EUROMOD Scientific Report 2021

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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

The transfer of the EUROMOD microsimulation model from the University of Essex (UoE) to the European Commission was successfully completed in December 2020. The JRC is now fully responsible for the maintenance and development of the model, jointly with Eurostat 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, recent 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 2021. Section 3 mentions the main recent technical developments of EUROMOD and the plan for 2022. Section 4 analyses the uses of the model over the course of 2021. Section 5 lists the recommendations issued by the SAB to JRC and Eurostat. Conclusion follows.

2   EUROMOD development and maintenance

The 2021 updating process of EUROMOD has seen the update of policies to 2021 and the production of EUROMOD input datasets based on the 2019 SILC data. The process of model update is proceeding according to plan, with EUROMOD beta versions released in April and September 2021. The 2021 EUROMOD "official" release took place in January 2022. All releases were accompanied by updated versions of the EUROMOD software. More details about this process, along with additional information on training and dissemination activities, can be found below:

— **Model updates.** After consulting the NTs, JRC decided to make publicly available the two model releases traditionally prepared in May and September, known as Eurostat release (available only to Eurostat) and Internal Release (available to Eurostat and NTs). Both releases are however marked as beta to be followed by the stable ("official") model release in January of the following year. The model is now freely downloadable from the EUROMOD-JRC website.

— **Software updates**. The same logic has been used for software updates. During 2021 they were aligned with the model updates and they were made publicly available on the EUROMOD-JRC website.

— **Data dissemination**. The EUROMOD input datasets are disseminated through the European Commission's S-CIRCABC data-sharing platform, directly by the JRC in co-ordination with Eurostat. Having a valid Research Project Proposal (RPP) for the use of EU SILC is the main requirement for accessing the EUROMOD input datasets. Since September 2021 a new simplified procedure is in place. Now the application must be done by the data manager or the principal investigator indicated in the RPP. It is then the responsibility of the data manager/principal investigator to share data with other researchers named in the RPP, after collecting and sending to JRC the individual data access forms.

— **Input data update**. The EUROMOD input datasets based on 2019 EU SILC were prepared for all EU countries. A new data source, the EUROMOD SILC Database (EMSD), has been used for the first time for 10 Member States. Prepared by Eurostat after consultation with JRC and NTs, the EMSD brings together relevant variables from the SILC User Database (UDB), National SILC and variables derived from the SILC Production Database (PDB) available internally to Eurostat. The preparation of the EMSD follows the signature of Practical Arrangements between Eurostat, JRC and the National Statistical Institutes of each Member State.

— **Training activities.** During 2021, JRC organised for the first time two EUROMOD general trainings in April and October 2021. Both trainings took place online and were delivered through the EU Academy platform. More than 30 students participated in the March training, while 60 participated in the October edition. Around half of the participants come from academia and research/policy institutes, while the other half comes from other public institutions: national authorities, central banks, several DGs of the European Commission and other international institutions. In addition to the general training, the JRC has started delivering open online technical sessions dedicated to EUROMOD. So far, they have focused on the use of the LMA add-on for simulating the effects of transitions to short-term work schemes, the new In-depth analysis plugin and the Hypothetical Household Tool (HHoT).

— **Dissemination activities**. In terms of dissemination activities, the JRC EUROMOD website is fully functional since the beginning of 2021. The website has undergone continuous improvements since the beginning of the year. Furthermore, a new Research section was added at the end of 2021, containing two subsections: Projects and Publications. Furthermore, since April the JRC released five EUROMOD newsletters over the course of the year, approximately every two months. The JRC newsletter has a web-based format, different to the pdf format of the newsletter previously published by Essex, since it has to be disseminated through the JRC's newsletter platform. The subscription to the EUROMOD newsletter is done through the website, where all the previous newsletters are stored as well.

2.1 Management of the national teams

In 2021 the JRC managed the contractual procedures for the work of the 27 national teams.

In terms of national teams' composition, the following changes occurred:

— The Swedish Institute for Social Research (SOFI, University of Stockholm) replaced the Ministry of Health and Social Affairs as Swedish NT.

— The ifo institute for Economic Research joined the EUROMOD network as German National Team. It replaces the DIW, who manifested its intention to leave the project as from 2021.

2.2 EUROMOD Workshop and Annual Meeting

The JRC organised the EUROMOD annual project meeting and research workshop on the 4-6 October 2021. The events took place through video conference.

The main actors involved in the EUROMOD development (including JRC, Eurostat and National Teams) were present, together with representatives from policy DGs and academic experts. Both the annual meeting and the EUROMOD workshop proved to be successful events. The 2022 edition of these events should take place in Prague on invitation from the Czech national team.

3 EUROMOD technical developments over 2021 and plans for 2022

This section highlights the main EUROMOD developments for the year 2021 and the plans for further developments in 2022.

## 3.1 The LMA add-on and the simulation of labour transitions

The LMA add-on is a EUROMOD tool developed for nowcasting purposes, which adjusts the labour market structure in the latest EUROMOD input dataset based on the most up-to-date information available from other data sources. The standard EUROMOD model combined with the LMA add-on allows simulating the current income distribution taking into account not only policy changes, but also changes in the labour market.

The JRC further developed the LMA add-on to make the tool more flexible in order to adapt it to the analysis of the COVID pandemic. The enhanced tool was developed in close collaboration with Eurostat. On the modelling side, the JRC developed new EUROMOD functionalities to model labour market transitions to monetary compensation schemes (for employed as well as for self-employed) and relaxed some assumptions on the duration of the modelled transitions. On the data side, Eurostat provided statistics that were included in the EUROMOD model to account for the changes in labour market conditions due to the COVID pandemic in the underlying microdata of EUROMOD.

The LMA add-on is regularly used for the production of Flash Estimates by Eurostat. This year the LMA add-on was used also for the publication of some academic working papers. One of the main outputs was the assessment of the cushioning effects of fiscal policy during the COVID-19 pandemic. Figure 2 shows the estimated income stabilizing coefficients for all EU countries. The indicator measures the share of a market income shock that is absorbed by the tax-benefit system. Our findings suggest that the tax-benefit systems of the EU Member States have been able to absorb a significant share of the COVID-19 shock, offsetting – or alleviating – its regressive nature on market incomes. Monetary compensation schemes implemented by EU Member States played a key role in cushioning against the fall in household income during the crisis.

Furthermore, the LMA add-on could be useful also for other research questions, such as analysis of hypothetical changes in the labour market or research that includes behavioural changes, which require the adjustment of labour market characteristics.

