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The buffering effect of the Austrian tax-benefit system on child poverty during the COVID-19 pandemic

Leonard Geyer and Felix Groß-Wohlgemuth

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The buffering effect of the Austrian tax-benefit system on child poverty during the COVID-19 pandemic¹

Leonard Geyer^a

Felix Groß-Wohlgemuth^a

^a European Centre of Social Welfare Policy and Research

Abstract

This paper analyses the effect of the COVID-19-induced labour market shock on household income, the at-risk-of-poverty (AROP) rate for children in Austria, and the buffering effect of the Austrian tax-benefit system. We apply Paulus & Tasseva's (2020) decomposition analysis based on EUROMOD simulations and propose a new approach to adjust Austrian EU-SILC data to control for benefit payments included in income variables. Our results indicate that automatic stabilisers and discretionary policy measures protected households with children from significant market income shocks, preventing an increase in child poverty between 2019 and 2020. However, comparing 2019 and 2021, the tax-benefit system was less successful in protecting lower-income families, resulting in an increase in the child AROP rate. Furthermore, we show that not adjusting input data would overestimate disposable income increases and distort the effects of discretionary policies and automatic stabilisers.

JEL codes: C81, D31, H55, I32, I38

Keywords: automatic stabilisers, discretionary policy changes, decomposition, COVID-19, child poverty

Corresponding author: Leonard Geyer geyer@euro.centre.org

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1 Introduction

The outbreak of the COVID-19 pandemic and the measures taken to reduce the spread of the virus resulted in a significant shock to the Austrian labour market (Bock-Schappelwein et al., 2021). In response, the Austrian government took several measures to protect employment and stabilise incomes. Among the most prominent was a short-time work scheme helping private employers cover wage costs to prevent layoffs, which, at its peak in May 2020, had 1.3 million registered recipients (Statista, 2022). Other measures included a hardship fund for the self-employed and multiple lump sum payments, for example, to the unemployed and families (Budgetdienst, 2023).

Several studies have provided evidence that those measures, as well as traditional automatic stabilisers like unemployment insurance and progressive income taxes, prevented a decline in disposable household incomes in 2020 (Christl et al., 2024) and were generally well-targeted in that they benefited lower-income households and those most affected by the labour market crisis more (Fink et al., 2020; Christl et al., 2022; Budgetdienst, 2023; Gasior et al. 2024).

While earlier studies provided valuable insights into the functioning of the Austrian tax-benefit system in the context of this unprecedented crisis, we identify three shortcomings. First, most studies rely on ‘nowcast’ EU-SILC data to conduct microsimulations based on which they assess the effects of compensatory policies (Fink et al., 2020; Maidorn & Reiss, 2021; Budgetdienst, 2023; Christl et al., 2022; Christl et al., 2024; Gasior et al. 2024). Nowcasting uses up-to-date aggregated labour market data to adjust EU-SILC microdata, which is published with a time lag, to current conditions and thereby allows for more timely analyses. However, nowcast income data arguably is never as accurate as data collected for the year in question. Second, only one study (Budgetdienst, 2023) also covers the second crisis year, 2021. Third, to the best of our knowledge, no study so far has explicitly explored the crisis’ effects and the effectiveness of countermeasures regarding child poverty.

This is relevant because poverty among children has long-lasting negative individual and societal consequences. Poor children experience multiple disadvantages and complex social and material problems (Laubstein et al. 2016), and their poverty in adolescence has far-reaching implications for their entire life (Bäcker, 2019; Neu & Stichnoth, 2020; ISS, 2023; ÖKSA, 2023). Children who grow up in poverty tend to be less likely to gain higher educational attainment and have more difficulties finding employment. Poverty can also limit their social and cultural participation, like going on school trips, which can translate into a smaller network of friends, and it increases the risk of poor physical and mental health among children, which can reduce their well-being throughout their lives.²

Against this background, the aim of our paper is to complement the literature on the pandemic’s effects in Austria with an analysis of the impact of the COVID-19 labour market shock and the buffering effect of the Austrian tax-benefit system on the income of households with children and the at-risk-of-poverty

² See Fuchs et. al., 2024 for an overview.

(AROP) rate among children in Austria based on EU-SILC data for the income years 2019, 2020 and 2021. Following Paulus and Tasseva (2020), we do so by conducting a decomposition analysis based on simulations with the tax-benefit microsimulation tool EUROMOD (Sutherland & Figari 2013), which allows us to isolate the compensatory effects of discretionary policies taken in response to the pandemic as well as of automatic stabilisers. We use additional EU-SILC variables, such as the identifier of individuals who have received short-time work benefits, to improve the accuracy of simulated COVID-19 discretionary policies. Furthermore, using EU-SILC data for the income years 2020 and 2021 for Austria in the decomposition analysis requires adjustments because some benefit payments, like income from short-time work schemes or one-off payments to the unemployed, have been recorded in the reported market income and unemployment benefit payments, respectively. We address this issue by simulating the benefits in question and, where necessary, subtracting their value from the income variable in which they were included.

Our results indicate that households with children experienced a significant decline in real market incomes in 2020 compared to 2019 and a minor decline in 2021. Regarding the effect of automatic stabilisers and discretionary policies, our results confirm the findings of earlier studies (e.g. Christl et. al., 2022; Budgetdienst, 2023; Gasior et. al., 2024) and show that those policies were effective in preventing a decline in real disposable incomes between 2019 and 2020. In fact, the Austrian tax-benefit system overcompensated (143%) the effect of the labour market shock on households with children, resulting in an increase in real mean equivalised disposable incomes from 2019 to 2020. Similarly, automatic stabilisers and the additional measures taken by the Austrian government in response to the crisis reduced the effect of the labour market shock on the child AROP rate by an estimated 92%. Comparing 2019 and 2021, however, we find that discretionary policies fully compensated for a change in mean market income among households with children but that the Austrian tax-benefit system was largely ineffective in preventing an increase in child poverty.

Furthermore, the results show the importance of this paper's methodological contribution, the input data adjustment, as not adjusting EU SILC data for benefit payments included in other income variables would have resulted in an overestimation of market incomes in 2020 and 2021, distorted estimates for the policy and automatic stabiliser effects and an overestimation of the increase in child poverty.

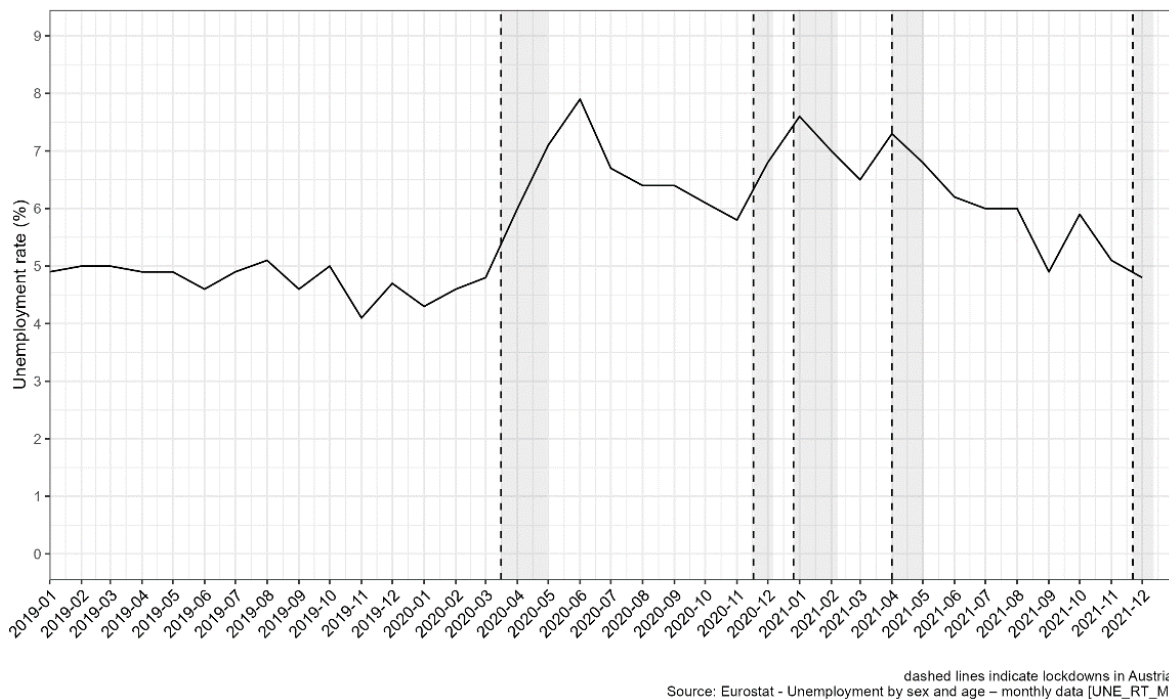
The remainder of the paper is structured as follows. The next section describes the impact of the COVID-19 shock on the Austrian labour market and the Austrian government's policy responses. In the subsequent literature review, we present results from previous Austrian and comparative studies on COVID-19-related income changes and the cushioning effect of automatic stabilisers and discretionary policies. Section 4 outlines the methodology and data used in our analysis, and section 5 presents the empirical findings, including a comparison of the results with adjusted and unadjusted income data. Section 6 summarises and concludes the analysis.

