into account, and for single parents with a child under 5, the child tax credit, the combination credit, the supplementary combination credit and the supplementary single parent credit are not taken into account in the means test.

- €1,471.68 (if one 65+, one 21-64)
- €748.84 (if both 18-20)
- €1,197.99 (if one 18-20, one 21+)

- b) Couples without children**
 - €1,372.62 (if both aged 21-64)
 - €1,471.68 (if both 65+)
 - €1,471.68 (if one 65+, one 21-64)
 - €74.32 (if both 18-20)
 - €23.47 (if one 18-20, one 21+)

- c) Lone Parent⁸**
 - €60.83 (if 21-64)
 - €1,077.63 (if 65+)

- d) Single person**
 - €86.31+ €274.52 (if really living alone) (21-64)
 - €1,077.63 (if 65+)
 - €34.01 (if 18-20)

⁸ As from 2015, social assistance no longer distinguishes single parents from other single persons.

Table 2.12 Social assistance: base amounts

	2015	2016	2017	2018
Couple with children				
21-64	1372.62	1389.57	1403.98	1417.32
65+	1471.68	1492.96	1508.06	1525.44
1 21-64, 1 65+	1471.68	1492.96	1508.06	1525.44
18-20	748.84	758.11	766.00	773.28
1 18-20, 1 20+	1197.99	1212.80	1225.39	1237.03
Couple no children				
21-64	1372.62	1389.57	1403.98	1417.32
65+	1471.68	1492.96	1508.06	1525.44
1 21-64, 1 65+	1471.68	1492.96	1508.06	1525.44
18-20	474.32	480.92	485.20	489.82
1 18-20, 1 20+	923.47	934.89	944.59	953.57
Single parents				
21-64	960.83	972.70	982.79	992.12
supplement	0.00	0.00	0.00	0.00
65+	1077.63	1092.87	1104.14	1115.48
18-20	237.16	240.10	242.60	244.91
Single persons				
21-64	686.31	694.79	701.99	708.66
supplement	274.52	277.91	280.80	283.46
65+	1077.63	1092.87	1104.14	1115.48
18-20	237.16	240.10	242.60	244.91

Persons aged below 65 who became unemployed after age 50 and exhausted their entitlement to (earnings related) unemployment benefits are entitled to a separate social assistance benefit: IOAW.⁹ The difference with the general BSA (WWB) is that no asset test is applied to calculate the entitlement for IOAW. The IOAW also applies to persons partially disabled for work, younger than 50, who were already disabled for work at age 17 and who are receiving a disability benefit (Wajong) based on their partial disability (< 80%).

Persons above the state pension age with insufficient means are entitled to the separate supplementary income provision for the elderly: AIO (*Aanvullende Inkomensvoorziening Ouderen*). This includes pensioners who did not build up the full state pension and insufficient supplementary pensions, and, as from 2015, pensioners with younger spouses with low incomes, with combined means below the social assistance norms.

- **EUROMOD notes**

As from January 2015, for recipients of social assistance who can share their housing costs with other persons aged 21 or over living in the same accommodation, social assistance is reduced.

⁹ Since the eligibility for IOAW can only be approximated (in particular the age at which one became unemployed is not registered in the data) previous EUROMOD versions overestimated the number of persons receiving IOAW and underestimated ordinary BSA. In actual fact, the number of recipients of IOAW is less than 5% of that of BSA. Lacking better data, we do not model IOAW in EUROMOD

With 3 non-student persons aged 21 or over sharing the accommodation, the base amount is reduced by 13.3%, 4: 20%, 5: 24%, 6: 26.7%, 7: 28.6%, 8: 30%. Until July 2015 this only affects new beneficiaries. It is not implemented in the base version of EUROMOD 2015 but available as an option (using switch FYA_nl). When fully enforced, about 15% of all benefit units will be affected, reducing the total expenditures by about 3.4%.

2.4.5 Rent allowance (*bho_s*)

- **Brief description**

Rent allowance is a benefit targeted to tenant households with high (but not too high) rents given their income. These households are entitled to a monthly means-tested rent subsidy.

- **Definitions**

Unit of analysis is the household: in addition to the income of the benefit unit, income of other household members is also taken into account. Income of children younger than 23 is only taken into account above a threshold.

Actual rent: rent to be paid to the landlord/owner of the accommodation

Norm rent: Rent amount used in the formula for the computation of the rent allowance, depending on the income of the tenant and his household composition.

- **Eligibility conditions**

Since 2006, the current taxable income (*il_taxabley*) is taken into account. There is also an asset test: the tax unit is not entitled to rent subsidy if income in Box 3 (Income from saving and investment - see section 2.6.4) produces a positive amount of income tax.

The eligible household can follow into one of four groups depending on age and number of people in the household:

A. Single person household ($nPersInUnit=1$) age under 65 ($dag < \$PenAge$)

C. multipersons household ($nPersInUnit \geq 2$) in which more than half of income is received by persons under 65 on 1/1/2015. The latter condition is assumed to be satisfied if the head is age <65 in 2015.

E. Single person ($nPersInUnit=1$) elderly (over 64 on 1/1/2015) household ($dag \geq \$PenAge$).

G. multipersons elderly household ($nPersInUnit \geq 2$) in which more than half of income is received by persons 65+ on 1/1/2015 ($dag \geq \$PenAge$)

- **Income test**

The rent allowance is a means-tested benefit as it depends on income as described in the next section.

Asset test: no rent subsidy is paid if tax payable on income in Box 3 is nonzero.

Income disregard: for children younger than 23 up to €4749 of their income is not taken into account. This income disregard is not taken into account in Euromod.

Table 2.13 Rent allowance: disregarded child income

	2015	2016	2017	2018
Disregarded child income	4749	4773	4788	4827

- **Benefit amount**

Computation of rent subsidy (amounts per month): If the actual rent is below €110.68 (*up_rent_lt*) per month in 2014, the monthly rent subsidy is calculated as follows:

Table 2.14 Rent allowance: relevant amounts

	2015	2016	2017	2018
<i>up_rent_lt</i>	710.68	710.68	710.68	710.68
<i>rent1_lt</i>	403.06	409.92	414.02	417.34
<i>rent21_lt</i>	576.87	586.68	592.55	597.30
<i>rent22_lt</i>	618.24	628.76	635.05	640.14
<i>subsidy2_rt</i>	0.75	0.75	0.75	0.75
<i>subsidy3_rt</i>	0.5	0.5	0.5	0.5

1) norm rent < actual rent <= €403.06 (*rent1_lt*):

$$\text{subsidy} = \text{actual rent} - \text{norm rent}$$

2) (norm rent < actual rent) & (€403.06 < actual rent <= B).

(B= €576.87 (1,2pers), (*rent21_lt*), B= €618.24 (3+ pers) (*rent22_lt*)):

$$\text{subsidy} = 0.75(\text{subsidy2_rt}) * (\text{actual rent} - \max(\text{norm rent}, 403.06)) + \max(0, 403.06 - \text{norm rent})$$

3) norm rent < actual rent & Actual rent > B:

$$\text{subsidy} = 0.5(=\text{subsidy3_rt}) * (\text{actual rent} - \max(B, \text{norm rent})) + 0.75 * \max(0, B - \max(\text{norm rent}, 403.06)) + \max(0, 403.06 - \text{norm rent})$$

Notably, the *subsidy3_rt* of 0.5 reduces to zero unless the household is a single person household or one of the household members is aged 65 or over.

Norm rent calculation: it depends on the age and the number of persons in the household (groups A, C, E and G as mentioned above) and the taxable income. Since 2008, the monthly norm rent is calculated on the basis of a formula: $a * \text{income} * \text{income} + b * \text{income} + c$ where income is annual taxable income. There is a minimum norm rent, and a maximum income threshold above which no rent allowance is received. The minimum norm rent holds for incomes below the minimum threshold. No subsidy is awarded if income is higher than highest amounts (maximum income) or if actual rent above €110.68 (*up_rent_lt*) or below the minimum norm rent. The relevant parameters are presented in Table 2.15.

Table 2.15 Parameters used for the calculation of norm rent

2015	A	C	E	G
a	7.3286E-07	4.18893E-07	1.09065E-06	6.40089E-07
b	0.002203399	0.00208241	-0.005942679	-0.005213178
c	27.44	27.44	27.44	27.44
minimum rent	229.64	229.64	227.82	226.01
minimum thr	15175	19625	16550	22150
maximum income	21950	29800	21950	29825
2016	A	C	E	G
a	7.20374E-07	4.10057E-07	1.04049E-06	6.18093E-07
b	0.00218091	0.00208958	-0.005595475	-0.005109
c	27.44	27.44	27.44	27.44
minimum rent	231.87	231.87	230.05	228.24
minimum thr	15400	19925	16900	22625
maximum income	22100	30000	22100	30050
2017	A	C	E	G
a	7.02729E-07	3.99071E-07	1.0252E-06	6.05312E-07
b	0.002157298	0.002092802	-0.005519295	-0.004953911
c	16.94	16.94	16.94	16.94
minimum rent	223.42	223.42	221.6	219.79
minimum thr	15675	20275	17075	22850
maximum income	22200	30150	22200	30175
2018	A	C	E	G
a	0.0000006843660	0.000000387746	0.000000985639	0.000000587777
b	0.002171484	0.002116316	-0.005167396	-0.00482133
c	16.94	16.94	16.94	16.94
minimum rent	225.08	225.08	223.26	221.45
minimum thr	15925	20600	17325	23200
maximum income	22400	30400	22375	30400

Rent allowance is not taxable. It is not included in the means test for social assistance and other benefits.

2.4.6 Unemployment benefit (*bunct_s*)

- *Brief description*

The (contributory) unemployment insurance benefit comprises two types of benefits:

- General (short-term) benefit;
- Extended (earnings related) benefit

The unemployment insurance scheme covers all employees under 65. *Self-employed* are not covered.

- *Definitions*

The unit of analysis is an individual person.

- **Eligibility conditions**

Short term benefit: eligible are persons who have been at least 26 weeks in paid employment during the last 36 weeks. Notably, short term benefit is received only if one is not eligible for extended benefit.

Extended benefit: eligible persons are those who have been at least 26 weeks in paid employment during the last 36 weeks plus they have worked at least 52 days or more during at least four of the last five years.

- **Benefit amount**

Short term and extended benefit: 75% of previous earnings up to a maximum daily wage of €199.15 during the first two months, 70% thereafter.