Figure 2. Income stabilisation coefficient – EU Member States
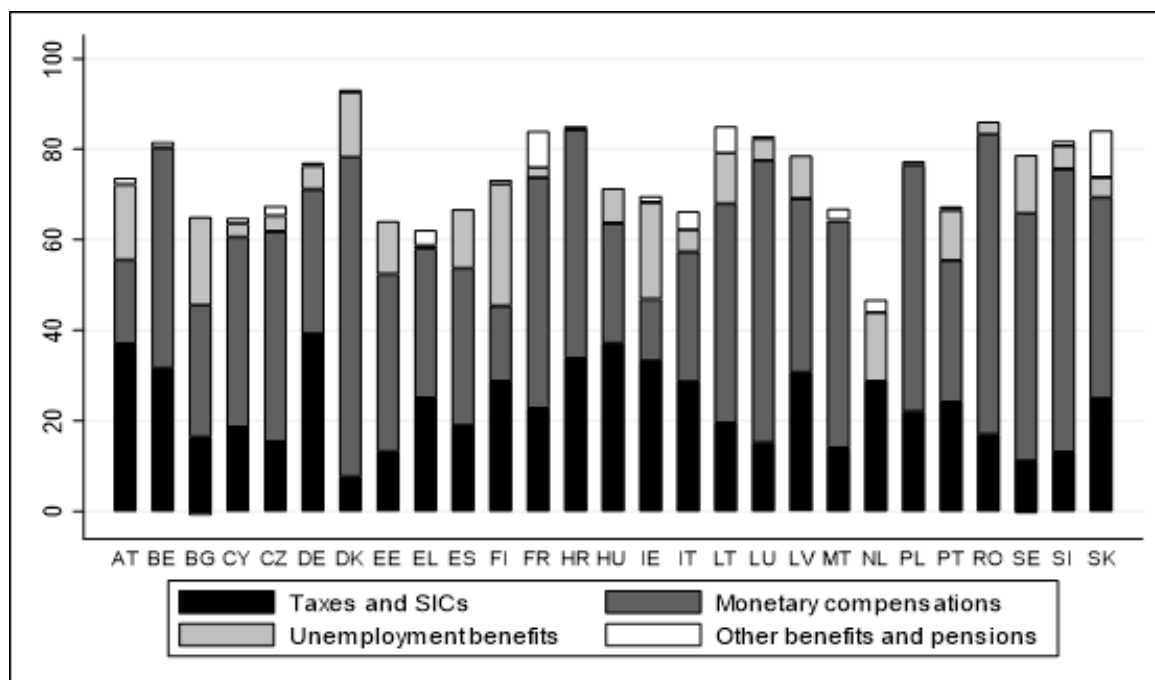
Source: own elaboration

3.2 Use of administrative data

Since 2017, JRC has been collaborating with DG REFORM (previously SRSS) in delivering technical support to member states regarding microsimulation and the use of administrative data for assessing tax-benefit reforms. In particular, the use of administrative data was foreseen for four countries: Greece, Lithuania, Slovakia and Romania. Details and status of each project follow.

The project for Greece was developed with the Council of Economic Advisors (SOE) of the Greek Ministry of Finance. It involved the creation of two alternative EUROMOD input datasets based on 2018 and 2020 tax returns (2017 and 2019 incomes respectively). Both datasets present a similar structure to the previously available 2015 dataset[1], but the sample design is different: it contains all the households in the top 1% of the income distribution, and it is sampled in a way that the same observations are followed across years, making possible to build a panel.[2]

These datasets have been thoroughly tested and incorporated to the master version of EUROMOD using a country-specific extension (switch). The distinctive feature of the new spine is the simulation of imputed income, a very relevant feature in the Greek PIT. It consists in imputing an income to all taxpayers, based on objective costs of living, ownership of assets and some real expenses. If imputed income is higher than declared income, the difference is also taxed with specific rules. All these rules had not been simulated in EUROMOD until now due to lack of information in the SILC-based input data.

The version of EUROMOD running with administrative data has been used by both JRC and SOE for the assessment of the distributional and budgetary impact of several policy reforms: the introduction of a birth grant, the impact of the Social Dividend, the taxation of imputed income and the reforms enacted in the context of the Enhanced Surveillance Framework (property tax and personal income tax).

Since September 2020 JRC has been working with the Slovak Council for Budget Responsibility (CBR/RRZ) on the adaptation of administrative data to be used in SIMTASK, CBR's in-house model which is compatible with

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[1]   This was a one-off 20% sample already available to the Ministry of Finance when the project started. It was adapted to be used in EUROMOD, but with a partial approach (only some policies were simulated).

[2]   More recently SOE received six new datasets (three for 2017 and three for 2019), with information about social insurance contributions paid by employees, employers and self-employed/farmers. All datasets contain information related to the individuals whose tax returns are part of the tax samples. JRC and SOE are currently working on the merge of these datasets with the tax returns, incorporate the new variables to the EUROMOD input data and adapt the model accordingly.

EUROMOD in terms of data. In particular, JRC has merged a sample of the population register with seven datasets from the Central Office of Labour, Social Affairs and Family (parental allowance, child benefit, child birth grant, child care allowance, foster care allowance, funeral benefit, disability benefit) and four from the social insurance agency (paid social insurance contributions, pensions, unemployment benefits and sickness benefits). Besides the very rich information on benefits, the resulting EUROMOD input dataset contains very detailed information on employment income and labour history, which will make possible to accurately simulate contributory benefits in a second phase of the project.

The projects for using administrative data of Lithuania and Romania are currently in an initial phase. The case of Lithuania is similar to that of Slovakia in terms of data availability, but with the addition of personal income tax returns, which will make the final EUROMOD input dataset even more complete. In the case of Romania only personal income tax returns will be available. The information contained is more limited than for Greece, so the idea is to build a simplified EUROMOD spine with only the policies that can be simulated.

Figure 3 gives an overview of the administrative data currently available at the JRC.

