Calculating OECD indicators on benefit generosity and financial work incentives using the OECD Tax-Benefit model (TaxBEN)

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Overview of the presentation

TaxBEN in nutshells

- What is it?
- Policy scope?
- How does it work?

Working with TaxBEN

- Web interface
- Online platform

Calculating policy indicators

- Net replacement rates in unemployment
- Adequacy of guaranteed minimum income benefits
- Effective tax rates
- Net childcare costs

Roadmap

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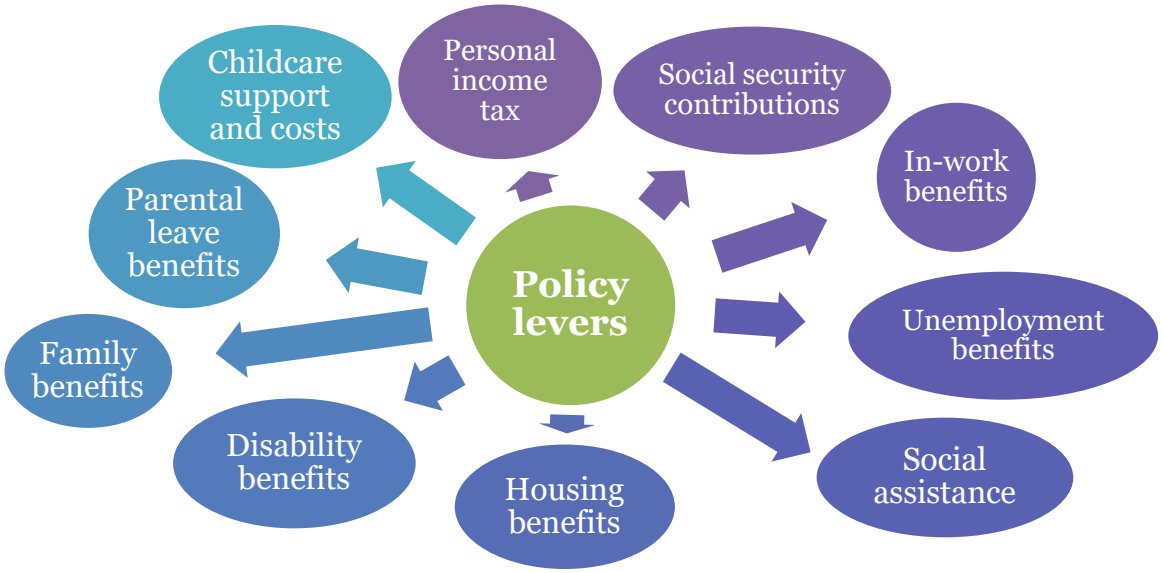
The OECD tax-benefit model (TaxBEN)
What is it?

- Essentially a **calculator** of tax burdens and benefit entitlements for working-age families.
- Incorporates detailed **tax and benefit rules** for all EU countries
- Puts all these complex rules into a **unified methodological framework**

  - ✓ Unique tool for **cross-country comparisons** and policy evaluations
  - ✓ **'Official' results**: ministries provide information, validate and 'sign off'
  - ✓ Long history of use by IOs; **acceptance in policy community**
  - ✓ **Long time series**: back to at least 2001 for most countries
  - ✓ **Comparability**, **consistency** across countries and over time
  - ✓ **Versatile and flexible**; no need for micro data
  - ✓ **Publicly available**: Models, indicators, policy descriptions
  - ✓ **Friendly support** ☺

TaxBEN: Scope

- **Broad set of social and fiscal policy levers**

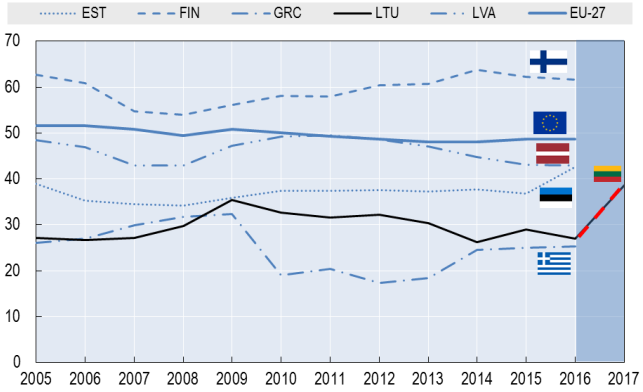


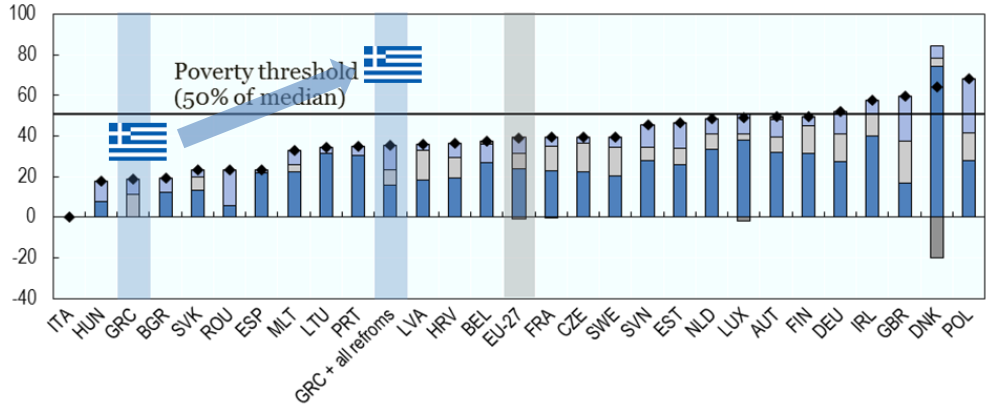
→ *Interactions between policy levers*

- **Note: some policies are not simulated**
  - ⚠ **Taxes on wealth and property**
  - ⚠ **Indirect taxes**
  - ⚠ **Early-retirement / old-age benefits**
  - ⚠ **Sickness benefits**
  - ⚠ **In-kind transfers** (e.g. free school meals or subsidised transport)
- **Others are simulated only for selected countries and years**
  - **Net childcare costs (2004, 2008, 2012, 2015, 2018, 2019)**
  - **Disability benefits (2010, 2016)**
  - **Parental leave benefits (2010, 2014)**

TaxBEN: Purpose

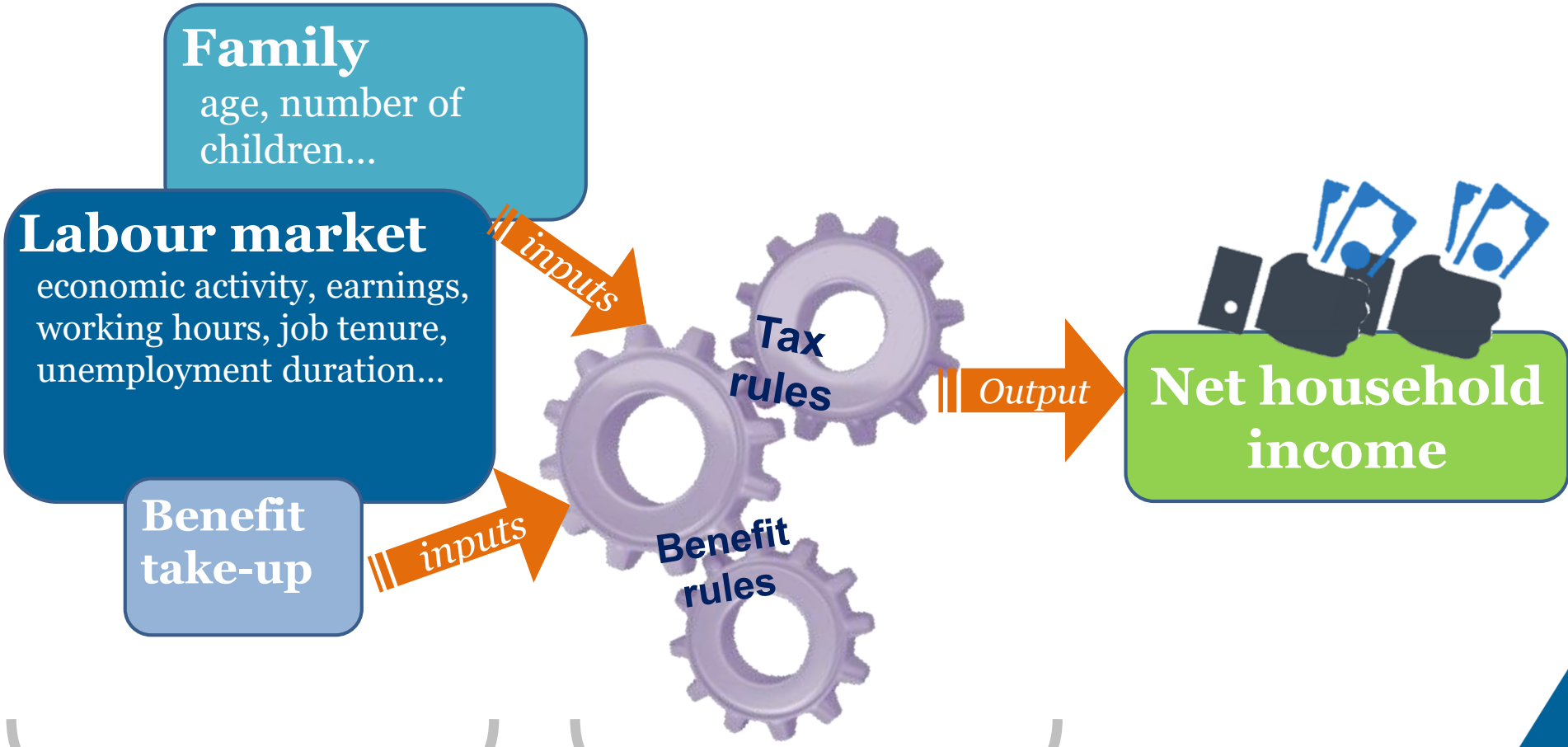
- ***Focus on policy mechanisms***
  - Facilitate understanding of tax-benefit rules and how they interact with one another
- ***Main use: policy indicators***
  (as opposed to outcome indicators)
  - Ideal for **policy design / benchmarking**
  - Facilitate policy **evaluation** & **monitoring**
  - Valuable for statistical analysis





How does it work?

TaxBEN calculates taxes and benefits for *hypothetical* households *given the characteristics specified by the user*



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TaxBEN in nutshells	• What is it? • Policy scope? • How does it work?
Working with TaxBEN	• Web interface • Online platform
Calculating policy indicators	• Net replacement rates in unemployment • Adequacy of guaranteed minimum income benefits • Effective tax rates • Net childcare costs
Support and future developments	• Support materials • Future developments

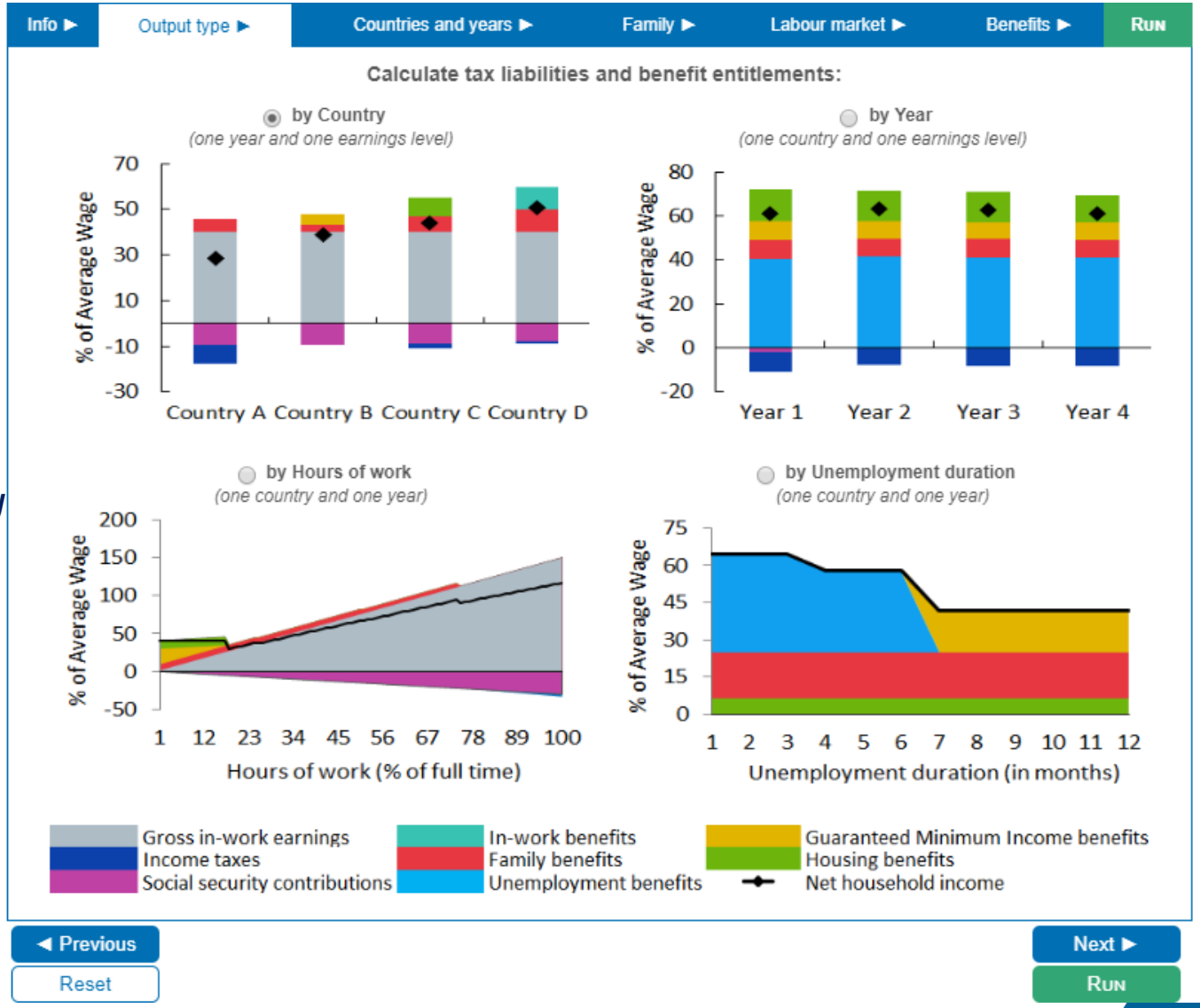
TaxBEN → Access

1. TaxBEN web calculator
   - **Public access** from the project webpage.
   - **Intuitive** and **user-friendly** → designed to ease model operations for non-expert users.
   - Produces **selected output types** in just few steps
   - Possibility to **customize** outputs → large choice of family and individual circumstances ('model options')
   - **Real time** calculations from the OECD servers → results are synchronized and up-to-date for all users.
   - **Safe computing environment**: alerts in case of inconsistent queries + 'interactive options' based on users inputs
2. Online platform
   - **Online access** using a username and a password (users have to apply for it)
   - Model operations based on an intuitive **single-line syntax command** → One single-line command can produce a **large amount of output**.
   - **Flexibility**: *All* model options are available.
   - **Real time** calculations from the OECD servers
   - **Safe computing environment**: alerts in case of inconsistent data queries and possibility to get real time support from the OECD TaxBEN team.

TaxBEN web calculator

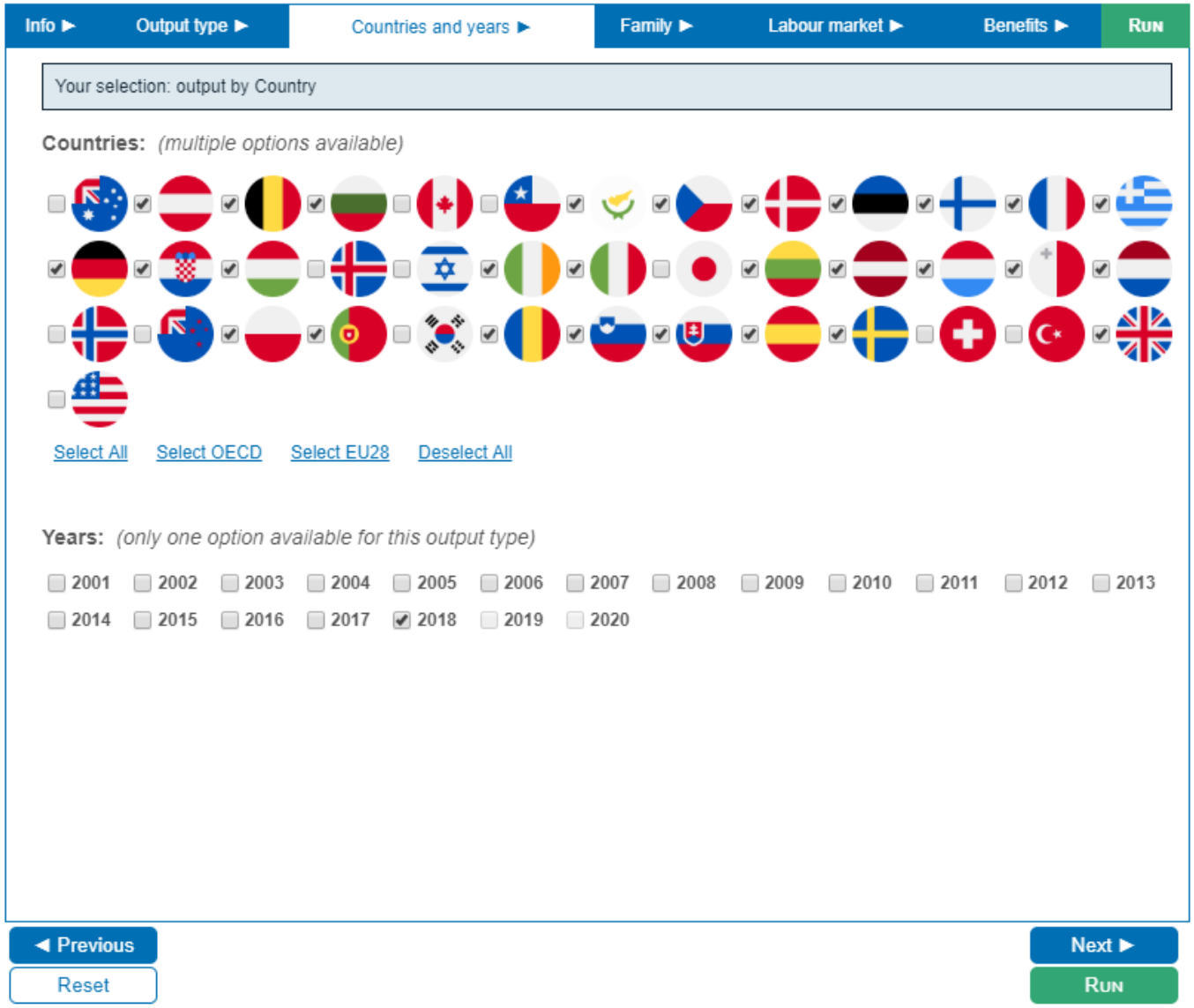
Users access the interface from the [project webpage](#).