Table 2.16 Characteristics of the unemployment benefit

		2015	2016	2017	2018
Eligibility	Contribution period	at least 26 weeks out of last 36	at least 26 weeks out of last 36	at least 26 weeks out of last 36	at least 26 weeks out of last 36
	Other conditions	younger than pension age			
	Eligibility of self-employed	no	no	no	no
Payment	Contribution base	il_sic	il_sic	il_sic	il_sic
	Basic amount	70%	70%	70%	70%
	Additional amount	5% (1 st 2 months)			
	Floor	0	0	0	0
	Ceiling	70%/75% * €199.15#d (max. daily wage)	70%/75% * €202.17#d (max. daily wage)	70%/75% * €205.77#d (max. daily wage)	70%/75% * €209.26#d (max. daily wage)
Duration	Standard (in months)	3-38 months dep. on age / employment period	3-36 months dep. on age / employment period	3-32 months dep. on age / employment period	3-28 months dep. on age / employment period
	Special cases (in month)	-	-	-	-
Subject to	Taxes	yes	yes	yes	yes
	SIC	yes	yes	yes	yes

Payment duration:

Short term benefit: three months

Extended benefit: duration in months equals the number of years worked (employment record), with a maximum of 38 (the minimum being four months with a minimum employment record of four years). From January 2016, the maximum duration will decrease by one month per quarter until it reaches 24 months in 2019.

Employment record (when relevant)

The employment record includes each of the previous five years in which the recipient has been employed 52 or more days¹⁰ plus the number of calendar years since 18th birthday minus five¹¹

¹⁰ From 1st January 2013, years in which the number of paid working hours exceeding 208 are counted instead of the number of years with 52 or more paid working days.

if he/she is age >22. Moreover, for people who were not in paid employment in the last five years, calendar years spent taking care of children younger than 6 are taken into account, as well as half of the years in which he/she took care of children aged between 6 and 12.

Previous earnings: is defined as gross employment income minus pension contributions minus tax exempt savings.

Notably, when the total net household income (defined according to the means test for Social Assistance) is below the Social Assistance level, persons entitled to Unemployment Benefit are entitled to a supplement to reach the SA-level without an asset test, according to the *Toeslagenwet* ('extra allowances act') (this is comparable to the way the IOAW benefit is calculated). During at most two years (or until age 65 when having become unemployed when older than 57.5 years) part of the income from work may not be taken into account when computing this extra allowance: all if less than 5% of the minimum wage, 30% up to 15% of the minimum wage.

No extra allowance is granted to single persons younger than 21 living with their parent(s), and to persons with a partner, when born after 31/12/1971 and not having a child younger than 12.

Minimum wage for persons younger than 23:

AGE	22	21	20	19	18	17	16	15
%	85	72.5	61.5	52.5	45.5	39.5	34.5	30

Unemployment benefit is taxable. It is included in the means test for social assistance and other benefits.

- **EUROMOD notes**

In EUROMOD, eligibility is assessed chiefly by checking who is actually in receipt of unemployment benefits in the data. But rather than simply using the observed receipt as part of the eligibility criteria, all eligibility rules are covered. However, as not all required information (e.g. detailed work or unemployment history) is available; several assumptions are made, among else considering some rules automatically fulfilled for those in receipt. This approach is chosen so that the benefit can be also modelled for those currently *employed* if needed (e.g. to simulate their entitlement to unemployment support if they become unemployed from the current year, for replacement rates calculations).

Therefore, EUROMOD distinguishes individuals into three groups:

- Those currently employed ($yem \neq 0$ & $lunmy_s = 0$ & $bunct = 0$)
- Those currently unemployed ($lunmy_s > 0$) and in receipt ($bunct > 0$)
- Those currently unemployed ($lunmy_s > 0$) and not in receipt ($bunct = 0$)

Both general and extended unemployment benefits are simulated. Which benefit one is entitled to depends on its employment history duration.

Unemployment duration (lunmy_s): it is set equal to the maximum between the observed unemployment duration (*lunmy*) and the observed benefit receipt (*bunctmy*) for the unemployed.

¹¹ Notably, since 1st January 2005, if possible, the actual number of years worked is taken into account. In practice, the number of years from age 18 until 1997 is added to the actual number of years worked from 1997.

Contributory history (liwmy_s): is based on the reported number of weeks in employment (*liwmy*) subject to be maximum equal to the total number of weeks in work (*liwwh*). The qualifying period is computed for the three groups described above making sure that individual currently unemployed and in receipt of the benefit satisfy the qualifying condition (taking the maximum between their time in work and the limit of 26 weeks necessary to qualify for the UB). For people currently unemployed and not in receipt of the benefit, qualifying period is set to zero.

Short term unemployment benefit duration (*bunctmy_s*) is calculated according to the rules above, using modelled contribution history (*liwmy_s*), while also controlling for the unemployment duration (*lunmy_s*). It is set to be equal to the unemployment duration subject to the maximum benefit duration (three months).

Extended unemployment benefit duration (*bunctmy01_s*) is also set to be equal to the unemployment duration (*lunmy_s*) subject to the maximum benefit entitlement period.

Although it is possible that some unemployment spells had started before the beginning of the reference year, SILC does not record information on unemployment history. Setting the UB duration to *bunctmy_s* or *bunctmy01_s* it is like assuming that unemployment spells always start from the reference year (*lunmy_s* varies between 0-12 months and refers only to the reference year). Although this is a strong assumption, we think this assumption becomes acceptable when considering that the main aim of the unemployment policy simulation is to simulate variation in the current employment status of employees.

When applying the upper daily threshold to previous gross earnings, we assume that there are 30.38 days per month and $52/12 = 4.34$ weeks per month.

At this point, working age people who are unemployed (*lunmy_s* > 0), have sufficient contribution history and are not self-employed (i.e. have employment earnings or no self-employment status as defined by *temp_tinyse* (income from self-employed work represents more than 60% of earnings)) are considered eligible. It is assumed that all of them are involuntary unemployed and capable and available for work (there is a variable in the SILC data identifying the latter but only filled in for those currently unemployed).

Benefit amount is calculated based on previous earnings and benefit duration, subject to the lower and upper thresholds. For those currently employed, current earnings are used. For those currently unemployed and in receipt, previous earnings are used which have been imputed by reversing unemployment insurance benefit rules. For those currently unemployed and not in receipt, imputed wage is set to zero. Finally, the benefit amount is adjusted with the number of months in receipt (*bunctmy_s* and *bunctmy01_s*).

EUROMOD simulates the contributory part of the unemployment benefit in the Netherlands, but when this policy is switched off, income lists using simulated contributory unemployment benefit *bunct_s* should replace this with the observed SILC variable *bunct*. This is done by making use of EUROMOD's *fnct_SetDefault* which sets *bunct_s=bunct* (from SILC) when *bunct_s* is not found because the UB policy is switched off.

2.4.7 Care allowance (*bhlmt_s*)

- **Brief description**

This benefit provides partial compensation for the obligatory private health insurance premium for residents aged 18+ with a Dutch health insurance and low taxable income.

- **Definitions**

Tax unit is the individual with his/her ‘allowance partner’ which could be:

- 1) the spouse in a married or registered couple
- 2) the fiscal partner
- 3) the spouse with a cohabitation contract
- 4) the other parent of a child
- 5) last year’s allowance partner
- 6) the pension partner
- 7) the co-owner of the accommodation (with shared responsibility for the mortgage) or
- 8) a household member with a child younger than 18 living in the household

Family members can be fiscal partners if one of the other conditions applies. In addition, for parent and child to be allowance partners, both have to be aged 27 or older.

- **Eligibility conditions**

All residents aged 18 or over with a Dutch health insurance are eligible if their total taxable income (Box 1, Box 2 and Box 3) passes the income test. Notably, assets in Box 3 exceeding € 82,093 plus the tax-free asset allowance of both tax partners (see 2.6.5) reduce the care allowance to zero.

- **Income test**

There are separate income tests for single tax payers and for tax payers with allowance partners. In 2015, eligibility was limited to single tax payers with total taxable income less than €26,316 per year and tax payers with allowance partners with total taxable income less than €32,655 per year.

Table 2.17 Income and asset limits health care allowance

	2015	2016	2017	2018
Single tax payers	26,316	27,012	27,857	28,720
Tax payers with allowance partners	32,655	33,765	35,116	35,996
Asset threshold	82,093	82,504	82,752	83,415

- **Benefit amount**

The benefit is calculated as follows: the norm premium is calculated as $0.134 * \max(0, \text{total taxable income} - 19,463) + 1,025 * (1 \text{ if person with allowance partner, } 0 \text{ otherwise}) + 466 * (1 \text{ if person without allowance partner, } 0 \text{ otherwise})$.

The health care allowance is then calculated as $(2,816 - \text{norm premium})$ in the case of persons with allowance partners, and $(1,408 - \text{norm premium})$ in the case of persons without allowance partners.

Norm premium = $A * \max(0, \text{total taxable income} - B) + C * (1 \text{ if person with allowance partner, } 0 \text{ otherwise}) + D * (1 \text{ if person without allowance partner, } 0 \text{ otherwise})$

Health care allowance = $(E - \text{norm premium})$ for persons with allowance partners

= $(F - \text{norm premium})$ for persons without allowance partners

Table 2.18 Parameters used in calculation of health care allowance

	2015	2016	2017	2018
A	0.134	0.1343	0.1346	0.1349
B	19,463	19,759	20,109	20,451
C	1,025	1,031	1,016	971
D	466	470	463	407
E	2,816	2,936	3,060	3,083
F	1,408	1,468	1,530	1,535

2.4.8 Child related budget (*bch_s*)

- **Definitions**

The child related budget was introduced in 2008 as child allowance (see CHALL_nl), instead of the previously existing child tax credit. The main difference with the child tax credit is that the child related budget is also payable in the case of low or zero income.

- **Eligibility Conditions**

Presence of (at least one) child aged below 18.

- **Income test**

The child related budget is a means tested benefit of which the amount depends on total taxable income of the tax payer (including the income of their fiscal partner income where applicable).

- **Benefit Amount**

The allowance amounts to $C - D * (\text{income} - B)$ where ‘income’ is the sum of taxable income in Box 1, 2 and 3 net of all deductions (tax allowances) of the tax payer and his/her fiscal partner ($i_{l_taxable_box1} + i_{taxbase_box3}$). The amount C is differentiated by the number of children for whom there exists entitlement to child benefit.