Figure 3. Administrative datasets available at the JRC
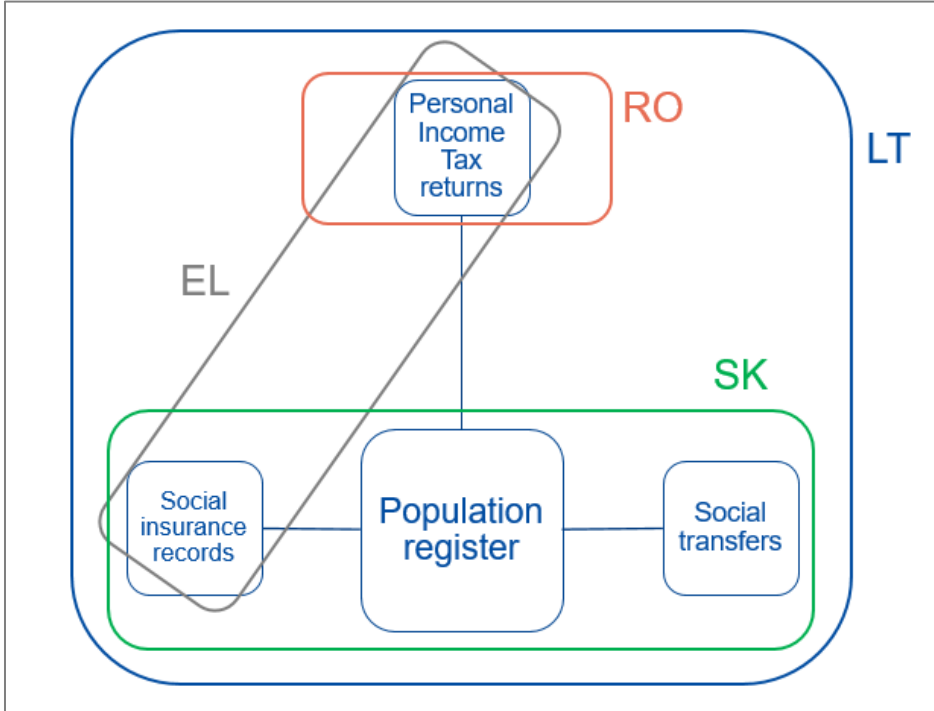
3.3   The EUROMOD-JRC Interface

The JRC started developing the EUROMOD-JRC Interface in 2014 as a simplified online version of EUROMOD, to be used by policy DGs to simulate parametrical reforms of social insurance contributions and personal income taxes. The tool has dramatically evolved since then. Currently it offers hundreds of parameters to modify, including tax expenditures (tax allowances and credits) classified in six categories: (1) personal, (2) family, (3) work-related, (4) housing, (5) education, and (6) health. Due to data limitations to simulate education and health-related allowances and tax credits, input data for six Member States[3] are modified exclusively for the web interface, in order to include average expenses on education and health at household level imputed from the EU Household Budget Surveys (EU HBS). Regarding the output, the tool offers an Excel workbook with a complete set of budgetary and distributional indicators, including the most standard inequality and at-risk-of-poverty indicators.

Since April 2021, the EUROMOD-JRC Interface is open to any researcher or policy analyst requesting access, with the objective of increasing the openness and transparency of EUROMOD and make it accessible to a wider

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[3]   Estonia, Ireland, Latvia, Lithuania, Malta and Portugal.

audience. The interface is also accessible through mobile phone and tablets, thus improving the user experience and further widening its accessibility.

Figure 4. Screenshot of the HHoT output of EUROMOD-JRC Interface
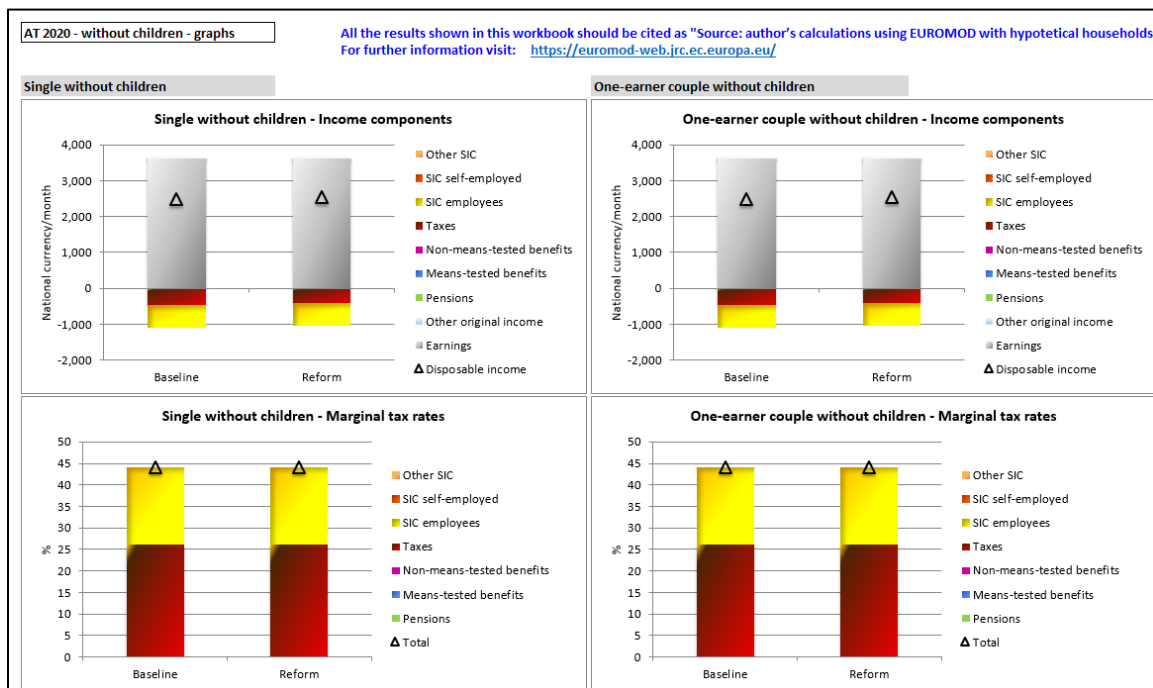
Moreover, two new features were added throughout 2021: the estimation of medium-term effects of tax and SIC reforms, using parameters from a VAR model developed at JRC[4]; and the possibility of alternatively running simulations with hypothetical data created with the EUROMOD Hypothetical Household Tool (HHoT), instead of EU-SILC based data. These two new features are available since June 2021. Figure 4 shows a screenshot of the output offered when simulations are run with HHoT.

Future developments will be made in two important areas. On one hand, JRC plans to start adding social benefits to the interface, something that will clearly increase the scope of simulations and the audience of interested researchers. On the other hand, JRC will make the use of HHoT more flexible and broaden the categories of households that can be defined (currently only six predefined households can be used).

3.4 EUROLAB: A labour demand and supply model for EUROMOD

EUROLAB is a labour-supply-demand model based on EUROMOD, which can be used to assess the impact of fiscal or economic policies on labour supply and overall employment in EU countries. Developed by the JRC, EUROLAB is based on the modelling of discrete choice labour supply (Aaberge et al., 1995[5]; Van Soest, 1995[6]) based on the Random Utility Maximization approach (McFadden, 1974[7]). EUROLAB also takes stock of the labour supply model developed by ZEW in collaboration with the JRC. Like other behavioural microsimulation models, EUROLAB estimates a set of structural parameters of the utility function and applies them to predict labour supply behaviour. However, unlike other behavioural models, EUROLAB adopts a multidimensional approach in the construction of choice setting as well as it provides a labour demand module. Furthermore, what makes EUROLAB unique in the domain of behavioural microsimulation is its characteristics of covering all EU countries in a comparable way as regards the modelling of preferences and opportunities, as well as income concepts.