…The first step is to select the output of interest → currently 4 options



TaxBEN web calculator

Select the countries and years …

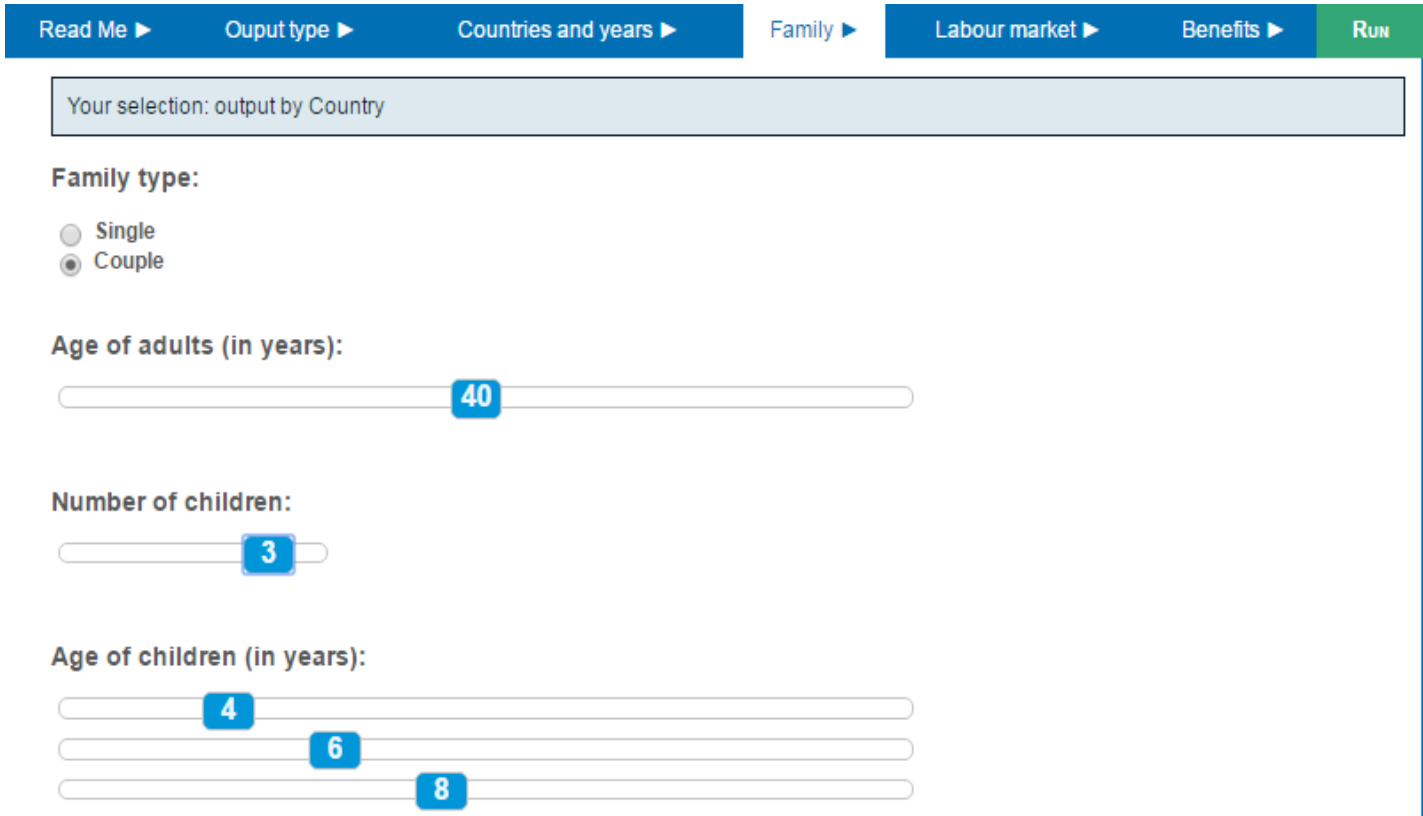


TaxBEN web calculator

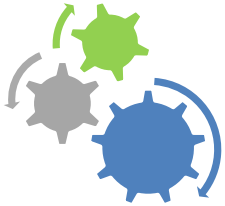
Customise the data query

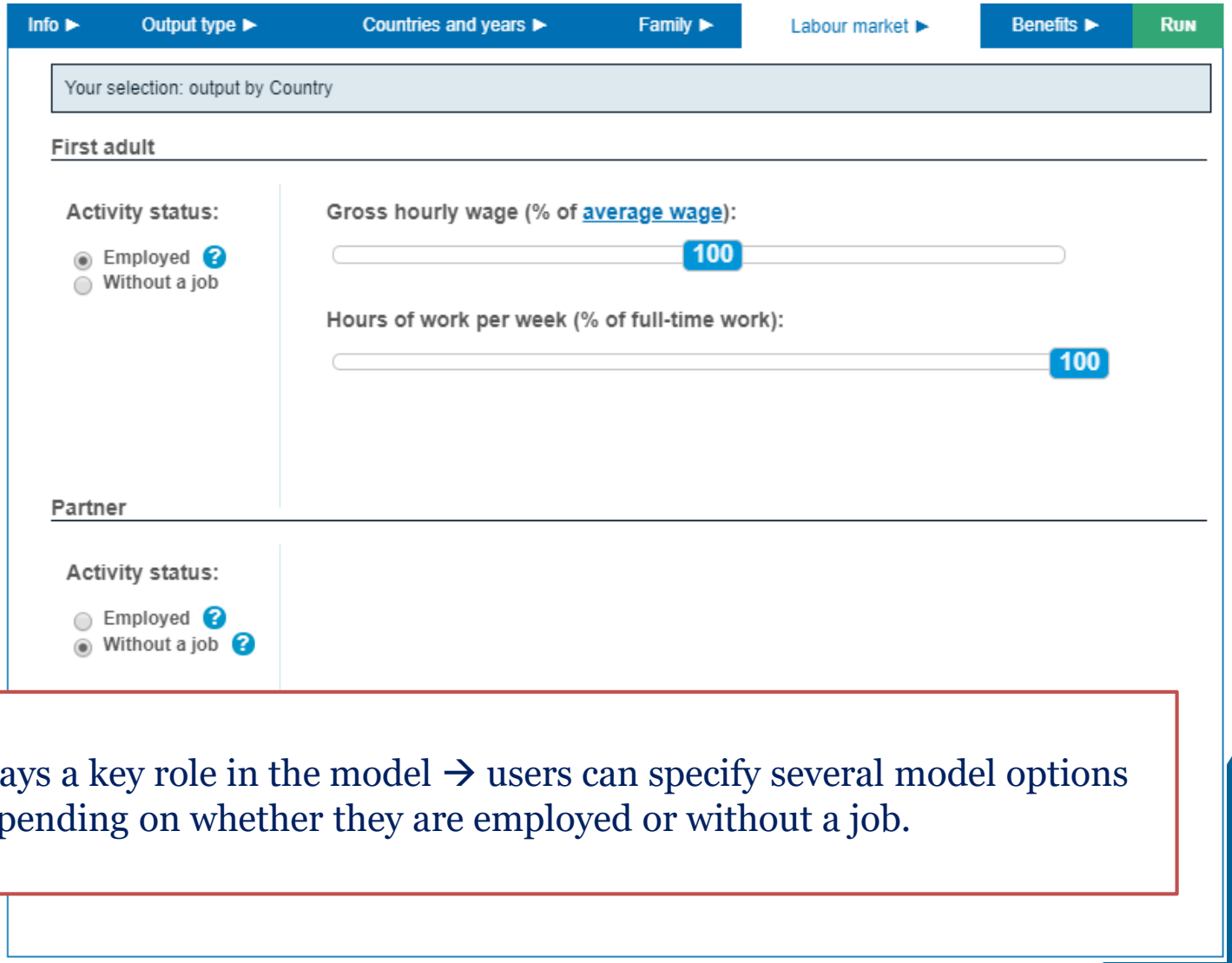
→ Options become visible depending on the user's choices

→ This keeps the interface simple and "clean", minimizing also the risk of inconsistent queries.



TaxBEN web calculator

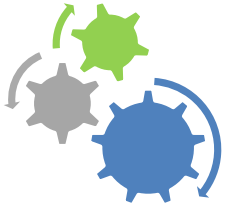


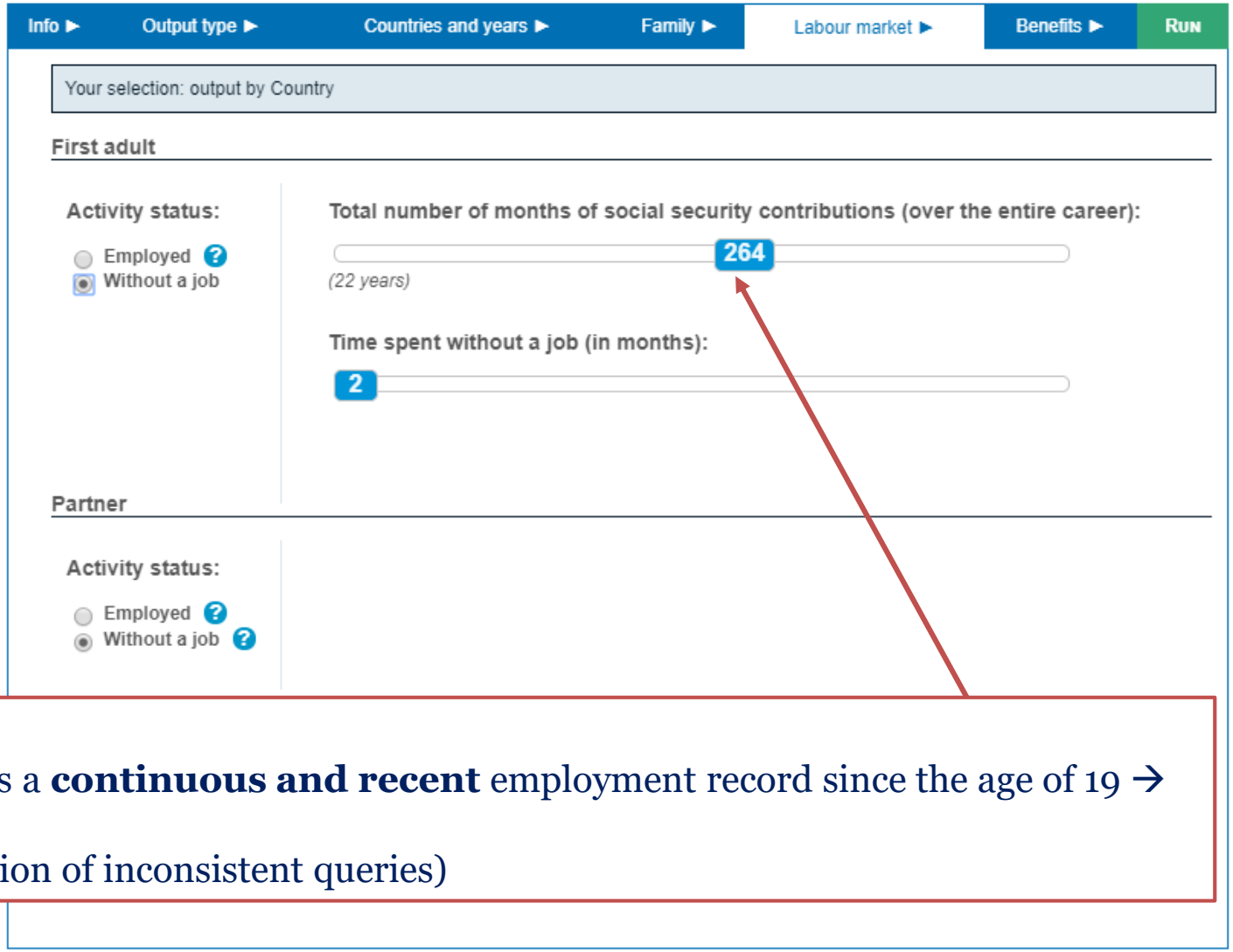


Technical notes:

- The 'first adult' plays a key role in the model → users can specify several model options for this person depending on whether they are employed or without a job.

TaxBEN web calculator

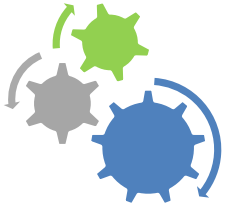


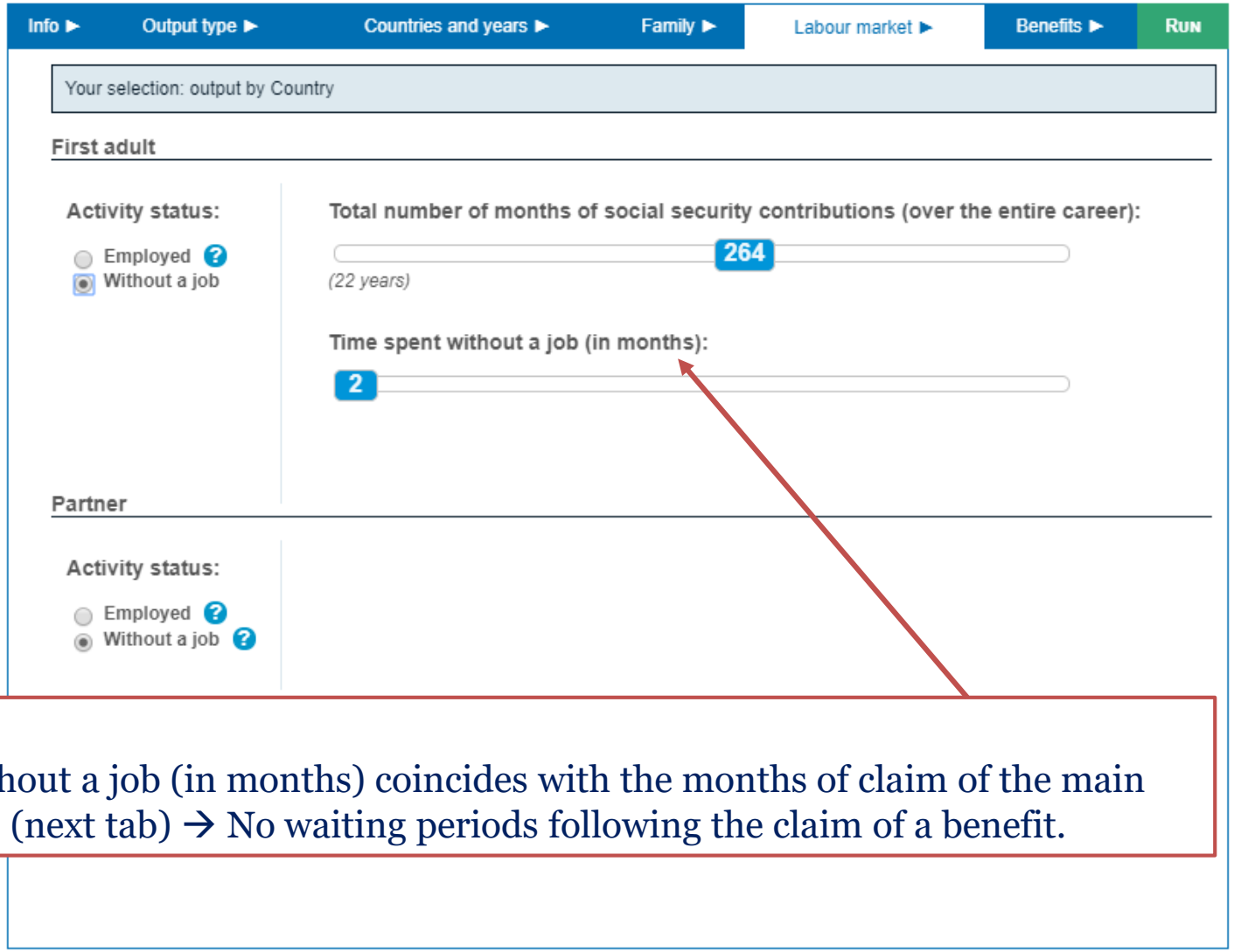


Technical notes:

- The model assumes a **continuous and recent** employment record since the age of 19 → No career breaks!
- (Automatic correction of inconsistent queries)

TaxBEN web calculator

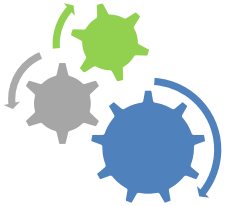


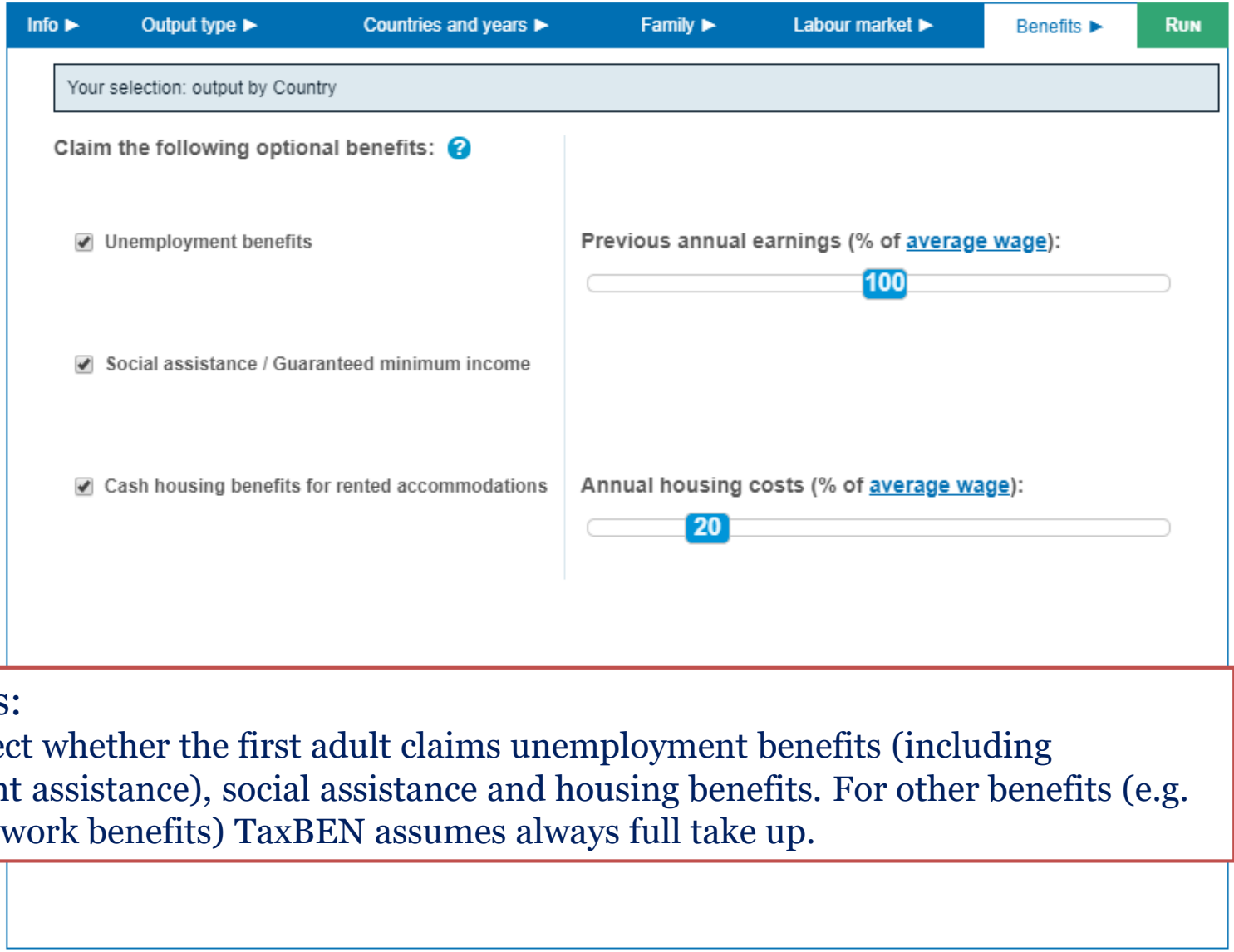


Technical notes:

- The time spent without a job (in months) coincides with the months of claim of the main out of work benefit (next tab) → No waiting periods following the claim of a benefit.

TaxBEN web calculator

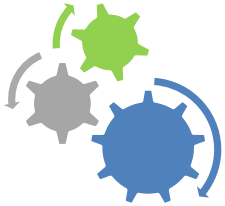


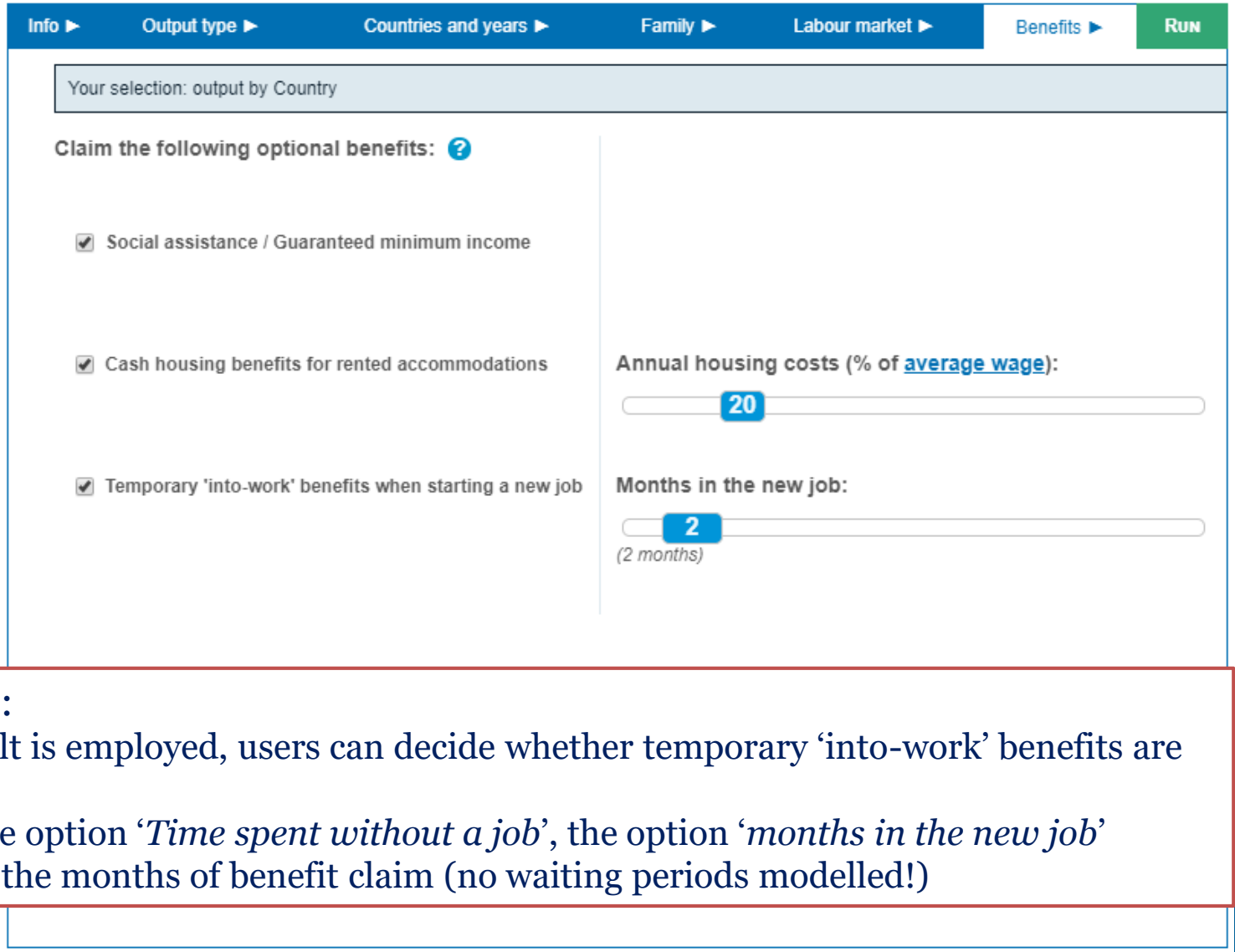


Technical notes:

- Users can select whether the first adult claims unemployment benefits (including unemployment assistance), social assistance and housing benefits. For other benefits (e.g. family and in work benefits) TaxBEN assumes always full take up.

TaxBEN web calculator

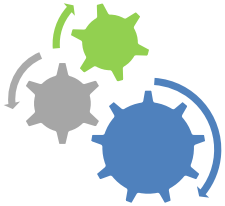




Technical notes:

- If the first adult is employed, users can decide whether temporary 'into-work' benefits are available.
- Similarly to the option '*Time spent without a job*', the option '*months in the new job*' identifies also the months of benefit claim (no waiting periods modelled!)