2 The COVID-19 labour market shock and the Austrian government's response

2.1 Labour market effect of COVID-19

As shown in Figure 1 below, the seasonally adjusted unemployment rate increased from below 5% in February 2020 to a peak of 8% in June of the same year following the first lockdown. After declining to below 6% by November 2020, it increased again in December 2020 and January 2021 to 7.5%, coinciding with the second and third 'hard' lockdown. Restaurants, schools, and other institutions were reopened in May 2021, with the remaining restrictions mostly being abolished over the following months. During this period, the unemployment rate recovered, reaching the pre-COVID-19 level of 5% by the end of 2021, only interrupted by a short re-increase to 6% in October 2021, anticipating the fourth lockdown.

Figure 1: Monthly unemployed individuals as percentage of the labour force (seasonally adjusted), 2019-2021; AT



The pandemic resulted in the steepest drop in employment in the past 70 years (Bock-Schappelwein et al., 2021). The number of individuals in full-time employment over the entire year decreased by 223,000 (-8.0%) from 2019 to 2020. Full-time employment among individuals in households with children decreased by 80,000 (-7.6%), with single parents affected the most among different family constellations (-30.0%/12,000). Given the recovery in the labour market, a slightly revised trend was observed in the second crisis year 2021. Compared to 2019, full-time employment decreased by 90,000 persons (-3.2%) and by 18,000 (-1.7%) for working-age individuals in households with children. Like in 2020, single

parents were particularly affected (-8,000/-20.0%), alongside multiple-person households with two children (-30,000/-7.6%)³ (Statistik Austria 2021a, 2022, 2023).

2.2 Automatic stabilisers and tax-benefit policies to support children in Austria

Austria has a well-developed welfare state, which acts as an automatic stabiliser and can buffer the effect of labour market shocks on incomes. The Austrian unemployment insurance offers payments of 55% of the previous net wage for up to 52 weeks for individuals with at least 24 contribution months. The replacement rate can increase up to 80% if the benefit amount is below the standard rate for the minimum pension top-up (*Ausgleichszulage*), and families receive a daily supplement for each dependent family member (*Familienzuschlag*). Individuals no longer eligible for unemployment benefits can apply for unemployment assistance (*Notstandshilfe*), which amounts to between 92% of unemployment benefits if the original benefit was higher than the minimum pension standard rate and 95% if it was below that amount. Individuals and families in need can apply for means-tested social assistance (*Sozialhilfe/Mindestsicherung*) amounting to €917 per month plus rent allowances for individuals living alone in 2020 in Vienna (European Commission et al., 2024).⁴ In addition, Austria has a progressive income tax which acts as an automatic stabiliser (Auerbach & Feenberg, 2000).

Furthermore, the Austrian welfare state provides substantial support to families and children. In 2022, Austria spent 12% of its GDP on child-contingent cash support, consisting of 7.3% child benefits, 3.5% tax concessions and 1.3% other benefits. Austria thus has the highest public expenditure on child-related cash transfers in the EU (Bornukova et al., 2024), with the unique combination of high expenditure on child benefits and tax relief.

Support for families includes universal benefits like family allowances (*Familienbeihilfe*), which depend on the age and number of children, as well as different options of childcare benefits paid to the parents during parenting leaves (*Kinderbetreuungsgeld*, *Familienzeitbonus*) and a maternity benefit (*Wochengeld*) paid to mothers as an income compensation for 8 weeks before and after giving birth. Tax reliefs such as the child tax credits for parents (*Kinderabsetzbetrag*), single-earner and single-parent tax credit (*Alleinverdiener- und Alleinerzieherenabsetzbetrag*) are applied as negative tax credits for low-income families and thus function like benefits. In addition, there are some income-dependent benefits for families which can act as automatic stabilisers, most notably the family hardship compensation (*Familienhärteausgleich*) and family supplements provided by the nine federal states to social assistance recipients with children.

³ For multiple person households with three and more children (+3.5%/5,000) and with one child (+2.9%/14,000) this employment pattern even increased compared to the situation before the crisis.

⁴ The social assistance regulations and benefit levels differ between the nine federal states.

2.3 Discretionary crisis-related policy measures

In addition to the regular measures described above, the Austrian government reacted to the COVID-19-related labour market shock with several monetary compensation schemes for employees at risk of losing their jobs, self-employed, unemployed and families with children as well as the reduction of the marginal tax rate for the first income bracket initially planned for 2021 which was brought forward to 2020 (see Budgetdienst, 2023; European Commission et al., 2024). The most important discretionary policy measures in 2020 and 2021 are listed below:

- Short-time work: From March 2020 through the end of 2021, an expanded short-time work scheme (*COVID-19 Kurzarbeitsbeihilfe*) was offered to bridge economic disturbances during the COVID-19 crisis with the aim of keeping employees employed. In the initial phase, from March to September 2020, a minimum average working time of 10% and a maximum average working time of 90% were applied. Depending on the income level, recipients received a net replacement rate of 80-90% for the forfeited working time. In later phases, the minimum average working time was increased, and the maximum average working time decreased.
- Hardship funds for self-employed and farmers (*Härtefallfonds für Selbstständige*): The funds were set up from March 2020 beyond the end of 2021 to support solo self-employed, freelancers and owners of micro-enterprises as well as farmers who experienced a decline in turnover and income due to COVID-19.
- Income-supporting measures for the unemployed: Two one-off payments of up to €450 were paid to unemployment benefits and unemployment assistance recipients in 2020⁵. The replacement rate of unemployment assistance was increased to the level of unemployment benefit from March 2020 until September 2021.
- Hardship funds for families (*Corona-Familienhärtefonds*): Parents in short-time work, unemployment and those experiencing a decline in self-employed activity could apply for payments of up to €1,200 per month for up to three months between April 2020 and June 2021.
- Extra payments for children: Parents with children entitled to family allowance received an additional lump-sum payment of €360 per child in September 2020. In 2021, families receiving social assistance benefits received a one-off payment of €300 per child.
- In addition, all students and children in vocational training receiving family allowance were entitled to approximately six months of prolonged benefit payment.
- The personal income tax rate for incomes between €11,000 and €18,000 (first tax bracket) was reduced from 25% to 20% in 2020.
- The commuter's tax credit, the pensioner's tax credit and related social insurance bonuses (negative tax) were increased in 2020 and 2021.

⁵ The second payment was made to individuals unemployed on late 2020 and some individuals have received it in 2021. However, at the Austrian EUROMOD model simulates the payments only for 2020.

How, then, did the COVID-19 labour market shock moderated by automatic stabilisers and discretionary policy measures impact family incomes and child poverty? Before presenting our own empirical work, we turn to other studies on the crisis' impact in Austria.

3 Literature review

Several recent studies used microsimulation techniques to assess the effect of the COVID-19 labour market shock and the response of tax-benefit systems in European countries (Figari & Fiorio, 2020; Bronka et al., 2020; Brewer & Tasseva, 2021; Bruckmeier et al., 2021; Cantó et al., 2022), including Austria (Baumgartner et al. 2020a, 2020b; Fink et al., 2020; Maidorn & Reiss 2021; Christl et al., 2022; Budgetdienst, 2023; Christl et al., 2024; Gasior et al., 2024, Midões & Seré, 2022). In addition, there have been studies using panel data to investigate the effect of the crisis and the countermeasures on household incomes (Albacete et al., 2021; Steiber et al., 2022). Across all studies, there is consensus that Austrian households experienced a significant shock to market incomes in 2020, which was compensated by automatic stabilisers and the countermeasures taken by the Austrian government. Most studies also indicate that lower-income households benefited more from government policies.

Gasior et al. (2024) found that Austria was among a small group of countries with no decline in the mean disposable income between 2019 and 2020. A reduction in market incomes was counteracted by the tax-benefit system. Specifically, they found that automatic stabilisers contributed strongly to the compensation and that the discretionary policies had a stronger compensatory effect on the incomes of households in the lower income quintiles. Similarly, Christl et al. (2024) found that in 2020, the Austrian tax-benefit system worked well and reduced the market income shock caused by COVID-19 by over 80%. Midões & Seré (2022) found that the more generous unemployment benefits offered in 2020 were extremely effective in preventing financial vulnerability among Austrian households.