The child related budget is only received by one allowance partner. In EUROMOD, the allowance is awarded to the partner with the highest taxable income – in the case where both partners have the same taxable income, it is received by the oldest – where the partner’s age is the same, the male will receive the allowance.

Table 2.19 Income related child allowance parameters

	2015	2016	2017	2018
Income threshold				
B	19,676	19,657	20,109	20,451
C	1,032	1,032	1,142	1,152
D	6.75%	6.75%	6.75%	6.75%
C 2 kids	1,823	1,856	2,040	2,129
C 3 kids	2,006	2,139	2,325	2,417
C 4 kids	2,112	2,316	2,610	2,705
C 5+ kids, extra per child	106	177	285	288
Increase 12-15	231	233	234	236
Increase 16-17	412	415	417	421
Single parent supplement	3,050	3,066	3,076	3,101
Asset threshold	82,093	82,504	82,752	83,415

As of 2015, single parents receive a supplement of at most €3,050 per year as a compensation for the abolishing of various single parent benefits: the single parent allowance in the income tax, the single parent supplement in the social assistance and the half-orphan benefit.

In 2013, an asset test was introduced: in 2015 assets in Box 3 exceeding €82,093 plus the tax-free asset allowance of both tax partners (see 2.6.5) reduce the child related budget to zero.

2.5 Social contributions

Social contributions for unemployment and disability insurance are paid by employees and employers. However, from 2009 employees’ contributions were set to zero. In addition, all recipients of earnings and benefits pay peoples’ insurance contributions. Statutory health insurance contributions consist of flat rate private insurance contributions and income related health insurance contributions. Self-employed do not pay separate social contributions since before 2006.

2.5.1 Employee social contributions

a) Employee contributions to unemployment insurance

Employees in the private sector aged below 65 are insured against (loss of income as a result of) unemployment. On average they pay a total contribution of x% on wages between y and z per month: $0.01 * x * (\text{wage} > y) * \min(\text{wage} - y, z - y)$. Similar rules apply for public sector employees who are not identified separately in EUROMOD.

The basis for the calculation of unemployment insurance contributions (*il_sic*) includes next to gross wages net of (occupational) pension contributions, also wage replacement benefits such as unemployment and disability benefits. The relevant tax unit is the *individual*.

From 2009 the employees unemployment contribution was (not abolished, but) set to zero.

Table 2.20 Parameters employee contribution to unemployment insurance

	2015	2016	2017	2018
x	0%	0%	0%	0%
y				
z				

2.5.2 Employer social contributions

Employers pay social contributions divided into unemployment insurance contribution and disability insurance contribution¹².

a) Employer contributions to unemployment insurance (*tscerui_s*)

Employers of employees in the private sector aged below 65 on average pay a total contribution of 4.23% on wages between €0 and €4,331.33 per month: For public sector employees rules are the same.

The income basis for the employer contribution to unemployment insurance is the same as for the employee contribution to unemployment insurance (*il_sic*).

Table 2.21 Parameters employer contribution to unemployment insurance

	2015	2016	2017	2018
rate1				
rate2	4.23%	4.22%	4.00	4.13
lower_lt	0	0	0	0
maxbase	4,331.33	4,396.92	4,475.08	4,551.17

b) Employer contributions to disability insurance (*tscerdi_s*)

Employers of employees in the private sector aged below 65 pay, on average, a total contribution of 5.75% on wages with a wage limit of €4,331.33 per month: $0.0575 * \min(\text{wage}, 4,331.33)$. For public sector employees rules are the same.

The income basis for the employer contribution to disability insurance is the same as for the employee contribution to unemployment insurance (*il_sic*).

Table 2.22 Parameters employer contribution to disability insurance

	2015	2016	2017	2018
rate2	5.75%	6.38%	6.66%	6.77%
Maxbase2	4,331.33	4,396.92	4,475.08	4,551.17

¹² In addition, most employers pay occupational pension fund contributions, differing by sector or firm (not modelled in EUROMOD)

c) Employer contributions to health insurance

See section 2.5.4

As mentioned in section 2.5.4, all residents are obliged to take out private health insurance. For wage earners (and recipients of most benefits), the employer (or the benefit agency) pays the income related health insurance contribution.

2.5.3 Self-employed social contributions

a) Self-employed contributions to disability insurance

Not in force in 2015.

b) Self-employed contributions to health insurance

Similar to other residents, self-employed pay a flat rate health insurance premium as well as an income related contribution. See section 2.5.4.

2.5.4 Other social contributions

a) Peoples' insurances (*tsceepi_s*)

The so-called peoples' insurances or national insurances include the State pension insurance (AOW), the Survivor benefit insurance (ANW) and the Act on long-term care (WLZ). All income tax payers contribute to these insurances where the taxable income (Box 1) (see section 2.6.4) acts as the basis for the calculation of these contributions (*tsceepi_s*). In other words: all persons with income in Box 1 are subjected to these contributions. Therefore in EUROMOD we do not distinguish between employees and self-employed because the contributions are the same for both groups.

The contribution rates are reported for each year in Table 2.23 below. In 2015 they are 17.9%, 0.6% and 9.65% respectively for AOW, ANW and WLZ. Hence, the total contribution in 2015 amounts to 28.15%. Persons aged 65 or older do not pay AOW contributions and their contribution rate is 10.25%.

The maximum base for the calculation of these contributions is €33,589 per year (€33,857 for persons born before January 1, 1946). Note that tax credits apply to income tax and peoples' insurance contributions as a whole. They reduce the income tax and peoples' insurance contributions proportional to the tax/contribution rates on the lowest income tax bracket¹³.

Table 2.23 Contribution rates and maximum base peoples' insurances

	2015	2016	2017	2018
AOW	17.9%	17.9%	17.9%	17.9%
ANW	0.6%	0.6%	0.1%	0.1%

¹³ In 2015, the lowest income tax rate was 8.35%. The peoples insurance contribution rate is (17.9 + 0.1 + 9.65 =) 28.15% (10.25% for 65+). So 8.35/(8.35+28.15) of the tax credit is to be subtracted from the income tax (8.35/(8.35+10.25) for 65+) and the remainder from the peoples insurance contributions. (Notably, in cases where this leads to zero income tax and insurance contributions in Box 1 all of the remaining amount of tax credit can be subtracted from income tax in Box 3).

WLZ	9.65%	9.65%	9.65%	9.65%
pi_maxbase	33,589	33,715	33,791	33,993
pi_maxbase when born before 1-1-1946	33,857	34,027	34,130	34,403

- **EUROMOD notes**

As tax credits apply both to income tax and people’s insurance contribution, in EUROMOD the calculation of this contribution is divided into two parts. The first policy sheet is PEOPLESIC_NL which calculates a “gross” amount of the contribution just applying the rates in the table above to the taxable income from Box 1 (*il_taxable_box1*).

After the calculation of tax credits in TINTC_nl and social assistance by BSAnet_nl, EUROMOD computes the final people’s insurance liability (*tscepi_s*) in BSAgross_nl.

b) Health insurance contributions (*tschl_s*)

All residents are obliged to take out private health insurance. Part of this is financed by flat rate health insurance premiums paid by the individual and part of this is financed by income related contributions. For wage earners, these income related contributions are paid by the employer. None of the health insurance contributions are deductible from taxable income.

In 2015, the average flat rate health insurance premium (*tschlfx_s*) amounted to €1,188 per adult (aged 18+) per year.

The earnings related contribution amounts to 6.95% of gross earnings and benefits, paid by employer or benefit agency. On the state pension, self-employment income and supplementary pensions the contribution rate is 4.85%, paid by the individual. The maximum tax base is €1,976.

Table 2.24 Parameters health insurance contribution

	2015	2016	2017	2018
Average flat rate	1,188	1,295	1,265	1,341
Contribution rate:				
Earnings etc	6.95%	6.75%	6.65%	6.9%
Self-employment etc	4.85%	5.5%	5.4%	5.65%
maxbase	51,976	52,763	53,701	54,614

In the case of multiple sources of income, the contribution is calculated as follows: Firstly, as indicated above, the total maximum base is €1,976 per year. This maximum base consists of three possible components.

The first component (*tschl01_s*) is wages, unemployment benefits, disability benefits and social assistance benefits and other earnings replacing benefits (except pensions). Here the contribution is 6.95%. As of 2013, this contribution *tschl01_s* is paid by the employer or benefit agency, and no longer included in the tax base for income tax and peoples insurance contributions.

The second possible component (*tschl02_s*) is the state pension, with a contribution rate of 4.85%. Contribution: *tschl02_s*.

The third possible component (*tschl03_s*) consists of other pensions (*poacm*) as well as self-employment income (*yse*), with a contribution rate of 4.85% on *poacm* + max(0, *yse*). Contribution: *tschl03_s*.

So a person with €30,000 in wages and €30,000 in self-employment income would owe 6.95% of €30,000 (paid by his employer) + 4.85% of €21,976.

From 2012, the maximum threshold for the computation of the health insurance contribution is harmonized with (i.e. raised to) the maximum threshold for the unemployment and disability insurance contributions.

2.6 Personal income tax

2.6.1 Tax unit

In general, the tax unit for income taxation is the individual. Income of other members in the household is taken into account in the calculation of the income tax credits (section 2.6.6). It is also important for the decision on who is paying taxes on components of household income such as imputed income from owner-occupied housing and for the decision on who can deduct expenditures such as mortgage interest, gifts etc. Fiscal partners may choose how to distribute non-personal income components and deductions between both partners.

Two persons living in the same household are fiscal partners

- if they are married,
- registered partners,
- two adults living together under a legally binding contract,
- two persons with a child,
- two persons, one of whom has recognized the other person's child,
- two pension partners,
- two persons who are co-owner of the accommodation in which they live,
- two persons with the same address as the child of one of them aged below 18,
- two persons living at the same address who were fiscal partners last year.

2.6.2 Exemptions

Following Verbist (2004), we define exemptions as “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)”.

Child benefits, rent allowance, care allowance, child related budget and child care allowance are not included in taxable income, as are child maintenance payments made by the former spouse.

2.6.3 Tax allowances

Here, we define tax allowances as any amount subtracted from pre-tax income (including social insurance contributions). Differently from 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).

