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Commission

EUROMOD Scientific Report 2022

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Foreword

This report was prepared by the JRC on behalf of the EUROMOD Scientific Advisory Board and for the attention of the EUROMOD Steering Committee.

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1 Introduction

Since January 2021, the Joint Research Centre (JRC) is fully responsible for the maintenance and development of the EUROMOD model and software. This task is carried out jointly with Eurostat (ESTAT) for what concerns the preparation of the EUROMOD input datasets, and in close collaboration with the network of EUROMOD National Teams (NTs). The development and maintenance of EUROMOD is co-financed by DG EMPL, DG ECFIN, DG TAXUD and DG REFORM.

In accordance with the provisions of the EUROMOD governance structure, this Scientific Report summarises the state of the EUROMOD updating process, the uses of EUROMOD and the measures taken to foster its use, recent and planned model developments and the recommendations issued to DG JRC and DG ESTAT by the EUROMOD Scientific Advisory Board.

The report is organised as follows. Section 2 describes the activities related to the EUROMOD update and maintenance over 2022. Section 3 assesses the main uses of EUROMOD in 2022, both within the European Commission and externally. Section 4 describes the actions aimed at fostering the use of EUROMOD, including training and dissemination activities. Section 5 introduces the ongoing and planned developments. Section 6 lists the recommendations issued by the SAB to the JRC and ESTAT. Conclusions follow in Section 7.

2 EUROMOD maintenance and update in 2022

2.1 Releases

As foreseen in the Administrative Arrangement (AA) for the maintenance and development of EUROMOD, policies have been updated to 2022 and 2020 SILC-based datasets have been incorporated to the model. The following subsections give more details.

2.1.1 Model

The process of model update is proceeding according to plans, with EUROMOD beta versions released in April and September 2022 (details in Table 1). The 2022 EUROMOD stable release (I5.0+) is planned for January 2023.

After the release of the September beta version, two important changes were introduced in the model and will be available in the public release:

- The systematic update of all the min/max/abs functions from the old syntax (e.g. $x < \max > y$) to the new syntax (e.g. $\max(x,y)$), a task foreseen since before the transfer of the model to the JRC. This has been done automatically for all countries and all systems using a script. Cases that presented issues were checked manually.
- The addition of external statistics on aggregates, inequality and poverty, to be used for macrovalidation purposes, and also available to be used within the spine. See Subsection 2.1.3 for more details on how these statistics are handled by EUROMOD.

Table 1. Model releases in 2022

	I4.62+ beta	I4.109+ beta
Release date	12/05/2022	05/09/2022
Policies	Up to 2021	Up to 2022
Uprating factors	Updated for 2021	Updated for 2021 New for 2022
Data	Updated to 2020 data for 16 countries (AT BE BG CZ EE ES FI HR LT LV MT PT RO SE SI SK)	Updated to 2020 data for 22 countries (all but DE, DK, FR, IT, LU)
Add-ons	-	NRR, MTR and TCA add-ons updated to run with 2022 systems
Other	Bug fixes and improvements in the country models	Bug fixes and improvements in the country models

2.1.2 Data

The EUROMOD input datasets based on 2020 EU SILC have been prepared for all EU countries except DE, DK, FR, IT and LU. The preparation of the datasets for DE, DK, FR and IT were delayed due to different reasons, but are being prepared and will be ready for the stable release in January. There will not be dataset for LU, since there is no complete 2020 EU-SILC available.

Following the plans, most National Statistical Institutes (NSIs) signed practical arrangements with ESTAT and JRC before 2022; therefore, the corresponding datasets were produced based on the EUROMOD-SILC dataset (EMSD) procedure. PT and RO NSIs signed their practical arrangements in 2022, so the EMSD procedure will be implemented next year. To sum up, all member states will use EMSD in 2023, except PL, for which ESTAT has started negotiations.

Representatives of the JRC team continue to take part to the regular EU-SILC Working Group and the EU-SILC task force meetings, in line with past practice. These meetings steer the development of the SILC survey. Additionally, monthly meetings are held between ESTAT and JRC EUROMOD teams.

2.1.3 Software

JRC released five new versions of the EUROMOD software between January and November 2022. Two of them (January and September) accompanied model releases. Details are shown in Table 2.

Table 2. Changes and improvements in software releases in 2022

		v3.4.7	v3.4.10	v3.5.1	v3.5.2	v3.5.3
Release date		Jan 2022	Feb 2022	Sep 2022	Oct 2022	Nov 2022
Core software	Speed			*		
	Functions			*		
	External statistics			**	*	*
	Version control					*
	Visual identity	*				
Plugins	HHoT	*		*		
	Statistics Presenter			*		
	In-depth Analysis			*		
	Macrovalidation			**	*	*

* Changes and improvements

** New tool or functionality

The main novelty introduced in 2022 is the macrovalidation tool, which consists of two elements:

- The External statistics table. It is part of the core software and allows to save aggregates from external statistics, for both monetary variables (market income, taxes and benefits) and inequality and poverty indicators. It is country-specific (works in a similar way to the Uprating factors table), but it is also project-specific (the table shows the monetary variables corresponding to the project that is being used). These statistics are used for the Macrovalidation plugin (see next point) and can also be used directly in the spine (as constants).
- The Macrovalidation plugin. It compares the aggregates in the External statistics table with those produced by EUROMOD, for macrovalidation purposes. In particular, the plugin produces the tables that will be included in the EUROMOD country reports.

2.2 Other developments

Besides the releases, three additional aspects should be highlighted:

- The JRC team has been working on the update and improvement of the Indirect Tax Tool (ITT), in order to incorporate it in January 2023 to the master version of EUROMOD, with the objective of making it public in 2024. The model and corresponding data has been shared with selected users and institutions for testing purposes. More details about planned work can be found in Subsection 5.1.
- JRC has reached an agreement with the University of Essex to keep full compatibility between the EU and the UK model.¹ This means that, since January 2023, users of the EU model can add the UK files and they will work like when the UK was part of the EU model. The compatibility also works in the opposite direction (EU countries can be added to UKMOD).
- As done in previous years, the EUROMOD software includes contributions from the University of Essex and UNU WIDER, in order for them to be able to use different templates for the Statistics presenter, adapted to their non-EU models.

2.3 Changes in teams and committees

The JRC team experienced several changes throughout 2022. Table 3 summarises them.

Table 3. Changes in the JRC team

	Left	Started
Coordination	Alberto Tumino	Fidel Picos ^a Antonio F. Amores (ITT)
Model development	Vanda Almeida Michael Christl	Paola De Agostini ^b Chrysa Leventi Silvia Navarro Hannes Serruys
Software development	Estefanía Vázquez	Kostas Manios Bianey Palma ^a

a. Already member of the team, changed role.

b. As external contractor since March 2022, contract agent since December 2022.

As can be seen in the table, the JRC team has expanded, both in terms of model and software developers. Other two model developers will join during the first semester of 2023.