Another study by Christl et al. (2022) on the impact of COVID-19 in Austria in 2020 finds that an increase in at-risk-of-poverty rates could be largely avoided by the COVID-19-compensation measures, except for single-parent households. Furthermore, their findings suggest that households in the lowest income quintiles experienced a lesser decline in market incomes, while higher-income households benefited less from short-time work and unemployment benefit payments due to lower replacement rates, which resulted in lower-income households experiencing a stronger increase in real incomes.

Fink et al. (2020) used pre-crisis structural data and 2020 micro-census data to simulate the income shock on private households at the beginning of the COVID-19 crisis. Like Christl et al. (2022), they found that income losses increased with income quintiles. Inactive and unemployed persons who were overrepresented in the lowest income decile were less affected by the COVID-19-induced labour market shock because most of their income stems from social transfers.

Similarly, Baumgartner et al. (2020a, 2020b) estimate that in 2020, households in the lower income third made the strongest relative gains in disposable income. They trace the effect of the increase in disposable incomes primarily to the reduction of the lowest marginal income tax rate and, to a lesser extent, to the

hardship fund for the self-employed. For households in the lower tercile, the child bonus – dependent children are above average to be found in middle and lower income-thirds – and the enlarged support for the unemployed (one-off payments, increase in unemployment assistance) played a crucial role.

A study by the Fiscal Advisory Council (Maidorn & Reiss 2021) based on nowcast input data and the microsimulation tool FISKSIM found that more than a third of households were at least temporarily affected by unemployment, short-time work or loss of self-employment income in 2020. However, the Austrian government's discretionary countermeasures prevented a sharp decline in household income. Both low-income households and households severely hit by the economic shock benefitted from them. The €360 child bonus paid in 2020 was estimated to be relatively well targeted, as it accounted for a higher proportion of income in the lower quintiles and because, according to their analysis, families with children were hit harder by the income shock.

The budget office (Budgetdient, 2023) of the Austrian parliament used EUROMOD with nowcast input data to evaluate the development of real incomes and found that in 2020 and 2021, automatic stabilisers and compensation measures, including short-time work offset real income losses caused by the income shock, particularly in lower and middle-income deciles. Compared to 2019, real disposable incomes increased 1.6% in 2020 and 1.4% in 2021 on average. The minor income loss from 2020 to 2021 was mainly due to the decreasing volume of targeted COVID-19 measures. In 2020, compared to 2019, households with children saw higher income gains than households without children, while in 2021, compared to 2019, the opposite was recorded. One explanation could be that measures for households with children, especially one-off payments, were discontinued or reduced in 2021. In both years, income gains for couples with children were higher than for single parents. In terms of progressivity, COVID-19 compensation measures were especially relevant in the first income decile but less significant in volume, while universal benefits such as the child bonus were largely distributed equally across deciles. The at-risk-of-poverty rate remained constant, with the COVID-19 packages having a preventative effect.

In addition, two Austrian studies made use of panel survey data that was collected during the COVID-19 pandemic. Both provide further evidence of a significant income shock and the effectiveness of discretionary policy measures. The Austrian Corona Panel Project by the University of Vienna concluded that during the lockdown in April 2020, household income declined on average by about 12%. However, short-time work had a clear preventative effect, as it was estimated that income losses would have doubled if one-third of the short-time workers had become unemployed (Albacete et al. 2021). Based on the panel survey data from the AKCOVID project and Austrian register data, Steiber et al. (2022) concluded that one-third of couples with children experienced income losses and that the financial difficulties were particularly severe for families with multiple children and single parents, who already had a higher at-risk-of-poverty rate before COVID-19. Due to the short-time work scheme, parental employment remained stable, but with a decline in income since the short-time work benefit did not replace the entire income loss.

While the existing studies have provided important insights into the development of household incomes and the performance of the Austrian tax-benefit system during the COVID-19 crisis, as mentioned in the introduction, we see room for additional research for three reasons. First, most studies which analysed the income effects of COVID-19 and the corresponding policy measures relied on income data

collected before the pandemic, which was then adjusted to meet the macroeconomic conditions in 2020 and 2021 (Fink et al., 2020; Maidorn & Reiss, 2021; Budgetdienst, 2023; Christl et al., 2022; Christl et al., 2024; Gasior et al. 2024). However, this comes with certain caveats. As described above, the nowcasting or forecasting methods applied in these studies use more readily available aggregated labour market data like quarterly employment and unemployment statistics to adjust microdata on incomes, which is published with a considerable time lag. Specifically, individuals in the pre-COVID-19 microdata are randomly identified within socio-demographic groups to undergo labour market transitions. This approach allows for more timely analysis, but it might skew the differences in the extent of income shocks between households with and without children and among the different socio-demographic groups of families. More generally and questions of data quality notwithstanding⁶, it must be assumed that microdata adjusted to fit the macroeconomic conditions in a given year is never as accurate as the data collected in that year. Second, except for the study by the Austrian parliament's budget office (Budgetdienst, 2023), all studies only cover the first year of the pandemic. This is understandable because the labour market shock was most severe in the early months of the crisis, but as shown above, the Austrian labour market did not recover until the end of 2021. We thus argue that the second year of the crisis also warrants scholarly attention. Third, while some studies have explored the situation of families (Steiber et al., 2022; Christl et al., 2022; Budgetdienst, 2023), we are unaware of any study on the impact of COVID-19 and the buffering effect of the Austrian tax-benefit system on child poverty. We therefore aim to complement the literature with such an analysis based on EU-SILC data for the income years 2019, 2020 and 2021.

4 Methodology

To analyse the effect of the COVID-19 labour market shock on incomes and poverty and the effectiveness of the Austrian tax-benefit system and certain components in limiting the effect of the shock, we apply a decomposition analysis developed by Paulus & Tasseva (2020) based on earlier work of Bargain & Callan (2010).⁷ This analysis allows us to decompose the total change in incomes and poverty rates between two points in time according to the following four effects :

- The gross **market income and population effect** records changes in income and poverty due to changes in incomes from (self-) employment, capital income and private pensions as well as changes in the composition of the population, for example, due to demographic changes or variation in the survey samples used for different periods. The market income and population effect is used to estimate the effect of the COVID-19 labour market shock on disposable incomes and poverty rates.

⁶ While the COVID-19 pandemic has affected the data collection process and thus the data quality of EU-SILC data in selected countries, we are unaware of data collection problems in Austria. We have no indication that the Austrian EUROMOD input data for the income years 2020 and 2021 is of lower quality than the data for the pre-COVID-19 years.

⁷ We thank Iva Tasseva for kindly providing information on the application of the decomposition method.

- The **policy effect** shows the contribution of discretionary policy changes. Specifically, it indicates the effects of all taxes and benefits newly introduced in 2020 and 2021 as well as changes to policy parameters, like income tax thresholds or eligibility criteria, and changes to benefit levels that deviate from changes in CPI. We use the policy effect to capture the effects of the policies introduced by the Austrian government in response to the COVID-19 labour market shock.
- The **automatic stabiliser** effect represents the contribution of changes in benefit eligibility, benefit amounts or effective tax rates due to changes in market incomes. It captures, for example, gaining (or losing) eligibility for a means-tested benefit due to a decline (or increase) in market income. We use this effect to capture the contribution of automatic stabilisers, including unemployment benefits, to income and poverty changes between the observation periods.
- The **nominal effect** is a scaling effect. It reflects the change in price level between the observation periods and can be used to interpret the other effects in real terms.⁸

This analysis allows us to decompose changes in the income of families with children and child poverty between 2019 (before the crisis) and 2020 and 2021 into the described components.