The most important tax allowance is formed by mortgage interest payments (*xhcmomi*), both in terms of the number of tax payers concerned and the amounts involved. Mortgage interest payments are deducted from personal income in Box 1 (see below).

From personal income (earnings, benefits, pensions) the amounts to be paid as occupational pension contributions and employee contributions to unemployment insurance are also deducted.

Alimony paid to the ex-spouse is also tax deductible.

Self-employed are entitled to self-employment deduction (*tinta00_s*). Amounts and thresholds:

Table 2.25 Parameters self-employment deduction

	2015	2016	2017	2018
amt_1	7,280	7,280	7,280	7,280
starters	2,123	2,123	2,123	2,123
65+	50%	50%	50%	50%
rate	14%	14%	14%	14%

Notably, the self-employed in question needs to have worked a minimum number of hours in his/her own firm: more than 1,225 hours per year and more than 50% of the total time worked¹⁴. Starters get an extra deduction during the first three years of self-employment. This starter deduction is not implemented in EUROMOD because of missing information on when employment spells start.

From 2012, the amount of self-employment deduction is no longer income dependent. Instead it is a fixed amount (but not higher than the self-employment income).

In addition, recipients of self-employment income are allowed an additional deduction of 14% on self-employment income minus the self-employment deduction (the so-called *mkb-vrijstelling* (= tax allowance for medium and small firms)).

2.6.4 Tax base

The tax base for the income taxation is divided in three components (boxes).

Box 1. Income from work and house (including benefits)

Box 2. Income from substantial interest (income received by shareholders owning more than 5% of the shares in a company) (ignored in EUROMOD)

Box 3. Income from saving and investment

Box 1.

Included in the income tax base are personal income components such as earnings from labour, (earnings replacing) benefits and pensions. If an employee drives a car provided by the employer, a percentage of the catalogue value of the car is to be added. The percentage depends

¹⁴ This hours criterion was not implemented in the earliest versions of EUROMOD. In the current version we approximate it by the condition that self-employment income makes up more than 60% of income from work and the number of hours worked exceeds 23 hours per week.

on the fuel type and the CO₂ emission per kilometer. This component of taxable income is not modelled within EUROMOD, but read directly from the data (variable *kfb*).

Income from abroad is also included in the tax base, but usually to the extent that it had not been taxed abroad.

Alimony received from the ex-spouse (not: alimony paid for the maintenance of children) is taxable as well.

Next to these personal income components, the tax base also includes imputed income from owner occupied housing, and some categories of allowances from life insurances. Imputed income from owner occupied housing (per year) is calculated as a percentage (in most cases 0.75%) of the value of the house as determined by the Act on Immovable Objects (WOZ). To the extent that the imputed income from owner occupied housing exceeds the mortgage interest tax allowance, it is exempt from taxation. As a result, home owners with low or zero mortgage interest payments do not pay income tax on the imputed income from owner occupied housing. In Euromod, the imputed income from owner occupied housing is included in the data (*kivho*).

Starting in 2014, the tax deduction of mortgage interest payments is reduced with 0.5% per year for tax payers in the highest income tax bracket. In 2015, instead of 52%, their income tax is reduced with at most 51% of their mortgage interest payments. In 2041, the maximum mortgage interest deduction is scheduled to reach 38%.

2.6.5 Tax schedule

Box 1

The income tax schedule, applied to taxable income minus all deductions in Box 1, is as follows:

Table 2.26 Parameters income tax schedule

	2015	2016	2017	2018
tax_rate1	8.35%	8.4%	8.9%	8.9%
tax_rate2	13.85%	12.25%	13.15%	13.2%
tax_rate3	42%	40.4%	40.8%	40.85%
tax_rate4	52%	52%	52%	51.95%
band1 up to	19,822	19,922	19,982	20,141
band2 up to	33,589	33,715	33,791	33,993
band2 (born before 1-1-1946)	33,857	34,027	34,130	34,403
band3 up to	57,585	66,421	67,072	68,506

Hence for a tax payer born after 1-1-1946 in 2015:

Tax band		Per year	Per month		Tax-rate
1	0	19,822	1,651.83	<i>tax_band1</i>	<i>tax_rate1</i> : 8.35%
2	19,822	33,589	2,799.08	<i>tax_band2</i>	<i>tax_rate2</i> : 13.85%
3	33,589	56,532	4,711.00	<i>tax_band3</i>	<i>tax_rate3</i> : 42%
<i>nbands</i> : 4	56,532			<i>tax_band4</i>	<i>tax_rate4</i> : 52%

Box 2

Income from substantial interest is taxed with a flat rate of 25%. In EUROMOD, information on this income component is not available.

Box 3

Income from capital is generally taxed in Box 3. For that purpose assets (*afc*) (savings, shares, value of 2nd accommodation etc) minus max (0, debts¹⁵ minus €3,000) are calculated on 1st January. (Mortgages on owned (1st) accommodation are excluded from debts but mortgage interest is taken into account in Box 1). From this taxable asset base a tax free asset allowance is deducted. The remaining taxable amount (if positive) is assumed to have generated a taxable income of 4%, with a tax rate of 30% (or 1.2% of the taxable amount).

The general tax free asset allowance is €21,330 per person. From 2012, the asset allowance for minor children is abolished.

Couples may choose which part of their assets is reported by which spouse. They can also transfer the full amount of tax free asset allowance to their spouse.

Persons older than 65 on 31st December are entitled to an additional asset allowance. The old age asset allowance is zero if the taxable asset base exceeds €282,226 or if taxable income in Box 1 exceeds €20,075. If income in Box 1 is between €14,431 and €20,075, the old age allowance equals €14,188. However, if the taxable asset base (A) minus the general tax free asset allowance (B) is lower than €14,118 the old age allowance is equal to the amount (A-B), so that the resulting taxable asset base after deducting all tax allowances would be zero: (A-B)-(A-B)= 0 if A-B < €14,118. If income in Box 1 is below €14,431 the maximum old age allowance is €28,236.

The old age allowance may be transferred to the fiscal partner. No old age allowance is awarded if the taxable asset base of the individual plus his fiscal partner exceeds 2 * €282,226. As from 2016, the old age allowance has been abolished.

Table 2.27 Parameters tax free allowance and old age allowance

	2015	2016	2017	2018
Debts ignored	3,000	3,000	3,000	3,000
General t.f.a.	21,330	24,437	25,000	30,000
t.f.a. children	0	0	0	0
Old age allowance:				
Asset limit	282,226	-	-	-
Income limit	20,075	-	-	-
Lower limit	14,431	-	-	-
Allowance1	14,118	-	-	-
Allowance2	28,236	-	-	-

Starting in 2017, the income assumed to be generated from the taxable amount in Box 3 is differentiated. The first €75,000 generates 2.87%, the next €900,000 generates 4.6%, and the amounts exceeding €975,000 generate 5.39%. The tax levied on this income remains constant at 30%.

¹⁵ Notably, in EUROMOD, debts are not taken into account.

Table 2.28 Thresholds and parameters differentiated income from Box 3

	2017	2018
Income in Band1 upto	75,000	70,800
generates an income of	2.87%	2.017%
Income in Band2 upto	975,000	978,000
generates an income of	4.6%	4.326%
Remainder generates an income of	5.39%	5.38%

2.6.6 Tax credits

The amount resulting from adding all taxable income components and subtracting all deductions described in the first part of section 2.6.4 is taxable income in Box 1 (*il_taxabley_box1*), upon which the tax schedule as described in section 2.6.5 is applied. In addition, (imputed) taxable income from saving and investing (Box 3) (*temp_taxbase_box3*) is taxed with a constant rate of 30%. However, tax credits are deducted from the full amount of taxes and peoples' insurance contributions (in proportion to the rates on the lowest tax bracket in Box 1).

The tax credits may consist of several components:

a) general tax credit (*tintc00_s*)

All tax payers receive a general tax credit of at most €2,203 per year or €183.58 per month (*amount1*). For persons aged 65 or more, the general tax credit is at most €1,123 per year (€93.58 per month). In principle, tax credits are not transferable between spouses. However, the general tax credit is also paid to a spouse with a low (or zero) income if his/her spouse pays income tax and peoples' insurance contributions. In that case the tax credit is not higher than the amount of income tax and peoples' insurance contributions paid by the spouse (after deducting his/her own tax credits): total tax/contributions paid by a couple is never negative.

Starting in 2009, the payment of the general tax credit to a spouse with a low or zero income is to be reduced to zero in 15 years (i.e. by 6.67% per year). In 2015, the payment of the general tax credit to a spouse with low or zero income is reduced by 46.67% of the maximum general tax credit.

Starting in 2014, a reduction of the general tax credit is applied when taxable income in Box 1 exceeds a threshold. In 2015 the reduction was 2.32% of taxable income above €19,822 with a maximum of €31 per year (65+: 1.182% with a maximum of €438).

From 2016 the general tax credit is fully income dependent and it reduces to zero for high incomes. In 2016, the reduction increased to 4.82% of taxable income above €19,922 with a maximum of €2,242 per year (see Table 2.29 for more details).

b) work credit (*tintcee_s*)

Tax credit on income from work (*il_taxabley_work*) (including self-employment income): normally, at most €2,220 per year (65+: €1,132 per year).

The work credit amounts to 1.81% (*band_rate 1*) on the first €9,010 (*band_uplim 1*) of income from work plus 19.679% (*band_rate 2*) of the remainder; the maximum amount being €2,220 (*uplim*). Income from work (*il_taxabley_work*) includes: employment income (*yem*), self-

employment income (*yse*), income from employer provided car, minus the occupational pension contributions (*tpcpe*) and minus the unemployment insurance contribution paid by the employee (*tsceui_s*). Sickness benefits (*bhl*) should also be counted as income from work.

For persons aged 65 or over, the work credit is 0.922% on the first €9,010 of income from work plus 10.028% of the remainder, with a maximum of €1,132.

For persons with income from work higher than €9,770, the work credit is reduced by 4% of the income above €9,770 with a maximum of €2,036 (65+: 2.038%, with a maximum of €1,042).