TaxBEN web calculator



Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Your selection:

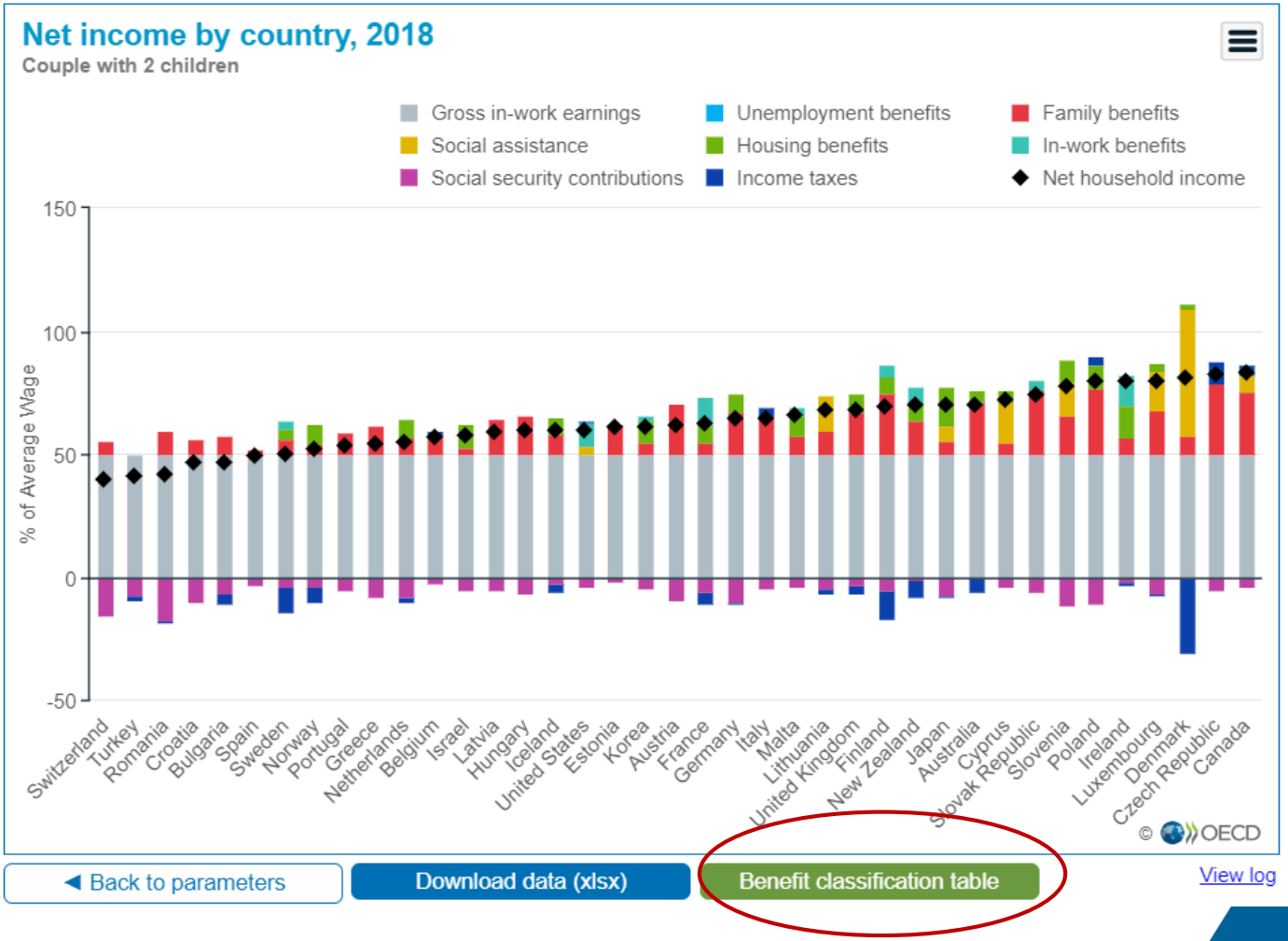
Output type	by Country
Country list	40 countries
Year	2018
Family type	Couple
Age of adults	40 years old
Number of children	2
Age of children	2, 6 years old
Activity status (first adult)	Employed
Gross hourly wage (first adult)	50% of average wage
Hours of work per week (first adult)	100% of full-time
Total number of months of social security contributions	n/a
Time spent without a job (first adult)	n/a
Activity status (partner)	Without a job
Gross hourly wage (partner)	n/a
Hours of work per week (partner)	n/a
Claim unemployment benefits	n/a
Annual previous earnings	n/a
Claim social assistance / GMI benefits	Yes
Claim cash housing benefits	Yes
Annual housing costs	20% of average wage
Claim temporary into-work benefits when starting a new job (first adult)	No
Months in the new job (first adult)	n/a

RESET RUN

TaxBEN web calculator

...Get the results: net household income by income components

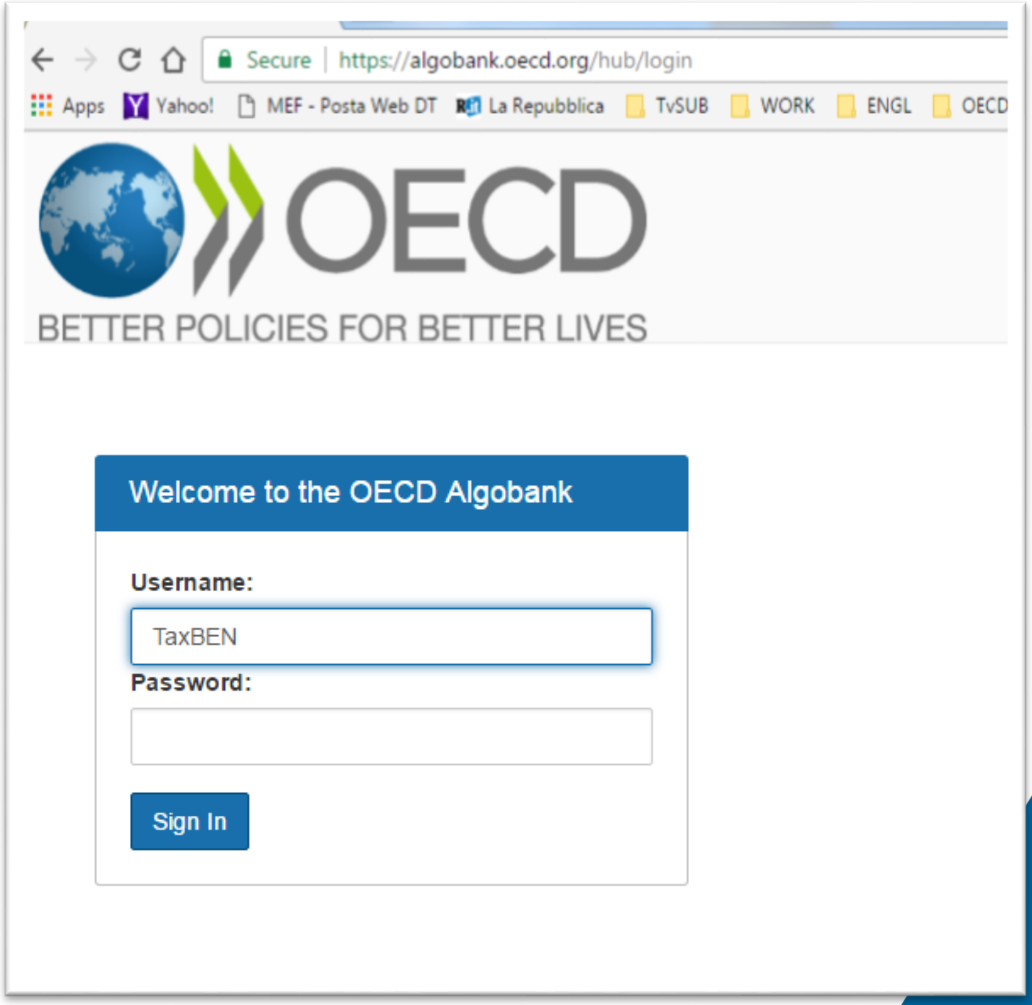
- The chart is interactive. Users can download the chart and the underlying data (in xlsx)



Benefits are grouped *by type*. The benefit classification table allows to see which national benefits are part of each macro category.

TaxBEN: Access via the online platform

- Users log-in to the online platform with a username and a password.
- Please send us an email if you want to get access to the online platform.



TaxBEN: using the online platform

- Users generate output using an simple *single-line syntax command* that allows specifying *multiple data queries* in an intuitive manner .

Example 1: calculate the net household income in 2016, 2017 and 2018 for a 30 years old person without children as well as one child, at selected earnings levels (from 1% to 100% of the Average Wage, with steps of 1%), for all EU countries → you type:

```
taxben, country(EU28) year(2016/2018) hhtype(single)
nchild(0 1) ageadult(30) wage(AW) by(earnings)
byperc(0.01(0.01)1)
```

TaxBEN: using the online platform

Example 2: calculate the net household income for all years between 2005 and 2018, for all EU countries, for a single-adult family *and* a couple family, with 1 to 4 children, at selected unemployment durations of the first adult (from 1 to 60 months), for *three* previous earnings levels, and *three* (current) earnings levels of the spouse → you type:

```
taxben, country(EU28) year(2005/2018) hhtype(single couple)
nchildren(1 2 3 4) activity(unempl) prWage_pr(AW MIN P50)
wageSP(50AW 67AW AW) by(time) bylevel(1/60)
```

- Note: the query can be further customized by specifying other options. There are more than 20 options for, e.g., changing the default values for the age of children, the housing costs, years of social security contributions, hours of work, etc.
- Users can combine the output to calculate **highly-customized policy indicators**. This can be done within the platform or downloading the data in a local drive.

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- Net replacement rates in unemployment
- Adequacy of guaranteed minimum income benefits
- Effective tax rates

Policy Indicators: purpose

- Main output from the model
- Summarise "policy design" (rather than population outcomes)
- Used for:
  - monitoring
  - benchmarking
  - exploring and evaluating policies
  - statistical analysis (e.g. between benefit generosity and employment)

Policy Indicators: types

- **Benefit Generosity**
  - Net Replacement Rate (NRR) in unemployment
  - Adequacy of minimum income benefits = Income Adequacy (IA)
- **Work Incentives**
  - Effective tax rate on *entering* employment
    = Participation Tax Rate (PTR)
  - Effective tax rate on *increasing* working hours
    = Marginal Effective Tax Rate (METR)
- **Net Childcare Cost** (NCC) for parents using centre-based childcare

Policy indicators are available from the OECD tax and benefit data portal:
http://www.oecd.org/social/benefits-and-wages/data

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Net Replacement Rate in unemployment (NRR)

1. Definition: formula and intuition
2. Example from actual policy analysis
3. How to compute it using the TaxBEN web calculator?

NRR: (1) Definition

Net Replacement Rate in unemployment shows the proportion of the net household income before the job loss that is maintained at a particular month of the unemployment spell.

$$NRR_t = \frac{y_{out\ of\ work,t}}{y_{in\ work}}$$

$y_{in\ work}$ - net household income before the job loss

$y_{out\ of\ work,t}$ - net household income after t months of unemployment.

NRR: Assumptions!

- √ NRR compares **total family income** across two different situations of the first adult: out-of-work & in-work
- √ Other things remain **unchanged:** e.g. employment status and working hours of the partner, housing expenses, etc.
- √ The first adult is "eligible" to the **unemployment benefit** (UB)
  - √ Behavioral eligibility conditions are satisfied
  - √ Standard indicators assume **continuous and long contribution record** (i.e. full work career from 19 to 40 years old)
  - √ Possible to choose other contribution record (in months), but it is also recent and continuous, i.e. **no career breaks**!
- √ Partner if unemployed is not eligible to UB (but can receive social assistance and housing benefits)
- √ **Waiting period** of unemployment benefits is ignored

NRR: (2) Example

Reform of unemployment benefit in Lithuania in 2017

Main focus: **Generosity of unemployment benefits** (i.e. NRR)

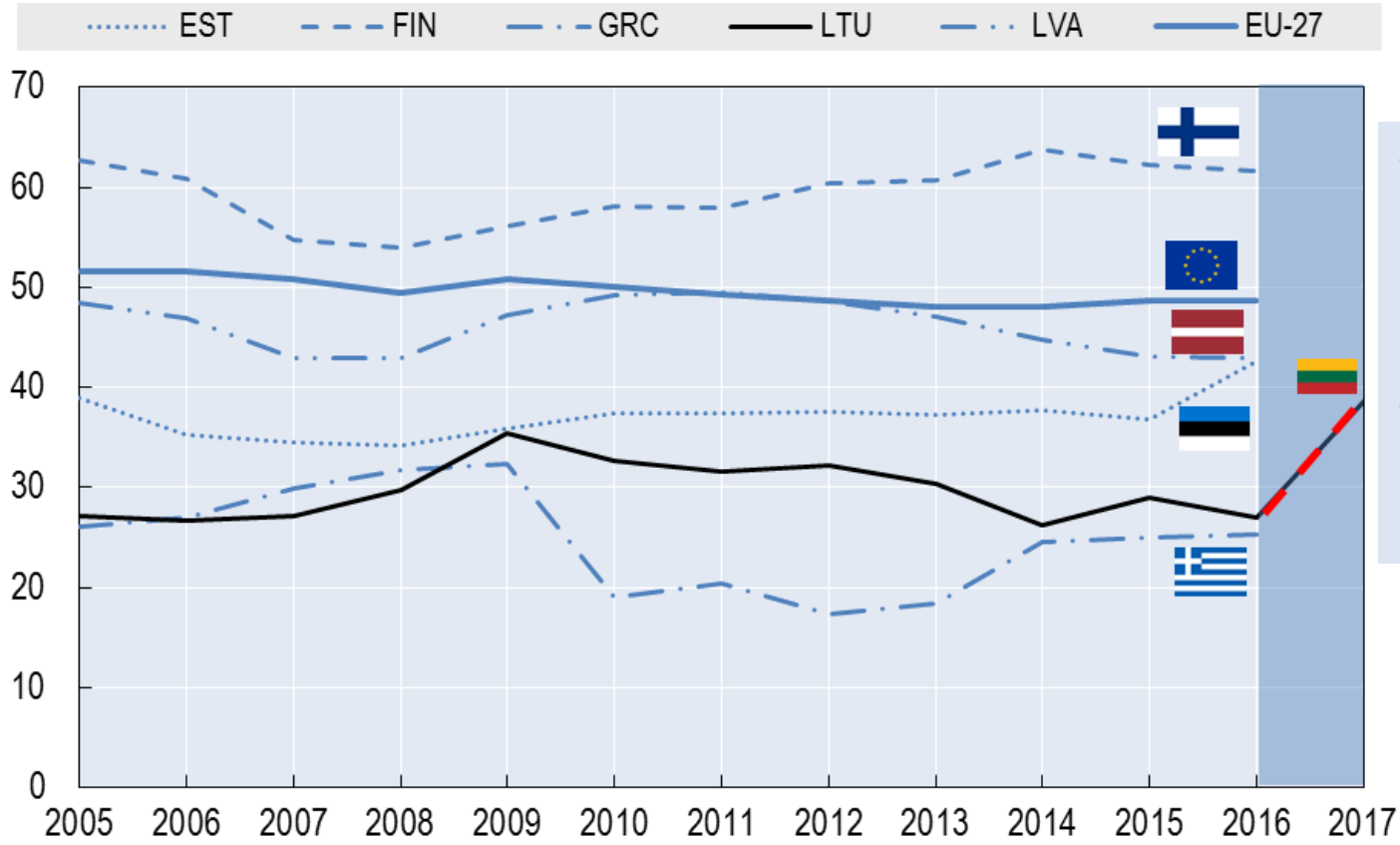
Type of request: **policy benchmarking & monitoring** (i.e. over time)

REFORM:

- **Contribution record:** reduced from 18 to 12 months
- **Minimum amount:** increased by 12%
- **Maximum amount:** increased by 85%
- **Variable part of the benefit:** 30-50% of the previous earnings (before: 20-40%)
- **Duration:** 9 months regardless of contribution history (before: 6-9 months)

Reform of unemployment benefits in Lithuania
Effects on net replacements rates

Average net replacement rate, 2-year unemployment spell
Single person without children. Previous earnings: P50



- Reform makes benefits more generous than ever before
- But NRRs are still below the EU average

Computing Net Replacement Rates in unemployment
Steps

1. Calculate family income **out of work** (1st adult is unemployed)
2. Calculate family income **in work** (1st adult is employed)
3. Compute NRR using the following **formula,** i.e. (1)/(2)

$$NRR_t = \frac{y_{out\ of\ work,t}}{y_{in\ work}}$$

$y_{in\ work}$ - net household income before the job loss

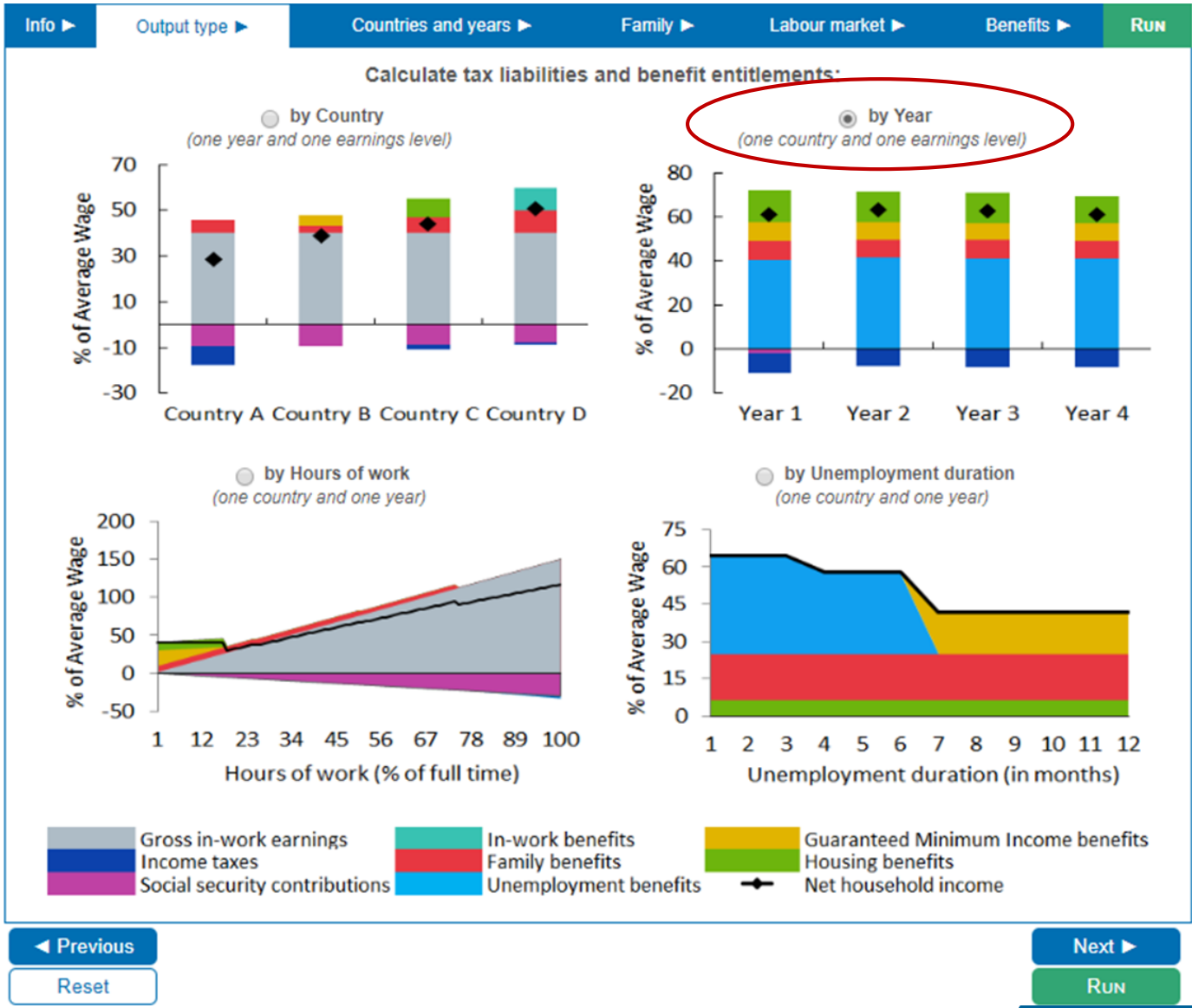
$y_{out\ of\ work,t}$ - net household income after t months of unemployment.

Computing NRRs for several policy years and one country
Step 1: calculate family net incomes for the out-of-work scenario

Note there are other alternatives depending on the aim of the analysis:

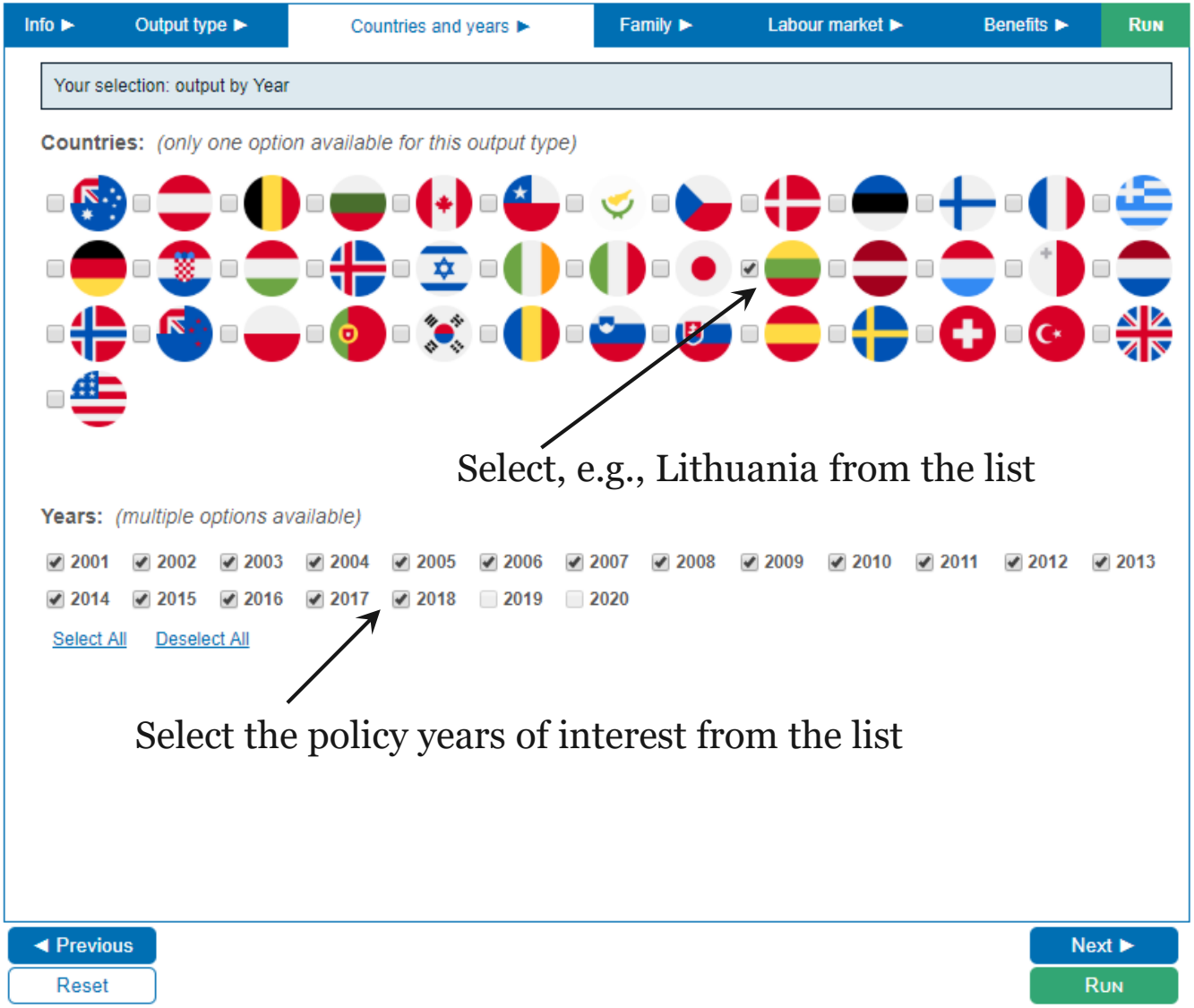
1. NRRs for one country and one policy year over the unemployment spell: select output 4 'by unemployment duration'.