4.1 Decomposition

Mathematically, the decomposition starts from the observation that household net incomes can be expressed as a function of the tax-benefit parameters p , a matrix with information on individual and household characteristics including gross market incomes y , and the structure of the tax-benefit policies d , which turns p and y into net household incomes (Paulus & Tasseva, 2020). A population-level statistic I – for example, average disposable income or the poverty rate – can be described as a function of household net incomes. By extension, a change in I between two periods ($t = 0, 1$) can be described as the difference between the I derived from net household incomes in periods 0 and 1 as in Equation 1 below.

$$\Delta I = I[d_1(p_1, y_1)] - I[d_0(p_0, y_0)]$$

(1)

The total change ΔI can then be decomposed into the average policy effect ($\overline{PE}$), market income and population effect ($\overline{ME}$) and automatic stabiliser effect ($\overline{AE}$) and the average nominal effect ($\overline{N}$). For population statistics that are *independent* of price and wage levels (scale-invariant), such as the AROP rate, the nominal effect is zero and the other effects can be calculated by the following equations:

$$\overline{PE} = \frac{1}{2}[B_1 - C_1 + C_0 - B_0]$$

(2)

⁸ The policy, automatic stabiliser as well as market income and population effects are calculated in real terms. The sum of these effects is equal to the total change (total effect) between the observation periods in real terms. By adding the nominal effect, we receive the total change in nominal terms.

$$\overline{ME} = \frac{1}{2}[C_1^* - B_0^* + B_1^* - C_0^*]$$

(3)

$$\overline{AE} = \frac{1}{2}[C_1 - B_0 - (C_1^* - B_0^*) + B_1 - C_0 - (B_1^* - C_0^*)]$$

(4)

Thereby, B_t denotes what Paulus and Tasseva (2020) call the *baseline scenario* for the period t which is defined as a scenario in which the statistic of interest is calculated based on household disposable incomes derived from tax-benefit policies (d), parameters (p) and income and population data (y) from the same period ($B_t = I[d_t(p_t, y_t)]$). In contrast, C_t denotes the *counterfactual scenario* in which tax-benefit policies and parameters from one period are applied to income and population data from the other period. In other words, it describes a scenario in which I is derived for disposable incomes calculated based on the tax-benefit policies in period 0 and the market income and population data of period 1, or the other way around. To control for different price levels, market incomes are adjusted by α , the change in consumer price index (CPI) between the two periods. Mathematically, this can be expressed as $C_t = I[d_{1-t}(p_{1-t}, \alpha^{1-2t}y_t)]$. B_t^* and C_t^* respectively describe the value of I calculated based on the pre-tax incomes in the baseline scenario ($B_t^* = I[y_t]$) and the counterfactual scenario ($C_t^* = I[\alpha^{1-2t}y_t]$).

For *scale variant* statistics like average or median incomes, equations 2 to 4 must be adapted to control for the difference in price levels between the two periods through the parameter α . The resulting equations to calculate the average values of the different effects are as follows:

$$\overline{PE} = \frac{1}{6} \left[\left(\frac{1}{\alpha} + 2 \right) (B_1 - \alpha C_1) + (2 + \alpha) \left(\frac{1}{\alpha} C_0 - B_0 \right) \right]$$

(5)

$$\overline{ME} = \frac{1}{6} \left[(2 + \alpha) (C_1^* - B_0^*) + \left(\frac{1}{\alpha} + 2 \right) (B_1^* - C_0^*) \right]$$

(6)

$$\overline{AE} = \frac{1}{6} \left[(2 + \alpha) (C_1 - B_0 - (C_1^* - B_0^*)) + \left(\frac{1}{\alpha} + 2 \right) (B_1 - C_0 - (B_1^* - C_0^*)) \right]$$

(7)

$$\bar{N} = \left(\frac{\alpha - 1}{3} \right) \left(B_0 + C_1 + \frac{1}{\alpha} B_1 \right)$$

(8)

The decomposition can be conducted in different orders, resulting in six different, strictly symmetrical permutations for scale-variant decompositions and two permutations for scale-invariant decompositions. Following Paulus and Tasseva (2020), we calculate the average effects across all permutations as displayed in equations 2-7, as there is no reason to prefer one decomposition order over another.

4.2 Implementation in Euromod

Like Tasseva and Paulus (2020), we use the tax-benefit micro-simulation model EUROMOD to simulate the baseline and counterfactual income distributions. EUROMOD simulates taxes, benefits, and disposable incomes for a representative sample of the Austrian population based on data from the European Survey on Income and Living Conditions (EU-SILC). For the baseline scenarios, we simulate income distributions based on the tax and benefit structure and rules, or ‘systems’, for 2019 (B₁₉), 2020 (B₂₀) and 2021 (B₂₁) with income data for the same years. For the counterfactual scenarios, we simulate disposable income distributions with the 2020 (C₂₀) and 2021 (C₂₁) systems with uprated income data for 2019 and for the 2019 system with ‘downrated’ (inversely uprated) income data for 2020 (C_{19;20}) and 2021 (C_{19;21}).⁹

In line with the EUROMOD modelling conventions, market income is defined as monthly income from employment and self-employment, investments, property and private pensions (JRC-EUROMOD team, 2023). Disposable income is defined as all incomes after taxes, social insurance contributions, and benefits.¹⁰ To control for benefit take-up rates, we use the non-simulated amounts of social assistance benefits (*bsa*) directly from EU-SILC data. Since benefits from unemployment insurance have an important role as automatic stabilisers during a crisis, we use the non-simulated unemployment benefit (*bunct*) and assistance (*bunnc*) amount. We also replace the duration of unemployment benefits and assistance spells with EU-SILC variables (*bunctmy*, *bunncmy*). We, therefore, improve the simulation of other benefits that depend on the amount of unemployment benefits and durations, such as the COVID-19 compensation schemes. To improve the simulation of short-time work benefits and hardship fund benefits for self-employed, we use the EU-SILC variables of “Did you receive short-time work benefits in 2020 / 2021?” and “COVID-19 support for self-employed 2020 / 2021” as eligibility criteria. Only for those employed and self-employed individuals who state that they have received those benefits do we simulate the amount and the spell of the benefit (*bwkmcse_s*, *bwkmcee_s*).

Additionally, adjustments to the input data are necessary because several discretionary benefits introduced in the COVID-19 years 2020 and 2021 in EU-SILC are included in other income variables. For the decomposition method to correctly include those benefits in the policy effect, they must be simulated for the years in which they were paid out (2020, 2021) – as they are in the EUROMOD version used in this paper (I5.0+) – and subtracted from the variables in which they were originally included in order to not be counted twice.

Specifically, this problem applies to short-time work payments (*Kurzarbeitsgeld*) (*bwkmcse_s*, *yemmc_s*), which are included in employment income (*yem*), and payments from the hardship fund for the self-employed (*Härtefallfonds*) (*bwkmcse_s*), which are included in self-employment income (*yse*). Furthermore, since we are using non-simulated EU-SILC variables for unemployment benefits and assistance, we encounter the same problem for the monetary compensation benefits recorded as part of the regular benefit payment. The unemployment benefit (*bunct_s*) includes the simulated amount of the

⁹ Our analysis partially builds on code developed by Tamara Premrov for a study on intergenerational fairness. See chapter 3 in Raitano et. al., 2021.

¹⁰ We use the EUROMOD variables *ils_origy* for market income and *ils_dispy* for disposable income.

two additional one-off payments in 2020 (*buncttu_s*). Similarly, the unemployment assistance benefit (*bunnc_s*) contains an additional increase to the level of the unemployment benefit in 2020 and 2021 (*bunnctu_s*).

To correctly include these payments in the policy effect and prevent double counting, we simulate short-time payments, benefits from the hardship funds and extra payments for recipients of unemployment benefits and unemployment assistance and subtract their value from the variables in which they were originally included. In the baseline scenarios B₂₀ and B₂₁, the simulated values are then added to the disposable income so that total disposable income does not change, only its composition. In the counterfactual scenarios C_{19;20} and C_{19;21}, the simulated values are subtracted from the original income variables and not added to disposable income because they represent benefits which did not exist in 2019. All simulated scenarios with their respective systems and input data are summarised in Table 1.

Table 1: Overview of simulated scenarios

Policy systems*					Input data				
Scenario	Year	Reforms			Source	Income year	Adjustments		
B ₁₉	2019	All 2019 policy changes			SILC 2020	2019	None		
B ₂₀	2020	All 2020 policy changes			SILC 2021	2020	Adjusted market incomes & unemployment benefits		
B ₂₁	2021	All 2021 policy changes			SILC 2022	2021	Adjusted market incomes & unemployment benefits		
C ₂₀	2020	Regular 2020 policy changes, excluding COVID-19 policy measures			SILC 2020	2019	Uprated incomes to 2020		
C ₂₁	2021	Regular 2021 policy changes, excluding COVID-19 policy measures			SILC 2020	2019	Uprated incomes to 2021		
C _{19;20}	2019	All 2019 policy changes			SILC 2021	2020	Downrate incomes to 2019; Adjusted market incomes & unemployment benefits		
C _{19;21}	2019	All 2019 policy changes			SILC 2022	2021	Downrate incomes to 2019; Adjusted market incomes & unemployment benefits		

* All policy systems use non-simulated benefits for social assistance (*bsa*), unemployment benefit (*bunct*) and unemployment assistance (*bunnc*) to correct for non-take up and for partial employment history information in EU-SILC.