A work bonus for persons aged 60-63 was introduced in 2013. In 2015, this work bonus was discontinued for new recipients (aged 60), and kept constant for old recipients (aged 61-63). It amounts to 58.1% of income from work above €17,327 with a maximum of €1,119 per year. For every euro earned above €23,104 10.57% is deducted from this maximum, so that persons with income from work above €33,694 do not receive the work bonus.

c) child credit (*tintch_s*)

As of 2008, the child credit was replaced by an income related child allowance, renamed child related budget in 2009 (see section 2.4.8).

d) supplementary child credit

The supplementary child credit had already been abolished before 2006.

e) income related combination credit (*tintch00_s*)

As of 2009, the earlier combination credit and supplementary combination credit were replaced by the income related combination credit. In 2014, the income related combination credit amounts to €1,034 + 0.04*(income – 4,857) with a maximum of €2,152. It is received if earnings from paid employment exceed €4,857 and a child under 12 is present. In the case of a couple it is received only by the lower earning spouse. If the earnings of both spouses are equal, only the older spouse receives the credit. For 65+, the amount is €28 + 0.02042*(income – 4,857) with a maximum of €1,098 per year.

f) single parent credit (*tintclp_s*)

The single parent credit was abolished in 2015. As a compensation, single parents were entitled to a supplement to child related budget (see section 2.4.8).

g) supplementary single parent credit (*tintclp00_s*)

The supplementary single parent credit was also abolished in 2015.

h) old age credit (*temp_tcOA*)

Tax payers aged 65 or over (*\$PenAge*) on 31/12/2015 are entitled to an additional tax credit: €1,042 per year if total taxable income ('verzamelinkomen') from Box 1, 2 and 3 net of all deductions is lower than €35,770 per year, and €152 if total taxable income is higher.

i) old age credit single persons (*temp_SuppOA*)

Tax payers entitled to an old age credit and to the state pension for single persons or single parents (section 2.1.3) with total taxable income below €35,770 obtain the old age credit for single persons of €433 per year next to the old age credit.

j) temporary credit early retirement (from 2013 to 2015: *temp_ERtc*)

In 2015, persons receiving a pension before the state pension age are entitled to a temporary credit of 0.33% of the pension with a maximum of €61 per year. This temporary credit has been abolished from 2016.

Table 2.29 Parameters tax credits

	2015	2016	2017	2018
general tax credit	2,203	2,242	2,254	2,265
reduction: threshold	19,822	19,922	19,982	20,142
reduction: rate	2.32%	4.82%	4.787%	4.683%
reduction: maximum	861	2,242	2,254	2,265
65+	1,123	1,145	1,151	1,157
reduction: rate	1.182%	2.46%	2.443%	2.389%
reduction: maximum	438	1,145	1,151	1,157
work credit:				
band_rate 1	1.81%	1.793%	1.772%	1.764%
band_uplim 1	9,010	9,147	9,309	9,468
band_rate 2	19.679%	27.698%	28.317%	28.064%
uplim	2,220	3,103	3,223	3,249
work bonus 60-63:				
maximum	1,119	1,119	1,119	0
minimum threshold	17,327	17,327	17,327	
rate	58.1%	58.1%	58.1%	
decrease starts from	23,104	23,104	23,104	
rate of decrease	10.567%	10.567%	10.567%	
reduction %	4%	4%	3.6%	3.6%
max	2,036	3,103	3,223	3,249
from	49,770	34,015	32,444	33,112
Work credit 65+:				
band_rate 1 65	0.922%	0.915%	0.904%	0.901%
band_rate 2 65	10.028%	14.133%	14.449%	14.32%
uplim 65	1,132	1,585	1,645	1,659
reduction %	2.038%	2.041%	1.837%	1.837%
max	1,042	1,585	1,645	1,659
from	49,770	34,015	32,444	33,112
Income related				
Combination credit				
Earnings threshold	4,857	4,881	4,895	4,935
Minimum	1,034	1,039	1,043	1,052
Rate	4%	6.159%	6.159%	6.159%
Maximum	2,152	2,769	2,778	2,801
Max inc	32,832	32,969	33,049	33,331
Minimum 65+	528	531	533	538
Rate 65+	2.042%	3.143%	3.143%	3.143%
Max 65+	1,098	1,413	1,419	1,431
Old age credit	1,042	1,187	1,292	1,418
threshold	35,770	35,949	36,057	36,346

	2015	2016	2017	2018
Higher income credit	152	70	70	72
Single persons	433	436	438	423
Temporary credit early retirement: rate	0.33%	0%	-	-
Maximum	61			

As mentioned earlier, tax credits are not transferable between spouses and the amount of income tax and peoples' insurance contributions paid cannot be negative. However, some tax credits are also paid to a spouse with a low (or zero) income if his/her spouse pays income tax and peoples' insurance contributions. In that case the tax credit is not higher than the amount of income tax and peoples' insurance contributions paid by the spouse (after deducting his/her own tax credits): total tax/contributions paid by a couple is never negative. The tax credits for which this holds are: the general tax credit, work credit, child credit and (supplementary) combination credit.

- **EUROMOD notes**

In EUROMOD simulated values for income tax and peoples' insurance contributions may be negative at the individual level as long as the total amount for the couple is not negative.

Tax credits not taken into account in EUROMOD

a) young disabled credit

Persons receiving the benefit for young disabled persons 'Wajong' are entitled to the young disabled credit of €715 per year

b) parental leave credit

From 2015, the parental leave credit has been abolished

c) credit for investment in venture capital, and green/ethical investment funds

Some categories of investments which are normally subject to the capital gains taxation (Box 3) are tax exempt up to certain limits.

- **EUROMOD notes**

As mentioned above, starting in 2009, the payment of the general tax credit to a spouse with a low or zero income is to be reduced to zero in 15 years (i.e. by 6.67% per year). Initially, this reduction did not hold if the spouse in question was born before 1st January 1972 or had a child living at home who was younger than 6 years at 31st December 2008. In previous EUROMOD versions this reduction was not implemented before 2011. In that year the reduction amounted to 20%. By 2012 the reduction was 26.66% for persons born after 1st January 1972 without a child younger than 6 years living at home, and 13.33% for persons born between 1st January 1963 and 1st January 1972 and for persons born after 1st January 1972 with a child younger than 6 years living at home. In 2013, these percentages were increased to 33.33% and 26.66%,

respectively. In 2014, 2015, 2016, 2017 and 2018 the reduction was further increased (to 40%, 46.66%, 53.33%, 60% and 66.67%) for persons born after 1962.

EUROMOD does not take into account a number of possible tax allowances, such as public transportation costs (home-work), gifts to charities, specific health care expenditures, and study costs.

3. DATA

3.1 General description

The Dutch database consists of the Dutch part of the European Union Statistics on Income and Living Conditions (EU-SILC). This is a rotating panel survey (4 rotational groups), aimed to be representative of the Dutch population in private households. The sampling frame is the Dutch Population register (Basisregistratie Personen (BRP)). The sampling design can be classified as a stratified random sampling design. The unit of assessment is the household. The User Data Base on which the EUROMOD database is based, is provided by Eurostat (UDB_c16_release_18-03 from 25-01-18). The data consist of register data, supplemented by interview data (CATI/CAWI). Notably, although the original data is a panel, the UDB is not. This means that it is not possible for users to follow the same people over time.

Table 3.1 EUROMOD database description

EUROMOD database	
Original name	EU-SILC UDB
Provider	Eurostat
Year of collection	2016
Period of collection	March-September
Income reference period	2015
Sample size	12,748 hh
Response rate	59%

Table 3.1 presents some information from the report on EU-SILC 2016, published in the series of National Quality Reports on EU-SILC by the European Commission¹⁶. The household response rate of EU-SILC 2016 is 59%. In order to improve the timeliness and the oncoming revision of EU-SILC, Statistics Netherlands has redesigned the data collection in the first wave. From 2016 onwards, the first wave was conducted as a stand-alone survey with a new sampling design and mixed mode data collection (CAWI and CATI) as a main feature. Sampled persons were invited to fill in the questionnaire by means of CAWI. Subsequently, non-respondents had been contacted by phone to conduct the interview by means of CATI. The timeliness of the data transmissions was also taken into account in the redesign, as the starting date of the field work changed from July to March.

The sampling frame is the Dutch Population register (Basisregistratie Personen - BRP). The sampling design can be classified as a stratified random sampling design. In the new sampling design for the first wave in 2016, a stratified sampling frame of persons aged 16 and over was

¹⁶<http://ec.europa.eu/eurostat/web/income-and-living-conditions/quality/eu-and-national-quality-reports>

constructed. Sample persons were divided into 21 strata. These strata were defined on the basis of household income, age and number of household members. For a detailed description we refer to the Quality Report. It should be noted that the said improvement of the sampling strategy may affect the comparability with results based on earlier data.

Cross-sectional weights were calculated in compliance with the Eurostat recommendations for these calculations. The final cross-sectional weights were obtained by a calibration of the joint cross-sectional and longitudinal sample. The following variables were included in the calibration scheme: sex, age, household size, region, tenure status, disposable income, low income category, at risk of poverty rate, ethnic background, degree of urbanisation.

As income data are based on register information most income variables do not suffer from item non-response. Only the inter-household transfers (paid and received) and the income from rental of a property or land are partly derived from the EU-SILC questionnaire. Notably, part of the labour market information, such as the number of years worked, is asked from the selected household member only. As a result, this information suffers from considerable item non-response.

3.2 Data adjustment

In order to guarantee consistency between demographic variables and income variables, which refer to the previous year (and on which EUROMOD simulation are based), all children born between the end of the income reference period and the date of interview (105 children) have been dropped from the sample. The final sample includes 29,454 individuals in 12,748 households.

Except for a very small number of corrections of negative income components, no further adjustments to variables have been made.

3.3 Imputations and assumptions

3.3.1 Time period

The EU-SILC information on demographic variables mainly refers to the time of data collection (March-October 2016). However, some information also indicates the status quo at the end of the income reference period (2015). If possible, the demographic, labour and socio-economic information in the EUROMOD dataset was based on the EU-SILC variables referring to the income reference period.

The EU-SILC UDB information on incomes refers to the calendar year of 2015, based on a 12 months receipt period. All monetary incomes in the EUROMOD database are converted into monthly terms. In most of the EUROMOD calculations it is implicitly assumed that income is received at the same rate throughout the year.

3.3.2 Gross incomes

Only gross incomes are available in the EU-SILC UDB database. Therefore, no net to gross imputations have been made.