2. NRRs for several country, one policy year and one slected month of unemployment: select output 1: 'by country'



Computing NRRs for several policy years and one country

Step 1: calculate family net incomes for the out-of-work scenario



Computing NRRs for several policy years and one country

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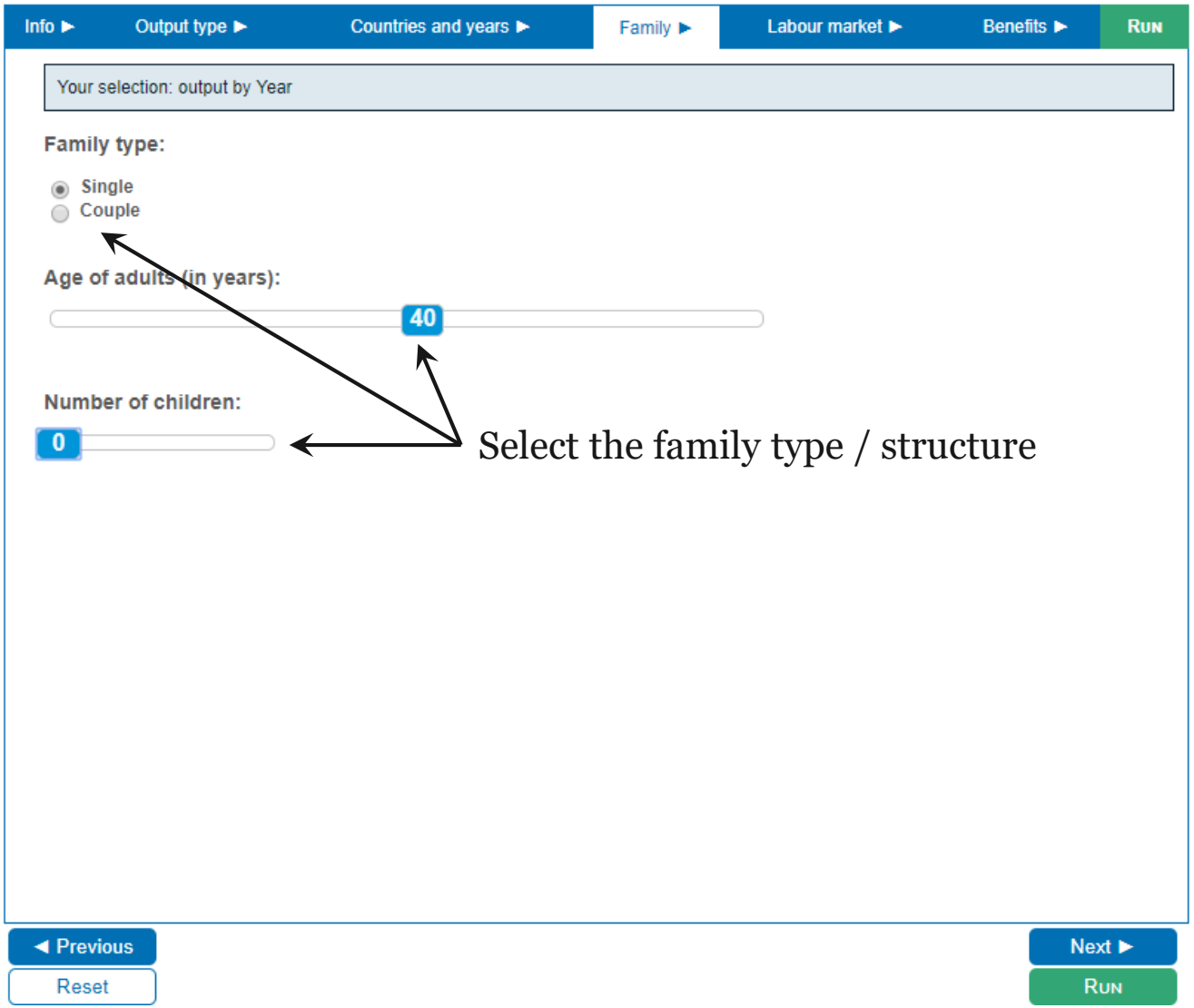

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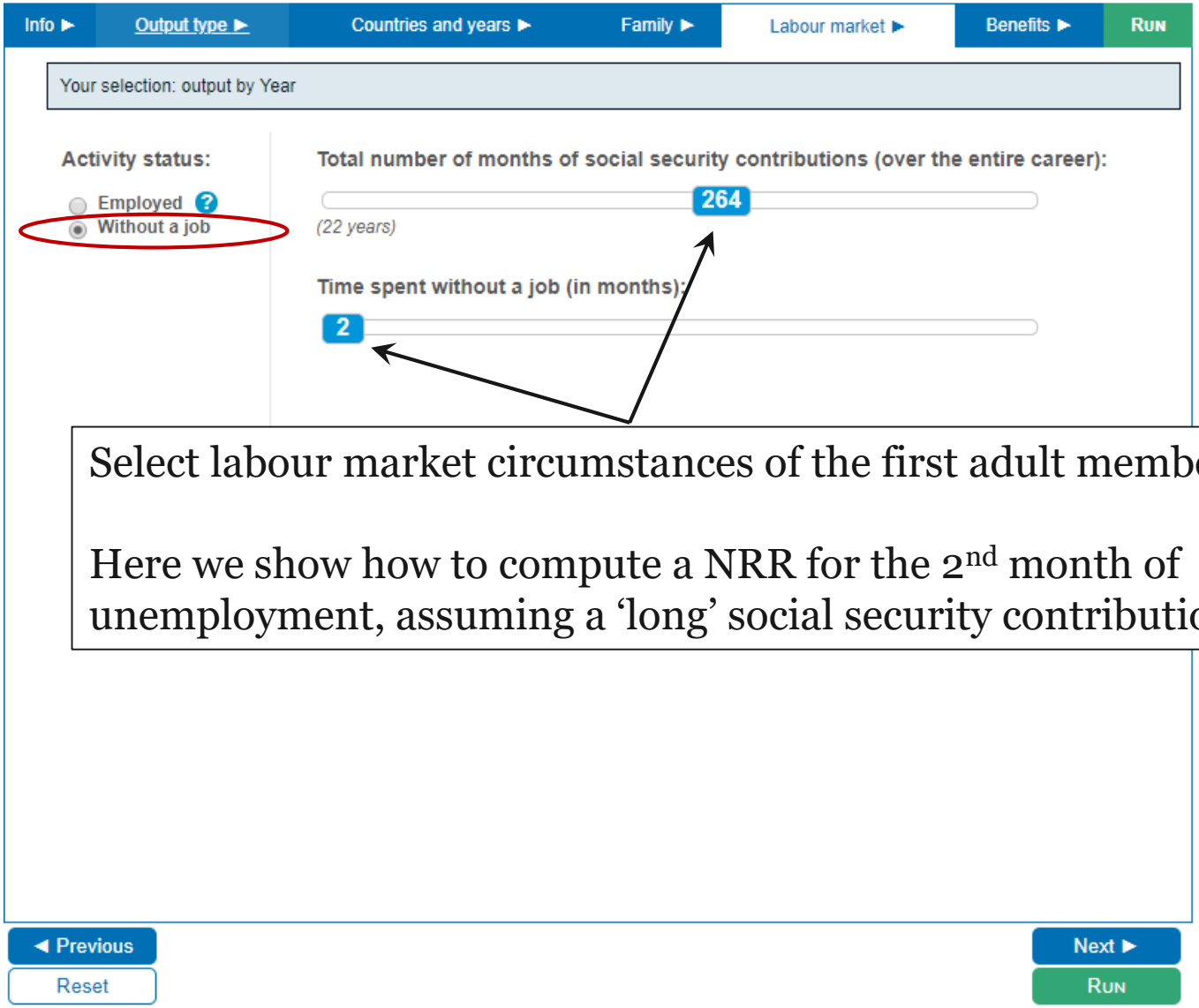
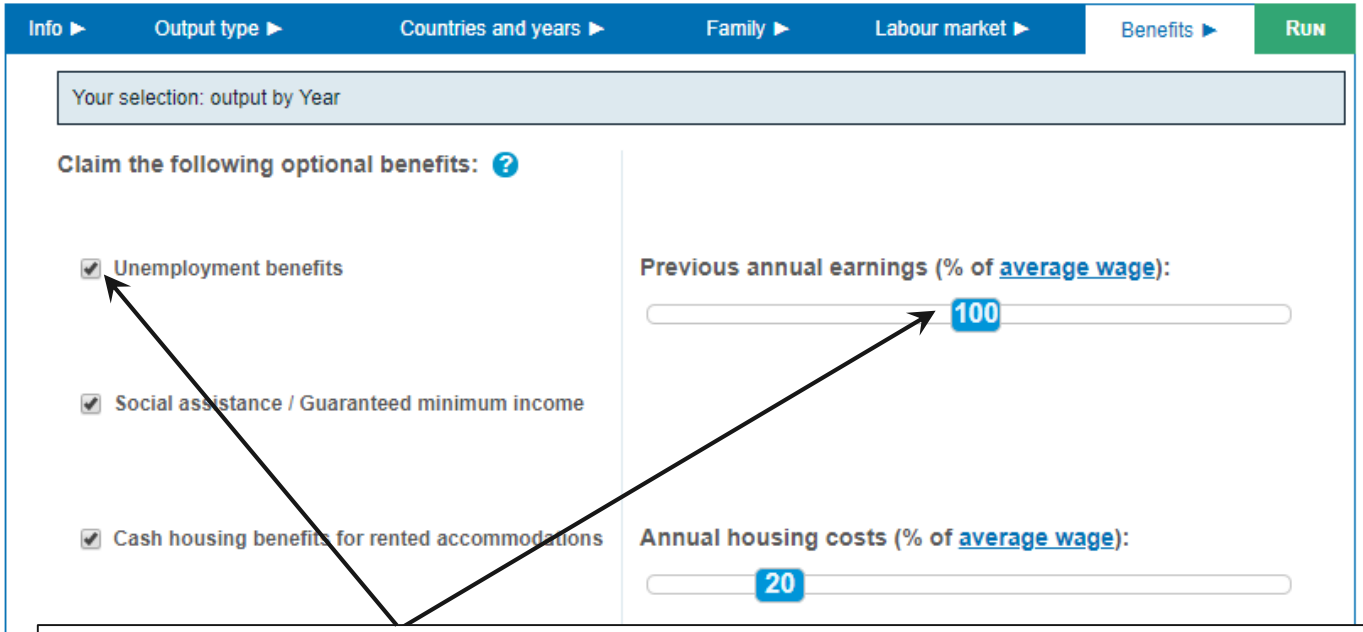
Step 1: calculate family net incomes for the out-of-work scenario



Select labour market circumstances of the first adult member.

Here we show how to compute a NRR for the 2nd month of unemployment, assuming a 'long' social security contribution record

Computing NRRs for several policy years and one country
Step 1: calculate family net incomes for the out-of-work scenario

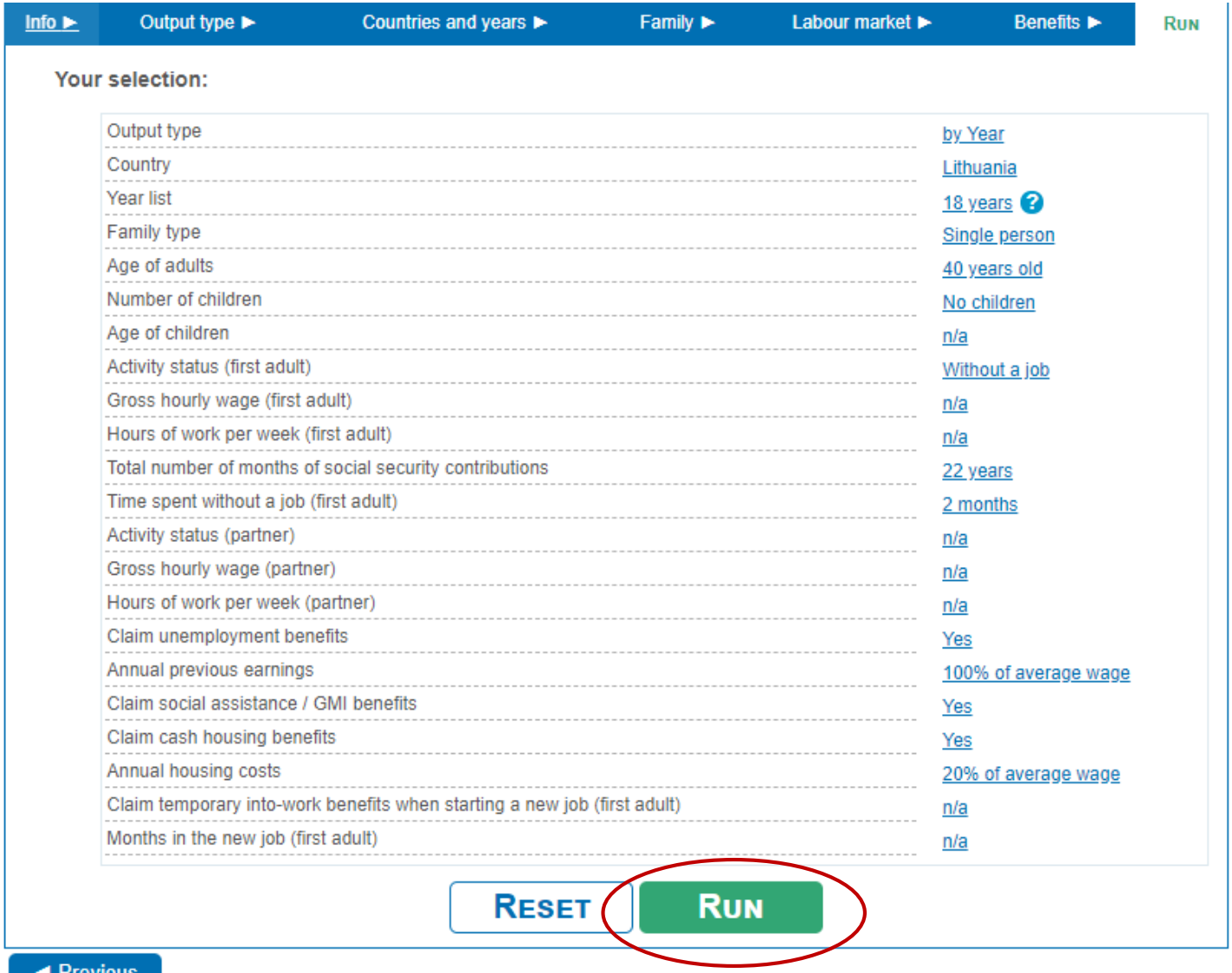


→ **Allow** the person to claim unemployment benefits and **select** the previous annual earnings (as this may be relevant for the calculation of unemployment benefit entitlements).

Notes:
a. TaxBEN assumes always full time work in the previous job when this is relevant for calculating unemployment benefit entitlements.
b. TaxBEN assumes that the family claims always family and in-work benefits where these benefit exists.

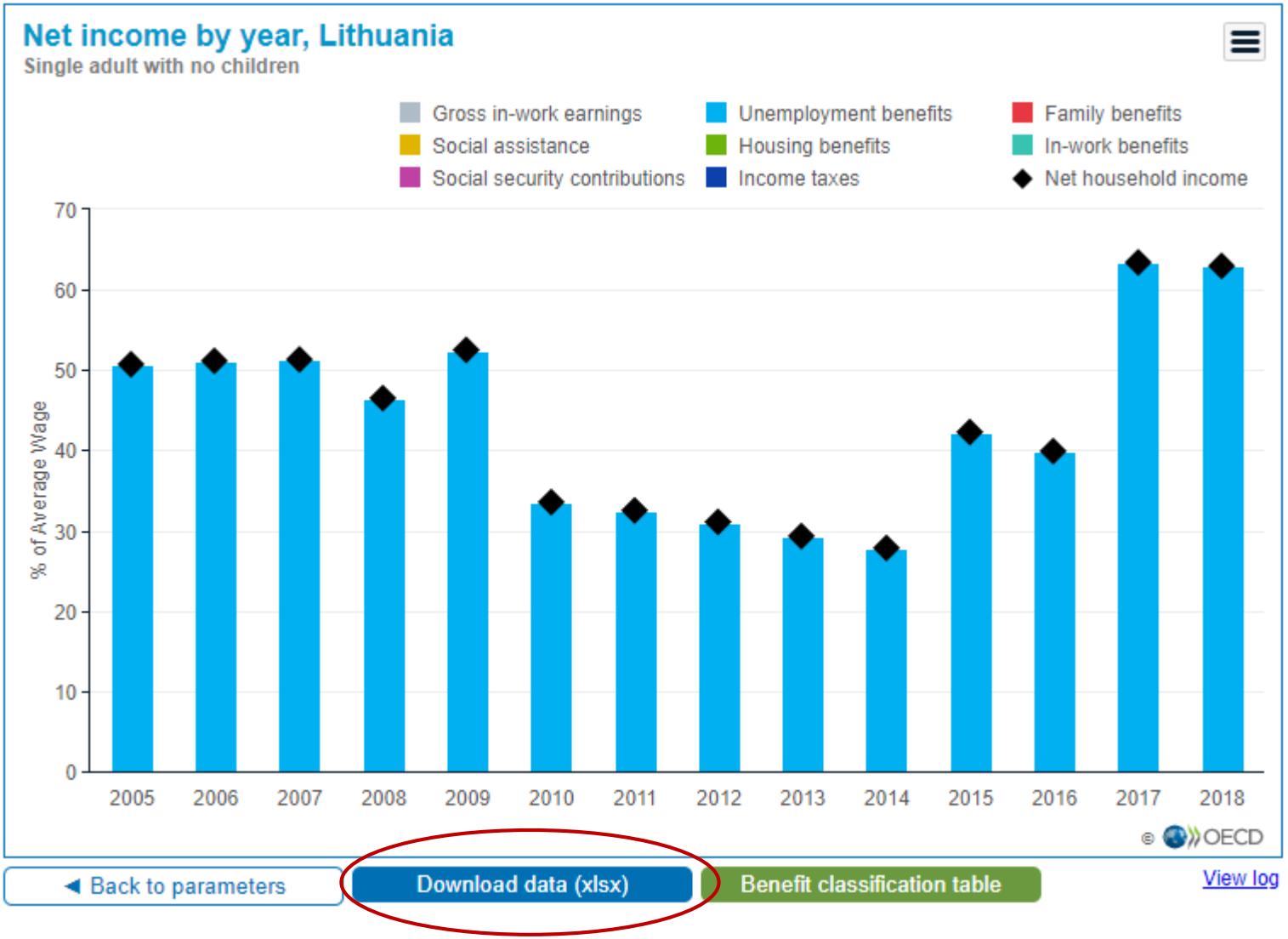
Computing NRRs for several policy years and one country

Step 1: calculate family net incomes for the out-of-work scenario



Computing NRRs for several policy years and one country

Step 1: calculate family net incomes for the out-of-work scenario



Computing NRRs for several policy years and one country
Step 1: calculate family net incomes for the out-of-work scenario

Get net family income for the **out-of-work** scenario:

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage
Lithuania	2005	7672	0	0	7672	0	0	0	0	0	15131
Lithuania	2006	9088	0	0	9088	0	0	0	0	0	17771
Lithuania	2007	11169	0	0	11169	0	0	0	0	0	21772
Lithuania	2008	11878	0	0	11878	0	0	0	0	0	25543
Lithuania	2009	12499	0	0	12499	0	0	0	0	0	23806
Lithuania	2010	7800	0	0	7800	0	0	0	0	0	23255
Lithuania	2011	7800	0	0	7800	0	0	0	0	0	23994
Lithuania	2012	7800	0	0	7800	0	0	0	0	0	25103
Lithuania	2013	7800	0	0	7800	0	0	0	0	0	26612
Lithuania	2014	7800	0	0	7800	0	0	0	0	0	28024
Lithuania	2015	3646	0	0	3646	0	0	0	0	0	8623
Lithuania	2016	3738	0	0	3738	0	0	0	0	0	9370
Lithuania	2017	6476	0	0	6476	0	0	0	0	0	10216
Lithuania	2018	7000	0	0	7000	0	0	0	0	0	11121

$$NET = GROSS + SA + UB + HB + FB + IW - IT - SC$$

NET - net family income

GROSS – gross earnings from employment

SA – social assistance

UB – unemployment benefits

HB – housing benefits

FB – family benefits

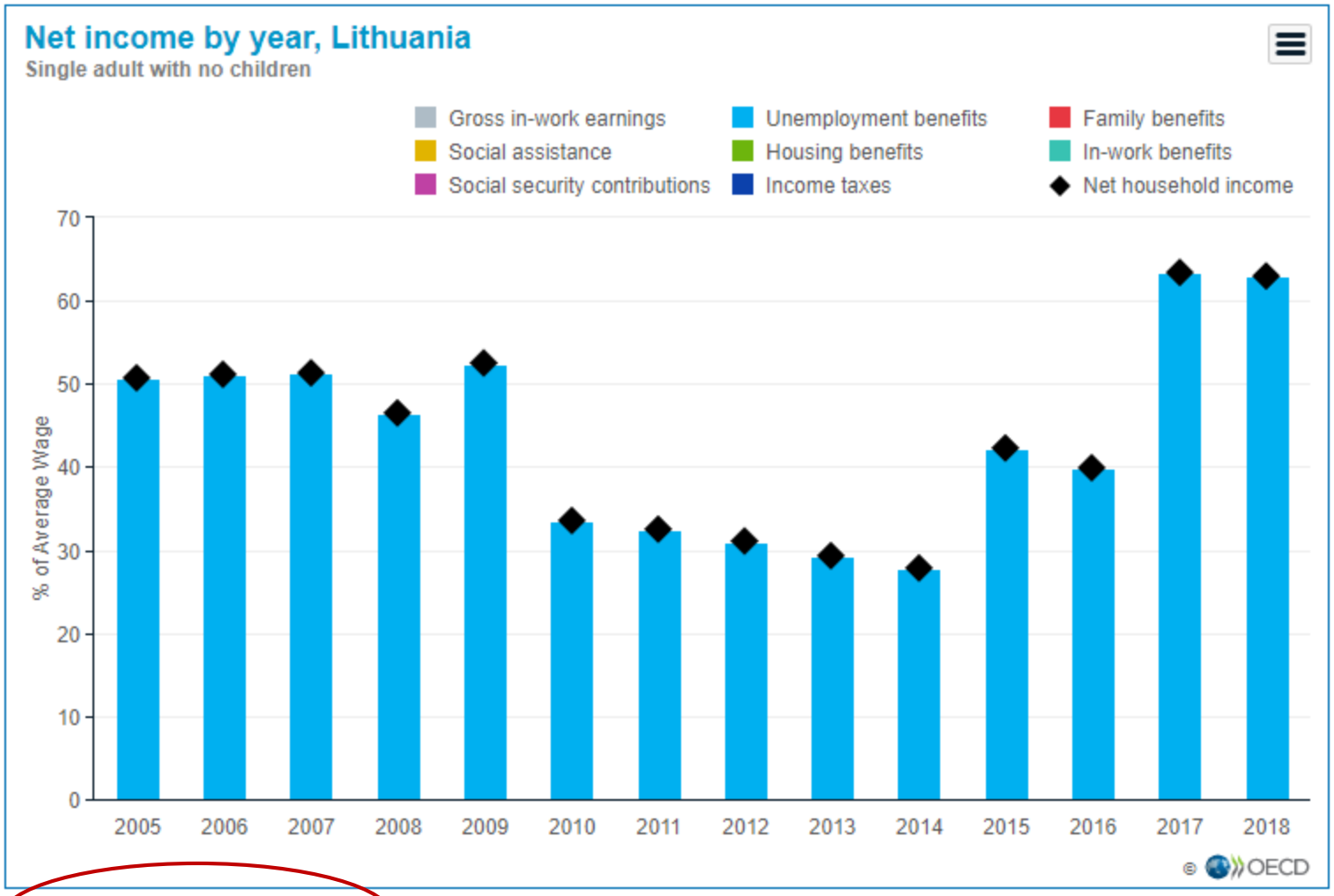
IW – in-work benefits

IT – income tax

SC – employee social contributions

Computing NRRs for several policy years and one country

Step 2: calculate family net incomes for the in-work scenario



Computing NRRs for several policy years and one country

Step 2: calculate family net incomes for the in-work scenario

Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Your selection:

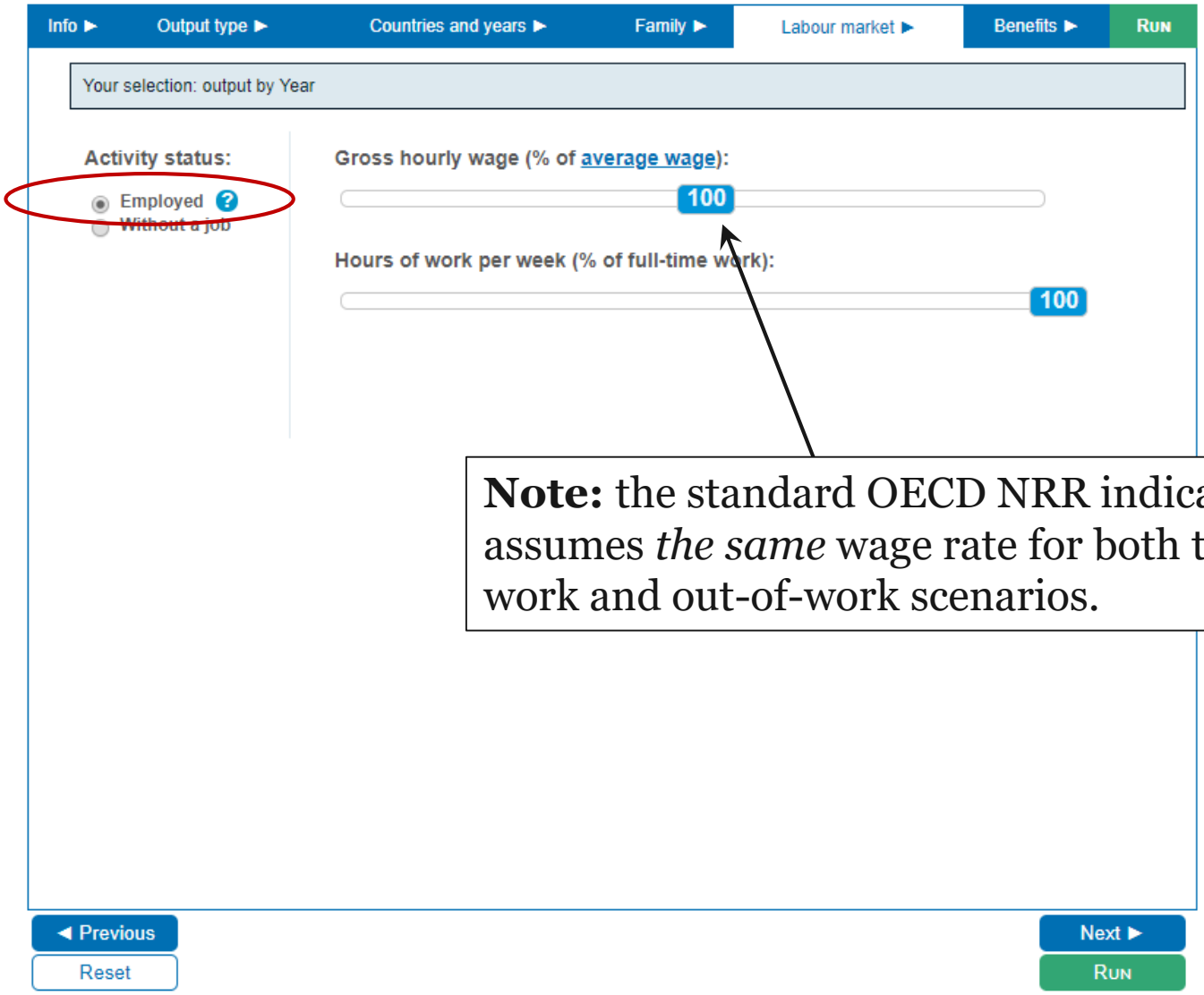
Output type	by Year
Country	Lithuania
Year list	18 years
Family type	Single person
Age of adults	40 years old
Number of children	No children
Age of children	n/a
Activity status (first adult)	Without a job
Gross hourly wage (first adult)	n/a
Hours of work per week (first adult)	n/a
Total number of months of social security contributions	22 years
Time spent without a job (first adult)	2 months
Activity status (partner)	n/a
Gross hourly wage (partner)	n/a
Hours of work per week (partner)	n/a
Claim unemployment benefits	Yes
Annual previous earnings	100% of average wage
Claim social assistance / GMI benefits	Yes
Claim cash housing benefits	Yes
Annual housing costs	20% of average wage
Claim temporary into-work benefits when starting a new job (first adult)	n/a
Months in the new job (first adult)	n/a

RESET | RUN

◄ Previous

Computing NRRs for several policy years and one country

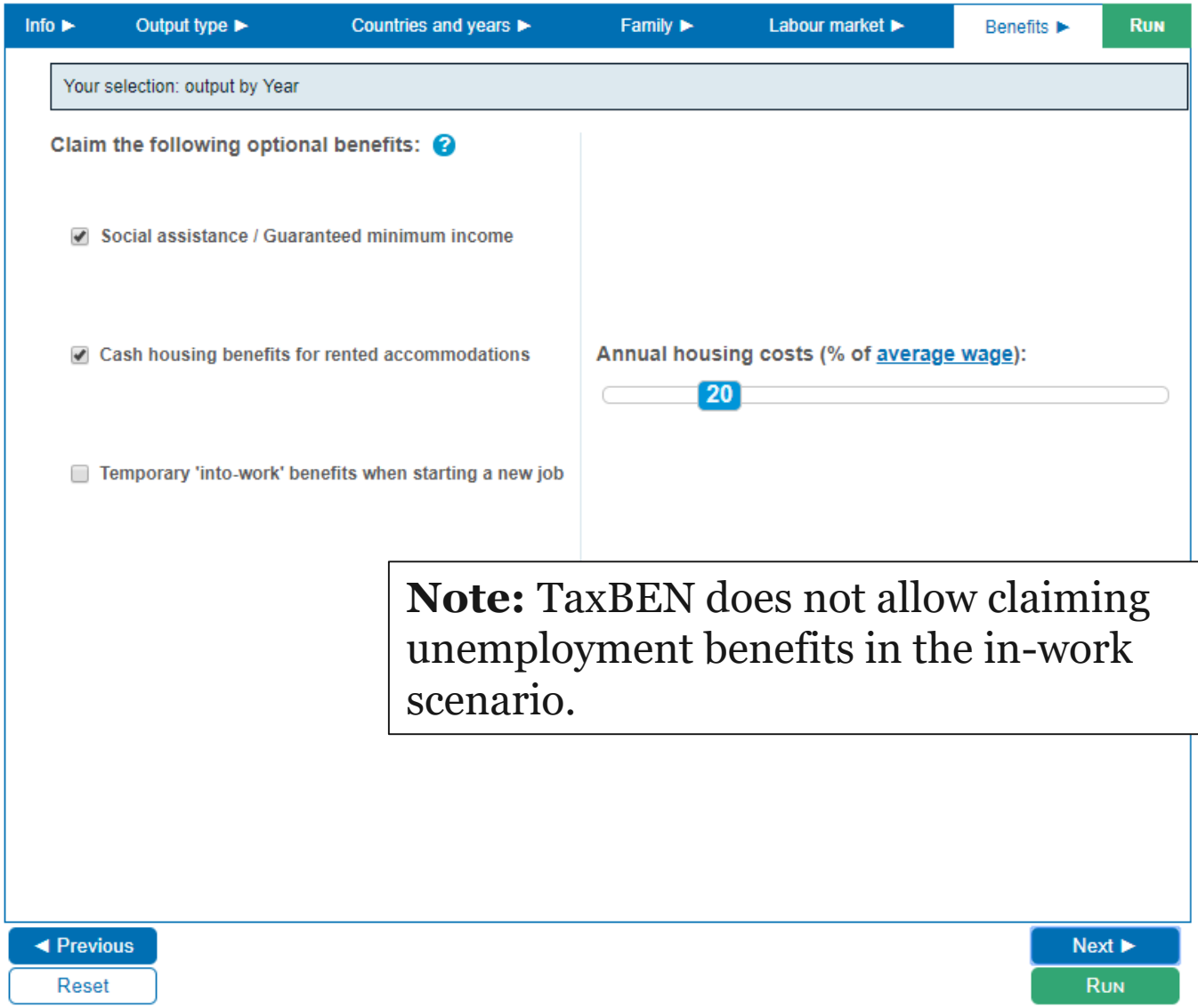
Step 2: calculate family net incomes for the in-work scenario



Note: the standard OECD NRR indicator assumes *the same* wage rate for both the in-work and out-of-work scenarios.

Computing NRRs for several policy years and one country

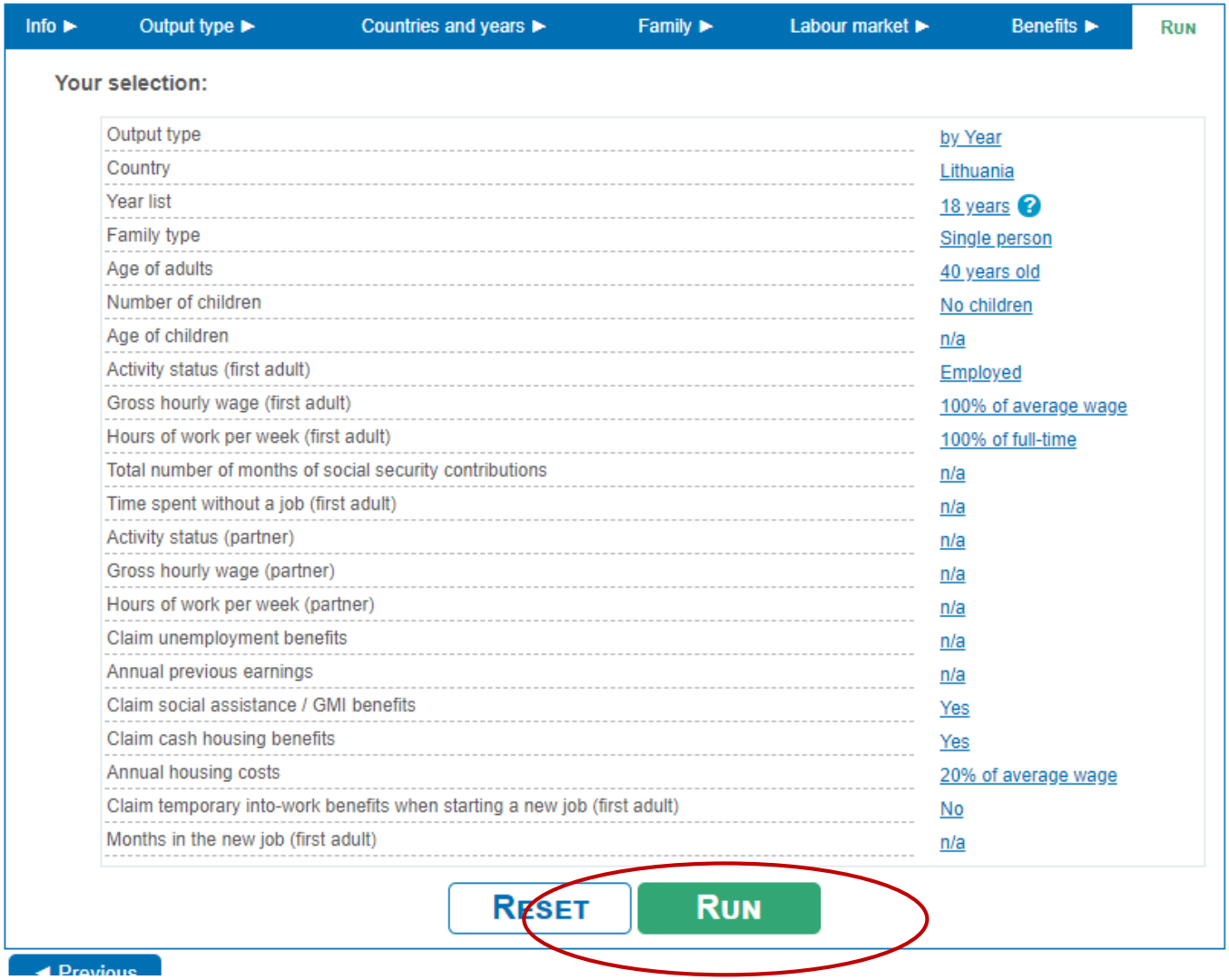
Step 2: calculate family net incomes for the in-work scenario



Note: TaxBEN does not allow claiming unemployment benefits in the in-work scenario.

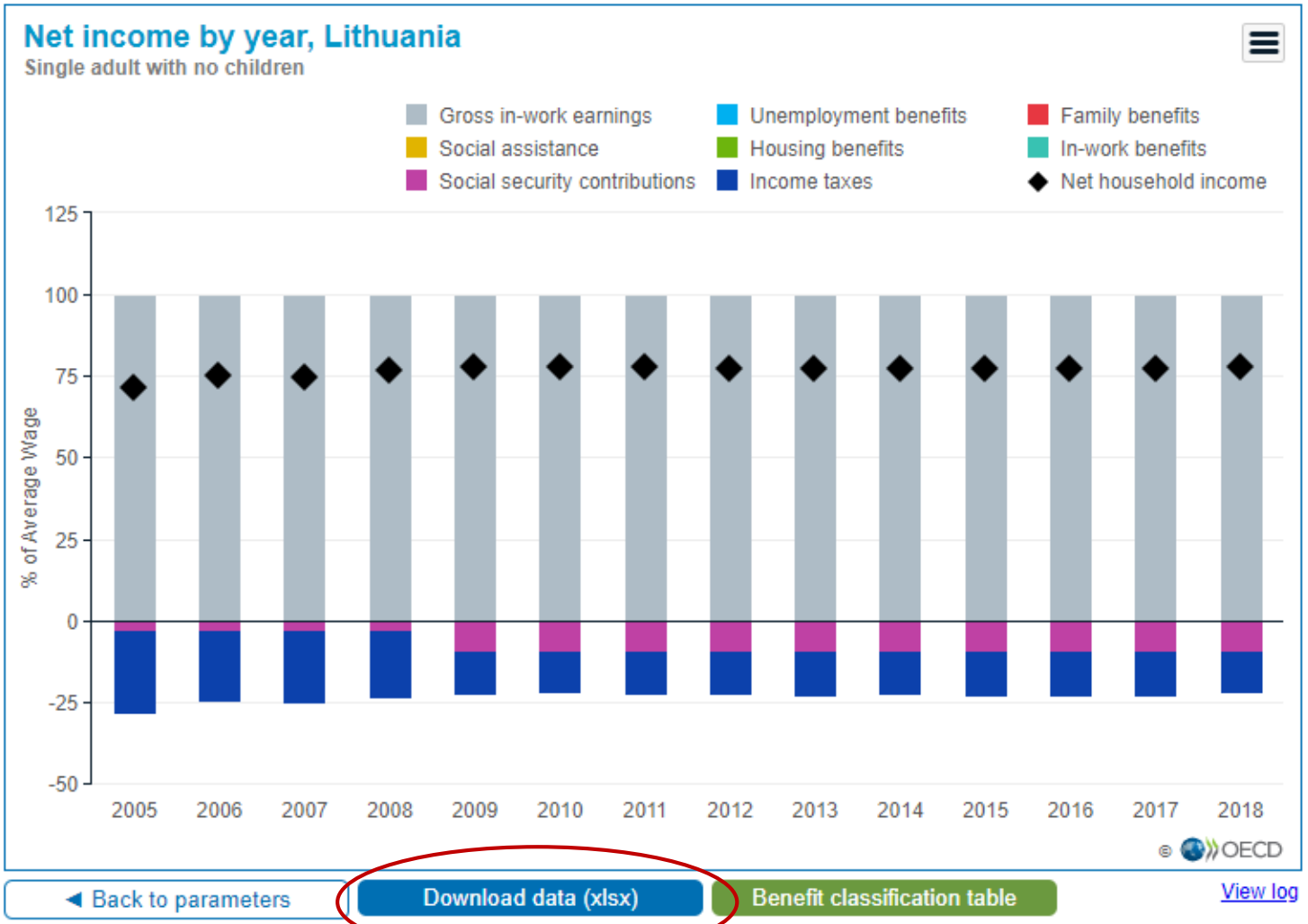
Computing NRRs for several policy years and one country

Step 2: calculate family net incomes for the in-work scenario



Computing NRRs for several policy years and one country

Step 2: calculate family net incomes for the in-work scenario



Computing NRRs for several policy years and one country

Step 2: calculate family net incomes for the in-work scenario

Get net family income for the **in-work** scenario:

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage
Lithuania	2005	10832	15131	0	0	0	0	0	3845	454	15131
Lithuania	2006	13379	17771	0	0	0	0	0	3859	533	17771
Lithuania	2007	16277	21772	0	0	0	0	0	4842	653	21772
Lithuania	2008	19568	25543	0	0	0	0	0	5209	766	25543
Lithuania	2009	18512	23806	0	0	0	0	0	3151	2143	23806
Lithuania	2010	18110	23255	0	0	0	0	0	3052	2093	23255
Lithuania	2011	18650	23994	0	0	0	0	0	3185	2159	23994
Lithuania	2012	19459	25103	0	0	0	0	0	3385	2259	25103
Lithuania	2013	20561	26612	0	0	0	0	0	3656	2395	26612
Lithuania	2014	21699	28024	0	0	0	0	0	3802	2522	28024
Lithuania	2015	6652	8623	0	0	0	0	0	1195	776	8623
Lithuania	2016	7217	9370	0	0	0	0	0	1309	843	9370
Lithuania	2017	7898	10216	0	0	0	0	0	1399	919	10216
Lithuania	2018	8662	11121	0	0	0	0	0	1458	1001	11121

$$NET = GROSS + SA + UB + HB + FB + IW - IT - SC$$

NET - net family income

GROSS – gross earnings from employment

SA – social assistance

UB – unemployment benefits

HB – housing benefits

FB – family benefits

IW – in-work benefits

IT – income tax

SC – employee social contributions

Computing NRRs for several policy years and one country

Step 3: calculate NRR by dividing the net family incomes in the in-work and out-of-work scenarios

3. Compute **NRR** using formula:

OUT OF WORK		
Country	Year	net
Lithuania	2005	7672
Lithuania	2006	9088
Lithuania	2007	11169
Lithuania	2008	11878
Lithuania	2009	12499
Lithuania	2010	7800
Lithuania	2011	7800
Lithuania	2012	7800
Lithuania	2013	7800
Lithuania	2014	7800
Lithuania	2015	3646
Lithuania	2016	3738
Lithuania	2017	6476
Lithuania	2018	7000

IN WORK		
Country	Year	net
Lithuania	2005	10832
Lithuania	2006	13379
Lithuania	2007	16277
Lithuania	2008	19568
Lithuania	2009	18512
Lithuania	2010	18110
Lithuania	2011	18650
Lithuania	2012	19459
Lithuania	2013	20561
Lithuania	2014	21699
Lithuania	2015	6652
Lithuania	2016	7217
Lithuania	2017	7898
Lithuania	2018	8662

Year	NRR
2005	70.8
2006	67.9
2007	68.6
2008	60.7
2009	67.5
2010	43.1
2011	41.8
2012	40.1
2013	37.9
2014	35.9
2015	54.8
2016	**51.8**
2017	**82.0**
2018	80.8

For example in 2005:
*NRR = 7672/108321*100% = 70.8%*
70.8% of net family income before the job loss is maintained at the 2nd month of the unemployment spell

Note the effect of policy change in 2017!

Adequacy of minimum income benefits

Policy Indicators: types

- **Benefit Generosity**
  - Net Replacement Rate (NRR) in unemployment
  - **Adequacy of minimum income benefits = Income Adequacy (IA)**
- Work Incentives
  - Effective tax rate on *entering* employment
    = Participation Tax Rate (PTR)
  - Effective tax rate on *increasing* working hours
    = Marginal Effective Tax Rate (METR)

Income Adequacy (IA)

1. Definition: formula and intuition
2. Example from actual policy analysis
3. How to compute it using the TaxBEN web calculator?

IA: (1) Definition

The adequacy of minimum income benefits (Income adequacy, or IA) shows the benefit generosity for out-of-work households who are receiving social assistance as a proportion of the equivalent median disposable income.

This indicator can be used to measure the **"distance" of the family income from a poverty line**, defined as a fixed percentage of the median disposable income.

$$IA = \frac{y_{out\ of\ work}}{\tilde{y}.}$$

$y_{out\ of\ work}$ - net household income

$\tilde{y}.$ - median household disposable income.

IA: Assumptions!

- √ IA compares **total** family resources of those on social assistance (SA) to the median household disposable income
- √ Both the numerator and denominator are adjusted for family size ("**equivalized**") using the square root of the family size
- √ SA eligibility conditions and amounts:
  - √ **Behavioral conditions** assumed to hold
  - √ **Assets** are sufficiently low
  - √ If varies by region, use **national guidelines** or rules of a **typical region**
  - √ Assume sufficient financial resources in the SA budget
- √ Availability of **other benefits**:
  - √ Unemployment benefits are not available to either partner (e.g. expired)
  - √ Family benefits are always available
  - √ Housing benefits can be switched on or off

IA: (2) Example

Hypothetical reform package in Greece

Main focus: income adequacy and work incentives

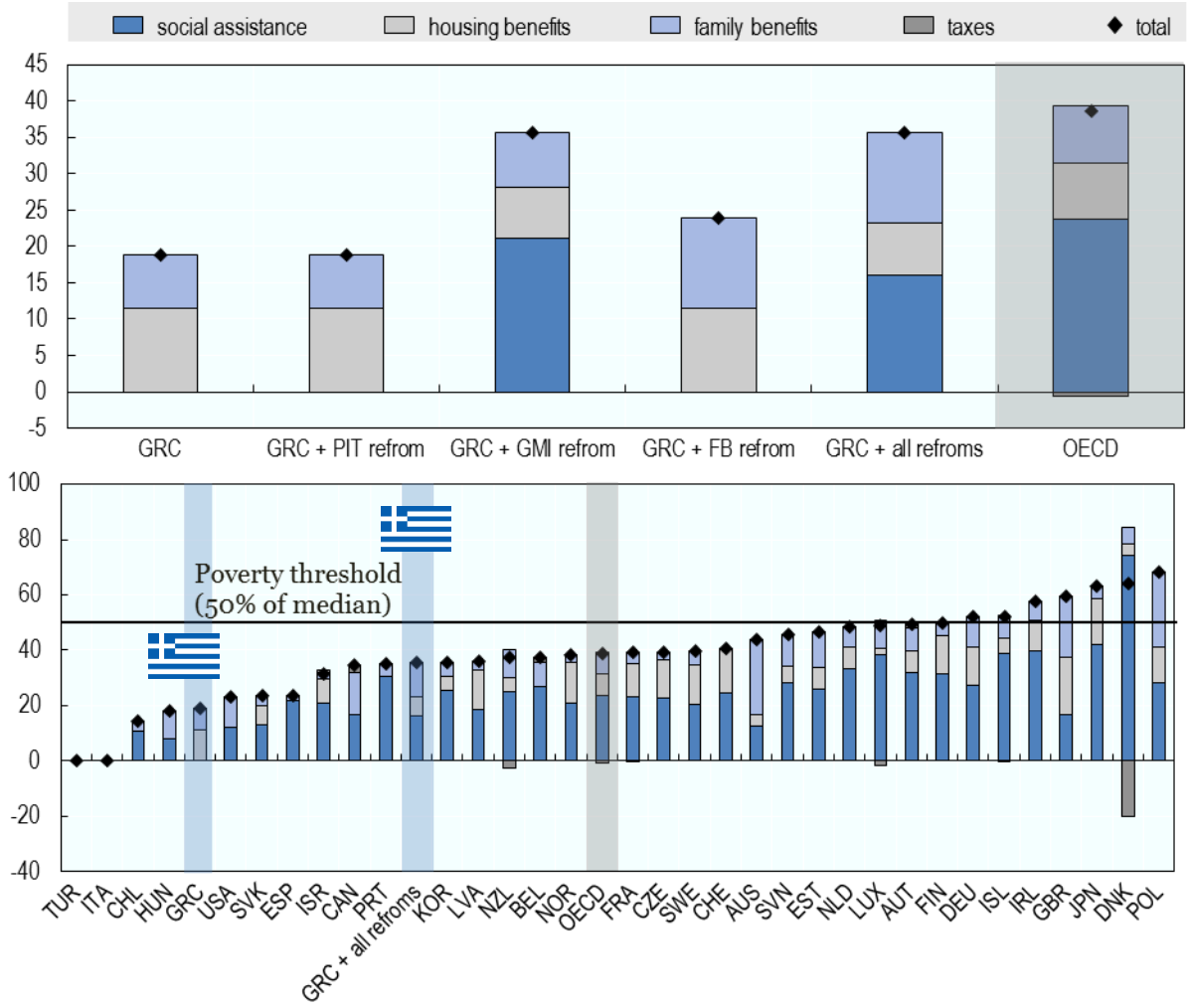
Type of request: policy benchmarking (i.e. across countries) and incentives for minimum wage earners

REFORM:

- **Income tax reform (PIT)**
  - Tax credit reduced (by 650 EUR) and tax rate in the 1st bracket reduced by 2 ppts
- **Introduction of guaranteed minimum income (GMI)**
  - Social Solidarity Income (SSI) introduced nation-wide with earnings disregards when take up employment of 100% in 1st month and 40% in 2nd and 3rd months
- **Family benefits (FB)**
  - Child support payment increased from 40 to 60/90/130 EUR (1st/2nd/3rd child)
- **Other related changes**

The Greek reform package
Effects on income adequacy (IA)

Net income of families out of work
% of median disposable income, couple with two children



- Social Solidarity Income (SSI) brings those out of work closer to poverty line – broadly in line with OECD average
- Interactions between family benefits and social assistance

IA: (3) with the Web Interface

1. Calculate net family income **out of work** (and equivalise it!)
2. Obtain the **equivalent median disposable income** from the OECD TaxBEN wage file or the OECD Income Distribution Database
3. Compute IA using **formula,** i.e. (1)/(2)

$$IA = \frac{y_{out\ of\ work}}{\tilde{y}.}$$

$y_{out\ of\ work}$ - net household income

$\tilde{y}.$ - median household disposable income.