4.3 Limitations

Our analysis is subject to some limitations inherent to the Austrian EUROMOD model. One limitation is that EUROMOD simulations for Austria tend to underestimate poverty rates due to benefit non-take-up and other unaccounted simulation inaccuracies that influence incomes around the poverty threshold. For example, the EUROMOD simulation for Austria for 2020 underestimates the AROP rate by 1.35 percentage points (European Commission et al., 2024). We address this problem in two ways. First, as stated above, we address benefit non-take up as well as inaccuracies in simulating unemployment benefits by using the original EU-SILC records for social assistance (*Sozialhilfe/Mindestsicherung*), unemployment benefit (*Arbeitslosengeld*) and unemployment assistance (*Notstandshilfe*) and simulating only top-ups and additional benefits introduced in 2020 and 2021, which are required for the decomposition analysis. Second, we address the underestimation of the AROP rate in the micro-simulation model by focusing on *relative* changes between the observation periods rather than absolute

levels. A second limitation is that two of the anti-COVID-19 measures aimed at families, the COVID-19 family hardship fund and the prolonged payment of family allowance to parents of students, are not simulated in EUROMOD, due to a lack of data. This means that our analysis likely underestimates the size of the policy effect.

5 Results

5.1 Change in mean incomes

The results of the decomposition analysis of the effects on mean equivalised household incomes are presented in Table 2 for households with and without children. Household incomes are equivalised according to the OECD's modified equivalence scale¹¹ to control for household size. Children are defined as persons under the age of 18.

The total effect (TE), policy effect (PE), automatic stabiliser effect (AE) and market income and population effect (ME) show real changes in mean equivalised household incomes relative to 2019. Inspired by the work of Dolls et al. (2010), we further calculate a tax-benefit coefficient indicating the extent to which a change in mean market income is translated into a change in mean disposable income, which is calculated as $TaxBen = 1 - \frac{TE}{ME}$. A value of 1 means the change in market income was fully absorbed by the tax-benefit system. Values smaller than 1 show that market income changes were partially absorbed by the tax-benefit system, and values larger than 1 indicate that the tax-benefit system overcompensated market income changes. The nominal effect (N) is roughly equivalent to the inflation rate (change in CPI) and is not shown here

Like most previous studies discussed in section 3 (e.g. Fink et al., 2020; Christl et al., 2022; Budgetdienst, 2023), the results indicate that between 2019 and 2020, Austrian households experienced a significant shock to their mean equivalised market income. Households with children experienced a decline in real average incomes of -4.6%. For childless households, the decline was even higher at -7.9%. Thus, in contrast to Maidorn & Reiss (2021), we find that families with children experienced a weaker income shock. In both groups, automatic stabilisers worked as intended and counteracted the market income effect on households without children, which experienced a stronger decline in market incomes, benefiting more. Discretionary policy changes, too, increased mean incomes, but in contrast to automatic stabilisers, their effect was stronger on households with children (+3.4%) than those without children (+2.8%). This result indicates that the €360 lump sum payment per child in 2020 had a significant effect on families' household incomes.

¹¹ See https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Equivalised_disposable_income

Table 2: Decomposed effects on mean equivalised household incomes

Household type	2019 vs 2020					2019 vs 2021				
	TE%	PE%	AE%	ME%	Tax Ben	TE%	PE%	AE%	ME%	Tax Ben
<i>Household with children</i>	2.0	3.4	3.2	-4.6	1.43	0.0	0.6	0.0	-0.6	1.00
<i>Household without children</i>	-0.5	2.8	4.5	-7.9	0.94	-1.4	1.4	3.6	-6.3	0.78
Total	0.4	3.0	4.1	-6.7	1.06	-0.9	1.1	2.1	-4.1	0.78

Source: Own calculations based on EUROMOD outputs.

Taken together, the TaxBen coefficient indicates that automatic stabilisers and discretionary policy changes absorbed the income shock on childless households between 2019 and 2020 by 94% and reduced a -7.9% decline in market incomes to a reduction in disposable incomes of only -0.5%. For households with children, the results indicate an overcompensation: while mean market incomes declined by -4.6%, disposable incomes increased by 2.0%.

Comparing 2019 with 2021, the market income and population effect shows a significant decline in the mean market incomes for childless households (-6.3%) and a minor decline (-0.6%) for households with children. Automatic stabilisers counteracted the market income effect for childless households (+3.6%) but not for households with children. The policy effect was weaker than in the first period, which indicates that households benefited less from discretionary policy changes in 2021 than in 2020. Furthermore, while discretionary policy changes had a more pronounced effect on the mean income of households with children between 2019 and 2020, childless households benefited more when comparing 2019 with 2021. Overall, the Austrian tax-benefit system proved effective in stabilising mean equivalised household income, including in the second COVID-19 year. The shock on the mean market incomes of households with children was fully absorbed, and the shock on the mean incomes of childless households was absorbed up to 78%.

Table 3 presents the results of the decomposition analysis for households with children by income deciles and shows that the market income and population effect in both periods was more negative for the bottom five income deciles. In other words, the results indicate a stronger market income shock for poorer households with children than for richer ones. The effect of automatic stabilisers on mean incomes varies between income deciles. It is strongly and negatively correlated with the market income and population effect (Pearson's $r = -.91$). Notably, however, when comparing 2019 with 2021, automatic stabilisers seemed to have had only a limited effect in counteracting the market income and population effect on the mean incomes of households with children in the second and fourth decile. For households in the first and third deciles, the effect was negative and strongly counteracted the limited increase in market incomes in the first and reinforced the income decline in the third.

The effect of discretionary policy changes on mean disposable incomes was stronger, in percentage terms, for lower-income deciles in both periods. This is not surprising since several of the actions taken by the Austrian government were lump-sum payments that had a stronger relative effect on lower-income households. Overall, in the first period, the tax-benefit system overcompensated the market

income shock for households in all income deciles except the second and tenth. When comparing 2019 with 2021, however, the tax-ben coefficient indicates that the Austrian tax-benefit system seems to have had only a limited compensatory effect on average incomes in the second and third income deciles. Moreover, it strongly overcompensated an *increase* in mean market incomes in the first decile, resulting in a decrease in average mean equivalised disposable incomes. Taken together, as we will show in the next section, these effects seem to have contributed to an increase in child poverty.

Table 3: Decomposed effects on mean equivalised disposable incomes of households with children by deciles

Income deciles	2019 vs 2020					2019 vs 2021				
	TE%	PE%	AE%	ME%	Tax-Ben	TE%	PE%	AE%	ME%	Tax-Ben
1	1.8	6.0	8.3	-12.5	1.14	-1.2	3.3	-6.1	1.7	1.71
2	-0.6	5.3	4.0	-9.8	0.94	-3.1	2.8	0.3	-6.2	0.50
3	1.2	4.6	2.6	-6.0	1.20	-2.2	2.1	-0.7	-3.5	0.37
4	0.9	4.4	5.3	-8.8	1.10	-1.7	2.0	1.0	-4.7	0.64
5	1.2	3.8	8.0	-10.6	1.11	-1.0	1.8	7.5	-10.3	0.90
6	2.9	3.3	1.5	-2.0	2.45	0.7	1.7	5.2	-6.1	1.11
7	1.8	3.1	4.6	-5.9	1.31	0.1	1.0	-4.1	3.2	0.97
8	0.9	2.6	1.2	-2.9	1.31	0.2	1.0	-1.5	0.7	0.71
9	0.1	2.2	4.1	-6.2	1.02	-1.1	0.6	4.1	-5.7	0.81
10	-5.4	1.0	7.6	-14.0	0.61	-1.7	0.1	4.4	-6.2	0.73
Total	2.0	3.4	3.2	-4.6	1.43	0.0	0.6	0.0	-0.6	1.00

Source: Own calculations based on EUROMOD outputs.

Income deciles are calculated individually for each year (floating) based on equivalised disposable incomes.

5.2 Changes in child poverty

Turning to child poverty, Table 4 shows the decomposed effects on the child at-risk-of-poverty (AROP) rate, which is calculated as the share of children with an equivalised disposable income of less than 60% of the median equivalised disposable income. All effects are displayed in percentage point changes.

The comparison of 2019 and 2020 shows that, absent countervailing effects, the shock to market incomes would have caused a strong (+2.5 percentage point) increase in the child AROP rate. However, automatic stabilisers and discretionary policy changes worked in the other direction, decreasing the child AROP rate by -1.4 and -0.9 percentage points, respectively. As a result, the market income effect was reduced by 92%, and the increase in child poverty rate was limited to +0.2 percentage points.