There were also changes in the ESTAT team, as can be seen in Table 4.

Table 4. Changes in the ESTAT team

	Left	Started
Coordination	Albane Gourdol	Sébastien Chami
Data preparation	-	Anastasija Norkuviene
Practical arrangements	-	Alessandro Albano ^a

a. Not formally in the team.

During 2022 the NTs were the same of 2021.

Regarding the Scientific Advisory Board, Chrysa Leventi resigned on 15th June 2022 due to her joining the EUROMOD team at the JRC. She was replaced by Iva Tasseva (BG NT), who was elected by the EUROMOD NTs.

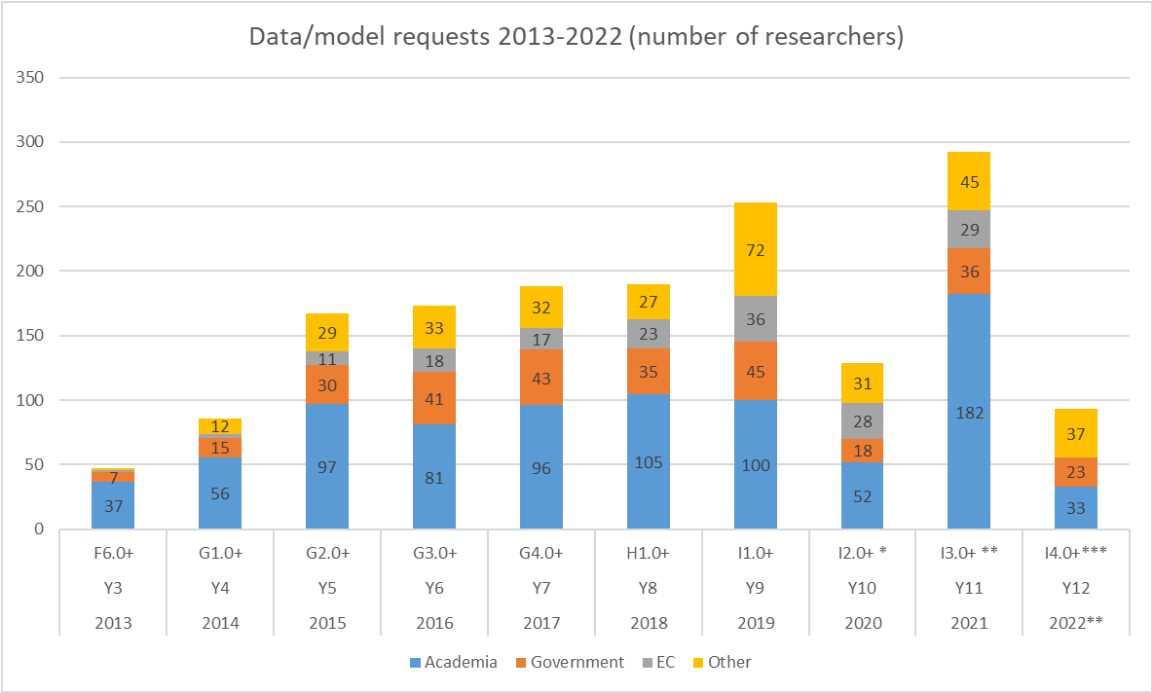
¹ This follows the 2021 recommendation 2 by the Scientific Advisory Board. In principle the same arrangement could be made effective for other non-EU countries.

3 Uses of EUROMOD

3.1 Access to EUROMOD

Figure 1 below shows the number of data/model requests in the last ten years, disaggregated by type of institution to which the user belongs.

Figure 1. Completed EUROMOD access requests by type of institution (until 31/08/2022)



Source: own elaboration and University of Essex

* January-September 2020, due to unavailability of information.

** From 6th September 2021 onwards, requests corresponds only to data, and permission lasts until the end of the RPP.

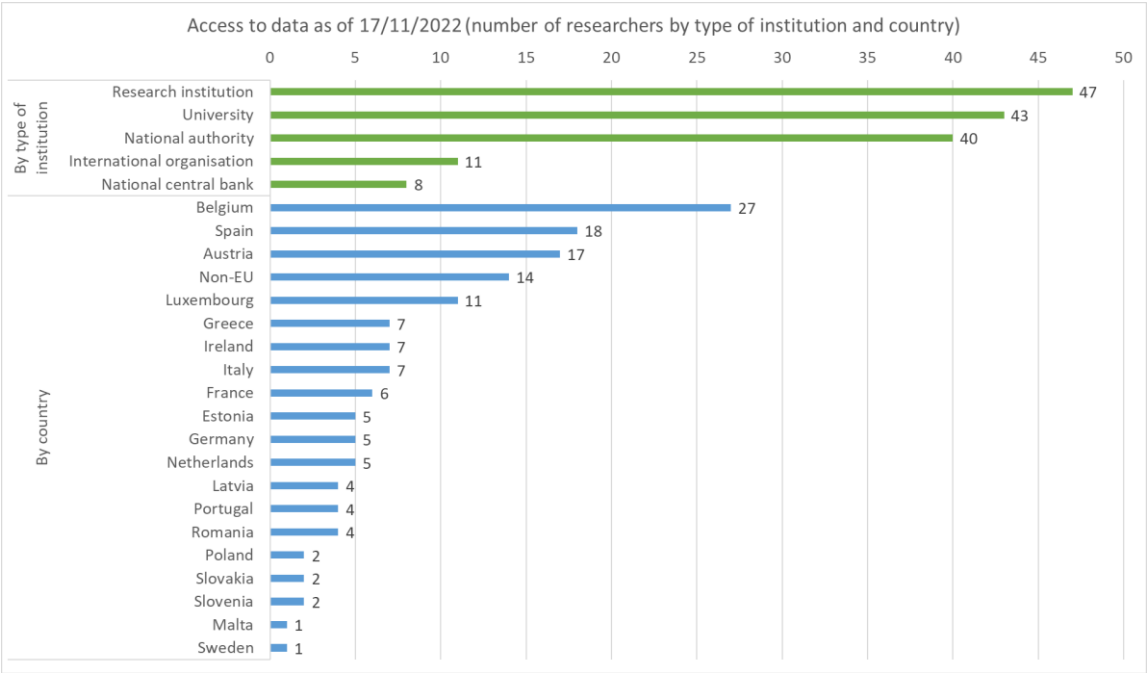
*** Until 31st August 2022.

2022 is the first year in which the new procedure was fully implemented. This means that all the researchers that requested data since 6th September 2021 have access until their RPPs expire, so they do not need to request again.

As a complement of the previous information, Figure 2 shows the number of completed requests as of 17/11/2022, with the new procedure, classified by type of institution and country.

A total of 149 users have access to data with the new procedure. Around 60% of them belong to research and policy institutes and universities, around 27% to national authorities and the rest to central banks and international organisations. Note that many users still have access to data by the old procedure, i.e. up to 2018 input datasets. Also these figures do not show all the uses of the model, since some users may use EUROMOD only with HHoT.