EUROLAB is based on a multi-dimensional choice set covering not only the alternatives of working hours (one-dimensional choice set) but also other job peculiarities such as employment arrangement (employment versus

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[4]   Using estimates from Van der Wielen (2020), "The macroeconomic effects of tax changes: Evidence using real-time data for the European Union", Economic Modelling, 90, 302-321.

[5]   Aaberge, R., J.K. Dagsvik and S. Strøm (1995): "Labor Supply Responses and Welfare Effects of Tax Reforms", Scandinavian Journal of Economics, 97, 4, 635-659.

[6]   van Soest, A. (1995): "Structural Models of Family Labor Supply: A Discrete Choice Approach", Journal of Human Resources, 30, 63-88.

[7]   McFadden, D. (1974): "Conditional Logit Analysis of Qualitative Choice Behavior". In: Frontiers in Econometric, Academic Press, New York, 105-142.

self-employment status) or occupational sectors. As a result, wage rates are determined differently according to employment arrangements, taking into account the large differential between them. In addition, EUROLAB is designed to take into account involuntary unemployment and to address the underestimation of part-time work by using information on underemployment. Finally, EUROLAB accounts for labour demand side and represents a partial labour market equilibrium in line with the approach of Colombino (2013)[8].

EUROLAB can be used to simulate the behavioural effects of tax-benefit reforms related to labour market outcomes. The main contributions of EUROLAB are the assessment of i) labour supply elasticities, ii) changes in the labour participation rate and working hours, iii) changes in labour supply when labour demand is taken into account.

EUROLAB was applied to analyse hypothetical reforms in Italy[9].Two hypothetical reforms are simulated to change the income tax bracket rates of the Italian tax system running the Italian spine of EUROMOD with the underlying data from the Italian SILC 2018. Specifically, with the first reform (PIT1), we increase income tax rates in the first and second income tax brackets from 0.23 and 0.27 to 0.30 and to 0.32 respectively, and decrease these rates in the third, fourth and last tax brackets from 0.38, 0.41 and 0.43 to 0.34, 0.36 and 0.38. With the second reform (PIT2), we lower income tax rates across the entire income distribution from 0.23, 0.27, 0.38, 0.41 and 0.43 to 0.1, 0.16, 0.22, 0.28 and 0.34 respectively. SILC 2018 data and policy year 2020 have been used for simulating the reforms in EUROMOD.

In this application, the choice set of a single decision-making unit includes three ranges of positive working hours ([15-30], [31-45] and [46-60]) with two employment statuses (employment and self-employment) and alternatives for inactivity and unemployment. The final choice set established in this case consists of 8 alternatives for singles and 64 for couples. Earnings are observed for the working sample or predicted using the Dubin and McFadden method[10].

Figure 5 gives a summary of labour supply effects for eight demographic groups. After the PIT1 reform, all demographic groups are estimated to decrease their labour supply, but women stand out for the group with the highest decrease in working hours. On the contrary, the PIT2 reform leads to an increase in labour supply in all demographic groups, but again women are more responsive to tax rate reductions. However, both reform simulations indicate that sole parents react more than other groups. Results can be further analysed by different socio-demographic dimensions, for example income quintiles.

Figure 5. Changes in average working hours
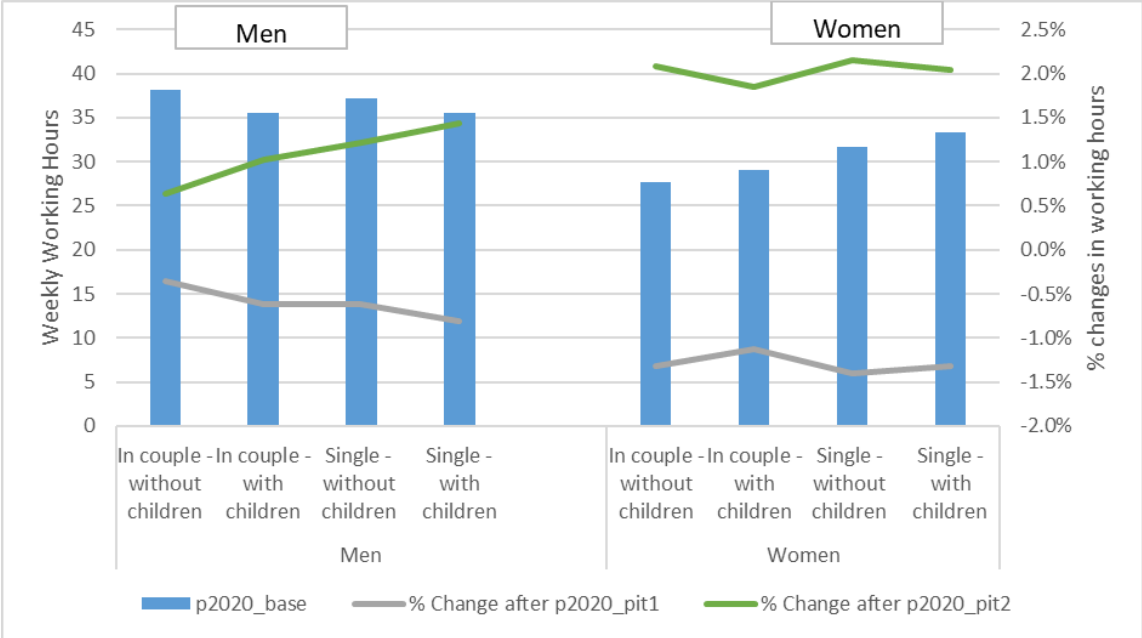
8   Colombino, U. (2013): "A new equilibrium simulation procedure with discrete choice models". International Journal of Microsimulation 6(3), 25–49.

9   Narazani, E., Colombino, U. & Palma, B. (2021), "EUROLAB: A Multidimensional Labour Supply-Demand Model for EU Countries", JRC Working Papers on Taxation and Structural Reforms, 15/2021.

10   Dubin, J.A. and McFadden, D.L. (1984): "An Econometric Analysis of Residential Electric Appliance Holdings and Consumption". Econometrica, 52, 345-362.

Figure 6 shows the changes in employment, unemployment and inactivity rates following the two reforms, with and without considering the demand constraints. If labour demand was not taken into account, PIT1 reform would reduce total employment by 0.8%. On the contrary, the PIT2 reform would increase labour supply by 1.44%. Assuming an elasticity of labour demand of –0.5, equilibrium conditions for PIT1 lead to a 3.5% (v, right axes) increase in wages and a 0.56% decrease in employment, mainly offset by a 6% increase in unemployment. The PIT2 reform would generate a wage rate fall of 1% and a low increase in employment (1.39%).

