

The role of short-time work and discretionary policy measures in mitigating the effects of the COVID-19 crisis in Germany¹

M. Christl, S. De Poli, T. Hufkens, A. Peichl and M. Ricci

October 4, 2021

¹The content of this article does not reflect the official opinion of the European Commission.

Introduction

- COVID-19 crisis lead to a drop in GDP of about 5% in 2020 in Germany. Labour market impact was severe: in March, almost 6 millions workers were registered in short-time work (STW).
- In response the German government strengthened and extended STW. Also, it introduced discretionary policy measures (DPM), such as child benefit and increased tax allowance for single parents.
- How much STW and DPM cushioned against the income loss of households? Evidence at the micro level is limited due to missing up-to-date information.

Recent literature

Two main approaches to overcome time lags in micro data:

- 1 **Static methods:** update the weights of observations in the micro data to mirror up-to-date labour market statistics. These include:
 - ▶ *Re-weighting.* E.g. Almeida et al. (2021) update EU-SILC data weights to estimate the impact of COVID-19 on household income in the EU.
 - ▶ *Matching.* E.g. Beznoska et al. (2020) combine pre-crisis survey data with a questionnaire on the income loss of households in Germany.
- 2 **Dynamic methods:** employ labour market transition techniques to change the employment status of individuals in the micro data to replicate labour market developments. E.g. Brewer and Tasseva (2020) and Figari and Fiorio (2020), for the UK and Italy, respectively.

This paper

- We use EUROMOD, the microsimulation model of the EU, to simulate the COVID-19 crisis in the German labour market.
- We extend the labour market transition approach and combine it with a probit model over HOPP database (from IAB) to update the EU-SILC data underpinning EUROMOD.
- We investigate the impact of COVID-19 on German's household income as well as the role of STW and DPM in cushioning its effects.

Extended labour market transition

- We alter the employment status of individual observations in the EU-SILC data consistently with up-to-date statistics.
- We select the observations using a probit model to identify individuals who are more likely to change their labour market status following the COVID-19 shock.
- For individuals affected by the transition, taxes and benefits are re-calculated consistently with the tax code in Germany in 2020.
- We model two types of transitions: (i) from employment to unemployment, and (ii) from employment to STW.

Simulation scenarios

We simulate three different scenarios in EUROMOD:

- **Baseline (no-COVID-19 scenario):** EU-SILC data are not updated. The tax-benefit system does not include DPM.
- **COVID-19 scenario:** EU-SILC data are updated using labour market transition to generate the COVID-19 shock in the labour market. The tax-benefit system includes the STW and the DPM.
- **COVID-19 scenario w/o STW and DPM:** EU-SILC data are updated using labour market transition to generate the COVID-19 shock in the labour market. But it is assumed that STW scheme and DPM were not in place. Therefore workers transit to unemployment instead of STW.

Calibrating the labour market transition

We construct our COVID-19 scenario in two main steps.

- 1 We calibrate the number of workers who transit to STW and unemployment, in each sector of the economy during using IAB data.
- 2 We estimate a probit model (see next slides), to order each individual in our micro data by their probability of moving to STW. Individuals with higher probabilities will then be the ones who are transited to STW, until the shares in each sector of the economy are met.

For the COVID-19 Scenario w/o STW and DPM, we simply transit individuals at point (2) to unemployment.

Table: Probability of moving to STW (Probit model - marginal effects)

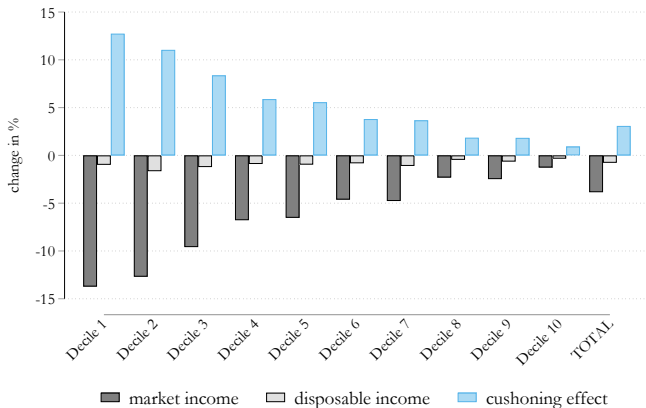
VARIABLES	marginal effect		SE
household disposable income (ref: 2000-3000 Euro)			
below 1,500 euro	0.104	***	0.028
1,500 - 2,000 euro	0.027		0.020
3,000 - 4,000 euro	-0.035	***	0.014
4,000 - 5,000 euro	-0.066	***	0.014
5,000 euro or more	-0.076	***	0.014
gender (ref: male)	-0.039	***	0.008
age (ref: 40-49)			
18-29	-0.003		0.017
30-39	0.016		0.013
50-59	0.010		0.012
60 or above	-0.026	*	0.015
partner (ref: no)	0.033	***	0.011
children (ref:no)	0.010		0.010
education (ref: upper-secondary)			
primary or below	0.207		0.126
lower-secondary	0.009		0.014
post-secondary	0.024		0.016
tertiary	-0.036	***	0.013
citizenship (ref: only German)			
German and other	0.018		0.030
other	0.066	**	0.028
Observations	16,053		

Note: */**/** means significant at 10%/5%/1% level; Reading example: A marginal effect of -0.039 for females means that cet. par. women are 3.9 percentage points less likely to be in STW than the reference category (men).