3.3.3 Disaggregation of harmonized variables

The following imputations of key variables (not available in the EU-SILC UDB survey) are produced:

- Financial capital is imputed, assuming that investment income reflects a rate of return of 4%.
- Pension income is disaggregated into state pension and complementary pension income, by approximating entitlement to the state pension.
- Social assistance is disaggregated into general social assistance, other taxable social assistance and other non-taxable social assistance. Other taxable social assistance is mainly targeted to disabled persons, other non-taxable social assistance to children aged 12-25.
- Unemployment benefits are disaggregated into contributory unemployment benefits and non-contributory unemployment benefits.
- Employee (occupational) pension contributions are imputed using approximate average contribution rates; employer pension contributions are not taken into account.

3.3.4 Other imputations

As noted in section 3.1, part of the labour market information in the Dutch EU-SILC UDB databases suffers from considerable item non-response. One key variable used in the simulation of unemployment benefits is the labour market history: the number of years in paid employment (*liwwh*). In cases where this variable is missing, an imputation procedure is used, in which the number of years in paid employment is based on a regression with age, gender and household composition as explanatory variables.

3.4 Updating

To account for any time inconsistencies between the input dataset and the policy year, uprating 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. Uprating 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 uprating factor as well as the sources that have been used, see Annex 1.

As a rule, uprating factors are provided both for simulated and non-simulated income components present in the input dataset. Note however that in the case of simulated variables, the actual simulated amounts are used in the baseline rather than the updated original variables in the dataset. Uprating factors for simulated variables are provided so as to facilitate the use of the model in cases when the user wishes to turn off the simulation of a particular variable. The list of uprating factors as well as the sources used to derive them can be found in Annex 1.

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 data. The main discrepancies between EUROMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1 Components of disposable income

Table 4.1 compares the definition of disposable income in EUROMOD with the definition of the disposable income variable HY020 in EU-SILC. The EUROMOD definition does not include non-cash components such as the company car, and it does not include tax adjustments pertaining to tax years other than the reference year.

Table 4.1 Components of disposable income

	EUROMOD 2015-2018	EU-SILC 2016
	ils_dispy	HY020
Employee cash or near cash income	+	+
Employer's social insurance contribution		0
Company car		+
Contributions to individual private pension plans		0
Cash benefits or losses from self-employment	+	+
Pension from individual private plans		0
<i>Unemployment benefits</i>	+	+
<i>Old-age benefits</i>	+	+
<i>Survivor' benefits</i>	+	+
Sickness benefits	+	+
Disability benefits	+	+
Education-related allowances	+	+
Income from rental of a property or land	+	+
<i>Family/children related allowances</i>	+	+
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		-
<i>Regular inter-household cash transfer paid</i>	-	-
<i>Tax on income and social contributions</i>	-	-
<i>Repayments/receipts for tax adjustment</i>		+

Notes: Some variables in EUROMOD are aggregate variables. They consist of several components, some of which have been simulated in EUROMOD and some not.

4.1.2 Validation of incomes inputted into the simulation

a) Number of employed and unemployed

Table 4.2 compares the numbers of employed and unemployed as derived from EU-SILC and used in EUROMOD with external statistics. It should be noted that the comparability of these statistics is questionable as the EU-SILC statistics are based on the number of months in which the main activity consisted of full-time or part-time employment or self-employment (in the case of the employed) and unemployment (in the case of the unemployed). This is likely to cause ambiguity in the case of e.g. students with part-time jobs and partly disabled workers and unemployed. The external statistics count as unemployed persons without paid employment who have recently been looking for work and are directly available. In doing so, the number of unemployed may differ from the number of persons registered as unemployed¹⁷, and those entitled to an unemployment benefit.

All in all, the number of employed persons in EU-SILC approximates the external statistics fairly closely, whilst the number of unemployed appears to be considerably overestimated in 2015. Obviously, this is likely to be caused by the different definitions of unemployment. In earlier Country Reports, the external statistics were based on a broader definition of unemployment, making it look as if the EU-SILC statistics underestimated unemployment. A cause for concern is the fact that unemployment in the Netherlands has decreased considerably between 2015 and 2017, whilst it remains constant in the updated data used in the EUROMOD simulations. This is explained by the fact that the EUROMOD simulations are based on EU-SILC 2016 data. EUROMOD is a static microsimulation model which by nature does not impose changes in demographics and labour market conditions, but takes them from the underlying input dataset. Consequently the simulations presented here do not pick up changes in unemployment rate between 2015 and later years, but they reflect the scenario where no changes apply to people's demographic and employment status. Thus comparisons across years identify changes in policies rather than total changes including changes in the population or changes in the labour market.

b) Number of recipients of various types of market income

Recent external statistics on the number of recipients of various types of market income are difficult to obtain. Statistics Netherlands does provide numbers of employed persons and numbers of jobs at various points in time, but not numbers of recipients of employment income in one calendar year. However, from table 4.3 we may infer that the number of households receiving employment income in 2014 as published by Statistics Netherlands, coincides rather well with the EU-SILC statistics for 2015. The number of persons receiving self-employment income appears to be clearly underestimated in EU-SILC. This may suggest that the definition of self-employment income used by EU-SILC is somehow narrower than the definition used by Statistics Netherlands. The number of households reporting investment income in EUROMOD in 2015 is about 17% higher than the official figure for 2014 derived from Statistics Netherlands. Unfortunately comparable external statistics for 2015 and later years are not yet available¹⁸.

c) Amounts of various types of market income

Total employment income in 2015 as derived from EU-SILC is no more than one percentage point lower than external statistics, as may be inferred from Table 4.4 in Annex 2. Self-

¹⁷ Only persons who would be entitled to benefits such as unemployment benefit or social assistance need to register themselves as unemployed.

¹⁸ Statistics Netherlands (<https://opendata.cbs.nl/statline/#/CBS/nl/>) will probably publish new statistics (to be based on administrative data) in the second half of 2018.

employment income in EUROMOD falls below external statistics by about 26%. The degree of underestimation is clearly higher than the underestimation of the number of self-employed. This confirms the conclusion that the definitions in both sources may be different: it appears that EUROMOD counts relatively more persons with low self-employment incomes. Investment income in EUROMOD in 2015 underestimates the actual amounts published for 2014 by more than 50%. Although no exact equality could be expected since both statistics derive from subsamples of the total population from two different years, we have no clear indication about the cause of these large differences.

d) Number of recipients of various types of non-simulated benefits

Table 4.5 shows that the number of recipients of education benefits in EUROMOD exceeds the external statistics by about 15%. The number of recipients of ‘other social assistance benefits’ appears to be overestimated by about 7%. Because an imputation procedure had to be implemented to separate out these benefits from regular social assistance, this seems acceptable. Similarly, the number of recipient households of occupational pensions in 2014 is replicated quite nicely in EUROMOD 2015. The number of recipients of disability benefits in EUROMOD is just 1% below the external statistics.

e) Amounts of various types of non-simulated benefits

The total amount of education benefits in EUROMOD in 2015 is about 5% below the amount derived from the external statistics, as can be seen from Table 4.6 in Annex 2. The extent to which EUROMOD replicates the external statistics varies considerably between 2016 and 2017. This may at least partly be attributed to the fact that mainly for accounting reasons the amounts paid for public transport included in the education benefits show large differences from year to year, whilst these amounts are probably not included in the EU-SILC definition of education benefits.

The aggregate amount of ‘other social assistance benefits’ is underestimated by 12% in 2015 and slightly more in later years. The imputation procedure used to separate out these benefits from regular social assistance benefits results in a fairly arbitrary division between regular and other social assistance benefits. From Table 4.8 (to be discussed in the next section) we can infer that the resulting regular social assistance benefits as derived from EU-SILC are underestimated by somewhat larger percentages. The total amount of occupational pensions in 2015 in EUROMOD exceeds the external statistic for 2014 by about 10%. By contrast, disability benefits are underestimated by about 10%, despite the fact that the number of recipients is quite close to the external statistics.

4.1.3 Validation of outputted (simulated) incomes

a) Number of recipients

Table 4.7 shows that the number of recipients of family benefits is underestimated by about 3%. In 2015 and 2016, the number of recipients of the (means tested) child allowance is also underestimated by EUROMOD, but EUROMOD does not replicate the decrease in the number of recipients between 2015 and 2017, as revealed by the external statistics.

EUROMOD underestimates the number of recipients of care allowance by about 13% in 2015 and 2016, and by 4% in 2017. Notably, the external statistics on the number of recipients of care allowance are subject to revision because the final decisions of the tax authorities on awarding care allowance may differ from the initial eligibility decisions, on the basis of the final assessment of taxable income for the calendar year in question. This may also affect the number of recipients of housing benefit (rent allowance) for which reliable recent external statistics are

hard to find anyway. Because the procedure used to uprate the data pertaining to 2015 to later years does not take into account structural changes, the numbers of recipients of social assistance, unemployment benefits¹⁹ and state pensions remains fairly constant over the years. In contrast, the external statistics suggest a slight increase in the number of recipients of social assistance, a clear decrease in the number of recipients of unemployment benefits and an increase in the number of recipients of the state pension. With respect to the survivor benefits, the number of recipients in EUROMOD is underestimated by 10% in 2015, but does not show a decrease like the external statistics over time.

b) Amounts

From Table 4.8 in Annex 2 we infer that the total amount of family benefits and child allowances simulated by EUROMOD coincides quite closely with the amount derived from the original EU-SILC data. However, whilst the simulated amount of family benefits differs from the external statistics by about 3%, the child allowance as simulated in EUROMOD appears to be underestimated by about 24% in 2015 and 2016 and by about 18% in 2017. At least partly, this difference can be explained by the fact that the external statistics include a non-negligible amount that will be paid back to the tax authorities once the final assessment of taxable income has been completed.

The extent to which the total amount of care allowance appears to be underestimated in EUROMOD is larger than that of the number of recipients. This raises the suspicion that the number of recipients per household may be overestimated due to insufficient information to identify allowance partners. Some degree of underestimation is also, again, to be expected because the external statistics include payments which after the final assessment may have to be returned. The latter phenomenon is also likely to play a role with the rent allowance of which the amount is underestimated in EUROMOD by 5% in 2015, by 21% in 2016 and by 17% in 2017.

The overestimation of the number of recipients of social assistance benefits is accompanied by an underestimation of the amounts of about 20%. This suggests that benefit units entitled to the full social assistance benefit, i.e., with no other sources of income, are underrepresented in the data. The fact that developments after 2015 are not captured by the uprating factors applied is illustrated by comparing the simulated amounts of unemployment benefits with the external statistics: unemployment does not change in EUROMOD, and as a result, the simulated amounts of unemployment benefits cannot be expected to reflect the trends in the external statistics.

