

# The impact of COVID-19 on households' income in the EU

V. Almeida, S. Barrios, M. Christl, S. De Poli, A. Tumino and W. van der Wielen European Commission, Joint Research Centre

9<sup>th</sup> ECINEQ conference

London School of Economics, 10th July 2021

Joint Research Centre

### Outline

- 1. Introduction
- 2. Methods
- 3. Main results
- 4. Robustness
- 5. Conclusion



## 1. Introduction



### 1. Introduction - Motivation

- The COVID-19 crisis has been one of the worst social and economic shocks that EU economies (and the world) have experienced
- The fiscal response to the crisis has been unprecedented, with all EU member states and several EU institutions adopting measures to protect jobs, households' incomes and economic activity
- Several studies focused on the impacts of the crisis and the cushioning role of fiscal policy measures on individual member states (Figari and Fiorio 2020 for Italy; Beirne et al. 2020 for Ireland; Christl et al. 2021 for Germany; among many others)
- But no systematic and harmonised analysis for all EU member states and the EU as a whole



#### 1. Introduction - What we do

- In this paper, we take a first attempt at filling this gap, assessing for each individual member state and the EU as a whole:
  - The distributional impacts of the COVID-19 crisis
  - The cushioning effect of discretionary fiscal policy measures adopted by each member state
- We do this by combining three main elements:
  - Three macroeconomic scenarios based on European Commission (EC) forecasts
  - A reweighting method to translate macroeconomic conditions to microeconomic data
  - The EUROMOD microsimulation model to perform the distributional analysis



### 2. Methods



### 2. Methods – Key features

- Two macroeconomic scenarios based on EC macroeconomic forecasts:
  - No COVID-19 (baseline)
  - COVID-19 with policy interventions
- One counterfactual macroeconomic scenario:
  - COVID-19 without policy interventions
- Reweighting techniques
- EUROMOD microsimulation model



### 2. Methods – EC forecasts macro scenarios

#### • No COVID-19 scenario (baseline):

- 2019 EC Autumn Forecast for 2020
- Proxy for a hypothetical 2020 EU economy in the absence of the COVID-19 crisis
- COVID-19 with policy interventions scenario:
  - 2020 EC Spring Forecast for 2020
  - Represents 2020 EU economy after the COVID-19 crisis, including discretionary policy interventions taken or announced by EU governments at the time of the forecast, including those financed by EU support
  - Also includes effects of automatic stabilisers



### 2. Methods – Counterfactual macro scenario (I)

#### • COVID-19 without policy interventions scenario:

- Removes economic impact of fiscal policy measures taken to tackle the COVID-19 crisis from the 2020 EC Spring Forecast for 2020
- Represents 2020 EU economy after the COVID-19 crisis if not discretionary fiscal policy measures had been adopted
- Includes effects of automatic stabilisers, which are not removed
- Derived by estimating what would be GDP growth and employment changes if no policy interventions had been, following four main steps (next slide)



### 2. Methods – Counterfactual macro scenario (II)

- <u>Step 1</u>: Estimate the **budgetary impact** of COVID-19 related discretionary fiscal policy measures, using:
  - Stability and Convergence Programmes (SCP) submitted by EU member states for national spending and revenue measures
  - Information from the EC's DG for Budget for EU-funded public spending
- <u>Step 2</u>: Obtain estimates of fiscal multipliers from the literature, differentiating between revenues and spending
- <u>Step 3</u>: Multiply budgetary impacts (in % of GDP) by fiscal multipliers to get impact on GDP and subtract this from 2020 EC Spring Forecast
- <u>Step 4</u>: Use Trade-SCAN model to translate impact on GDP to impact on employment (see Roman et al. 2019)



### 2. Methods – EUROMOD

- The effects of each macroeconomic scenario on households disposable income, inequality and poverty are assessed using EUROMOD, the EC tax-benefit microsimulation model (see Sutherland and Figari 2013)
- EUROMOD simulates personal income taxes, benefits and social insurance contributions for all EU member states, allowing to simulate disposable income for a sample of households based on the EU-SILC
- Macroeconomic conditions in each scenario are replicated in EUROMOD using reweighting techniques (next slide)
- We use EUROMOD simulations based on data from the 2017 EU-SILC and 2019 policy systems, uprating 2017 data to 2019 values



### 2. Methods – Reweighting

- For each of the three macro scenarios, reweighting is used to translate changes in several aggregate variables into changes at the microeconomic level (following the approach by Pacifico 2014)
- Done at the household level, adjusting the weights attributed to each household
- Shocks are introduced to key targets (Employment, Unemployment, Wages and Self-employment income) such that the aggregate values in the EUROMOD dataset replicate those in the macro scenarios
- Generates three new micro datasets, one for each macro scenario, which allow for the distributional analysis



### 3. Results



#### 3. Results – COVID-19 macro scenarios

- For all countries, discretionary fiscal policy measures play a role in mitigating the recessionary impact of the COVID-19 crisis.
- On average, GDP growth is close to 3 p.p. lower in the scenario without policy interventions.