Info ▶ | Output type ▶ | Countries and years ▶ | Family ▶ | Labour market ▶ | Benefits ▶ | RUN

The OECD Tax-Benefit web calculator enables users to quickly see and compare how tax liabilities and benefit entitlements affect the incomes of working-age families across countries and over time.

Use the **'Output type'** tab to select the type of comparison of interest: (1) by country; (2) by year; (3) by hours of work; (4) by unemployment duration

Customize your request using the other tabs **'Countries and years'**, **'Family'**, **'Labour market'** and **'Benefits'**

Click **'Run'** to get the results
(waiting time depends on the amount of selected outputs, e.g. the number of countries)


Overview of the OECD Tax-Benefit model


Methodological details


Disclaimer
(Please read carefully)


Country Policy descriptions


Contacts


The OECD network of national experts

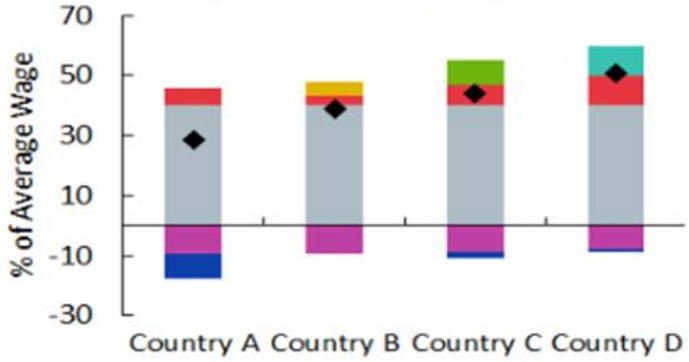

The OECD tax-benefit data portal

START

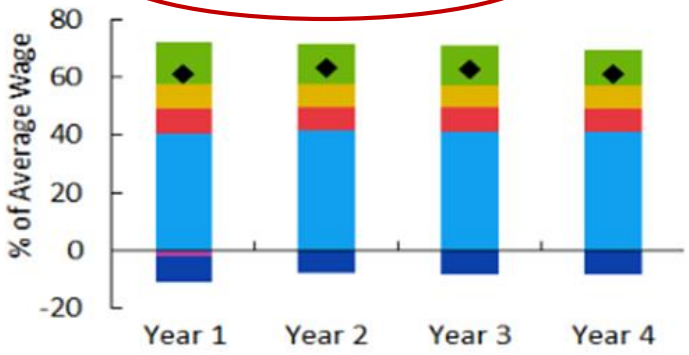
Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Calculate tax liabilities and benefit entitlements:

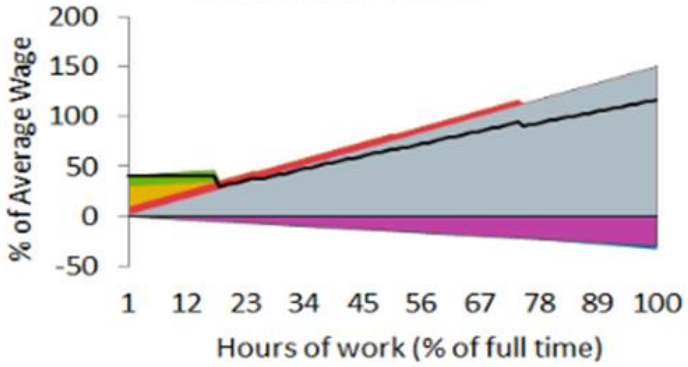
○ by Country
(one year and one earnings level)



◉ by Year
(one country and one earnings level)



○ by Hours of work
(one country and one year)



○ by Unemployment duration
(one country and one year)

Gross in-work earnings
Income taxes
Social security contributions
In-work benefits
Family benefits
Unemployment benefits
Guaranteed Minimum Income benefits
Housing benefits
Net household income

◄ Previous | Next ►

Reset | RUN

Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Your selection: output by Year

Countries: *(only one option available for this output type)*

Greece

Years: *(multiple options available)*

☑ 2001 ☑ 2002 ☑ 2003 ☑ 2004 ☑ 2005 ☑ 2006 ☑ 2007 ☑ 2008 ☑ 2009 ☑ 2010 ☑ 2011 ☑ 2012 ☑ 2013
☑ 2014 ☑ 2015 ☑ 2016 ☑ 2017 ☑ 2018 ☐ 2019 ☐ 2020

Select All Deselect All

◄ Previous Next ►

Reset RUN

Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Your selection: output by Year

Family type:

- ○ Single
- ◉ Couple

Age of adults (in years):

40

Number of children:

2

Age of children (in years):

4

6

◄ Previous

Reset

Next ►

RUN

Your selection: output by Year

First adult

Activity status:

- ○ Employed
- ◉ Without a job

Total number of months of social security contributions (over the entire career):

264

(22 years)

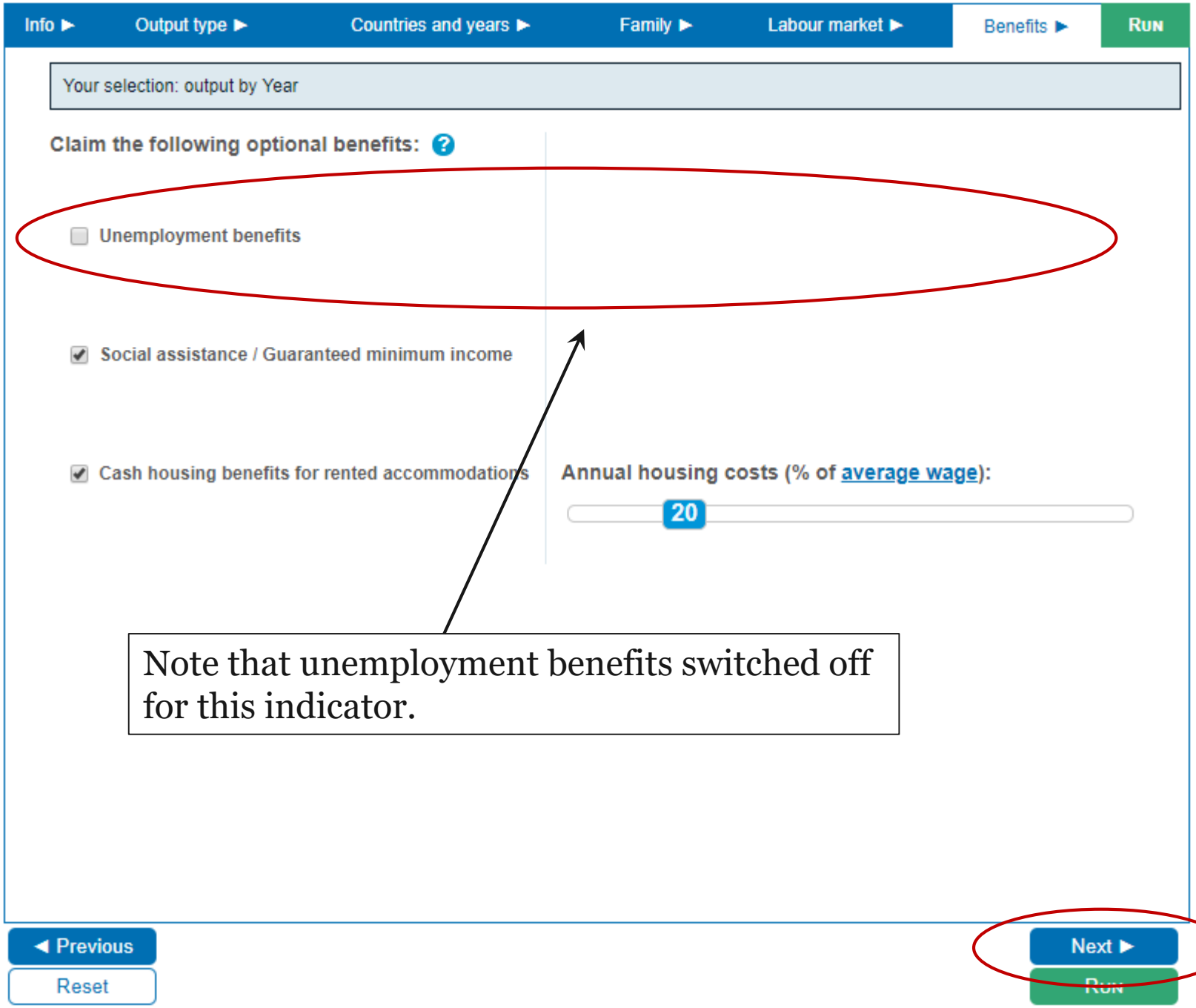
Time spent without a job (in months):

2

Partner

Activity status:

- ○ Employed
- ◉ Without a job


Info ▶
Output type ▶
Countries and years ▶
Family ▶
Labour market ▶
Benefits ▶
RUN
Your selection: output by Year
Claim the following optional benefits:
Unemployment benefits
Social assistance / Guaranteed minimum income
Cash housing benefits for rented accommodations
Annual housing costs (% of average wage):
20
Note that unemployment benefits switched off for this indicator.
◀ Previous
Reset
Next ▶
RUN

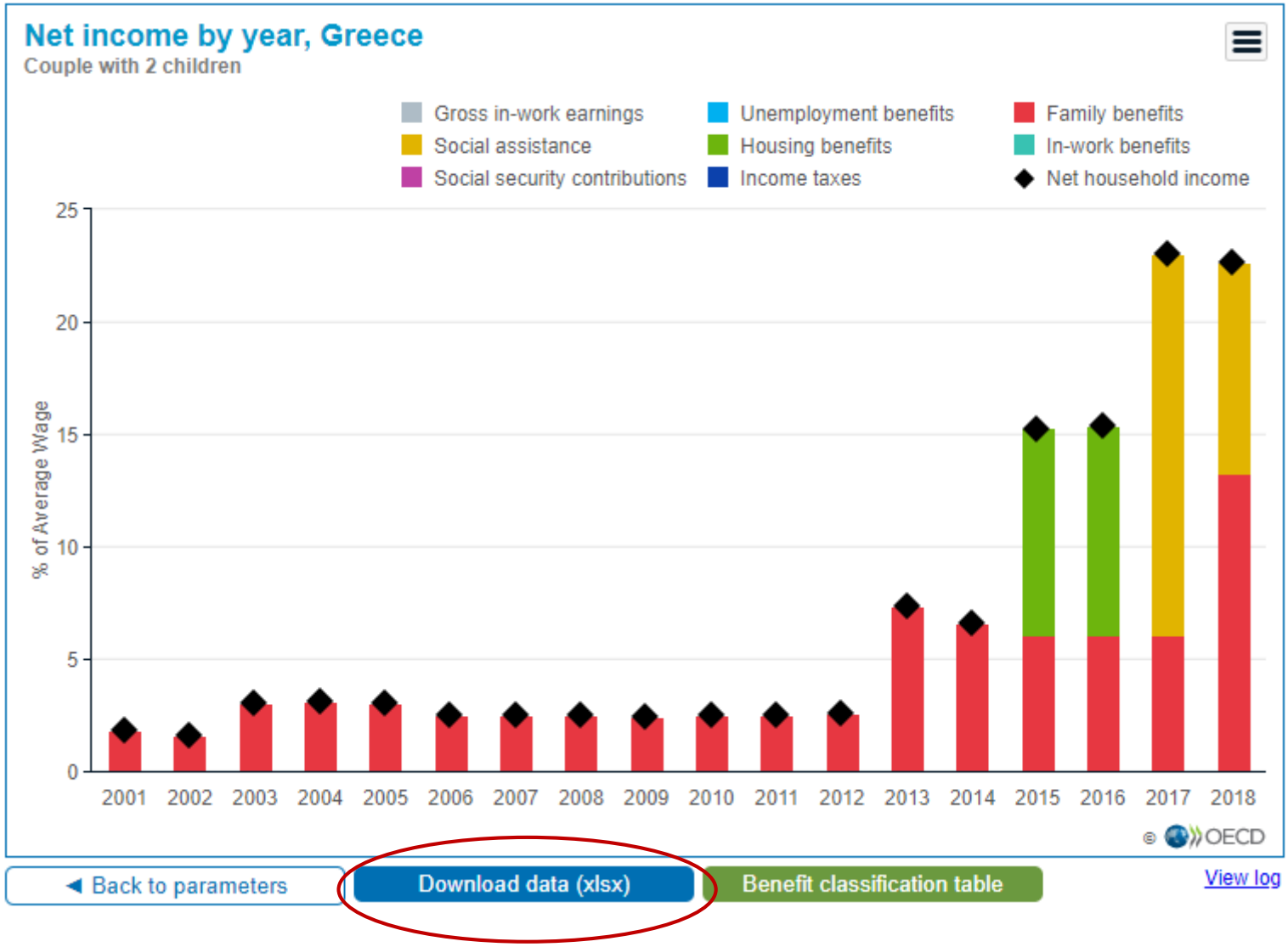
Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

Your selection:

Output type	by Year
Country	Greece
Year list	18 years
Family type	Couple
Age of adults	40 years old
Number of children	2
Age of children	4, 6 years old
Activity status (first adult)	Without a job
Gross hourly wage (first adult)	n/a
Hours of work per week (first adult)	n/a
Total number of months of social security contributions	22 years
Time spent without a job (first adult)	2 months
Activity status (partner)	Without a job
Gross hourly wage (partner)	n/a
Hours of work per week (partner)	n/a
Claim unemployment benefits	No
Annual previous earnings	n/a
Claim social assistance / GMI benefits	Yes
Claim cash housing benefits	Yes
Annual housing costs	20% of average wage
Claim temporary into-work benefits when starting a new job (first adult)	n/a
Months in the new job (first adult)	n/a

RESET RUN

◄ Previous


Net income by year, Greece
Couple with 2 children
Gross in-work earnings
Social assistance
Social security contributions
Unemployment benefits
Housing benefits
Income taxes
Family benefits
In-work benefits
Net household income
% of Average Wage
25
20
15
10
5
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
© OECD
◄ Back to parameters
Download data (xlsx)
Benefit classification table
View log

IA: (3) with the Web Interface

Calculate family income **out of work**

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage
Greece	2006	596	0	0	0	0	596	0	0	0	23800
Greece	2007	596	0	0	0	0	596	0	0	0	23935
Greece	2008	596	0	0	0	0	596	0	0	0	23849
Greece	2009	596	0	0	0	0	596	0	0	0	24569
Greece	2010	596	0	0	0	0	596	0	0	0	24156
Greece	2011	596	0	0	0	0	596	0	0	0	23929
Greece	2012	596	0	0	0	0	596	0	0	0	23309
Greece	2013	1556	0	0	0	0	1556	0	0	0	21101
Greece	2014	1408	0	0	0	0	1408	0	0	0	21322
Greece	2015	3180	0	0	0	1920	1260	0	0	0	20833
Greece	2016	3180	0	0	0	1920	1260	0	0	0	20678
Greece	2017	4800	0	3540	0	0	1260	0	0	0	20841
Greece	2018	4800	0	1980	0	0	2820	0	0	0	21214

$$NET = GROSS + SA + UB + HB + FB + IW - IT - SC$$

NET - net family income

GROSS – gross earnings from employment

SA – social assistance

UB – unemployment benefits

HB – housing benefits

FB – family benefits

IW – in-work benefits

IT – income tax

SC – employee social contributions

IA: (3) with the Web Interface

Calculate family income **out of work**

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage	Median	IA
Greece	2006	596	0	0	0	0	596	0	0	0	23800	11500	3%
Greece	2007	596	0	0	0	0	596	0	0	0	23935	12401	2%
Greece	2008	596	0	0	0	0	596	0	0	0	23849	12950	2%
Greece	2009	596	0	0	0	0	596	0	0	0	24569	13517	2%
Greece	2010	596	0	0	0	0	596	0	0	0	24156	12080	2%
Greece	2011	596	0	0	0	0	596	0	0	0	23929	10259	3%
Greece	2012	596	0	0	0	0	596	0	0	0	23309	9220	3%
Greece	2013	1556	0	0	0	0	1556	0	0	0	21101	8521	9%
Greece	2014	1408	0	0	0	0	1408	0	0	0	21322	8501	8%
Greece	2015	3180	0	0	0	1920	1260	0	0	0	20833	8429	19%
Greece	2016	3180	0	0	0	1920	1260	0	0	0	20678	8598	18%
Greece	2017	4800	0	3540	0	0	1260	0	0	0	20841	8696	28%
Greece	2018	4800	0	1980	0	0	2820	0	0	0	21214	8763	27%

$$IA = NETeq/Median = (NET/\sqrt{4})/Median$$

We divide NET by $\sqrt{4}$ because it is a 4-person household. OECD equivalence scale = square root of the family size

Note the effect of the policy changes: GMI introduced in 2017

IA: (3) with the Web Interface

Calculate family income **out of work**

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage	Median	IA
Greece	2006	596	0	0	0	0	596	0	0	0	23800	11500	3%
Greece	2007	596	0	0	0	0	596	0	0	0	23935	12401	2%
Greece	2008	596	0	0	0	0	596	0	0	0	23849	12950	2%
Greece	2009	596	0	0	0	0	596	0	0	0	24569	13517	2%
Greece	2010	596	0	0	0	0	596	0	0	0	24156	12080	2%
Greece	2011	596	0	0	0	0	596	0	0	0	23929	10259	3%
Greece	2012	596	0	0	0	0	596	0	0	0	23309	9220	3%
Greece	2013	1556	0	0	0	0	1556	0	0	0	21101	8521	9%
Greece	2014	1408	0	0	0	0	1408	0	0	0	21322	8501	8%
Greece	2015	3180	0	0	0	1920	1260	0	0	0	20833	8429	19%
Greece	2016	3180	0	0	0	1920	1260	0	0	0	20678	8598	18%
Greece	2017	4800	0	3540	0	0	1260	0	0	0	20841	8696	28%
Greece	2018	4800	0	1980	0	0	2820	0	0	0	21214	8763	27%

In 2017, a couple with 2 children on social assistance receives 28% of the population median household income. The standard EU poverty line is defined as 60% of the median.

Note the effect of the policy changes: GMI introduced in 2017

Work incentives

Policy Indicators: types

- Benefit Generosity
  - Net Replacement Rate (NRR) in unemployment
  - Adequacy of minimum income benefits = Income Adequacy (IA)
- **Work Incentives**
  - **Effective tax rate (ETR) on entering employment**

    = Participation Tax Rate (PTR)
  - **Effective tax rate (ETR) on increasing working hours**

    = Marginal Effective Tax Rate (METR)

Effective Tax Rate (ETR)

1. Definition: formula and intuition
2. Example from actual policy analysis
3. How to compute it using the TaxBEN web calculator?

ETR: (1) Definition

The **Effective Tax Rate** measures the fraction of *additional* gross earnings lost to either higher taxes or lower benefits when:

1. A jobseeker enters employment, **or**
2. An employee increases his or her working hours.

$$ETR = 1 - \frac{\Delta y_{net}}{\Delta y_{gross}} = \frac{\Delta Taxes - \Delta benefits}{\Delta y_{gross}}$$

$\Delta y_{net}, \Delta y_{gross}, \Delta Taxes$ and $\Delta benefits$ denote respectively *the change* in:

- Net household income,
- Gross household income, and
- Tax liabilities
- Benefit entitlements

after the transition from one labour market status to another.

→ **Higher ETRs mean weaker financial work incentives.**

ETR: Assumptions!