In 2015, the amount of state pensions is overestimated by EUROMOD by about 4%. Apart from the slight overestimation of the number of recipients, this may also be caused by the fact that EUROMOD cannot take into account that recipients may not be entitled to the full state pension, as a result of having lived abroad during their working life. The extent to which the amount of survival benefits is underestimated is clearly larger than the extent to which the number of recipients is underestimated, which confirms that the survivor benefits received by persons who were widowed before the most recent reforms are more generous than taken into account in EUROMOD.

Income tax payments are overestimated by 14% in 2015 and 2016 but underestimated by 4% in 2017, whilst peoples' insurance contributions are underestimated by 5% in 2015, 14% in 2016

¹⁹ In contrast to earlier Country Reports, the external statistics now reflect the total number of recipients of unemployment benefits in a calendar year, rather than the (much lower) number of recipients at a certain point in time.

and 7% in 2017. It should be noted that the external statistics on income tax payments reflect actual amounts paid in the calendar years²⁰.

Employer social insurance contributions are overestimated by about 6% in 2015, decreasing to 2% in 2017. This decrease may reflect the fact that the growth of employment income in EUROMOD is underestimated. Part of the initial overestimation of the social insurance contribution is caused by the fact that the actual unemployment insurance contribution for public sector employees is notably lower than the private sector rate that is used for all employees in EUROMOD. Health insurance contributions are overestimated by about 1% in 2015 and 2% in 2016, but underestimated by 3% in 2017. Notably, the quality of the external statistics for these amounts is subject to some doubt²¹.

4.2 Income distribution

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

4.2.1 Income inequality

Table 4.9 in Annex 2 presents a number of indicators of the income distribution and compares them to Eurostat figures on the basis of EU-SILC data on disposable income of the calendar year in question. Given that the data sources are the same, it is encouraging that the distributions of measured and simulated income in 2015 do not differ very much. As far as the income shares are concerned, the biggest difference is found in the share of the lowest decile, which in 2015 is overestimated by EUROMOD by about 13%. It is likely that this is mainly caused by the fact that EUROMOD assumes 100% take-up of benefits such as social assistance on the one hand, and 100% entitlement to (and take-up of) the state pension on the other. In 2015, EUROMOD underestimates both median and mean income by about 2%, whilst the Gini indicator is underestimated by about 6% and the S80/S20 indicator by about 9%.

4.2.2 Poverty rates

Comparing the poverty rates resulting from EUROMOD with the Eurostat figures (Table 4.10 in Annex 2) we find that in 2015, EUROMOD underestimates extreme poverty (drawing the poverty line at 40% of median equivalized income) by about 30%. When the poverty line is drawn at a higher percentage of median equivalized income, poverty is also underestimated, albeit to a lesser extent. Differentiated by age group we see that using the 60% threshold poverty is underestimated by 4% in the 0-15 age group, by 11% in the 16-24 and 25-49 age groups, by 25% in the 50-64 age group and by 66% among the elderly. Once again, this may at least partly be attributed to the fact that EUROMOD assumes 100% take-up of social assistance and 100% entitlement to the state pension.

²⁰ In addition, the external statistics include an amount for dividend taxation which residents can deduct from their income tax liability but which is partly borne by foreign residents and companies.

²¹ The external statistics include the sum of all payments of health insurance contributions made to private health insurance companies which appear to be based on fairly rough estimates.

4.3 Validation of minimum wage

In the Netherlands employees have been entitled to a minimum wage for several decades. However, the wage information as included in EU-SILC suggests that in some cases the wage received is below the minimum wage. Therefore, EUROMOD has an option to award the minimum wage to persons whose (hourly) earnings are below the minimum. Table 4.11 in Annex 2 compares a number of results of the baseline discussed so far with results including this minimum wage option. In contrast to previous country reports, it can be seen that statistics hardly differ when the minimum wage option is switched on. Apparently, there are fewer inconsistencies between earnings and hours worked than in previous years.

4.4 Summary of “health warnings”

- Care should be taken in interpreting results for small sub-groups.
- No adjustments are made for structural changes in the characteristics of the population between the data year (2015) and the simulation years.
- Non-takeup of benefits is not modelled. This has the effect of (a) inflating the simulated incomes of households who do not take up these benefits in reality and, possibly, reducing the number of people in very poor households, (b) inflating the cost of benefits and the cost of making them more generous, (c) diminishing the relative impact of benefits that do not have problems of non-takeup. In particular, means-tested benefits such as housing benefits and social assistance are likely to be affected by non-takeup, for example when the entitlements would be small.
- The quality of the rent variable used to simulate entitlement to housing benefit is subject to doubt.
- In a number of cases, benefit disaggregation is only possible using fairly arbitrary choices, in particular where social assistance is concerned.
- Child care allowance is not modelled.
- A number of potential income tax deductions is not taken into account. Potential deductions include specific health care costs, study costs and gifts to charities.
- Uprating factors for 2017 and 2018 are still provisional.
- No account has been taken of the increase of the state pension age starting in 2013.

5. REFERENCES

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

Statistics Netherlands (2013), “Final Quality Report EU-SILC 2010 The Netherlands”, Division of Social and Spatial Statistics, Heerlen, available at http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/quality/national_quality_reports

- *Sources for tax-benefit descriptions/rules*

General sources for tax-benefit descriptions/rules

In Dutch: Kluwer Fiscale encyclopedie De Vakstudie; Kluwer Encyclopedie Sociale Verzekeringen; Kluwer Encyclopedie Sociale Voorzieningen; www.belastingdienst.nl; www.st-ab.nl; www.svb.nl; www.uwv.nl

In English: www.svb.nl

ANNEX 1. UPRATING FACTORS

Table 1. Up-rating factors

Index	Income Source/index type	2015-2016	2015-2017	2015-2018
<i>default</i>	Annual average inflation	1.0011	1.0140	1.0299
<i>yem</i>	INCOME : Employment	1.0112	1.0224	1.0336
<i>yfb</i>	INCOME : Fringe Benefits			
<i>yyi</i>	INCOME : Investment	see yem		
<i>ypr</i>	INCOME : Property	see yem		
<i>ypt</i>	INCOME : Private Transfers	1.0130	1.0342	1.0497
<i>yse</i>	INCOME : Self Employment	see yem		
<i>bed</i>	BENEFIT/PENSION : Education	1.0098	1.0158	1.0191
<i>bfa</i>	BENEFIT/PENSION : Family	1.0314	1.0351	1.0490
<i>bho</i>	BENEFIT/PENSION : Housing	-		
<i>bsa</i>	BENEFIT/PENSION : Social Assistance	see bun		
<i>bun</i>	BENEFIT/PENSION : Unemployment	1.0152	1.0332	1.0507
<i>pdi</i>	BENEFIT/PENSION : Disability	1.0152	1.0332	1.0507
<i>phl</i>	BENEFIT/PENSION : Health			
<i>poa00</i>	BENEFIT/PENSION : State pension	1.0244	1.0373	1.0541
<i>psu</i>	BENEFIT/PENSION : Survivors	1.0121	1.0236	1.0344
<i>tpcpe</i>	TAX/CONTR : Occ. pension contr. employees	see yem		

Notes: source: inflation: Eurostat (AMECO); yem: statline.cbs.nl; ypt: www.alimentatiewijzer.nl, bed, bun, pdi: www.overheid.nl, bfa, poa00, psu: www.svb.nl.

ANNEX 2. VALIDATION TABLES.

Table 4.2 Number of employed and unemployed

	EUROMOD		External			Ratio		
	2015	2015	2016	2017	2018	2015	2016	2017
Number of employed	7418639	7213000	7355000	7494000	N/A	1.03	1.01	0.99
Number of unemployed	814795	614000	538000	438000	N/A	1.33	1.51	1.86

Note: In this and following tables 2018 official statistics from Statistic Netherlands are not yet available.

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

	EUROMOD		External			Ratio		
	2015	2015	2016	2017	2018	2015	2016	2017
<i>Employment income</i>								
- individuals	8284							
- households	5074	4998 ¹	N/A	N/A	N/A	1.02	N/A	N/A
<i>Self-employment income</i>								
- individuals	1487	1764	1788	N/A	N/A	0.84	0.83	N/A
<i>Investment income</i>								
- individuals	11456							
- households	7281	6237 ¹	N/A	N/A	N/A	1.17	N/A	N/A

¹2014 statistic. 2015 figures not yet available

Table 4.4 Market income in EUROMOD -Annual amounts (in millions)

	EUROMOD				External			Ratio		
	2015	2016	2017	2018	2015	2016	2017 & 2018	2015	2016	2017 & 2018
Average employment income										
- <i>individuals</i>	31054	31402	31750	32098						
- <i>households</i>	50703	51272	51840	52409	51945	N/A	N/A	0.98	N/A	N/A
Employment income	257260	260144	263028	265912	259619	267717	N/A	0.99	0.97	N/A
Self- employment income	35588	35986	36385	36784	47794	49712	N/A	0.74	0.72	N/A
Investment income	7034	7113	7192	7271	14759 ¹	N/A	N/A	0.48	N/A	N/A

¹2014 statistic

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

	EUROMOD		External				Ratio		
	2015	2015	2016	2017	2018	2015	2016	2017	
Benefits									
Education benefits	963	834	822	830	N/A	1.15	1.17	1.16	
Other social assistance	411	383	383	371	N/A	1.07	1.07	1.11	
Occupational pensions									
- individuals	3202								
- households	2683	2625 ¹	N/A	N/A	N/A	1.02	N/A	N/A	
Disability benefits	553	560	560	560	N/A	0.99	0.99	0.99	

¹2014 statistic

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

	EUROMOD				External				Ratio		
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017
Benefits											
Education benefits	2161	2182	2195	2202	2279	3273	1497	N/A	0.95	0.67	1.47
Other social assistance	3091	3137	3193	3247	3517	3673	3748	N/A	0.88	0.85	0.85
Occupational pensions	45151	45151	45151	45151	40880 ¹	N/A	N/A	N/A	1.10	N/A	N/A
Disability benefits	7854	7974	8115	8253	8650	8845	9087	N/A	0.91	0.90	0.89