Figure 6. Changes in employment, unemployment and inactivity rate (%)
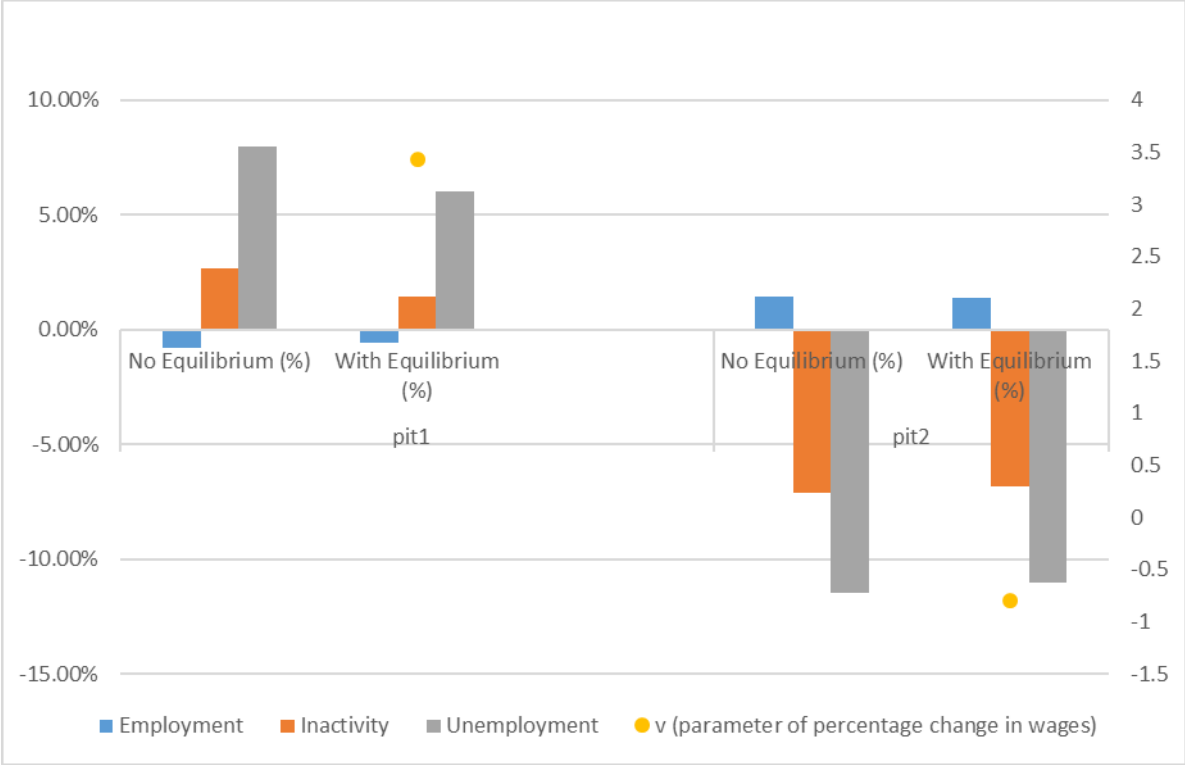
3.5 The Indirect Tax Tool (ITT)

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 are expected for the end of 2021.

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). Currently, 2010 and 2019 policy systems are running with the 2010 enhanced input database.

Compared to previous versions of the ITT, the current version has several new features: a wider country coverage (it will cover the EU-27 by end of 2021), imputation of consumption expenditures at a very detailed level (4-digit COICOP), and flexibility coming from its full integration within the EUROMOD policy spine. Moreover, it includes coefficients to align to National Accounts expenditures for 12 COICOP aggregate categories of consumption. This functionality is used for macro-validation as well as to conduct more accurate estimations of the budgetary effects of policy reforms.

Accounting for 34% of total tax revenues, indirect taxes represent a key source of government revenues. As shown in Figure 7, they also have a strong incidence on household budgets and a non-negligible impact on income inequality. Indirect taxes are often regressive, with a relatively strong negative redistributive effect, which in many MS even offsets the positive redistributive effect of direct taxation.

Figure 7. Gini coefficient before and after indirect taxes

■ "Official" inequality (based on disposable income)

■ "Adjusted" inequality (after indirect taxes)
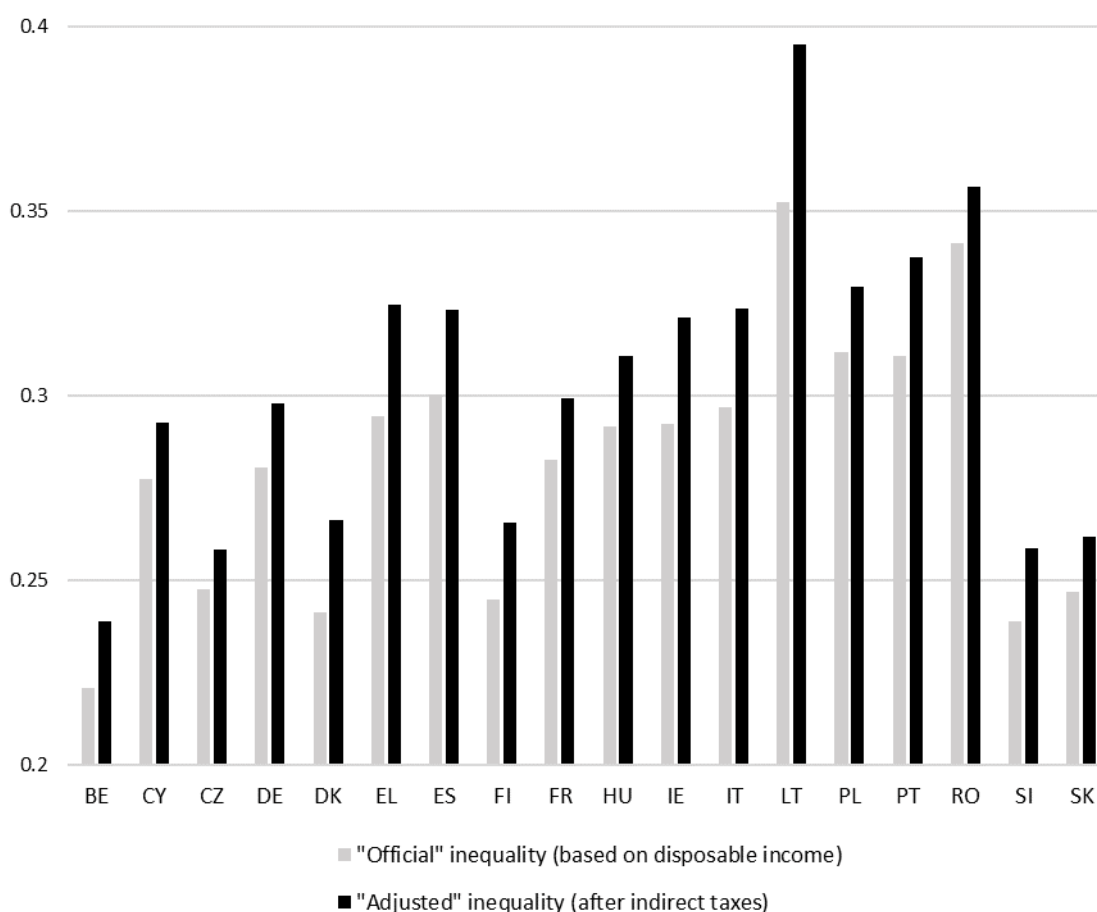
The ITT's main use will be the estimation of budgetary (government revenues) and redistributive effects (household income inequality) of:

— Actual or hypothetical reforms of indirect taxes: e.g. changes in VAT rates, energy taxation and other environmental taxes or excises on alcoholic beverages.