Figure 2. Access to data by type of institution and country

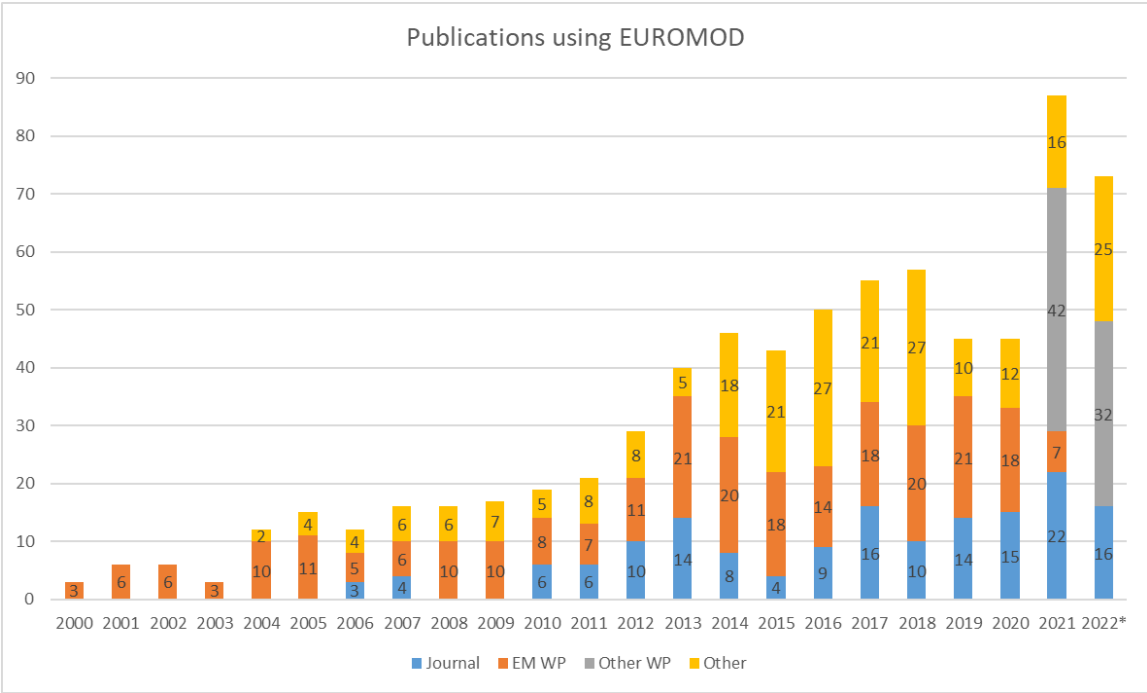


Source: own elaboration

3.2 Research

Figure 3 shows the number of publications using EUROMOD since 1999. Figures for 2022 correspond to the period January-October.

Figure 3. Publications using EUROMOD (1999-2022)



Source: University of Essex (up to September 2020); own elaboration using Google Scholar (from September 2020)

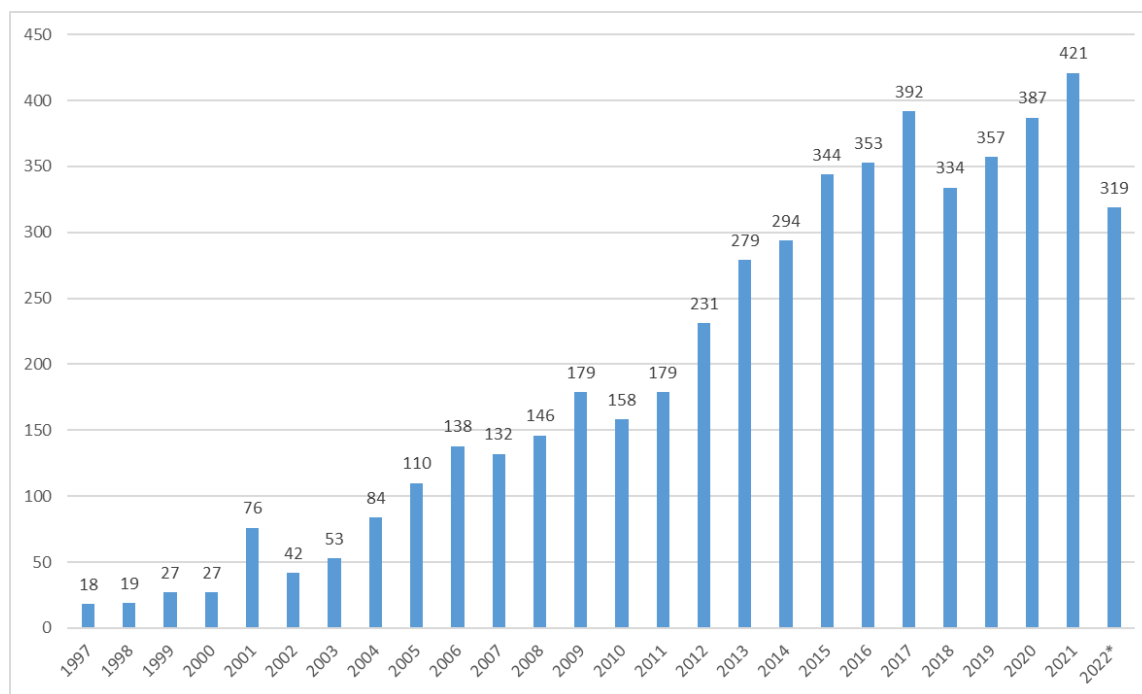
* Until 31st October 2022

The values of 2022 are already close to those of 2021, even if they correspond to the period January-October only. The numbers are much higher than previous years, what may be due to a different search methodology

between JRC and the University of Essex. Regarding the breakdown, there is an increase in the section “other”, which corresponds to reports and book chapters.²

Finally, Figure 4 shows the number of publications that use or mention EUROMOD since 1997.

Figure 4. Publications using or mentioning EUROMOD (1997-2022)



Source: Google Scholar (articles containing the word EUROMOD)

* Until 17th November 2022

The graph shows that 2021 is the peak of the whole series. The figure for 2022 is provisional, so it is expected to increase in the remaining days of the year.

3.3 Institutional use

In 2022 EUROMOD continued being an important analytical tool to support EU policies in the area of taxation and social policies. EUROMOD-based analyses mainly contribute to the Commission priority on “*An economy that works for people*” (which encompasses work related to social fairness and prosperity), with most of the issues falling within the European Pillar of Social Rights, the framework to improve EU welfare systems and labour markets for all Europeans. In this context, EUROMOD was used in combination with the EUROLAB model³ to support the revision of the Barcelona targets on childcare⁴, assessing the impact on labour participation of mothers of alternative scenarios of childcare policies. Results from the model were also key for a Commission proposal on adequate minimum income schemes, calling on Member States to modernise their minimum income schemes, as well as a Communication for better assessment of distributional impacts of Member States’ policies, as part of the ongoing efforts to reduce poverty and social exclusion in Europe⁵.