Source: Calculations of the Institute for Employment Research (IAR) based on HOPP Panel

The COVID-19 impact and the cushioning effect

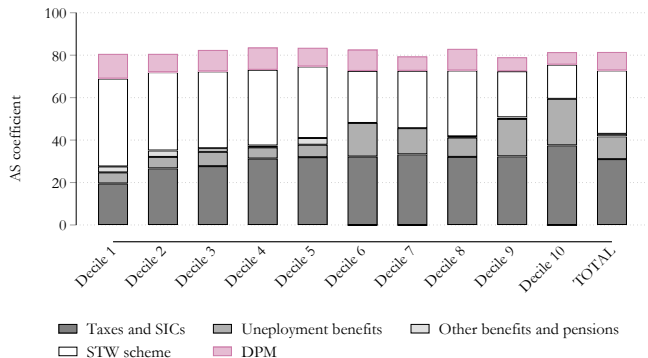
Figure: Impact of the COVID-19 crisis on household income



Note: Percentage change in household market and disposable income. Income deciles are based on the modified OECD scale for the no-COVID-19 scenario.

Automatic stabilisation with STW and DPM

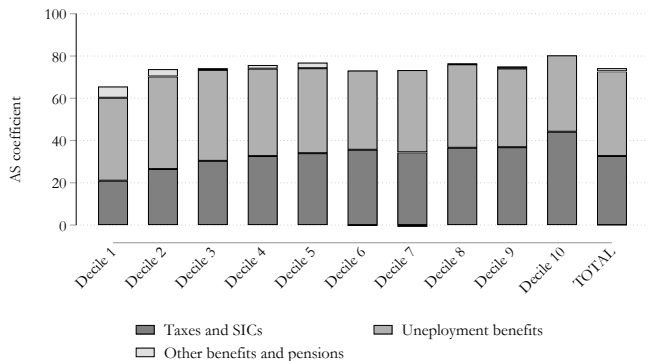
Figure: Impact of the COVID-19 crisis on household income



Note: Automatic stabiliser coefficients by Dolls et al. (2012). Income deciles are based on the modified OECD scale for the no-COVID-19 scenario.

Automatic stabilisation w/o STW and DPM

Figure: Impact of the COVID-19 crisis on household income



Note: Automatic stabiliser coefficients by Dolls et al. (2012). Income deciles are based on the modified OECD scale for the no-COVID-19 scenario.

Impact of the COVID-19 crisis on inequality

Table: Inequality measures

	Inequality across scenarios		
	Baseline	COVID-19 w/o *	COVID-19 with *
Gini			
A = market income	0.5056	0.5251	0.5225
B = A - taxes and SIC	0.5373	0.5607	0.5578
C = B + pension	0.3167	0.3367	0.3335
D = C + benefits (disp. inc)	0.2759	0.2815	0.2787
Additional measures			
Redistribution index	0.2297	0.2437	0.2438
Quantile share ratio (S80/S20)	4.0654	4.1609	4.0982
Inter-decile ratio (D5/D1)	1.8622	1.9308	1.8864

* STW and DPM

Conclusions:

- German households lost almost 5% of market income due to the COVID-19 crisis. The effect was regressive.
- The income fall was largely offset by the tax-benefit system, which absorbed about 80% of the income shock, with a similar effect across the income distribution.
- Our study highlights the importance of STW and DPM in cushioning the impact of the COVID-19 crisis. These policies play a crucial role in income stabilisation for low-income earners, therefore counteracting the expected increase in inequality.

Thank you!

Almeida, V., S. B. Cobos, M. Christl, S. De Poli, A. Tumino, and W. Van Der Wielen (2021). The impact of covid-19 on households' income in the eu. *Journal of Economic Inequality* (forthcoming).

Beznoska, M., J. Niehues, and M. Stockhausen (2020). Stabil durch die krise? verteilungsfolgen der corona-pandemie-eine mikrosimulationsanalyse. *IW-Report*.

Brewer, M. and I. Tasseva (2020). Did the UK policy response to COVID-19 protect household incomes? *EUROMOD Working Paper, No. EM12/20*.

Dolls, M., C. Fuest, and A. Peichl (2012). Automatic stabilizers and economic crisis: US vs. Europe. *Journal of Public Economics* 96(3-4), 279–294.

Figari, F. and C. V. Fiorio (2020). Welfare resilience in the immediate aftermath of the covid-19 outbreak in Italy. *EUROMOD Working Paper*.

Haas, G.-C., B. Müller, C. Osiander, J. Schmidtke, A. Trahms, M. Volkert, and S. Zins (2021). Development of a new COVID-19 panel survey: The IAB High-frequency Online Personal Panel (HOPP). *Journal for Labour Market Research* (forthcoming).