¹2014 statistic

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

	EUROMOD				SILC	Ratio	External				Ratio		
	2015	2016	2017	2018	2015	2015	2015	2016	2017	2018	2015	2016	2017
Benefits													
Family benefits	1867	1867	1866	1866	1914	0.98	1917	1913	1907	N/A	0.97	0.98	0.98
Child allowance	692	694	749	765	704	0.98	828	757	722	N/A	0.84	0.92	1.04
Care allowance	4037	4094	4196	4285	0	N/A	4638	4707	4383	N/A	0.87	0.87	0.96
Rent allowance	1387	1224	1234	1241	1597	0.87	1370	1535	N/A	N/A	1.01	0.80	N/A
General social assistance													
- individuals	544	530	523	521									
- households	486	472	465	462	347	1.40	425	438	444	N/A	1.14	1.08	1.05
Unemployment benefit	798	798	798	798	802	1.00	1025	937	805	N/A	0.78	0.85	0.99
State pension	2955	2955	2955	2955	2910	1.02	2876	2955	3037	N/A	1.03	1.00	0.97
Survival benefit	29	29	29	29	44	0.66	32	29	26	N/A	0.90	1.00	1.11
Taxes and Social Insurance contributions													
Income tax	11882	11560	11460	11361	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social insurance contributions: peoples' insurances	11865	11504	11400	11306	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Employer social insurance contributions	8082	8082	8082	8082	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Health insurance contributions	13621	13621	13621	13621	0	N/A	13238	13321	13448	N/A	1.03	1.02	1.01

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

	EUROMOD				SILC	Ratio	External				Ratio		
	2015	2016	2017	2018	2015	2015	2015	2016	2017	2018	2015	2016	2017
Benefits													
Family benefits	3154	3253	3264	3308	3120	1.01	3238	3323	3320	N/A	0.97	0.98	0.98
Child allowance	1588	1610	1734	1785	1545	1.03	2063	2143	2119	N/A	0.77	0.75	0.82
Care allowance	3597	3846	4229	4517	0	N/A	4741	4931	4955	N/A	0.76	0.78	0.85
Rent allowance	3439	3054	3254	3312	2977	1.16	3630	3860	3935	N/A	0.95	0.79	0.83
General social assistance	4262	4172	4212	4258	3717	1.15	5277	5304	5497	N/A	0.81	0.79	0.77
Unemployment benefit	6664	6766	6885	7004	6812	0.98	6403	5707	4977	N/A	1.04	1.19	1.38
State pension	34342	34871	35026	35379	31638	1.09	32947	33984	34419	N/A	1.04	1.03	1.02
Survival benefit	260	263	265	272	472	0.55	452	424	399	N/A	0.57	0.62	0.66
Taxes and Social Insurance contributions													
Income tax	61458	59221	61417	61860	0	N/A	53942	52100	63700	N/A	1.14	1.14	0.96
Social insurance contributions: peoples' insurances	39034	38692	37757	38048	0	N/A	41235	44900	40500	N/A	0.95	0.86	0.93
Employer social insurance contributions	21834	23478	23920	24771	0	N/A	20616	22888	23540	N/A	1.06	1.03	1.02
Health insurance contributions	37228	39063	38576	40723	0	N/A	36800	38300	39900	N/A	1.01	1.02	0.97

Table 4.9-Distribution of equivalised disposable income

	EUROMOD				External				Ratio
	2015	2016	2017	2018	2015	2016	2017	2018	2015
D1	4.1	4.1	4.1	4.1	3.6	N/A	N/A	N/A	1.13
D2	5.9	5.8	5.9	5.9	5.6	N/A	N/A	N/A	1.05
D3	6.8	6.8	6.8	6.8	6.6	N/A	N/A	N/A	1.03
D4	7.6	7.6	7.7	7.7	7.5	N/A	N/A	N/A	1.02
D5	8.5	8.5	8.5	8.5	8.5	N/A	N/A	N/A	1.00
D6	9.4	9.5	9.5	9.5	9.4	N/A	N/A	N/A	1.00
D7	10.5	10.6	10.6	10.5	10.6	N/A	N/A	N/A	0.99
D8	11.8	11.9	11.9	11.9	12.0	N/A	N/A	N/A	0.99
D9	13.8	13.9	13.8	13.8	14.1	N/A	N/A	N/A	0.98
D10	21.5	21.4	21.3	21.3	22.1	N/A	N/A	N/A	0.97
Median	22225	22708	23008	23167	22733	N/A	N/A	N/A	0.98
Mean	24897	25309	25629	25836	25366	N/A	N/A	N/A	0.98
Gini	25.4	25.4	25.2	25.2	26.9	N/A	N/A	N/A	0.94
S80/S20	3.6	3.6	3.5	3.5	3.9	N/A	N/A	N/A	0.91

Table 4.10 Poverty rates by gender and age

	EUROMOD				External				Ratio
	2015	2016	2017	2018	2015	2016	2017	2018	2015
40% median HDI									
Total	2.4	2.5	2.4	2.4	3.4	N/A	N/A	N/A	0.70
Males	2.5	2.6	2.5	2.5	3.5	N/A	N/A	N/A	0.72
Females	2.3	2.4	2.2	2.2	3.4	N/A	N/A	N/A	0.66
50% median HDI									
Total	5.1	5.3	5.2	5.2	6.6	N/A	N/A	N/A	0.77
Males	5.1	5.3	5.2	5.3	6.7	N/A	N/A	N/A	0.76
Females	5.1	5.3	5.2	5.2	6.5	N/A	N/A	N/A	0.78
60% median HDI									
Total	10.3	11.0	10.6	10.5	12.7	N/A	N/A	N/A	0.81
Males	10.3	11.0	10.6	10.6	12.8	N/A	N/A	N/A	0.81
Females	10.3	11.0	10.5	10.5	12.7	N/A	N/A	N/A	0.81
70% median HDI									
Total	18.8	20.0	19.6	19.4	21.2	N/A	N/A	N/A	0.89
Males	18.6	19.3	19.0	18.9	20.6	N/A	N/A	N/A	0.90
Females	19.1	20.7	20.2	19.9	21.8	N/A	N/A	N/A	0.88
60% median HDI									
0-15 years	13.9	14.4	13.9	13.9	14.5	N/A	N/A	N/A	0.96
16-24 years	20.6	21.4	20.9	20.8	23.1	N/A	N/A	N/A	0.89
25-49 years	9.9	10.3	9.8	9.8	11.1	N/A	N/A	N/A	0.89
50-64 years	8.6	9.3	9.1	9.1	11.4	N/A	N/A	N/A	0.75
65+ years	3.0	4.6	4.0	3.9	9.0	N/A	N/A	N/A	0.34

Table 4.11 Minimum wage validation

	Baseline				Min Wage Incl.				Ratio			
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Equivalised disposable income	289322	293847	297615	300029	289326	293851	297620	300034	1.00	1.00	1.00	1.00
Employment income	257260	260144	263028	265912	257265	260149	263034	265918	1.00	1.00	1.00	1.00
Total income tax	61458	59221	61417	61860	61459	59221	61417	61860	1.00	1.00	1.00	1.00
Social insurance contributions: peoples' insurances	39034	38692	37757	38048	39034	38692	37757	38048	1.00	1.00	1.00	1.00
General social assistance	4262	4172	4212	4258	4262	4172	4212	4258	1.00	1.00	1.00	1.00
Gini coefficient	25.4	25.4	25.2	25.2	25.4	25.4	25.2	25.2	1.00	1.00	1.00	1.00
Poverty rate (60% median HDI)	10.3	11.0	10.6	10.5	10.3	11.0	10.6	10.5	1.00	1.00	1.00	1.00

ANNEX 3. POLICY EFFECTS IN 2017-18

Table 1 and Figure 1 show the effect of 2018 policies on mean equivalised household disposable income by income component and income decile group. This effect is estimated as the difference between simulated household net income under the 2018 tax-benefit policies (deflating monetary parameters by Eurostat's Harmonized Index of Consumer Prices, HICP) and net incomes simulated under 2017 policies, as a percentage of mean equivalised household disposable income in 2017.

The total effect of (deflated) 2018 policies is a decrease in disposable income of 0.37%. This is mainly driven by higher health SIC (-0.32%), higher direct taxes (-0.09%) and lower public pensions (-0.06%). Although the policy effect across the income distribution is negative across all decile groups, the decrease varies in a range between 0.14% and 0.53%, with the highest decile seeing the lowest loss. For most decile groups, the decrease in disposable income is driven by an increase of the flat rate part of the other (health) SICs together with a slight decrease in the real value of the public pension and a small rise in direct income tax which is only partly compensated by higher means tested benefits and/or lower employee SICs. In the lowest decile, the increase in the other (health) SICs is accompanied by a slight increase in employee SICs and income tax, and by a higher (means-tested) health care allowance, resulting in an average loss of 0.45% of their 2017 net income.

Table 1: Policy effects in 2017-2018, using the CPI-indexation, %

Decile group	Original income	Public pensions	Means-tested benefits	Non means-tested benefits	Employee SIC	Self-empl. SIC	Other SIC	Direct taxes	Disposable income
<i>1</i>	0.0	0.0	0.35	0.0	-0.16	0.0	-0.58	-0.06	-0.45
<i>2</i>	0.0	-0.11	0.15	0.0	-0.06	0.0	-0.47	-0.04	-0.53
<i>3</i>	0.0	-0.15	0.11	0.0	0.01	0.0	-0.46	0.01	-0.48
<i>4</i>	0.0	-0.10	0.11	0.0	0.02	0.0	-0.40	-0.03	-0.40
<i>5</i>	0.0	-0.11	0.01	0.0	0.01	0.0	-0.37	-0.03	-0.50
<i>6</i>	0.0	-0.09	0.02	0.0	0.05	0.0	-0.33	-0.11	-0.46
<i>7</i>	0.0	-0.08	0.02	0.0	0.08	0.0	-0.31	-0.13	-0.44
<i>8</i>	0.0	-0.06	0.02	0.0	0.08	0.0	-0.28	-0.15	-0.40
<i>9</i>	0.0	-0.02	0.01	0.0	0.10	0.0	-0.26	-0.17	-0.33
<i>10</i>	0.0	-0.01	0.0	0.0	0.11	0.0	-0.18	-0.06	-0.14
<i>Total</i>	0.0	-0.06	0.05	0.0	0.05	0.0	-0.32	-0.09	-0.37

Figure 1: Policy effects in 2017-2018, using the CPI-indexation, %