In the context of the European Semester and the implementation of the Recovery and Resilience Plans, the JRC also used EUROMOD for in-depth country-specific analyses of several Member States’ tax-benefit systems, in collaboration with policy DGs.

Thematic studies carried out by the JRC have also contributed to policy uses across various domains. Notably, the analysis of the cushioning effect of fiscal policy in the EU (including short-time work schemes) during the

² The category “other working papers” was introduced in 2021. However, the sum of this category and “other” should be comparable with the previous category “other”.

³ [EUROLAB: A Multidimensional Labour Supply-Demand Model for EU countries | EUROMOD - Tax-benefit microsimulation model for the European Union \(europa.eu\)](https://europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

⁴ [A European Care Strategy \(europa.eu\)](https://europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

⁵ [Minimum income: more effective support needed to fight poverty and promote employment - Employment, Social Affairs & Inclusion - European Commission \(europa.eu\)](https://europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

COVID-19 pandemic and the flash estimates of income inequalities and poverty⁶, continued being in the spotlight. Following the activation of the Temporary Protection Directive to provide protection in EU countries to people displaced from Ukraine, the JRC also used EUROMOD to provide estimates of the fiscal impact of such migration flows into the EU (the analyses supported the EC 2022 Spring and Autumn Economic Forecasts and also featured in the IMF Regional Outlook for Europe⁷). Other important thematic studies based on the model have covered the following topics: the future of taxation in changing labour markets (results fed the Annual Report on Taxation⁸); the automatic stabilisation effect of the tax-benefit systems (used in the IMF Fiscal Monitor⁹); and the effects of fiscal policy on young population (in the context of the European Year of Youth: analyses featuring in the 2022 Employment and Social Developments in Europe Review¹⁰).

Finally, it is worth mentioning that EUROMOD is used for the assessment of tax-benefit policies by national administrations in the EU. According to a study carried out for the European Commission¹¹, more than half of the member states used it regularly in 2020. If we check the completed requests for accessing EUROMOD data, we find 13 national authorities, 3 central banks and 3 international organisations.

⁶ [Flash estimates of income inequalities and poverty indicators for 2021 \(europa.eu\)](#)

⁷ [Regional Economic Outlook for Europe, October 2022 \(imf.org\)](#)

⁸ [Annual report on taxation 2022 - Publications Office of the EU \(europa.eu\)](#)

⁹ [Fiscal Monitor, October 2022 \(imf.org\)](#)

¹⁰ [ESDE: Employment and Social Developments in Europe review | Knowledge for policy \(europa.eu\)](#)

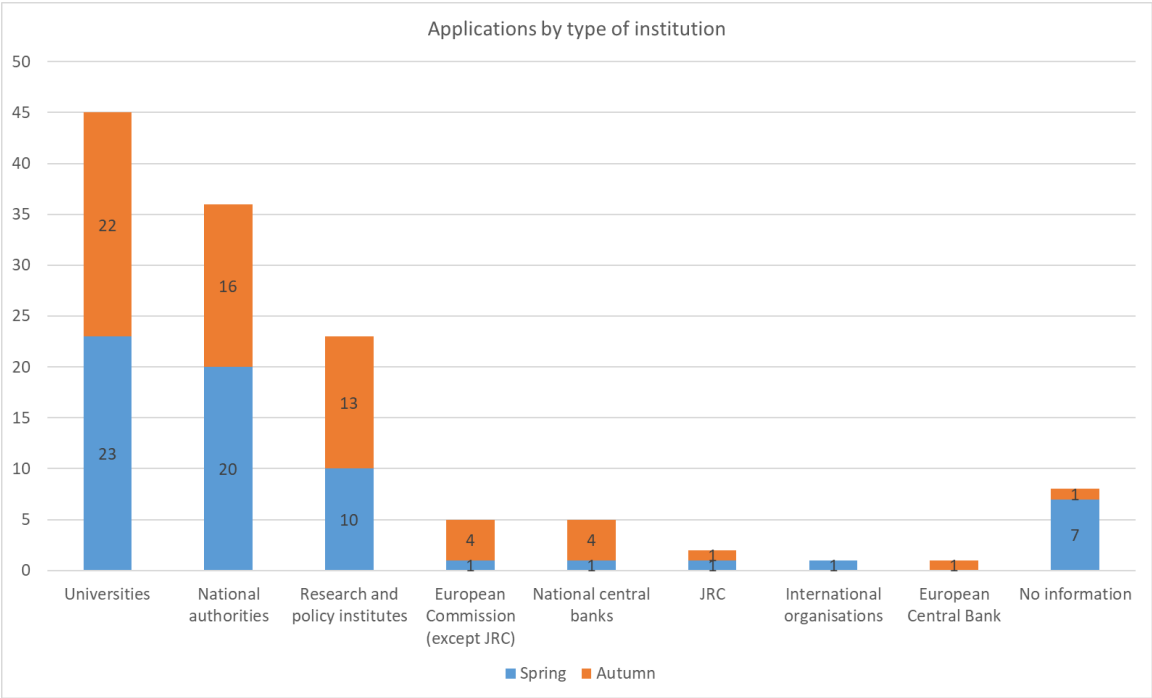
¹¹ [Study on Distributional Impact Assessment \(europa.eu\)](#)

4 Fostering the use of EUROMOD

4.1 Training activities

During 2022, JRC organised two EUROMOD general trainings in April and October. Both trainings took place online, using Webex for the classes and a dedicated space in the EUROMOD website for the material. More than 60 students participated in each of the trainings, similarly to October 2021. Figures 5 and 6 show the numbers classified by type of institution and country.