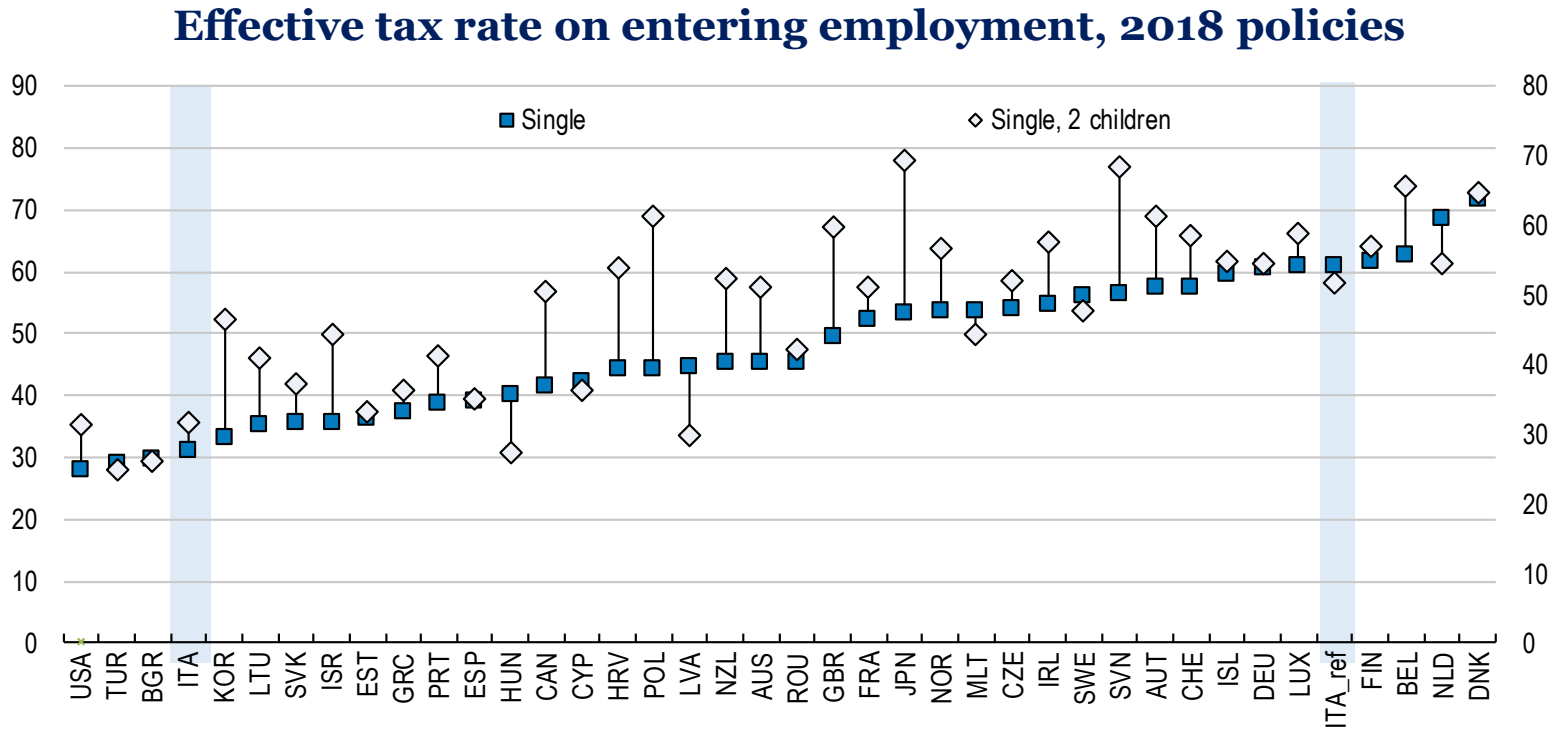
1. ETR compares **total** family resources across two different situations of the first adult:
   - out-of-work vs. in-work → entering employment
   - in-work vs. in-work → increasing working hours
2. Benefits eligibility:
   - If first adult is out of work: can receive unemployment benefits (UB) and/or social assistance (SA)
   - If partner is out of work, UB are not available to them
   - When *first adult* moves into work, **'into-work' benefits** may be available
   - **Behavioral** eligibility conditions assumed to hold where relevant
   - **Waiting period** of 'into-work' benefits is ignored
3. Assumptions for ***headline* indicators**
   - Earnings in the new job and in the previous job are the same
   - Hourly wage rate is constant (**no part-time wage penalties!**)
   - Continues and long-term employment record

ETR on entering employment: Example

2019 Reform of Social Assistance in Italy

	2018	2019
Maximum transfer for a single person	EUR 187 / month,	EUR 500 / month plus EUR 280 / month for renters.

Source: OECD Economic surveys: Italy 2019 (Table 1.3)



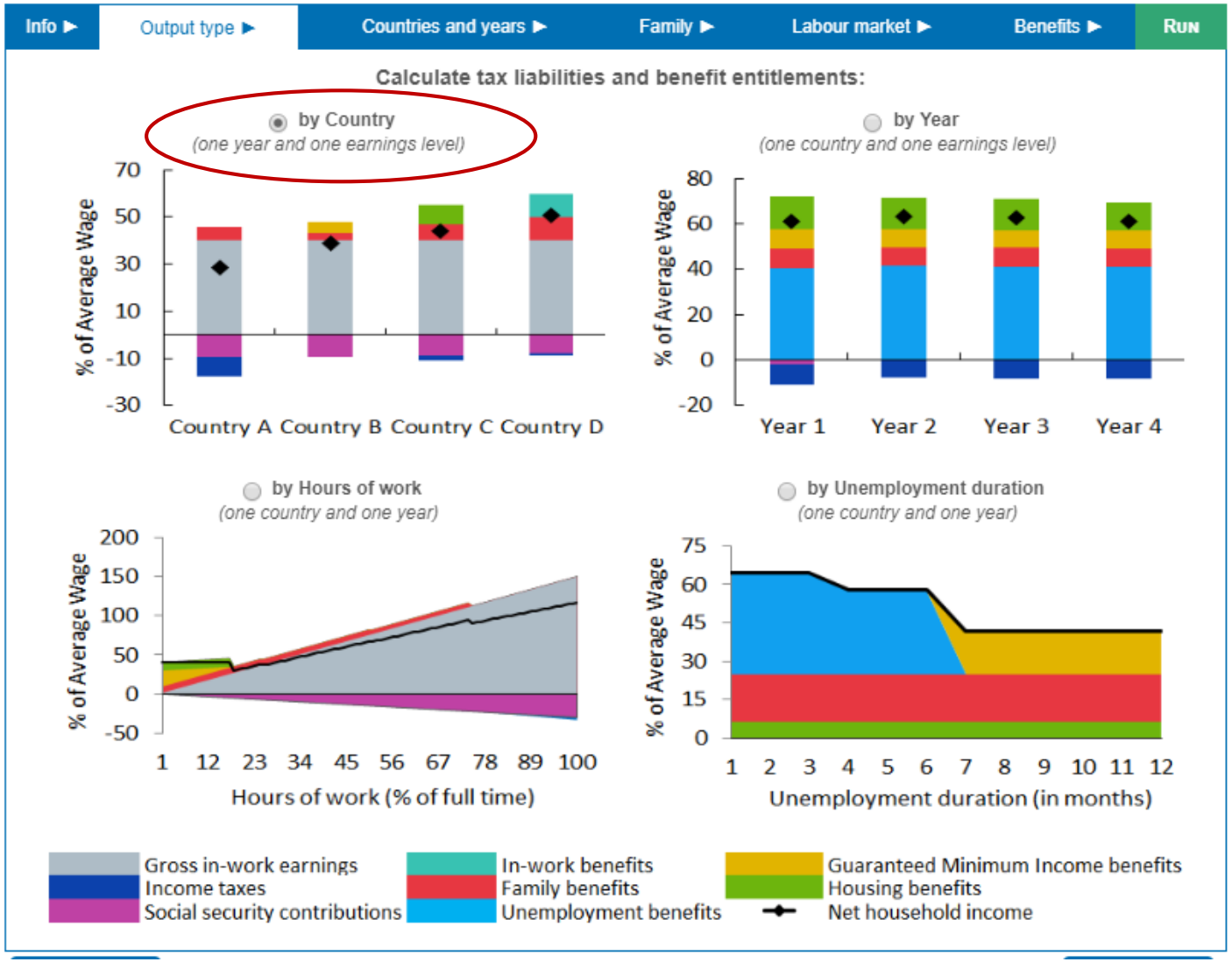
ETR on entering employment:
Steps

1. Calculate net family income **out of work**
2. Calculate net family income **in work**
3. Compute ETR using **formula**

$$ETR = 1 - \frac{\Delta y_{net}}{\Delta y_{gross}}$$

ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario

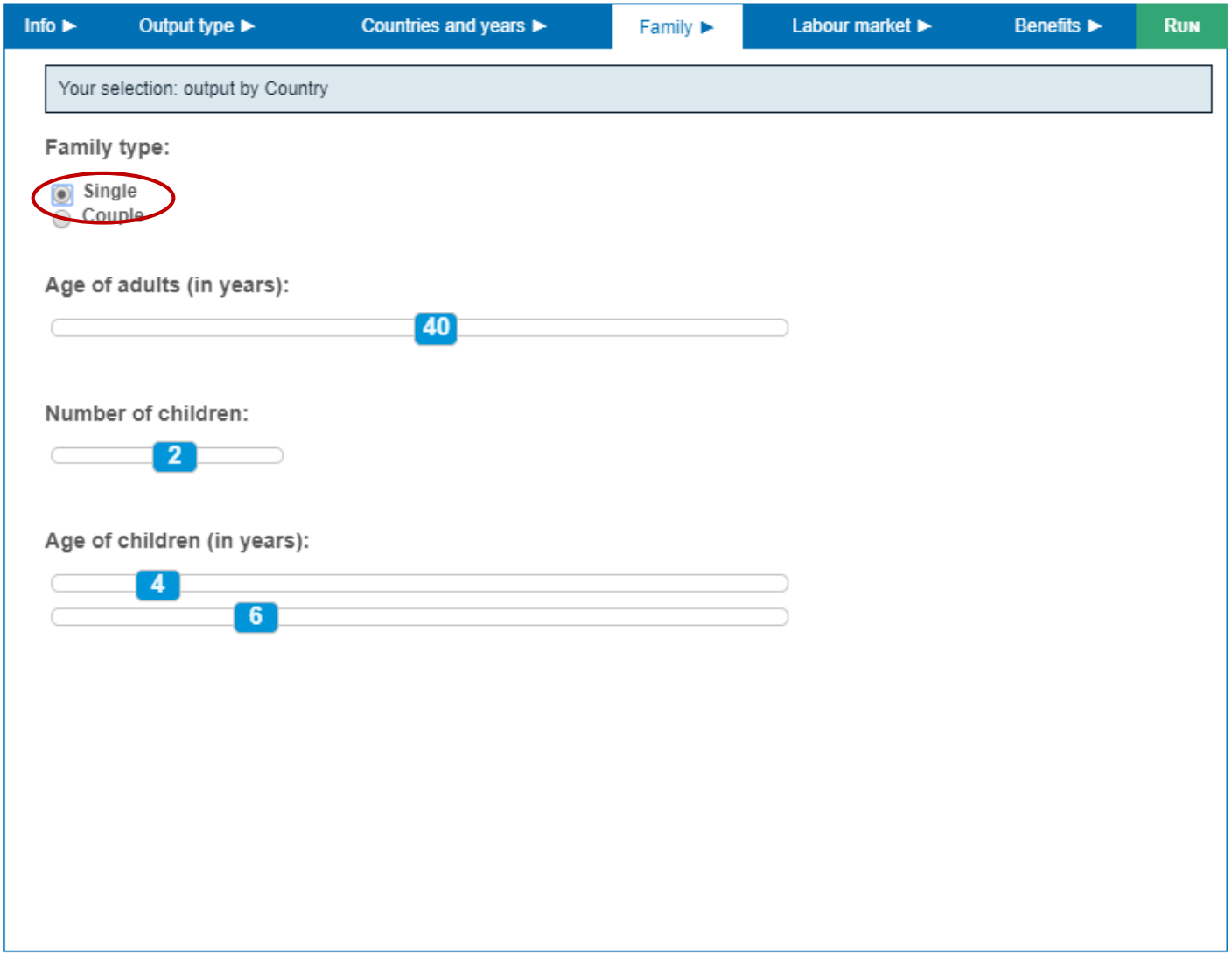


ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario

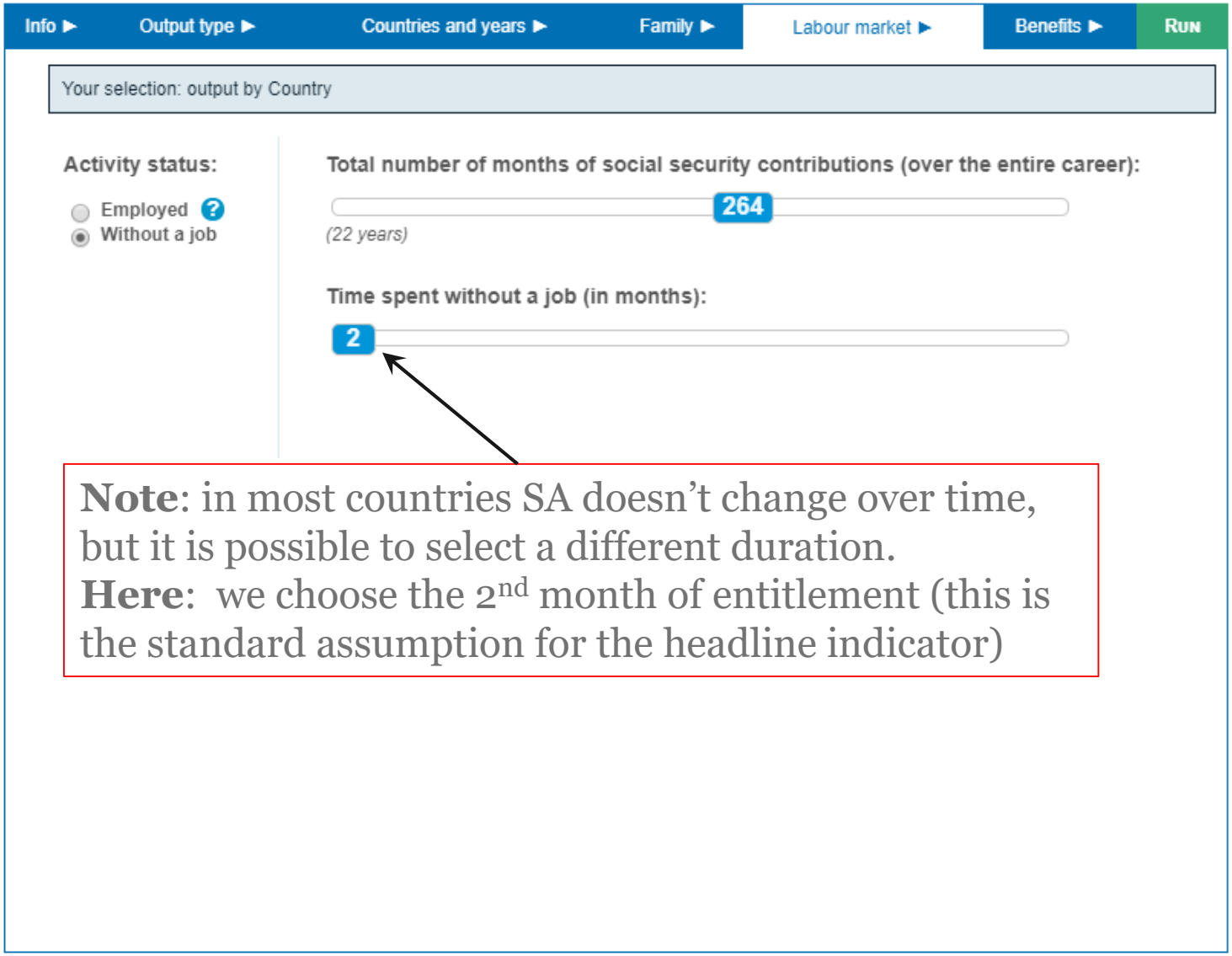
ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario



ETR on entering employment:

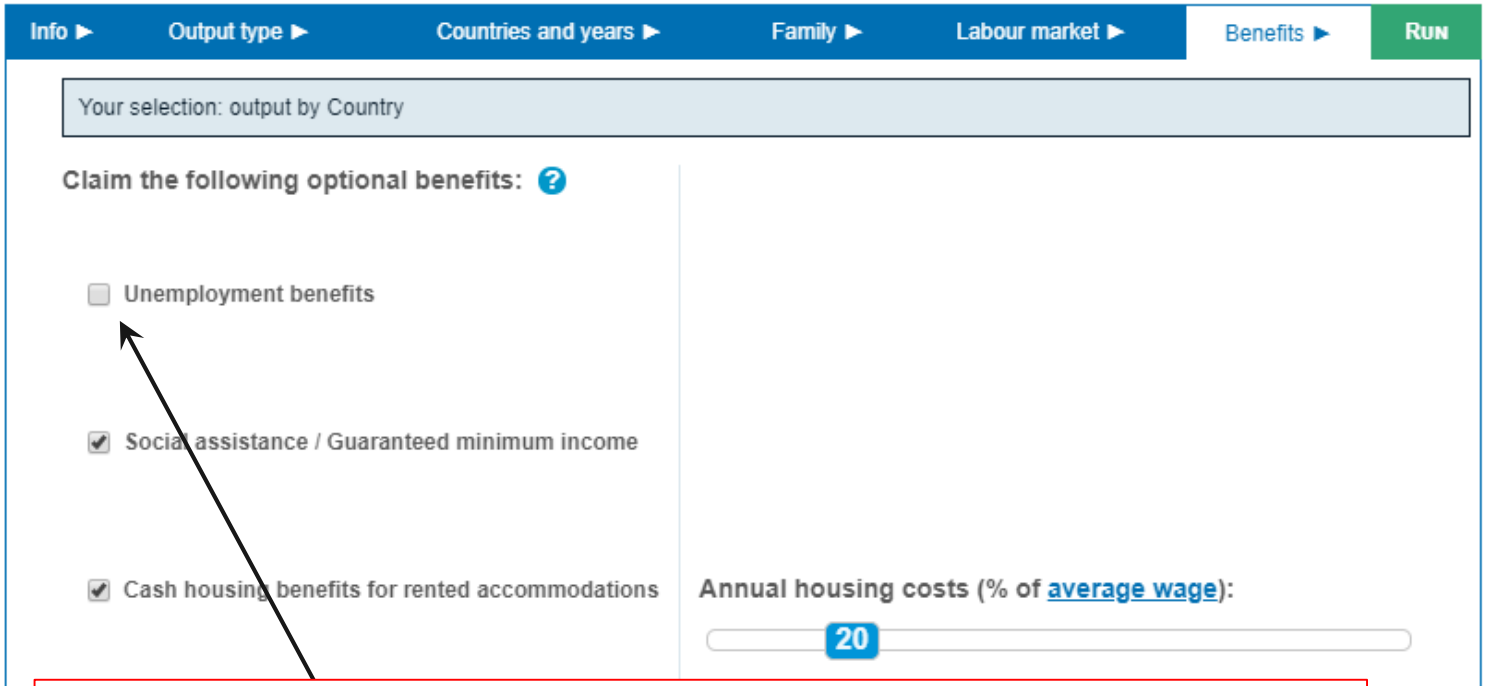
Step 1: Calculate the net family income for the out-of-work scenario



Note: in most countries SA doesn't change over time, but it is possible to select a different duration.
Here: we choose the 2nd month of entitlement (this is the standard assumption for the headline indicator)

ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario



Tick this box to calculate work incentives for individuals claiming unemployment benefits instead of social assistance / guaranteed minimum income benefits.
Then decide whether to allow the out of work person to claim social assistance benefits (on the top of unemployment benefits) by ticking/unticking the social assistance box underneath.

ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario

Info ► | Output type ► | Countries and years ► | Family ► | Labour market ► | Benefits ► | RUN

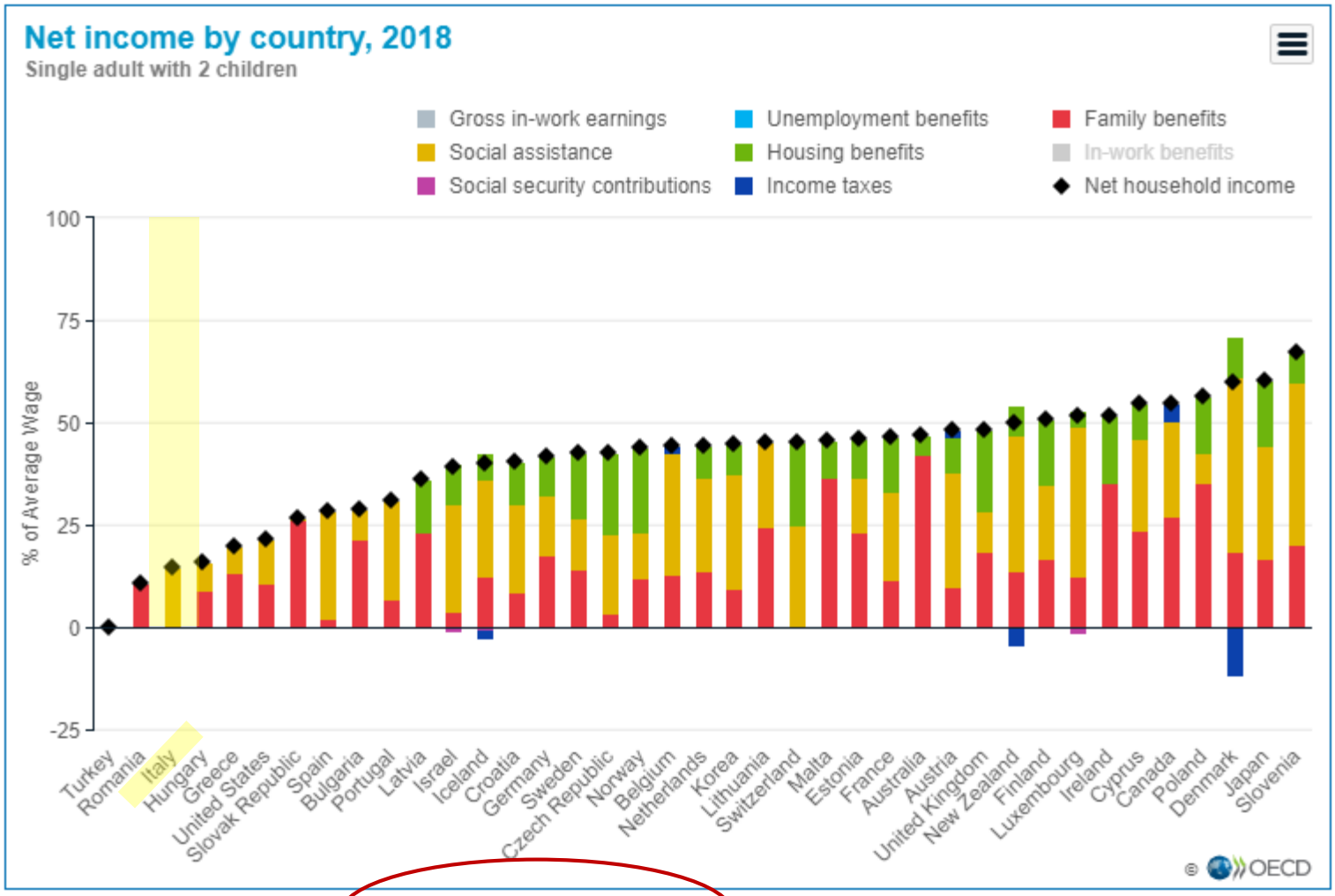
Your selection:

Output type	by Country
Country list	40 countries
Year	2018
Family type	Single person
Age of adults	40 years old
Number of children	2
Age of children	4, 6 years old
Activity status (first adult)	Without a job
Gross hourly wage (first adult)	n/a
Hours of work per week (first adult)	n/a
Total number of months of social security contributions	22 years
Time spent without a job (first adult)	2 months
Activity status (partner)	n/a
Gross hourly wage (partner)	n/a
Hours of work per week (partner)	n/a
Claim unemployment benefits	No
Annual previous earnings	n/a
Claim social assistance / GMI benefits	Yes
Claim cash housing benefits	Yes
Annual housing costs	20% of average wage
Claim temporary into-work benefits when starting a new job (first adult)	n/a
Months in the new job (first adult)	n/a