While this result shows that the Austrian tax-benefit system was very effective in preventing an increase in child poverty during the first year of the COVID-19 pandemic, the picture is markedly different when

comparing 2019 with 2021. In this second period, the market income effect was slightly weaker (+2.0 percentage points), but automatic stabilisers and discretionary policy changes appear to have had hardly any effect, so the child poverty rate rose by 1.8 percentage points. The weaker policy effect can be explained by the lower volume of anti-COVID-19 measures in 2021 compared to 2020 and, most importantly, the discontinuation of lump-sum payments to all parents. In contrast, the non-existing effect of automatic stabilisers appears to be related to their limited income-protecting effect on households with children in the first and second deciles.

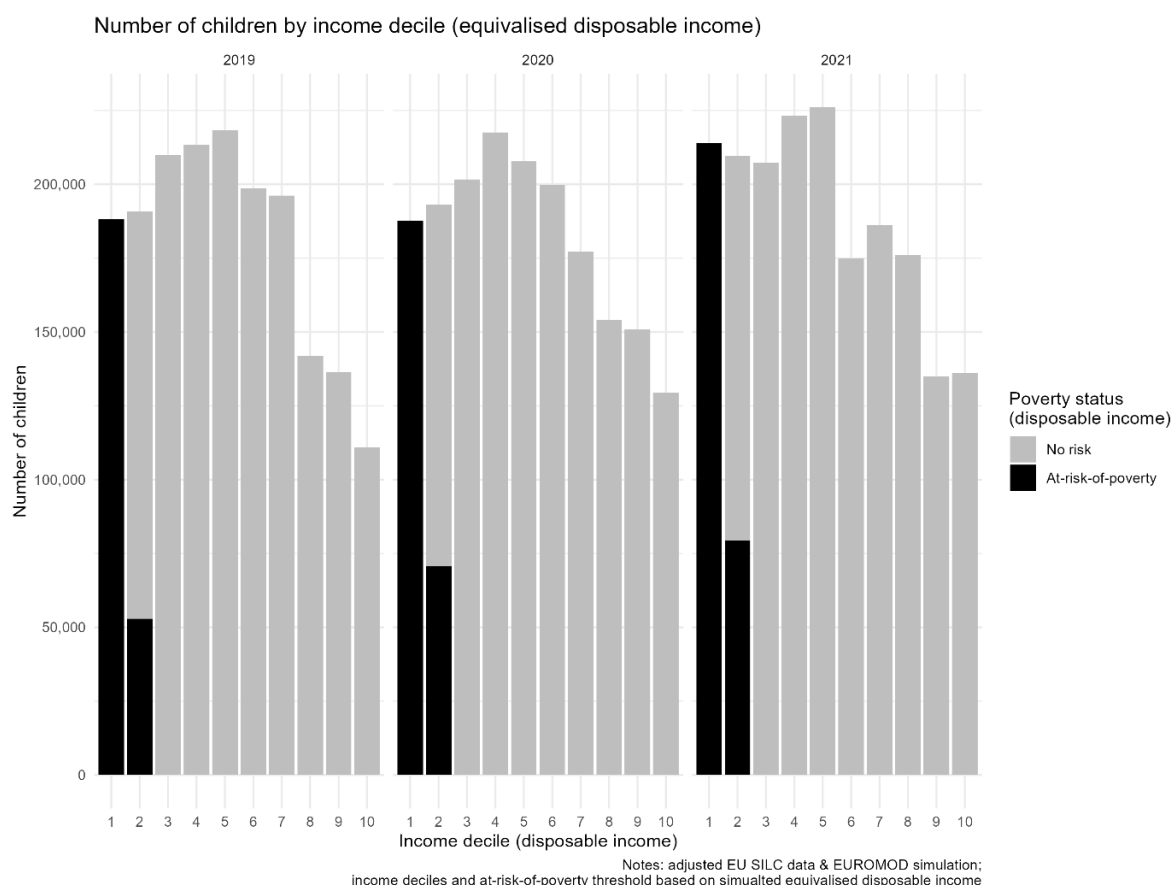
Table 4: Decomposed effects on the child AROP rate in percentage points

2019 vs 2020					2019 vs 2021				
TE	PE	AE	ME	Tax-Ben	TE	PE	AE	ME	Tax-Ben
0.2	-0.9	-1.4	2.5	0.92	1.8	-0.1	0.0	2.0	0.10

Source: Own calculations based on EUROMOD outputs. The AROP rates are calculated individually for each year based on equivalised disposable incomes.

To further explore how child poverty changed across income groups, we turn to Figure 2 which shows the number of children by income decile and their AROP status in 2019, 2020 and 2021.

Figure 2: Number of children by income decile and at-risk-of-poverty status



Across all years, all children in the first income decile and a share of children in the second decile were at-risk-of-poverty. The figure suggests that the small increase in the child poverty rate (+0.2 percentage points) between 2019 and 2020 was due to an increase in the share of AROP children in the second

decile. The more significant increase between 2019 and 2021 (+1.8 percentage points) seems to have been due to an increase in the number of children in the first income decile as well as an increase in the number and share of AROP children in the second decile. This finding suggests that the weaker buffering effect on incomes in the second decile between 2019 and 2020 and the weak (negative) automatic stabilisers effect on incomes in the second (first) decile between 2019 and 2021 contributed to the rise of child poverty during these periods.

5.3 Results without input data adjustment

Lastly, we explore the effects of the input data adjustments described in section 4.2, namely the simulation of short-time work payments, payments from the hardship funds for self-employed, one-off payments for unemployed and an increase in unemployment assistance payments and their subtraction from the regular income variables in which they were recorded.

Table 5 presents the decomposition results with and without input data adjustments by household type and shows that without adjustments, the market effect on mean disposable incomes would be less negative: -4.1% in 2020 and -2.7% in 2021 compared to -6.7% and -4.1%. In other words, average equivalised market incomes in 2020 and 2021 would have been overestimated due to the inclusion of two of the Austrian government's principal policies to counter the COVID-19 labour market shock, short-time work and the hardship funds for self-employed, in market income. The effect is even stronger among households with children. The market effect on the mean equivalised income of households with children would be -1.6% and +0.9% compared to -4.6% and -0.6%.

Table 5: Decomposed effects on mean equivalised household incomes - non-adjusted EU-SILC data

	2019 vs. 2020					2019 vs. 2021				
Household type	TE%	PE%	AE%	ME%	Tax-Ben	TE%	PE%	AE%	ME%	Tax-Ben
Household with children	5.5	3.9	3.2	-1.6	4.44	1.6	0.9	-0.2	0.9	-0.78
<i>with adjustments</i>	<i>2.0</i>	<i>3.4</i>	<i>3.2</i>	<i>-4.6</i>	<i>1.43</i>	<i>0.0</i>	<i>0.6</i>	<i>0.0</i>	<i>-0.6</i>	<i>1.00</i>
Household without children	2.1	3.2	4.5	-5.5	1.38	-0.1	1.6	3.4	-5.1	0.98
<i>with adjustments</i>	<i>-0.5</i>	<i>2.8</i>	<i>4.5</i>	<i>-7.9</i>	<i>0.94</i>	<i>-1.4</i>	<i>1.4</i>	<i>3.6</i>	<i>-6.3</i>	<i>0.78</i>
Total	3.4	3.5	4.0	-4.1	1.83	0.4	1.3	1.9	-2.7	1.15
<i>with adjustments</i>	<i>0.4</i>	<i>3.0</i>	<i>4.1</i>	<i>-6.7</i>	<i>1.06</i>	<i>-0.9</i>	<i>1.1</i>	<i>2.1</i>	<i>-4.1</i>	<i>0.78</i>

Source: Own calculations based on EUROMOD outputs.

The adjustment also increases the policy effects in both years. The policy effect for households with children would be +3.9% and +0.9% without the adjustment compared to +3.4% and +0.6%. The higher policy effect can be explained by the overestimation of market incomes for those receiving short-time work payments: since short-time work payments are simulated as a percentage of employment income (*yem*), higher employment income automatically increases short-time work payments and thus the policy effect. Lastly, Table 5 shows only minor differences in the automatic stabiliser effect on households' mean disposable incomes in both years. The higher market income and policy effect result in a higher

total effect for households with children of +5.5% and +1.6% compared to +2.0% and 0%. The conclusion without the adjustment would have been that households with children experienced a significantly higher increase in disposable incomes in both years compared to households without children and that the Austrian tax-benefit system significantly overcompensated the smaller market effect in 2020 (4.44 compared to 1.43). The tax-benefit system in the second year would have reduced the positive market effect for households with children (-0.78 compared to 1.00).