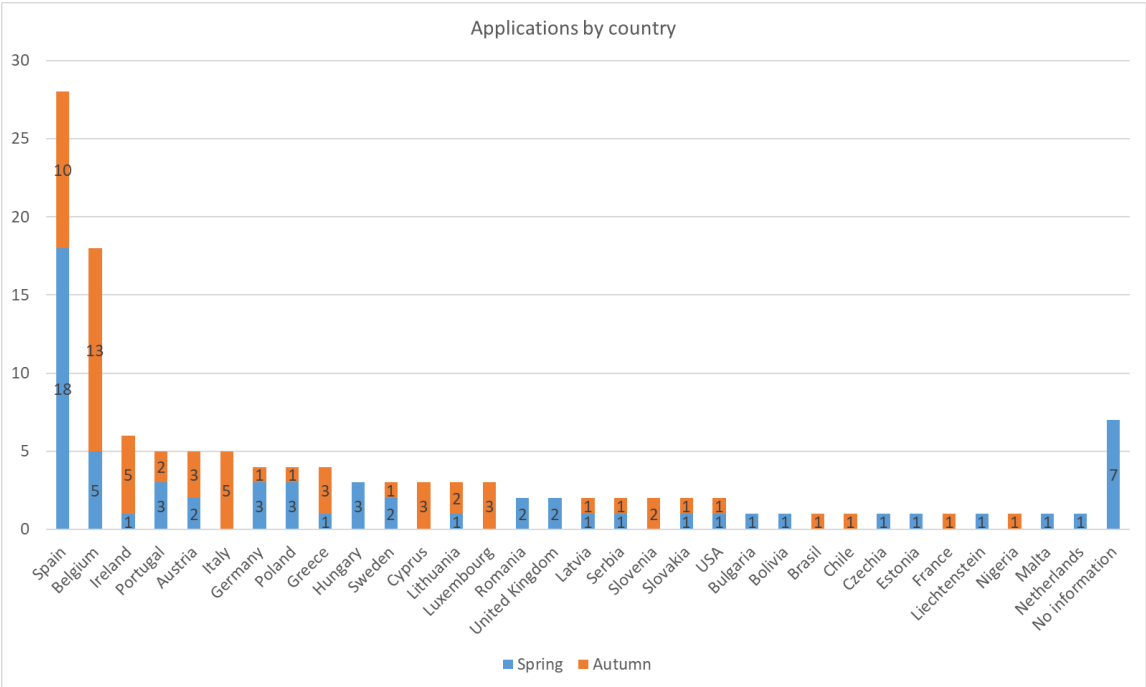
Figure 5. Applications by type of institution



Source: own elaboration

In addition to the general training, the JRC has continued delivering open online technical sessions dedicated to EUROMOD. In 2022 they focused on advanced EUROMOD functions (July) and the adaptation of alternative data sources to EUROMOD (October). The technical sessions were advertised in the EUROMOD website and newsletter, as well as among NTs and partner DGs. They were streamed online through Webex, with an average attendance of around 50 participants. They were also recorded and, after proper edition, they will be upload to the website (the videos of the 2021 sessions are already available).

Figure 6. Applications by country



Source: own elaboration

4.2 Communication

The EUROMOD website is always under continuous maintenance and development. This year the JRC worked to host the EUROMOD Autumn training in our website. The JRC created, with the help of our colleagues from IT, a webpage dedicated to host the training material and other training-related information. It was open only to trainees and only during a limited period of time. This development will allow us to organize future trainings in a more efficient manner. Additionally, the EUROMOD team at the JRC plans to host a new pilot project that has already started in collaboration with another JRC team (see Subsection 5.4 for details).

This year the JRC changed the software that monitors the visits to our website in order to have more accurate statistics and also to track the information only of the users that accept the cookies consent. The new software will allow us to make a yearly analysis to evaluate the growth of the website in terms of number of audience and downloads. However, there is a break in the series in relation to previous statistics, since before all visits were counted (not only the ones accepting cookies).

Figure 7 shows the top visits, the pages with more than 400 unique page views, while Figure 8 shows the top unique downloads. Please note that the statistics of this year cover only the period from May to November, since the new tracking software was implemented in May.

Figure 7. Top unique page views in the EUROMOD website

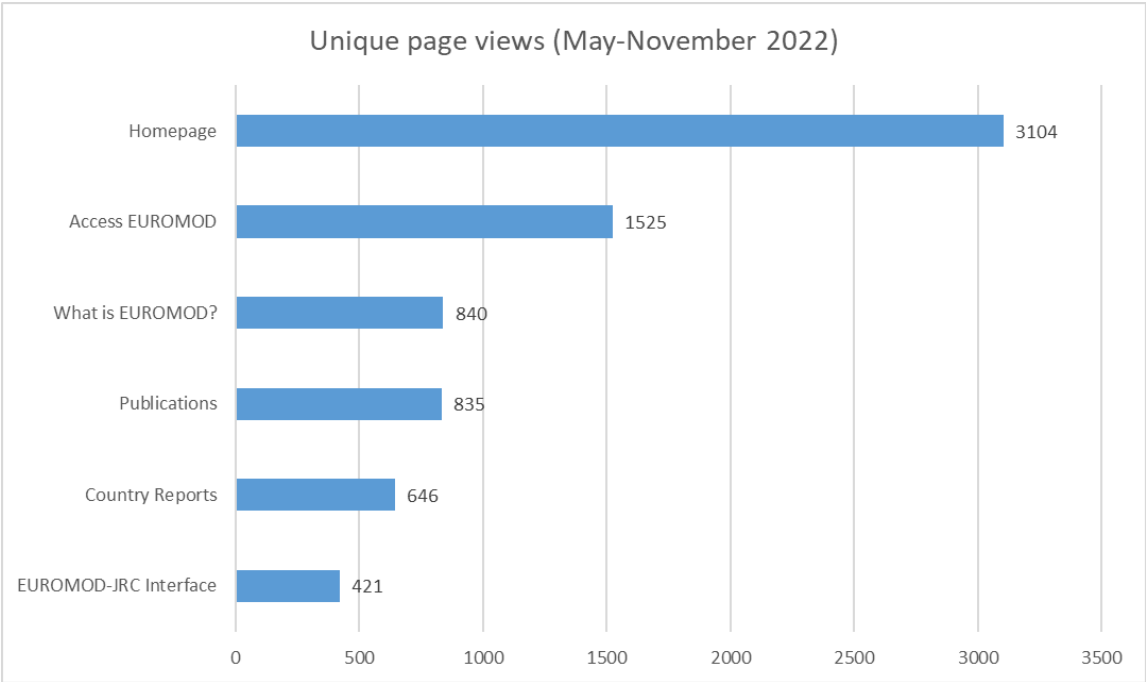
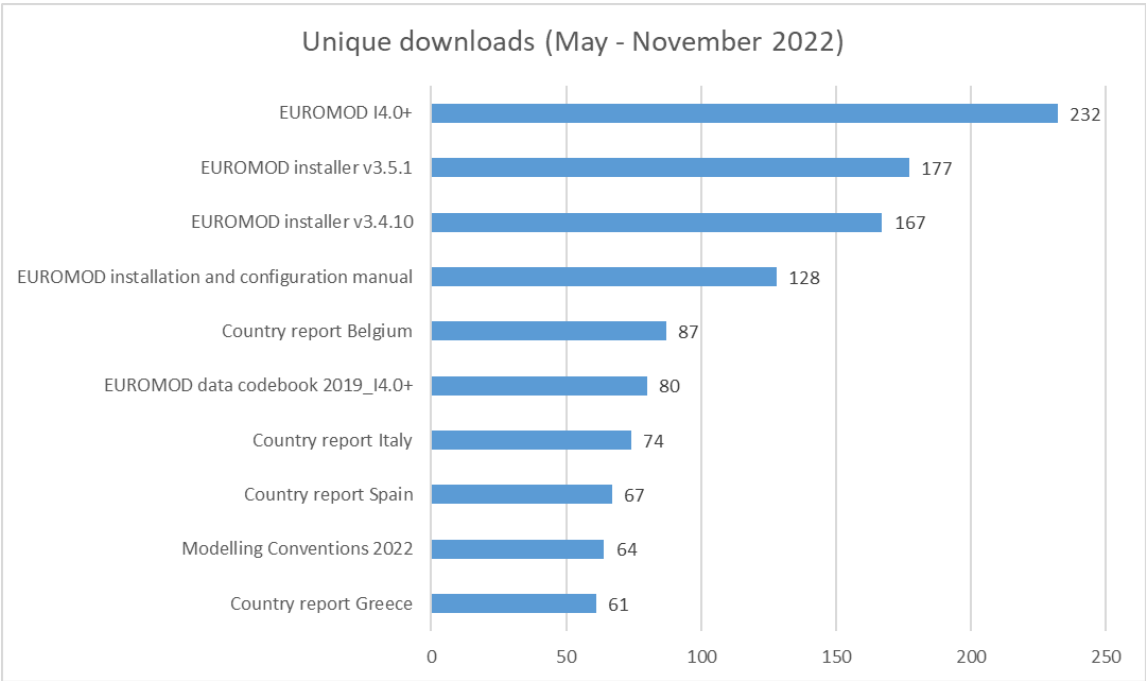