— Joint reforms in the tax-benefit system: e.g. compensatory measures when green tax reforms are inequality increasing; tax shifts from labour to other tax bases.

The ITT makes EUROMOD a unique tool to conduct evaluations of "green tax reforms". In addition to their fairness aspects, the possibility to link EUROMOD ITT with other models such as the GEM-E3 model will allow to shed new light on the efficiency and equity aspects of the transition.[11] In this respect, JRC is actively participating in the evaluation and discussions on green tax reforms in the context of the Green Deal and Just Transition.

The JRC is currently reflecting on important issues such as the integration of ITT into the master version; responsibilities for its update; frequency of production of HBS-based datasets; display of ITT extensions in the policy spine and integration with EUROMOD functionalities such as the statistics presenter and in-depth analysis plugin.

3.6   Extending the scope of EUROMOD simulations: wealth taxation (EWIGE)

The EWIGE project was launched to improve the modelling of wealth-related taxation using EUROMOD. EWIGE has been developed and coded by the University of Antwerp and the University of Insubria in close collaboration with the JRC. EWIGE is a parallel model of EUROMOD that uses input data derived exclusively from HFCS data. EWIGE systems allow to simulate additional wealth taxation policies and to improve the simulation of wealth-

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related policies in general. Furthermore, EWIGE allows to derive a joint distribution of disposable income and net wealth.

EWIGE has been built as a parallel model to the standard EUROMOD to account for the fact that HFCS-based input data miss some socio-economic information contained in SILC-based input data. A year-to-year update of EWIGE would therefore not just require an update of wealth-related policies, but an update of the whole EWIGE systems. EWIGE is available for 17 EU MS being included in the HFCS. The last policy year is 2017 and it has not been further updated.

In this context, the idea of statistical matching of HFCS and EM input data has emerged. In particular, the aim is to augment existing EUROMOD input data with HFCS variables that are relevant for wealth-related taxation. In this way, improved wealth-related simulations could be added to the existing standard EM model. Improvements can be achieved through a better modelling of property taxes, taxes on capital income, taxes on rental income or simply due to a better measurement of asset means testing for benefits. In addition, this would make a yearly update of wealth-related policies much easier compared to EWIGE, because it would not require an update of the whole system, but just of the specific related-wealth policies.

It was therefore decided to make a pilot study in order to experiment with the simulation of wealth-related policies using statistical matching. Two countries have been selected for the pilot study, Cyprus and Germany. For simplicity, the policy year 2017 has been used, i.e. a year that has been modelled in EWIGE. First results are currently available for Cyprus.

In terms of technical implementation, the matching is performed using R (package StatMatch). The algorithm matches households of SILC and HFCS based on socio economic characteristics. Matching is restricted within household groups defined based on household composition, tenure status of main residence, observed rental income and observed capital income. The matching produces a map of IDs between HFCS households and SILC households. Relevant variables from the HFCS are hence prepared in dedicated do-files and merged into the EUROMOD input datasets. Policies making use of wealth-related variables are updated/modified accordingly, using spine of the EWIGE model as a template. Uprating factors for wealth variables are also used.

Table 1 summarises the first preliminary results of Cyprus 2017. Matching HFCS data to the (SILC based) EM, increases original income by 20%. The matching of HFCS data has a strong impact on the aggregated tax revenue (+39%). In particular, 'Special contribution for defence' (i.e. a tax on income from dividends, interest, and the rental income) is increased by 936%. This drastic increase of the latter tax brings simulated figures close to the external figures (304 vs 274 million), while it is strongly underestimated in standard EUROMOD (29 million). Means tested benefits decrease after matching HFCS data, which is explained due to higher assets in augmented input data. In particular, simulated government expenditures on GMI decrease from 169 to 126 million and get closer to the external figures (113 million). There is no change in social insurance contributions or non-means tested benefits.

Table 1. Selected macrovalidation results of CY 2017 (in million)

	Baseline	Matching approach	Difference	External figures
Original income (ils_origy)	8,692	10,404	+20%	NA
Total taxes (ils_tax)	644	899	+39%	NA
• income tax (tin_s)	571	555	-3%	NA
• special contribution for defence (txc_s)	29	304	+936%	278
Total SIC (ils_sicdy + ils_sicer + ils_sicct)	1,953	1,955	0%	NA
Total non-means tested benefits (ils_bennt)	355	355	0%	NA
Total means tested benefits (ils_benmt)	418	358	-14%	NA
• student grant (bedet_s)	47	32	-30%	NA
• guaranteed minimum income benefit (bsamm_s)	169	126	-25%	113

Overall, the statistical matching in CY 2017 seems to improve simulation of capital income taxes and the simulation of means testing considerably. However, these results are preliminary, and the approach needs to be further validated. The work will follow applying the same methodology to a second country, Germany. If successful, it could be envisaged to standardise the inclusion of HFCS variables into the standard, SILC based, EUROMOD input datasets.

4 Uses of EUROMOD over the course of 2021

4.1 Uses by the European Commission

In 2021 EUROMOD continued being an important instrument for the analysis of tax-benefit policies in the EU. Results from the model have served as key evidence for legislative proposals by the European Commission, such as the Directive for binding pay transparency measures[12]. The ITT, in combination with JRC's GEM-E3 model, supported the consequential "Fit for 55" package of the European Green Deal, where two legislative initiatives, the revision of the Energy Taxation Directive[13] and the Carbon Border Adjustment Mechanism[14], used the model's results to discuss distributional impacts of several policy reform scenarios.

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 COVID-19 pandemic has been widely used: from the EC assessments of the national recovery and resilience plans of Member States, to the flagship Employment and Social Developments in Europe (ESDE) Report[15] or the Quarterly Review of the Euro Area (QREA)[16]. 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 Taxation[17]); the tax treatment of pensions (used in the Pension Adequacy Report[18]); the automatic stabilisation effect of the tax-benefit systems (used in the JRC Resilience Dashboard[19]); and early estimates on income and poverty (Flash estimates of Eurostat[20]).