Figure 3: 2020 GDP growth – EC 2020 Spring Forecast vs. Counterfactual Scenario





### 3. Results – Impact of COVID-19 on income (I)

- On average, household disposable income would fall by -9.3% due to the impact of COVID-19, without fiscal policy measures. Policy intervention reduces this impact to -4.3%.
- Impact of the COVID-19 crisis is regressive, lower income deciles are hit relatively more than higher ones.
- Fiscal policy interventions reduce the regressivity, leading to a more homogeneous impact along the income distribution.

Figure 4: Impact of COVID-19 on household disposable income in the EU, by deciles (change relative to no COVID-19 scenario)



European

Commission

#### 3. Results – Impact of COVID-19 on income (II)

- For all countries, there are losses in average income in both COVID-19 scenarios.
- For all countries, policy interventions have a mitigating effect, reducing the size of the losses.
- Significant heterogeneity on the size of the losses and policy effects across countries.

Figure 8: Impact of COVID-19 on household disposable income in EU member states, on average (change relative to no COVID-19 scenario)



Commission

### 3. Results – Impact of COVID-19 on poverty (I)

- The At Risk of Poverty (AROP) rate in the EU increases significantly due to COVID-19.
- From 16% in the baseline to 21.8% in the COVID-19 without policy intervention.
- When accounting for policy measures, the increase is less pronounced, to 18.5%. Fiscal policy intervention mitigates the poverty effects of the crisis.

Figure 6: Impact of COVID-19 on the AROP rate in the EU (anchored poverty line, 60% of median income)



### 3. Results – Impact of COVID-19 on poverty (II)

- For all countries, the AROP rate increases in both COVID-19 scenarios, with several countries exhibiting substantial increases.
- For all countries, policy interventions have a mitigating effect, reducing the increase in poverty.
- Significant heterogeneity on the magnitude of poverty impacts and policy effects across countries.

Figure 9: Impact of COVID-19 on the AROP rate in EU member states (change relative to no COVID-19 scenario)



### 4. Robustness



### 4. Robustness checks

- Three possible profiles for the quarterly evolution of fiscal multipliers, low, medium and high, reflecting different degrees of severity of lockdown measures and impact of policy interventions
- Bootstrapping procedure that allows the reweighting algorithm to be more flexible in the weight choice and to test the statistical significance of the results
- We consider a **sector-specific impact**, with wages being reduced only in those sectors that are most affected by the COVID-19 crisis

Some quantitative differences, but qualitatively all key results hold



### 5. Conclusion



### 5. Main conclusions and policy implications

- The COVID-19 crisis led to substantial losses in households' income in all EU countries and in the EU as a whole
- These losses were heterogeneous across the income distribution, with lowest income households being hit the most and poverty increasing
- Discretionary fiscal policies taken by EU member states and EU institutions were instrumental in cushioning the income and poverty effects of the crisis
- Without the swift intervention of EU governments and institutions to design and adopt exceptional support for EU economies and households, the distributional and social impacts of the COVID-19 crisis would have been much more pronounced
- Important lesson for policy makers when dealing with future crisis, a strong taxbenefit system can be key to cushion the impacts of an economic crisis



### References

- Beirne, K., Doorley, K., Regan, M., Roantree, B. and Tuda, D. (2020): The potential costs and distributional effect of COVID-19 related unemployment in Ireland. EUROMOD Working Paper 05/20, Institute for Social and Economic Research, University of Essex
- Christl, M., De Poli, S., Hufkens, T., Peichl, A. and Ricci, M. (2021): The role of short-time work and discretionary policy measures in mitigating the effects of the COVID-19 crisis in Germany, Mimeo
- Figari, F. and Fiorio, C. V. (2020): Welfare resilience in the immediate aftermath of the COVID-19 outbreak in Italy. EUROMOD Working Paper 06/20, Institute for Social and Economic Research, University of Essex
- Pacifico, D. (2014): Sreweight: a Stata command to reweight survey data to external totals.
  Stata J. 14(1), 4–21
- Román, M. V., Rueda-Cantuche, J. M., Amores A. F., Arto, I. and Pérez, M. (2019): "Trade-SCAN 1.1 – a tool for trade supply chain analysis, JRC scientific information systems and databases, publications Office of the European Union



# Thank you



© European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the <u>CC BY 4.0</u> license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