Figure 8. Top files downloaded from the EUROMOD website



To complement the information disseminated via the website, the JRC released six EUROMOD newsletters over the course 2022, approximately every two months. The subscription to the EUROMOD newsletter is done through the website, where all the previous newsletters are stored as well. Currently there are around 500 subscribers.

The JRC also keeps continuous communication with EUROMOD users and partners. In particular, information is sent by email to NTs, partner DGs, counterparts for technical support and other collaborators on the main EUROMOD developments and releases; a technical forum with around 150 users is maintained in S-CIRCBAC to discuss bugs and technical model and software improvements; and support to users is given to users requesting it via email or contact form.

4.3 EUROMOD Workshop and Annual Meeting

The EUROMOD Annual Meeting and Research Workshop took place from 28 to 30 September 2022 in Prague, co-organised by the Czech EUROMOD National Team based at the Center for Economic Research and Graduate Education - Economics Institute (CERGE-EI) and the EUROMOD team at JRC. The events gathered more than 100 participants, including JRC staff, representatives from partner DGs, members of the 27 EUROMOD NTs and several invited experts.

The goal of the Annual Meeting is to take stock of the development and maintenance of EUROMOD, plan the coming work, and exchange views on the future development of the model. The main sessions of the Meeting covered an overview of the work carried out in 2022; uses of EUROMOD for both country-specific analysis and EU-wide initiatives, highlighting the continuous importance of the model to support EC policies; statistics on external use, access to the data and training attendance; recent and planned software updates; developments of the model and its extended functionalities; input data; and the EUROMOD Indirect Tax Tool. The Annual Meeting ended with presentations of EUROMOD-related research carried out by NTs and the JRC.

The Research Workshop gathered academic and institutional EUROMOD users, to share mainly their model-based work and get feedback from the EUROMOD community. The presentations were grouped in four sessions, covering topical issues such as macroeconomic challenges in microsimulation modelling, indirect taxation in light of the energy crisis and the green transition, the redistributive role of welfare policies and labour markets, and non-EU model developments. Additionally, several experts were invited to participate in a round table on “Distributional Impact Assessments using microsimulation methods”, a timely debate in view of the adoption of an EC Communication on the topic on the very same day.

On the side, CERGE-EI organised a special event in the framework of the Czech Presidency of the Council of the EU, chaired by Klára Kalíšková (CERGE-EI) about the importance of evidence-based policy-making, using EUROMOD as illustrating example. Speakers included Štěpán Jurajda (Deputy Minister for R&D of the Czech Government), Karel Bláha (Deputy Minister for Legislation of the Czech Government), Salvador Barrios (Head of Unit, JRC), Anne Clemenceau (Head of Unit, ESTAT), Christoph Schwierz (Head of Unit, DG REFORM) and Loukas Stemitsiotis (Head of Unit, DG EMPL)

The full programmes of the two events were made public in the EUROMOD website.¹²

4.4 A new EUROMOD working paper

Following 2021 recommendation 6 from the Scientific Advisory Board a new Working Paper (or similar) describing the current state of EUROMOD is being written, coordinated by JRC and involving co-authors from the SAB. This will effectively replace the out-of-date Sutherland and Figari (2013).

4.5 Other initiatives

The European Pillar of Social Rights Action Plan put forward a number of initiatives aiming at reducing socio-economic inequalities and poverty. One of them was for the Commission to adopt in 2022 guidance to Member States on making greater use of distributional impact assessments (DIAs). DIAs encompass analyses that assess the distributional effects of public policies on the income of various groups across the population. They provide useful information base, and help policy-makers to decide between different reform options, to design flanking measures to protect vulnerable groups and overall can be expected to lead to the design of policies that limit negative social outcomes. The guidance took the form of an EC Communication, accompanied by a Staff Working Document on “Better assessing the distributional impact of Member States’ policies”, which was adopted in September 2022.¹³

The Communication makes a strong case for deploying sound models to provide reliable pictures of the distributional impact of policy changes. In particular, the use of microsimulation models by Member States is encouraged, as essential to estimate the effects of tax-benefit policy changes on household incomes along the income distribution, poverty and income inequality. Among them, EUROMOD is widely mentioned and promoted, as the reference tax-benefit microsimulation model for the EU, maintained by the Commission and available for all Member States. Thus, the Commission will support Member States in setting up or enhancing their DIA

¹² <https://euromod-web.jrc.ec.europa.eu/news-and-events/events/euromod-annual-meeting-and-research-workshop-2022>

¹³ Both the Communication and the Staff Working document can be found in <https://ec.europa.eu/social/BlobServlet?docId=26123&langId=en>.

practices, including by boosting mutual learning and further developing the functionalities and uses of EUROMOD.

5 Planned developments

This section highlights the main EUROMOD current and planned developments for 2023.

5.1 Indirect Tax Tool (ITT)

The ITT extends EUROMOD to include indirect taxation on household consumption (VAT/excises). The project started in 2019 in cooperation with KU Leuven, the University of Essex and Praxis. Eighteen Member States were covered by the ITT extension by the end of 2020. The remaining nine Member States have been incorporated in Spring 2022, after extensive checking.

The ITT complements the SILC microdata with information on households' consumption expenditure imputed from household budget surveys, mainly the EU-Household Budget Survey (EU-HBS). However, the data of some countries was not available/suitable at ESTAT (e.g. Austria and Luxembourg 2010; Austria 2015). The JRC reached the proper agreements with the institutions holding the datasets (e.g. Statistics Austria and STATEC Luxembourg) to be able to disseminate ITT without specific administrative arrangements for each user.