Turning to poverty, Table 6 shows the disaggregated effects with and without input data adjustments on children's at-risk-of-poverty rates. The market effect on the AROP rate of children is lower in both years without the adjustment: +1.5 percentage points and +1.6 percentage points compared to +2.5 percentage points and +2.0 percentage points. The policy and automatic stabiliser effects, in contrast, are less negative, meaning they have a weaker compensatory effect. Comparing 2019 with 2021, the policy and automatic stabiliser effect with input data adjustments even shows a positive impact i.e. that those policies would have contributed to an *increase* in child poverty. In sum, without the input data adjustments the total increase in child poverty would be higher and the compensatory effect of the tax benefit system lower for both periods.

Table 6: Decomposed effects on the child AROP rate in percentage points – non-adjusted EU-SILC data

	2019 vs. 2020					2019 vs. 2021				
	TE	PE	AE	ME	Tax-Ben	TE	PE	AE	ME	Tax-Ben
Household with children	1.0	-0.5	0.1	1.5	0.33	2.2	0.1	0.5	1.6	-0.38
<i>with adjustments</i>	<i>0.2</i>	<i>-0.9</i>	<i>-1.4</i>	<i>2.5</i>	<i>0.92</i>	<i>1.8</i>	<i>-0.1</i>	<i>0.0</i>	<i>2.0</i>	<i>0.10</i>

Source: Own calculations based on EUROMOD outputs. The AROP rates are calculated individually for each year based on equivalised disposable incomes.

The weaker market income effect can be explained by the fact that without adjustments, market incomes are higher due to the erroneous inclusion of benefit payments in employment and self-employment income. The weaker compensatory effect of automatic stabilisers can mostly be explained by two factors. First, in the non-adjusted scenario, one-off payments to the unemployed and increased payments to unemployment assistance recipients are included in this effect as well. Second, automatic stabilisers are, by design, sensitive to changes in market incomes. A smaller change in market incomes thus translates into a more limited automatic stabiliser effect. Finally, with respect to poverty rates, the explanation for the differences between the scenarios is more complex because counting the contribution of the described benefits twice – once as benefits and once included in market incomes or transfers to the unemployed – raises the median income and thus the at-risk-of-poverty threshold based on which the child AROP rate is calculated (see *Table A 1*). This effect helps explain why the impact of the policy effect is more limited and why our simulations with non-adjusted data show a stronger *increase* in the child AROP rate without adjustments, even though the mean equivalised disposable incomes of households with children would be *higher*.

6 Conclusion

The aim of this paper is to complement existing literature on the effects of the COVID-19 labour market shock on household incomes and the buffering effect of automatic stabilisers and discretionary policy measures in Austria through a decomposition analysis using EU-SILC data for the income years 2019, 2020 and 2021 and focusing explicitly on the effects of families with children and child poverty.

Our results drawn from a decomposition analysis following Paulus and Tasseva (2020) and based on adjusted EU SILC data for the income years 2019, 2020 and 2021 are in line with several earlier studies based on nowcast data and survey data and show that Austrian households experienced a significant income shock in 2020 (Albacete et al. 2021; Maidorn & Reiss, 2021; Steiber et al., 2022) which was (over)compensated by discretionary policy changes and automatic stabilisers (Christl et al. 2022; Budgetdienst, 2023; Christl et al. 2024; Gasior et al. 2024). Our findings also confirm previous evidence showing that lower-income households benefit relatively more from discretionary policy measures (Baumgartner et al. 2020a, 2020b; Christl et al., 2022; Budgetdienst, 2023); a finding which is not surprising since several of the measures taken by the Austrian government were lump-sum payments which are relatively more beneficial for lower-income groups.

Our results also show that households with children benefited more from discretionary policy changes than childless households in 2020, as parents benefited from a universal lump-sum payment of €360 per person. In fact, the Austrian tax-benefit system overcompensated the effect of the labour market shock on households with children, resulting in an increase in real mean equivalised disposable incomes from 2019 to 2020. With respect to preventing child poverty, the Austrian tax-benefit system also worked very effectively during the first year of the COVID-19 pandemic and reduced the effect of the labour market shock on the child AROP rate by an estimated 92%.

In 2021, after the payment was discontinued and the value of child-related payments reduced, this changed, and households without children benefited from the Austrian government's anti-COVID-19 measures to a greater extent, confirming the findings of the Austrian parliament's fiscal research service (Budgetdienst, 2023). Moreover, while we find that discretionary policies fully compensated for a change in mean market income among households with children, the Austrian tax-benefit system was largely ineffective in preventing an increase in child poverty when comparing 2019 and 2021. The increase can be traced to an increase in the number of at-risk-of-poverty children in the first- and second-income deciles, that is, the income groups for which the effect of automatic stabilisers was small (second decile) or negative (first decile).

In sum, it can be concluded that the Austrian government's policies were effective in protecting the disposable incomes of households with children and contributed to preventing an increase in child poverty, albeit to a more limited extent in 2021. Moreover, since we were unable to simulate one of the Austrian government's primary measures to support families in need in 2020 and 2021 – the hardship funds for families – due to a lack of data, our results likely underestimate the true size of the policy effect. Against this background, it may even be argued that financial support measures for families in 2020 were overly generous. On the other hand, the apparent failure of automatic stabilisers to protect

the incomes of families with children in the lowest income deciles in 2021 points to potential gaps in the Austrian social protection system and should be explored further.

Finally, our results show the importance of input data adjustment in case benefit payments are recorded as part of the regular income variables in EU-SILC 2021 and 2022. Without their extraction from the income variables, we would have overestimated market and disposable incomes in 2020 and 2021 and thus underestimated the income effect of the COVID-19 labour market shock, as important benefits would have been counted twice. Furthermore, not adjusting the input data distorts the effect estimations in the decomposition analysis of changes in child poverty. The (non)adjustment affects the market income, automatic stabiliser and policy effect on poverty rates not only by altering incomes but also by shifting the at-risk-of-poverty threshold. Our adjustment offers a correction approach that results in a more precise decomposition of market, policy, and automatic stabiliser effect in both COVID-19 years. It can be applied in future studies that decompose the effect of tax-benefit systems in mitigating the financial effect of the cost-of-living crisis in EUROMOD since compensation benefits were not always recorded separately in the EU-SILC-based input data.

7 References

- Albacete, N., Fessler, P., Kalleitner, F. & Lindner P. (2021). How has COVID-19 affected the financial situation of households in Austria?, in: Monetary Policy & the Economy, Q4/20-Q1/21, 111-130.
- Auerbach, A. J., & Feenberg, D. R. (2000). The Significance of Federal Taxes as Automatic Stabilizers. *Journal of Economic Perspectives*, 14(3), 37–56. <https://doi.org/10.1257/jep.14.3.37>
- Bäcker G. (2019). Kinderarmut in Deutschland, Präsentation 7. Hohenheimer Tage der Familienpolitik, Stuttgart: Universität Duisburg-Essen.
- Bargain, O., & Callan, T. (2010). Analysing the effects of tax-benefit reforms on income distribution: A decomposition analysis. *Journal of Economic Inequality*, 8(1), 1-21.
- Baumgartner, J., Bierbaumer-Polly, J., Fink, M., Friesenbichler, K.S., Kaniovski, S., Klien, M., Loretz, S., Pitlik, H., Rocha-Akis, S., Sinabell, F., Schnabl, A., Lappöhn, S., Mateeva, L., Plank, K., Wimmer, L., Berger, J., Schwarzbauer, W. & Strohner I. (2020a). Ökonomische Bewertung der in der Regierungsklausur am 16. Juni 2020 vorgestellten Maßnahmen, September 2020. Wien: WIFO.
- Baumgartner, J., Fink, M., Moreau, C. & Rocha-Akis, S. (2020b). Wirkung der wirtschaftspolitischen Maßnahmen zur Abfederung der COVID-19 Krise, Dezember 2020. Wien: WIFO.
- Bock-Schappelwein, J., Famira-Mühlberger, U., Huemer, U., & Hyll, W. (2021). Der österreichische Arbeitsmarkt im Zeichen der COVID-19 -Pandemie, in: WIFO Monatsberichte 5/2021, 371-388.
- Bock-Schappelwein, J., Famira-Mühlberger, U., Huemer, U., & Hyll, W. (2021). Der österreichische Arbeitsmarkt im Zeichen der COVID-19-Pandemie, in: WIFO Monatsberichte 5/2021, 371-388.
- Bornukova, K., Hernandez Martin, A. & Picos, F. (2024). Investing in Children: The Impact of EU Tax and Benefit Systems on Child Poverty and Inequality, JRC137125. Seville: European Commission.
- Brewer, M., & Tasseva, I. V. (2021). Did the UK policy response to Covid-19 protect household incomes? *The Journal of Economic Inequality*, 19(3), 433–458. <https://doi.org/10.1007/s10888-021-09491-w>
- Bronka, P., Collado, D., & Richiardi, M. (2020). *The Covid-19 Crisis Response Helps the Poor: The Distributional and Budgetary Consequences of the UK lock-down* [INET Oxford Working Paper]. Institute for New Economic Thinking at the Oxford Martin School, University of Oxford. <https://econpapers.repec.org/paper/amzwpaper/2020-17.htm>
- Bruckmeier, K., Peichl, A., Popp, M., Wiemers, J., & Wollmershäuser, T. (2021). Distributional effects of macroeconomic shocks in real-time. *The Journal of Economic Inequality*, 19(3), 459–487. <https://doi.org/10.1007/s10888-021-09489-4>
- Budgetdienst (2023). Einkommensentwicklung seit Beginn der COVID-19 -Krise und Verteilungswirkungen der Unterstützungsnahmen. Anfragebeantwortung 7.9.2023. Wien: Parlamentsdirektion.
- Cantó, O., Figari, F., Fiorio, C. V., Kuypers, S., Marchal, S., Romaguera-de-la-Cruz, M., Tasseva, I. V., & Verbist, G. (2022). Welfare Resilience at the Onset of the COVID-19 Pandemic in a Selection