RESET RUN

ETR on entering employment:

Step 1: Calculate the net family income for the out-of-work scenario



ETR on entering employment:

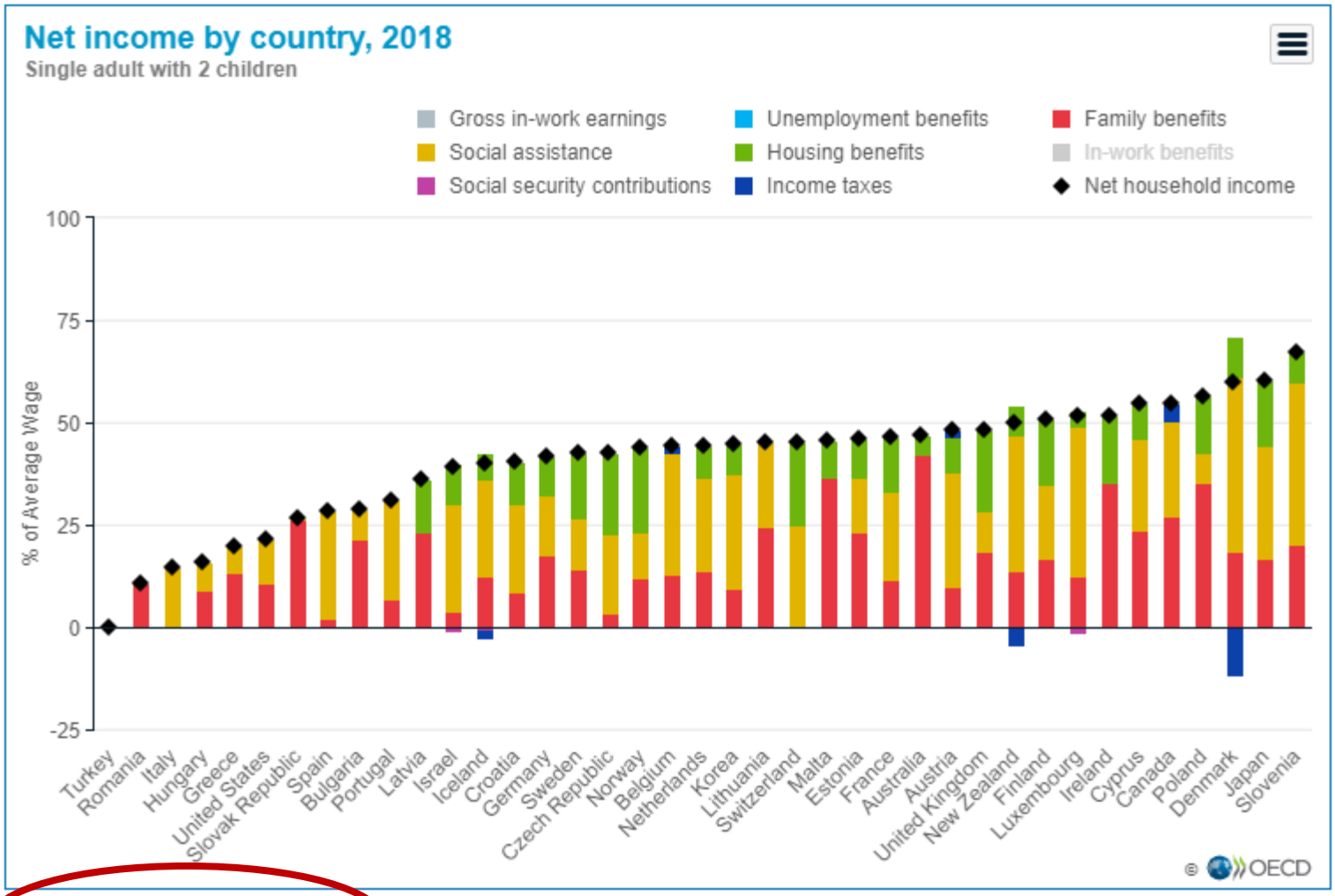
Step 1: Calculate the net family income for the out-of-work scenario

Save the family incomes for the **out of work scenario**

Country	Year	net	gross	sa	ub	hb	fb	iw	it	sc	Average Wage
Australia	2018	39650.65	0	0	0	4073.4	35577.25	0	0	0	84324
Austria	2018	22684.6	0	13359.84	0	4058.16	4597.6	0	-669	0	47120
Belgium	2018	21553.65	0	14287.92	0	0	6365.73	0	-900	0	48455
Bulgaria	2018	3983.1	0	983.1	0	0	3000	0	0	0	13895
Canada	2018	29275.95	0	12480	0	0	14556	0	-2239.95	0	53487
Cyprus	2018	12576	0	5214.78	0	1901.22	5460	0	0	0	23052
Czech Rep	2018	164140.8	0	74160	0	76660.79	13320	0	0	0	383304
Denmark	2018	252404.5	0	179916	0	42516	78180	0	48207.49	0	421547
Estonia	2018	7404	0	2172	0	1512	3720	0	0	0	16103
Finland	2018	22413.21	0	7946.51	0	7037.49	7429.2	0	0	0	43984
France	2018	18367.32	0	8588.62	0	5251.03	4576.82	0	49.14	0	39436
Greece	2018	4200	0	1380	0	0	2820	0	0	0	21214
Germany	2018	21088.93	0	7356.13	0	4768.81	8964	0	0	0	50546
Croatia	2018	38501.78	0	20160	0	10080	8261.78	0	0	0	94772
Hungary	2018	652800	0	273600	0	0	379200	0	0	0	4138492
Iceland	2018	3678139	0	2163276	0	603132	1135624	0	194938.9	28954	9152462
Israel	2018	59861.28	0	40472.64	0	15000	5624.64	0	0	1236	153115
Ireland	2018	24233.37	0	0	0	7738.17	16495.2	0	0	0	46774
Italy	2018	**4595.27**	0	4595.27	0	0	0	0	0	0	31292
Japan	2018	3133476	0	1428516	0	837600	867360	0	0	0	5188742
Lithuania	2018	5018.88	0	2292	0	0	2726.88	0	0	0	11121
Latvia	2018	4306.59	0	0	0	1523.31	2783.28	0	0	0	11881
Luxembou	2018	30677.16	0	21851.04	0	2088	7488.76	0	0	750.64	59497
Malta	2018	10633.18	0	0	0	2060.32	8572.86	0	0	0	23331
Netherland	2018	22960.72	0	11905	0	4044.96	7010.76	0	0	0	51567

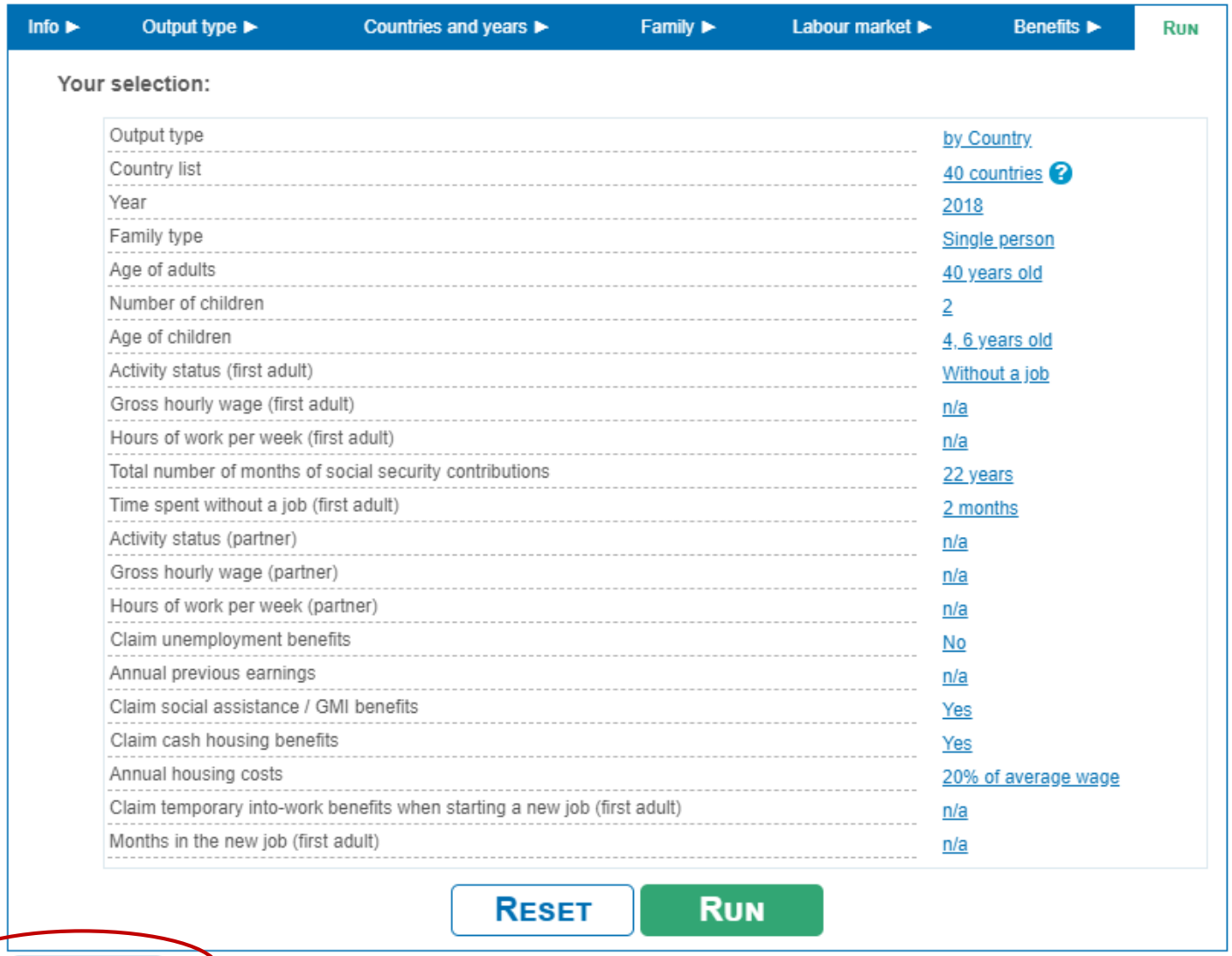
ETR on entering employment:

Step 2: Calculate the net family income for the in-work scenario



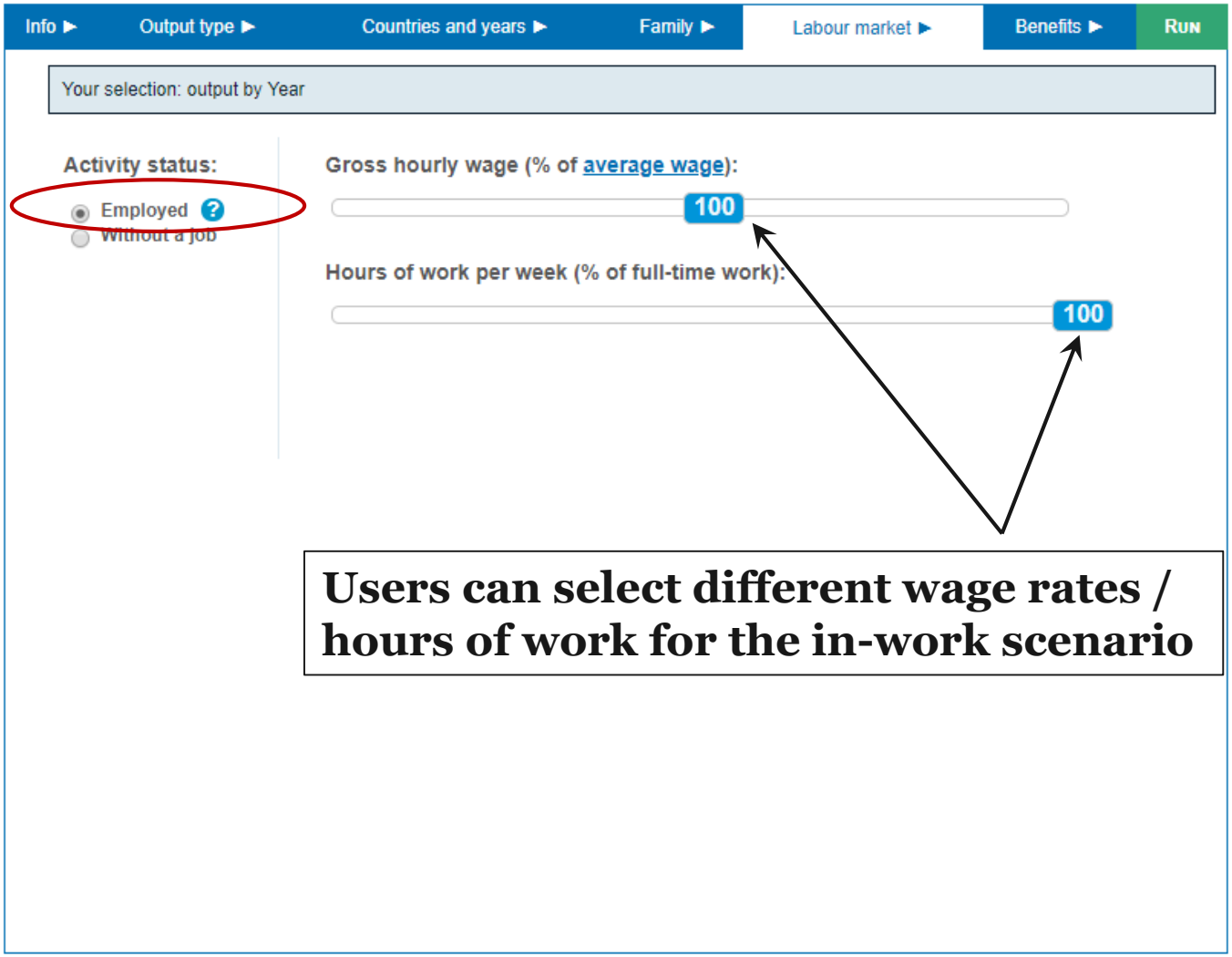
ETR on entering employment:

Step 2: Calculate the net family income for the in-work scenario



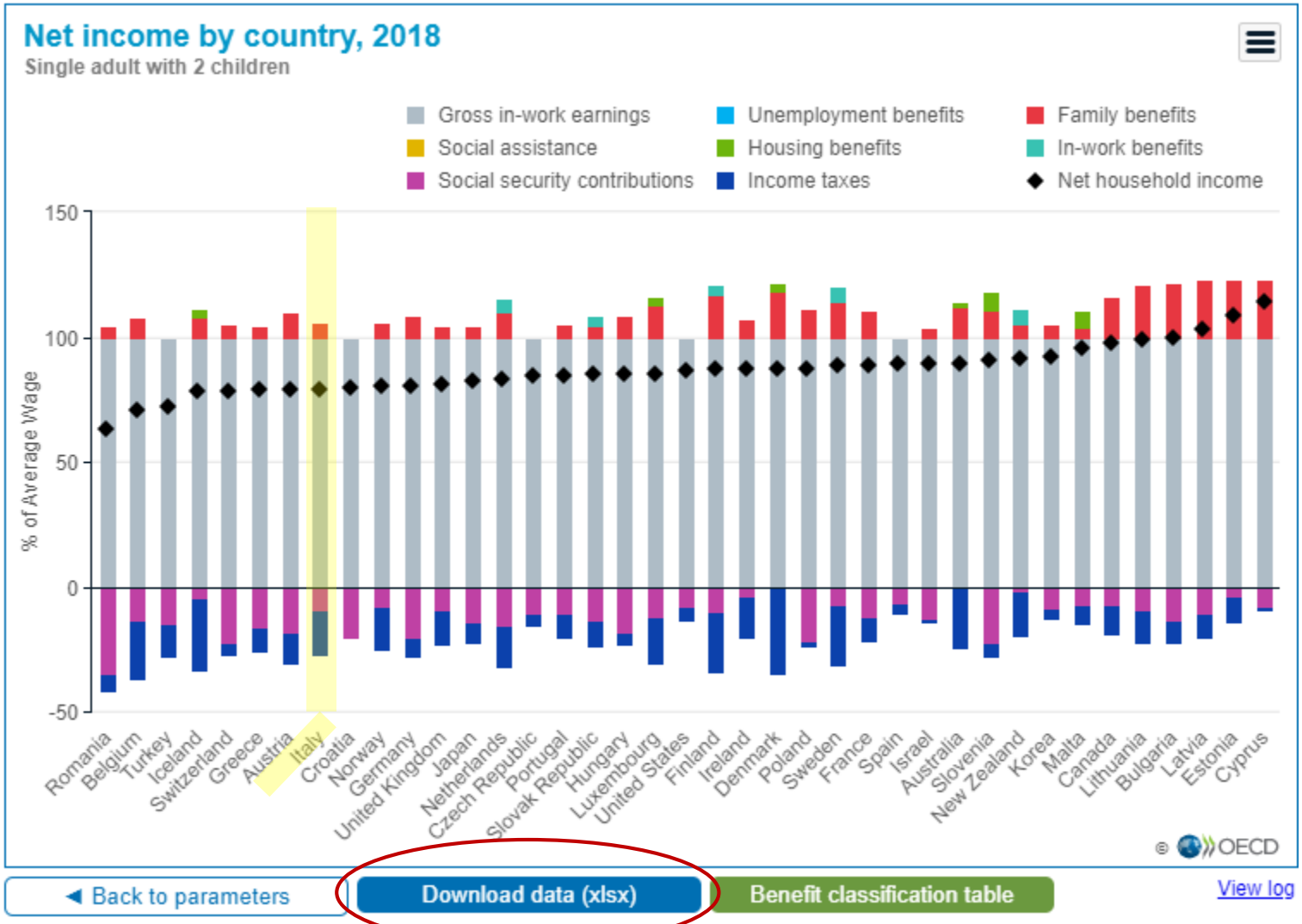
ETR on entering employment:

Step 2: Calculate the net family income for the in-work scenario



ETR on entering employment:

Step 2: Calculate the net family income for the in-work scenario



ETR on entering employment:

Step 2: Calculate the net family income for the in-work scenario

Save family income for the **in work scenario**

Country	Year	net	gross	sa	ub	hb	tb	iw	it	sc	Average Wage
Australia	2018	75381.84	84324.37	0	0	1631.46	10064.92	0	20638.91	0	84324
Austria	2018	37298.88	47119.68	0	0	0	4597.6	0	5947.63	8470.77	47120
Belgium	2018	34327.92	48455.28	0	0	0	3690.51	0	11139.24	6678.63	48455
Bulgaria	2018	13822.29	13895.07	0	0	0	3000	0	1158.03	1914.74	13895
Canada	2018	52305.59	53486.9	0	0	0	8789.28	0	6060.04	3910.54	53487
Cyprus	2018	26263.35	23052.27	0	0	0	5360	0	350.84	1798.08	23052
Czech Rep	2018	323544.4	383304	0	0	0	0	0	17596.09	42163.43	383304
Denmark	2018	367601.4	421547.3	0	0	13429.44	78180	0	144419.4	1136	421547
Estonia	2018	17519.24	16103.35	0	0	0	3720	0	1724.39	579.72	16103
Finland	2018	38235.07	43984.34	0	0	0	7429.2	1818.87	10695.66	4301.67	43984
France	2018	35075.89	39435.83	0	0	0	4210.91	0	3779.39	4791.45	39436
Greece	2018	16779.35	21213.95	0	0	0	1008	0	2048.37	3394.23	21214
Germany	2018	40658.16	50546.09	0	0	0	4308	0	3897.17	10298.77	50546
Croatia	2018	75817.8	94772.25	0	0	0	0	0	0	18954.45	94772
Hungary	2018	3527309	4138492	0	0	0	355200	0	200761.8	765621.1	4138492
Iceland	2018	7176281	9152462	0	0	306815.9	753562.8	0	2641507	395052.5	9152462
Israel	2018	136702.5	153114.9	0	0	0	5624.64	0	2391.78	19645.31	153115
Ireland	2018	40704.72	46774.27	0	0	0	3360	0	7558.58	1870.97	46774
Italy	2018	**24809.35**	31292.39	0	0	150	1787.04	0	5450.43	2969.65	31292
Japan	2018	4269561	5188742	0	0	0	240000	0	409407.1	749773.2	5188742
Lithuania	2018	11023.66	11120.56	0	0	0	2362.08	0	1458.12	1000.85	11121
Latvia	2018	12211.3	11881.39	0	0	0	2783.28	0	1146.41	1306.95	11881
Luxembou	2018	50808.8	59496.67	0	0	2088	7488.76	0	10910.24	7354.4	59497
Malta	2018	22343.42	23331	0	0	1600	900	0	1807.75	1679.83	23331

ETR on entering employment:

Step 3: calculate indicator

Put the two scenarios together and calculate the indicator using the formula: $1 - \frac{\Delta y_{net}}{\Delta y_{gross}}$

	A	B	C	D	E	F	G	H	I	J	K
		In work					Out of work				ETR
	Country	Year	net	gross		Country	Year	net	gross		
	Australia	2018	75381.84	84324.37		Australia	2018	39650.65	0		=100*(1-((H3-C3)/(I3-D3)))
	Austria	2018	37298.88	47119.68		Austria	2018	22684.6	0		69
	Belgium	2018	34327.92	48455.28		Belgium	2018	21553.65	0		74
	Bulgaria	2018	13822.29	13895.07		Bulgaria	2018	3983.1	0		29
	Canada	2018	52305.59	53486.9		Canada	2018	29275.95	0		57
	Cyprus	2018	26263.35	23052.27		Cyprus	2018	12576	0		41
	Czech Rep	2018	323544.4	383304		Czech Rep	2018	164140.8	0		58
	Denmark	2018	367601.4	421547.3		Denmark	2018	252404.5	0		73
	Estonia	2018	17519.24	16103.35		Estonia	2018	7404	0		37
	Finland	2018	38235.07	43984.34		Finland	2018	22413.21	0		64
	France	2018	35075.89	39435.83		France	2018	18367.32	0		58
	Greece	2018	16779.35	21213.95		Greece	2018	4200	0		41
	Germany	2018	40658.16	50546.09		Germany	2018	21088.93	0		61
	Croatia	2018	75817.8	94772.25		Croatia	2018	38501.78	0		61
	Hungary	2018	3527309	4138492		Hungary	2018	652800	0		31
	Iceland	2018	7176281	9152462		Iceland	2018	3678139	0		62
	Israel	2018	136702.5	153114.9		Israel	2018	59861.28	0		50
	Ireland	2018	40704.72	46774.27		Ireland	2018	24233.37	0		65
	Italy	2018	**24809.35**	31292.39		Italy	2018	**4595.27**	0		35
	Japan	2018	4269561	5188742		Japan	2018	3133476	0		78
	Lithuania	2018	11023.66	11120.56		Lithuania	2018	5018.88	0		46

35% of additional gross earnings is lost to higher taxes and lower benefits when a person moves into work

Thank you!

Please visit the project webpage for more information:
www.oecd.org/social/benefits-and-wages
AND do not hesitate to contact us if you have further questions:
Tax-Benefit.Models@oecd.org

Most of the indicators described here are published in our project website @
www.oecd.org/social/benefits-and-wages/data