Currently, 2010 and 2019 policy systems run with the 2010 input data. This has been made available in June 2022 as a beta version to users that manifested their interest in the tool. A technical session on the usage of the ITT was delivered in July 2022.

In Autumn 2022, the JRC incorporated 2015 HBS and are working to have 2022 policies implemented by Spring 2023. Moreover, the JRC targets to implement the special policies to cushion the energy crisis effects as well for Summer 2023.

We are working to have the ITT policies in the master version by January 2023. The plan is to release it publicly in a beta version of the model in 2024. From then, the maintenance of the ITT policies is intended to be done by NTs, either through the new Framework Contracts that already include these ITT-related tasks or through specific contracts for the countries for which the framework contracts have not been renewed at that time. The update of the ITT dataset is intended to be done annually by the JRC for the medium term. The JRC is also exploring centralised databases to try to automatize as much as possible the update of the ITT policies.

The JRC is currently reflecting on important issues such the simplification of the policy spine, deeper integration with the in-depth analysis plugin or the macrovalidation tool.

5.2 Use of alternative sources of data

5.2.1 Administrative data

JRC provides technical support to EU Member States for evaluating tax and benefit reforms. In collaboration with DG REFORM, the project aims at creating capacity building across the EU for the use of tax and benefit microsimulation models, namely (but not only) EUROMOD. The use of EUROMOD in this project often involves its integration with national administrative microdata, which allows enhancing existing simulations as well as expanding the scope of the model. Since 2017, JRC has collaborated with national institutions of Greece, Lithuania, Romania and Slovakia. More information about these projects can be found in the 2021 EUROMOD Scientific Report.¹⁴ Since 2021, there is an ongoing project with the Spanish Ministry of Inclusion, Social Security and Migration.

A summary of recent and future developments for each country follows:

- Greece. The alternative version of EUROMOD was completed already in 2021 and was intensively used by the Ministry of Finance for distributional impact assessment. Currently the JRC is negotiating with the Ministry of Labour, now in charge of this type of analysis, in order to sign a collaboration agreement for the maintenance, update and use of the administrative data-based model.

¹⁴ https://euromod-web.jrc.ec.europa.eu/sites/default/files/2022-06/EM_scientific_report_2021.pdf

- Slovakia. JRC has worked with the Slovak Council for Budget Responsibility (SCBR) for the adaptation of SIMTASK, their in-house EUROMOD-based tax and benefit microsimulation model, to be used with administrative microdata. A first running version of the new model was also completed, including several novelties as the simulation of contributory benefits or the performance of monthly simulations. A collaboration agreement between both institutions has been already agreed and recently launched for signature. This will give JRC access to the newly created administrative dataset and will work towards adapting EUROMOD for its use.
- Lithuania. A version of EUROMOD running with administrative data is already functional and will be soon incorporated to the master version of EUROMOD, thus becoming annually updated in the EUROMOD annual cycle. Like in the case of Greece, the JRC is currently negotiating a collaboration agreement with the two ministries involved (Ministry of Finance and the Ministry of Social Security and Labour) in order to collaborate on the maintenance, update and use of the administrative data-based model.
- Romania. Similarly to the cases of Lithuania and Slovakia, the project with Romania also entails collaborating (with the Ministry of Public Finance) towards the use of administrative microdata for tax-benefit modelling. Although the project is still under development, the access to the data has recently been granted to JRC and a first running version of the model is foreseen to be ready by 2023.
- Spain. JRC collaborates with the Ministry of Inclusion, Social Security and Migration with the aim of performing targeted microsimulations to assess the effect that any potential reorganisation and/or adjustment of existing benefits, namely non-contributory benefits, would have on households' disposable income. The project does not involve the adaptation of EUROMOD to be used with administrative microdata. However, the Spanish Institute of Fiscal Studies, in collaboration with the National Statistical Institute and the Spanish Tax Agency, has recently made available an anonymised sample administrative dataset including very detailed sociodemographic and income information of the Spanish population. In 2023, JRC foresees the adaption of this dataset to be used in EUROMOD, although how this adaptation will be organised in practice is still under discussion.

Beyond the scope of the collaboration of the JRC with DG REFORM, other national institutions in the EU are also working on the adaption of EUROMOD to be used with administrative microdata. For instance, the Federal Public Service - Social Security Service of Belgium has recently developed BELMOD, a EUROMOD-based microsimulation model that uses very rich administrative data.¹⁵ The Slovenian EUROMOD national team is also working towards a similar objective.

5.2.2 Collaboration with the European Central Bank

Since 2021, the JRC has been in contact with the team of the European Central Bank (ECB) responsible for the Household Finance and Consumption Survey (HFCS). The HFCS only includes information on gross income of households (net income is available only in surveys of few countries) and the ECB is interested in adding a variable reflecting net income. The JRC provided the ECB with the input data do-files and the EUROMOD model created for the EWIGE 2 project. The EWIGE 2 model is based on data from HFCS wave 2 (data collection period mostly in the year 2014) and simulates policy years 2013 and 2017. The ECB has started updating the EWIGE 2 input do-files in order to process HFCS wave 3 data (collected in 2017). Finally, this would allow them to calculate net income for both, HFCS wave 2 and wave 3. The ECB presented preliminary results in a meeting in October 2022 and it was agreed to follow-up in a technical meeting. In general, the JRC offered the ECB technical support for their usage of EUROMOD. Type and scope of the collaboration would need to be defined.

5.3 New user interface

The EUROMOD User Interface (UI) is the Windows software used to edit and run the EUROMOD models and is maintained and developed by the JRC. The current EUROMOD UI was designed, developed and first released back in 2012 by the University of Essex. It is based on outdated technologies and includes third-party proprietary libraries. For this reason, it is no longer capable of dealing with the advanced microsimulation requirements we have today.

The solution to this, as was already envisaged in Essex since 2018, is to design and develop a new EUROMOD UI from scratch. The JRC is planning to work on the new UI during 2023, with the following minimum requirements:

¹⁵ More information is available in <https://socialsecurity.belgium.be/en/shaping-social-policy/belmod-project>.

- It should be completely free and open source, i.e. it should not contain proprietary libraries.
- It should use web-based technologies, similar to the Statistics Presenter, so that it can be portable to a web server in the future.
- It should use the new XML format that the new executable is also using.
- It should allow for different visualisations of the models, to cover for the needs of basic/expert users.

We have also launched a survey to get feedback from the EUROMOD community on what they would ideally like to see included.¹⁶

5.4 EUROMOD online

The EUROMOD-JRC Interface provides a simplified access to EUROMOD, allowing to simulate non-complex reforms on Personal Income Taxes (PIT) and Social Insurance Contributions (SIC) of the European Union Member States, without prior knowledge of EUROMOD. More information on it can be found in the latest EUROMOD Scientific Report.¹⁷

The current version of the web interface simulates the tax-benefit systems in force in 2021 based on EUROMOD I4.0+, executed with latest EUROMOD executable. The main tasks foreseen for 2023 are: (1) the update to the next public release with 2022 systems; (2) the inclusion of family-related benefits; and (3) the introduction of interactive visualisation for HHoT results.