While in 2021 the European Semester was modified to align it with the process of assessment of the Recovery and Resilience Plans without the publication of Country Reports, the JRC also worked on in-depth country-specific analyses of several Member States' tax-benefit systems, in collaboration with policy DGs.

4.2 EUROMOD accesses and uses of the model

Figure 8 below shows the number of data/model requests in the last nine years, disaggregated by type of institution to which the user belongs.

The total number for 2021 (243) is very similar to that of 2019 (253). However, the numbers are not fully comparable for three reasons:

- 2021 only takes into account the requests received until 05/09/2021, when the procedure was changed and the numbers are not comparable anymore (see section 2.1)

- since 16/07/2021 the model is downloadable, so requests are only needed for getting data

- the method for disaggregation may differ, classifying in 2021 some institutions as academia that before were classified as other.

It is also worth mentioning that the figure for 2021 is much higher than that of 2020, even if the two refer to approximately the same period (January-September).

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[12] https://ec.europa.eu/info/sites/default/files/aid_development_cooperation_fundamental_rights/swd-2021-41_en_0.pdf
[13] https://ec.europa.eu/transparency/documents-register/detail?ref=SWD(2021)641&lang=en
[14] https://ec.europa.eu/transparency/documents-register/detail?ref=SWD(2021)643&lang=en
[15] https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8402&furtherPubs=yes
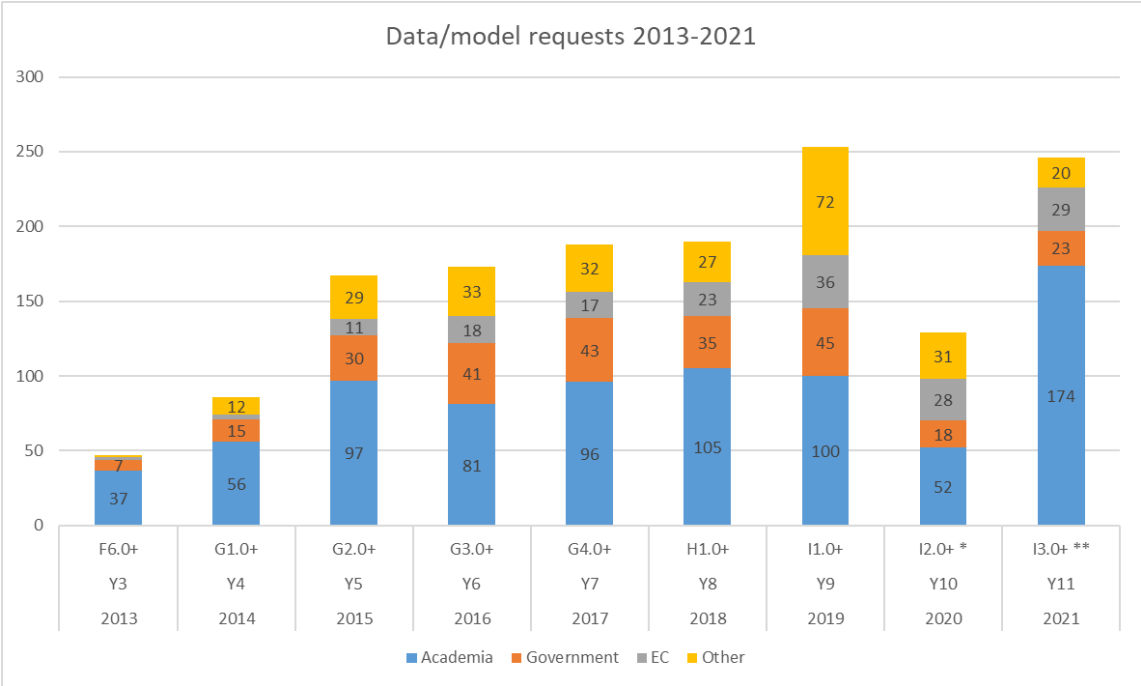[16] https://ec.europa.eu/info/sites/default/files/economy-finance/ip168_en.pdf
[17] https://ec.europa.eu/taxation_customs/news/2021-annual-report-highlights-contribution-taxation-towards-more-innovative-business-friendly_en
[18]
https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8397&preview=cHJldkVtcGxQb3J0YWwhMjAxMjAyMTVwcmV2aWV3
[19] https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en
[20] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210705-1

Figure 8. Completed EUROMOD access requests by type of institution (until 05/09/2021)

Data/model requests 2013-2021

	F6.0+ Y3 2013	G1.0+ Y4 2014	G2.0+ Y5 2015	G3.0+ Y6 2016	G4.0+ Y7 2017	H1.0+ Y8 2018	I1.0+ Y9 2019	I2.0+ * Y10 2020	I3.0+ ** Y11 2021
Other		12	29	33	32	27	72	31	20
EC			11	18	17	23	36	28	29
Government	7	15	30	41	43	35	45	18	23
Academia	37	56	97	81	96	105	100	52	174

Legend: Academia, Government, EC, Other

Source: presentations at previous annual meetings, own elaboration

Note: year refers to the first full year in which the corresponding model is available

* Data for I2.0+ refers to January–September 2020, due to unavailability of information for October–December.

** Data for I3.0+ until 05/09/2021 (old procedure)

5 Recommendations of the SAB to the JRC and Eurostat

The SAB notes that many of its previous recommendations have been put in place, fully or partly, by the JRC and Eurostat, and the SAB recognises these efforts. More generally the SAB would like to congratulate the JRC and Eurostat on successfully taking over full responsibility for EUROMOD.

The SAB recommends that the JRC continues to consider previous Recommendation 6 (Fostering the use of EUROMOD – in particular the promotion of the extension of EUROMOD to administrative data and the collaboration with national teams and research community) and Recommendation 7 (Training and public reports) as a priority. In general, many (although not all) of the SAB recommendations should be seen as continuing from one year to the next and should be reported on each year.

The SAB recommendations following the meeting on 14/1/22 and subsequent discussions are as follows:

Recommendation 1: Discontinuation of policy systems

The SAB recommends that there be no discontinuation of the early policy systems or input data until the full implications and possible alternative approaches have been explored by the JRC and fully discussed with the SAB. To inform future decisions in this area the SAB recommends there be a detailed survey of how EUROMOD is being used, in order to understand how old systems are (or might be) used and to identify appropriate technical solutions. (See recommendation 8.) The SAB recommends that this should be one of the main topics for discussion at the next SAB meeting.

Recommendation 2: Discontinuing countries

The SAB believes that it is in the interest of research to make sure that as many countries as possible are covered. It recommends that the UK system should continue to be updated in a way that is compatible with the EUROMOD bundle if a suitable collaboration can be found and that this should be explored by the JRC. In the meantime, the EUROMOD website should make clear how UKMOD can be accessed and used alongside EUROMOD.