- of European Countries: Impact on Public Finance and Household Incomes. *Review of Income and Wealth*, 68(2), 293–322. <https://doi.org/10.1111/roiw.12530>
- Christl, M., De Poli, S., Kucsera, D., & Lorenz, H. (2022). COVID-19 and (gender) inequality in income: The impact of discretionary policy measures in Austria. *Swiss Journal of Economics and Statistics*, 158(1), 4. <https://doi.org/10.1186/s41937-022-00084-6>
- Christl, M., De Poli, S., Figari, F., Hufkens, T., Leventi, C., Papini, A., & Tumino, A. (2024). Monetary compensation schemes during the COVID-19 pandemic: Implications for household incomes, liquidity constraints and consumption across the EU. *The Journal of Economic Inequality*, 22(2), 411–431. <https://doi.org/10.1007/s10888-023-09596-4>
- Dolls, M., Fuest, C., & Peichl, A. (2012). Automatic stabilization and discretionary fiscal policy in the financial crisis. *IZA Journal of Labor Policy*, 1(1), Article 1. <https://doi.org/10.1186/2193-9004-1-4>
- European Commission, Joint Research Centre, Fuchs, M., Geyer, L. & Wohlgemuth, F. (2024). EUR0MOD Country Report - Austria. Luxembourg: European Commission, <https://data.europa.eu/doi/10.2760/890868,JRC136957>.
- Eurostat Database (2024). Unemployment by sex and age – monthly data [UNE_RT_M]; <https://ec.europa.eu/eurostat/data/database> (retrieved 7 June 2024).
- Figari, F., & V. Fiorio, C. (2020). Welfare resilience in the immediate aftermath of the COVID-19 outbreak in Italy. *EUROMOD Working Papers*, Article EM6/20. <https://ideas.repec.org/p/ese/emodwp/em6-20.html>
- Fink, M., Moreau, C., Rocha-Akis, S. (2020). Auswirkungen der COVID-19 -Krise auf die Einkommenslage der privaten Haushalte, in: Bundesministerium für Soziales, Gesundheit, Pflege und Konsumentenschutz (ed.), COVID-19: Analyse der sozialen Lage in Österreich. Wien: BMSGPK, 44-59.
- Fuchs, M., Geyer, L., Groß-Wohlgemuth, F., Scoppeta, A. & Zólyomi, E. (2024). The Effects of COVID-19 on Poverty and Material Deprivation of Children in Austria. Vienna: European Centre for Social Welfare Policy and Research.
- Gasior, K., Jara, H. X., & Makovec, M. (2024). Assessing the effectiveness of social protection measures in mitigating COVID-19-related income shocks in the European union. *Economic Analysis and Policy*, 83, 583–605. <https://doi.org/10.1016/j.eap.2024.07.004>
- Heitzmann, K. & Rapp, S. (2023). Armut, soziale Ausgrenzung und Wohnen, in: Buxbaum A. et al. (eds.), Soziale Lage und Sozialpolitik in Österreich 2023. Entwicklungen und Perspektiven, 40-54. Wien: AK Wien.
- ISS (2023). Langzeitstudie zur Lebenssituation und Lebenslage von (armen) Kindern, <https://www.iss-ffm.de/themen/alter/projekte-1/langzeitstudie-zur-lebenssituation-und-lebenslage-armer-kinder> (retrieved on 24 November 2023).
- JRC-EUROMOD team (2023), EUROMOD Modelling Conventions, European Commission, Seville, 2023, JRC132843

- Laubstein C., Holz G. & Seddig N. (2016). Armutsfolgen für Kinder und Jugendliche. Erkenntnisse aus empirischen Studien in Deutschland, Gütersloh: Bertelsmann.
- Maidorn, S., & Reiss L. (2021). Treffsicherheit der Maßnahmen zur Stützung der Haushaltseinkommen während der COVID-19 -Krise in Österreich, in: Monetary Policy & the Economy Q3/21, 1-15.
- Midões, C., & Seré, M. (2022). Living with Reduced Income: An Analysis of Household Financial Vulnerability Under COVID-19. *Social Indicators Research*, 161(1), 125–149. <https://doi.org/10.1007/s11205-021-02811-7>
- Neu C., & Stichnoth H. (2020). Gesellschaftliche und regionale Bedeutung der Daseinsvorsorge, Zweites Symposium zum Sechsten Armuts- und Reichtumsbericht der Bundesregierung, 28.1.2020. Berlin: BM für Arbeit und Soziales.
- ÖKSA (Österreichisches Komitee für Soziale Arbeit) (2023). Was braucht Prävention und Bekämpfung von Kinderarmut in Österreich? Dokumentation Fachtagung, Wien: ÖKSA.
- OECD. (2024). *Family Indicators* [Dataset]. OECD. <https://doi.org/10.1787/efd30a09-en>
- Paulus, A., & Tasseva, V. (2020). Europe through the crisis: Discretionary Policy Changes and Automatic Stabilisers. *Oxford Bulletin of Economics and Statistics*, 82(4), 864-888.
- Raitano, M., Karagiannaki, E., Premrov, T., Geyer, L., Fuchs, M., Bloise, F., Costa-Font, J., Iudicone, F., De Micheli, B. (2021). Study on Intergenerational Fairness. Final Report. Brussels: European Commission.
- Statista (2022). Kurzarbeiter in Österreich; <https://de.statista.com/statistik/daten/studie/1198022/umfrage/kurzarbeiter-in-oesterreich/> (retrieved 5 June 2024).
- Statistik Austria (2021a). Tabellenband EU-SILC 2020. Wien: Statistik Austria.
- Statistik Austria (2022). Tabellenband EU-SILC 2021. Wien: Statistik Austria.
- Statistik Austria (2023). Tabellenband EU-SILC 2022. Wien: Statistik Austria.
- Steiber, N., Siegert, C., & Vogtenhuber, S. (2022). The impact of the COVID-19 pandemic on the employment situation and financial well-being of families with children in Austria: Evidence from the first ten months of the crisis. *JFR- Journal of Family Research*, 34(1), 193-220. <https://doi.org/10.20377/jfr-721>
- Sutherland, H. and F. Figari (2013). EUROMOD: the European Union tax-benefit microsimulation model. *International Journal of Microsimulation*, 6(1), 4–26.

8 Appendix

Table A 1: At-risk-of-poverty thresholds in € for adjusted and non-adjusted EU-SILC data

Scenario	With adjustments		Without adjustments	
	<i>Disposable income</i>	<i>Market income</i>	<i>Disposable income</i>	<i>Market income</i>
B ₁₉	1333.24	1277.04	1333.24	1277.04
B ₂₀	1381.86	1187.91	1428.24	1238.75
B ₂₁	1381.24	1250.38	1409.66	1275.10
C ₂₀	1386.49	1297.95	1386.49	1297.95
C ₂₁	1397.97	1330.04	1397.97	1330.04
C _{19;20}	1291.27	1171.45	1333.82	1219.25
C _{19;21}	1297.22	1198.19	1314.17	1230.05

Source: Own calculations based on EUROMOD outputs.