In parallel, the EUROMOD team at the JRC is planning to launch a pilot project in collaboration with the DIGCLASS initiative¹⁸, an interdisciplinary project of the JRC that includes a team of economists, sociologists and political scientists, focused on inequalities in the labour market, health outcomes, educational attainment and political economy and behaviour. The joint pilot project consists on experiments on perceptions of the tax-benefit system. The EUROMOD website would be the platform where surveyed people would have to make simple choices about the tax-benefit design. The objective would be to test how showing users the distributional impact of their choices (using EUROMOD) would change their original choices (compared to a control group to which they don't give information).

A second stage of the joint project with DIGCLASS would consist in offering a simplified and more visual web interface. Our current EUROMOD-JRC interface requires a certain level of expertise in tax-benefit systems and economic indicators. The objective would be to develop a space where a selection of indicators could be shown in a simple and interactive visual manner that could be easily understood by the general audience and not only by experts.

5.5 EUROLAB

EUROLAB is a multi-dimensional discrete choice labour supply model, programmed in Stata and managed by the JRC, which uses EUROMOD to construct budget constraints at each alternative of the choice set. During 2022, the JRC developed a user interface to make it more user-friendly. For the next year, the JRC is planning to work on:

- developing further the user interface, which should facilitate and promote the use of the model
- enriching the EU SILC data using information from the Structure of Earnings Survey (SES) and the Labour Force Survey (LFS), in order to improve the labour demand module of the model
- the incorporation of intertemporal dynamics in the model.

6 Recommendations of the SAB to the JRC and ESTAT for 2023

Recommendation 1. The structure of the annual SAB meeting and the content of the Scientific Report

These should continue to follow previous recommendations as far as possible. The SAB also suggests using the SAB meeting mainly for discussions and hence omitting presentations that recap materials circulated in advance. In addition, and if feasible, the SAB members should attend the EUROMOD Annual meeting and hold

¹⁶ The survey can be accessed on the following link: <https://euromod-web.jrc.ec.europa.eu/news-and-events/news/survey-gather-ideas-build-new-euromod-user-interface>.

¹⁷ https://euromod-web.jrc.ec.europa.eu/sites/default/files/2022-06/EM_scientific_report_2021.pdf

¹⁸ More information can be found in https://joint-research-centre.ec.europa.eu/knowledge-research/centre-advanced-studies/digclass_en.

their own short meeting immediately following. A shorter remote meeting somewhat later in the year can focus on any contentious issues and on recommendations. The date for this stand-alone meeting should be set early, as it was this year, to reduce the difficulty in finding one.

Recommendation 2. Discontinuation of policy systems and checked policy-data combinations

Following recommendation 1 from the 2021 SAB meeting and discussion at the 2022 meeting, the SAB welcomes the JRC intention to keep all baseline policy systems in the model. The SAB now recommends more clarity and an update by JRC on plans and progress for system/data combinations *beyond* baseline simulations. In particular, (i) there should be guidelines for developers and national teams for what checks need to be done for additional non-standard combinations to be included in the model; ii) there should be transparency for users over which non-standard policy-data combinations have been checked for all countries; (iii) a full list of checked combinations should be published regularly.

Recommendation 3. EUROMOD WP series.

Following recommendation 1 from the 2021 SAB meeting and discussion at the 2022 meeting, the SAB considers that it is now urgent that a solution be found so that the new series is up and running in time to be evaluated at our next meeting. SAB members are willing to assist but need to be kept informed.

Recommendation 4. How EUROMOD is used

Following recommendation 8 from the 2021 SAB meeting the SAB believes there is room to further develop ways to (i) engage with non-EC users over particular technical issues and choices and (ii) collect information on how EUROMOD is being used outside the EC. The initiatives to use surveys of self-selected respondents via the web is interesting and we would like to see an evaluation of this at the next meeting.

Recommendation 5. HFCS data and EUROMOD

The SAB welcomes the initiative that EUROMOD will be used by the ECB to construct net incomes to be inserted and made available in the HFCS database. The SAB underlines the importance of the HFCS database as an input dataset for EUROMOD, as it also allows to broaden the scope of policy simulations to wealth-related policies (such as wealth taxes). The SAB sees here opportunities to provide a more structural basis in this domain to follow up on pilot projects, such as EWIGE2 and the work done in the InGRID2-project (which entailed an extension and an update of wealth policies in EUROMOD for 2018 and 2019; these policy sheets have been delivered to the JRC). Hence, the SAB encourages JRC to use this initiative to explore possibilities to integrate the HFCS data in EUROMOD on a more regular basis.

Recommendation 6. Use of administrative data

The SAB welcomes the use of administrative data as a source for EUROMOD simulations in an increasing number of countries. The SAB recommends that JRC considers ways (e.g. guidelines, technical report or pilot project) to show other countries the pros and cons (technically and content-wise) of this extension focusing on its feasibility (e.g. secure access of admin data; flexibility of EUROMOD) and the increased policy scope.

Recommendation 7. EUROMOD web interface

The SAB welcomes the latest development for the EUROMOD web interface and the DIGCLASS project on perceptions of the tax-benefit system. The SAB now recommends exploring possibilities to use the EUROMOD web interface to run survey experiments with *existing* surveys (e.g. SILC, ESS) as well as new ad-hoc surveys.

Recommendation 8. Indirect Tax Tool

While the Indirect Tax Tool is still underway, given its significance for policy and research the SAB encourages JRC to consider plans for dissemination. These could include shorter-run, quicker developments such as including results on indirect taxes in the annual publication of the 'EUROMOD Statistics on the Distribution and Decomposition of Disposable Income' and Country Reports, to longer-run developments such as the production of a longer report or research paper accompanying the tool.

7 Conclusions and way forward

The 2022 process of model update is going according to plans, and can be summarised as follows:

- EUROMOD beta releases were made public in May and September 2022 and the stable release foreseen for January 2023.

- Most EUROMOD datasets were already produced using EMSD, after the corresponding practical arrangements were signed by NSIs with ESTAT and JRC in 2021. Three remaining countries are planned to be incorporated before the end of 2023.
- EUROMOD continues to be used extensively, keeping a balance between research and policy uses.
- Activities to foster the use of EUROMOD, including training and communication, were consolidated and present regular calendars.
- The largest ongoing development is the EUROMOD Indirect Tax Tool, which is planned to be disseminated publicly in 2024.
- The recommendations by the SAB in 2021 have been dealt with to a great extent during 2022. Pending issues will be taken care of by the JRC in the following months.

In accordance with the terms of reference for the EUROMOD governance signed by all the partner DGs, the recommendations of the SAB will be discussed by the Steering Committee and addressed over the course of 2023.

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