Recommendation 3: EUROMOD input datasets

The SAB recommends that the production of a new input data should continue every year. This is important for many reasons. However, it also recommends that the JRC and Eurostat assess the benefits of the new SILC data (including that produced every 3 or 6 years) with a view to having less frequent improvements to the EUROMOD input data that may be of use for particular types of analysis or validation/assessment of annual analysis.

Recommendation 4: Sharing new developments with the EUROMOD community

The SAB welcomes the JRC's intention to make the ITT publicly available and recommends that this should be the goal for other new developments, such as the wealth extension and EUROLAB. However, it is also important that complex tools or those incorporating specific assumptions are fully documented and explained, with training offered on an ongoing (rather than a one-off) basis.

Recommendation 5: EUROMOD Working Paper series

The SAB considers that the EUROMOD WP series is of great value and relevance. However, this is only the case if the series is in the hands of an institution which is willing to take good and proactive care of it. It recommends that JRC explores the possibilities. The SAB should be informed of the outcome not waiting for our next annual meeting and, if necessary, the SAB (or members of it) may be willing to take responsibility for finding a solution.

Recommendation 6: New background reference paper

The SAB recommends that a new EUROMOD reference background paper be written and suitably published. Sutherland and Figari (2013) is now too old and out of date. While such a paper need not be written by JRC it would require their cooperation and encouragement.

Recommendation 7: Annual report to SAB

The SAB recommends that the annual report regularly contains sections on (a) the actions taken to foster the use of EUROMOD by NTs, MS administrations, international organisations and the academic community; (b) the public availability, training opportunities and take-up of new tools, interfaces and other major developments and (c) the use of the source code by others.

Recommendation 8: Uses of EUROMOD

There is a need to better understand and also communicate the uses and possible uses of EUROMOD. The SAB recommends that a "catalogue" of types of use be developed (e.g. from analysis of past papers, WPs etc. and current projects, focussing on data and methods rather than results) and then regularly updated. This should be accessible from the website.

Recommendation 9: SAB meeting organisation

The SAB would like the meeting to focus better on the important issues, while still making sure that the board is kept up to date. To avoid a longer meeting, the SAB recommends a longer preparation period, with some interaction before the meeting. The SAB suggests the following:

(a) Set date for the SAB meeting long enough in advance for there to be a 3+ month lead-in period.

(b) The SAB members receive the draft annual report in September or early October (assuming a December meeting) and comment and ask questions on it in writing. In doing so, the SAB members identify points where further elaboration is needed in advance of the meeting.

(c) Once this is done the agenda of the meeting can mainly focus on those points as well as a briefer update on progress and operational issues.

6 Conclusions and way forward

This Scientific Report attempted to summarise the state of the EUROMOD updating process over 2021, highlighted the most important model developments and uses of EUROMOD during this year, and listed the recommendations of the EUROMOD Scientific Advisory Board towards DG JRC and DG ESTAT.

In accordance to 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 2022.

Appendix. Programmes of the 2021 EUROMOD Annual Meeting and Research Workshop

EUROPEAN COMMISSION
Joint Research Centre
Directorate B - Growth and Innovation

Fiscal Policy Analysis Unit

EUROMOD Annual Meeting 2021

Final programme

Monday 4 October 2021

09:00-09:15   Registration/connection

09:15-09:30   Welcome – Salvador Barrios (JRC) and Anne Clemenceau (Eurostat)

09:30-10:45   **Session 1. Overview. Chair: Salvador Barrios (JRC)**
- Overview of 2021 activities (20min) – Alberto Tumino (JRC)
- Uses of the model over 2021 (40min)
  - By the JRC – Ana Agúndez (JRC)
  - External use – Fidel Picos (JRC)
- Discussion (15min)

10:45-11:00   Break

11:00-12:30   **Session 2. Recent developments. Chair: Anne Clemenceau (Eurostat)**
- Software (20min) – Bianey Palma (JRC)
- Model and extended functionalities (20min) – Adrián Hernández (JRC)
- Data (40min) – Albane Gourdol (Eurostat) and Aura Leulescu (Eurostat)
- Discussion (10min)

Tuesday 5 October 2021

09:00-10.30   **Session 3: Discussion with NTs – Chair: Fidel Picos (JRC)**

Project organisation, SAB recommendations, new template for country reports, visual identity, new data request procedure, new framework contracts

10.30-11.00   Break

11.00-13.00   **Session 4. Presentations by NTs and JRC – Chair: Ana Agúndez (JRC)**
- "The use of EUROMOD in Distributional Impact Assessment of Draft Budgetary Plans" – **Carlo Fiorio**, Loris Vergolini and Jonathan Pycroft

- "Using EUROMOD with administrative data in Greece: lessons and prospects" – **Chrysa Leventi** and Fidel Picos
- "Analysing intergenerational fairness – Disaggregating income effects and simulating revenue-neutral reform policies", **Tamara Premrov** and **Leonard Geyer**
- "The Redistributive Impact of Indirect Taxation in Europe" – **Sofia Maier** and **Mattia Ricci**

13.00-13.15   Goodbyes – Salvador Barrios (JRC) and Anne Clemenceau (Eurostat)

EUROPEAN COMMISSION
Joint Research Centre
Directorate B – Growth and Innovation

Fiscal Policy Analysis Unit

EUROMOD Research Workshop 2021

"Tax-benefit policies in times of recovery"

Final Programme

Wednesday 6 October 2021

09:00-09:15   Registration/connection

09:15-09:30   Welcome by Salvador Barrios (JRC)

09:30-11:00   **Session 1 – Chair: Bent Greve (Roskilde University)**
- "The cushioning effect of fiscal policy in the EU during the COVID-19 pandemic" - **Michael Christl, Silvia De Poli**, Francesco Figari, Tine Hufkens, Chrysa Leventi, Andrea Papini and Alberto Tumino
- "The impact of the COVID-19 crisis on gender equality in Finland – results from SISU microsimulation model " - **Tapio Räsänen** and Miska Simanainen
- "The Gender Gap in Income and the COVID-19 Pandemic" - **Karina Doorley**, Cathal O'Donoghue, Denisa M. Sologon

11.00-11:30   Break

11:30-13:00   **Session 2 – Chair: Gerlinde Verbist (University of Antwerp)**
- "The Role of Short-Time Work and Discretionary Policy Measures in Mitigating the Effects of the COVID-19 Crisis in Germany" – Michael Christl, Silvia De Poli, Tine Hufkens, **Andreas Peichl** and Mattia Ricci
- "How to improve the assessment of COVID-19 measures: using admin data to identify atypical workers" – **Tine Hufkens** and Natascha Van Mechelen
- "Evaluating the fiscal and distributional impact of public policies at local level using EUROMOD and spatial microsimulation techniques" – **Francesco Figari** and Manos Matsaganis.

13.00-13.15   Closing

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