The Effect of Policy Responses to COVID-19 on Income Changes and Poverty*

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Abstract

We use the COME-HERE longitudinal survey collected by the University of Luxembourg to assess the effects of policy responses to the COVID-19 emergency on household disposable incomes in France, Germany, Italy, Spain and Sweden, between January and November 2020. Using the Stringency Index and the Economic Support Index of the Blavatnik School of Government as proxies for policy responses, we show that more stringent confinement policies significantly reduce household income, while government economic-support measures have a positive effect. We find that policy responses to COVID-19 are interdependent: with a sufficient level of economic support, stringent policies are less likely to be responsible for significant income losses. However, the cost of more stringent lockdown-style is disproportionally born by individuals who generally have weak ties to the labour market (women and not employed respondents) and those whose economic activity was more at risk and subject to greater likelihood of disruption due to the COVID emergency (employees from non-essential sectors). Last, we find similar results when we consider the probability of transitioning into poverty.

Keywords: COVID-19, Income losses, Lockdown policy

JEL Classification Codes: I18, I32, H24.

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1. Introduction

The COVID-19 pandemic represents an on-going challenge to health systems and economies all over the world. Around 100,000,000 cases of infections have been reported globally in 2020 and the number of daily infections in some Western European countries increased since the beginning of 2021. The governments of countries most heavily hit by the pandemic have had to come up with carefully balanced sets of measures and restrictions, with the objective of limiting the diffusion of the virus, while ensuring at least a certain degree of continuity of their countries' economic activity. While the evolution of the number of confirmed cases appears to confirm the effectiveness of a number of confinement measures (see Haug *et al.*, 2020, for a machine-learning statistical model quantifying the efficacy of over 6,000 different kinds of government interventions in curbing the spread of the virus), relatively little is known on the unintended consequences of the restrictions on individuals' economic and psychological wellbeing.

There is a growing literature documenting the impacts of COVID-19 lockdowns on outcomes such as compliance with lockdown measures (Briscese *et al.*, 2020), individual wellbeing (Brodeur *et al.*, 2021), student performance (Clark *et al.*, 2020c), and human mobility (Fang *et al.* 2020), complementing the more general evidence on the economic and distributional consequences of COVID-19 (Adams-Prassl *et al.*, 2020; Alon *et al.*, 2020; Beland *et al.*, 2020; Berger *et al.*, 2020; Fetzer *et al.*, 2020; Jones *et al.*, 2020; Jordà *et al.* 2020; Ramelli *et al.*, 2020; Stephany *et al.*, 2020; Stock, 2020). A series of studies uses simulation techniques to investigate the inequality and poverty effects of COVID-19 under different lockdown scenarios (Almeida *et al.*, 2020; Bronka *et al.*, 2020; Brunori *et al.*, 2020; Figari and Fiorio, 2020; Li *et al.*, 2020; Palomino *et al.*, 2020). Due to the relative scarcity of individual-level data collecting income information at different times during 2020, only few papers address the evolution of income during the pandemic. Brewer and Gardiner (2020), using real-time survey data from a sample of 6,000 British participants, show that 33% of respondents report having a lower household income in May 2020 as compared to January. Exploiting data from the monthly US Current Population Survey, Han *et al.* (2020) document the efficacy of targeted government economic-support measures in reducing poverty between February and

June 2020 – although the policy success can likely be at least partly attributed to the relatively low number of cases in the US around that time.

Exploiting the quasi-experimental variation deriving from governments' policy responses to the COVID-19 emergency, we here identify the effect of more stringent lockdown measures as well as the effect of the economic support provided by governments on household income changes and the risk of falling into poverty in France, Germany, Italy, Spain, and Sweden. In order to do so, we combine national policy indicators from the Oxford COVID-19 Government Response Tracker, capturing the stringency of confinement measures and the generosity of economic support measures, with unique real-time panel data on more than 8,000 individuals from the University of Luxembourg's COME-HERE survey.

Using the same COME-HERE data as we do here, Clark *et al.* (2020b) track inequality in household disposable income between January and September 2020. They show that relative inequality changed in a hump-shaped way. Menta (2021) shows a similar pattern for various indices of poverty over the same period: poverty rates increased in all COME-HERE countries from January to May and partially recovered in September. Although both papers are interesting time-series, they do not assess explicitly the influence of policy responses to the COVID-19 emergency. This is where the first contribution of this paper lies: we estimate the effect of two sets of government policies in response to the COVID-19 crisis (stringency measures and economic support measures) on the incomes of the same individuals four times over the same year. Conditional on cross-country differences and common time shocks, our identification strategy relies on the arguably-exogenous policy changes over the survey period, which we show not to be confounded by the parallel evolution of the COVID-19 pandemic.

We find that more stringent lockdown measures are associated with household income losses, with one standard-deviation (SD) increase in the Stringency Index implying an average loss of 0.9 percentage points (pp) with respect to previously reported household income. As for economic support measures (captured by the Economic Support Index), a one-SD increase in the index is associated with 1.2 pp higher household income on average. The two indices do not act independently of one another: a sufficiently high level of economic support counterbalances the negative impact of more stringent confinement policies. These effects are

robust to a variety of definitions of income changes and policy measures, and appear to be at least partly mediated by adverse labour market events (job loss, reductions in working time and pay).

Additionally, we investigate the distributional effects of anti-COVID-19 policies by assessing the role of individual heterogeneity, based on pre-COVID characteristics (gender, education, marital status, employment status and income status in January 2020). We find that more stringent lockdown-style policies disproportionately reduce the incomes of respondents with weaker ties to the labour market (women and not employed), and those whose economic activity was likely at risk or disrupted by the COVID emergency (employees from non-essential sectors). Economic support policies, on the other hand, appear to have equally protected everyone against the adverse economic consequences of COVID-19.

We last ask whether individuals in our sample are more at risk of poverty as a consequence of the anti-COVID policies distributional effects. We find that respondents experience a higher risk of poverty due to high values of the Stringency Index, and a reduction of that risk as the Economic Support Index increases. Consistent with the results on income losses, heterogeneity analysis shows that the risk of poverty is higher for individuals with more vulnerable labour market positions.

The remainder of the paper is structured as follows. Section 2 describes the data and the empirical strategy. Section 3 shows the effects of governments policy responses to COVID-19 on changes in household disposable income, highlighting potential mediators of this relationships and identifying more vulnerable population segments. Section 4 focuses on the risk of transitioning into poverty as a consequence of policy measures. Last, Section 5 concludes.

2. Data and empirical strategy

2.1. Data

The data we use here comes from the COME-HERE survey collected by the University of Luxembourg. The survey was conducted with Qualtrics to reach representative samples in

France, Germany, Italy, Spain and Sweden.[1] Respondents were asked to complete an on-line questionnaire that took approximately 20 minutes. This dataset collects information at the individual and household level and it is longitudinal. The first four waves of survey were conducted, respectively, around late April, early June, early August, and late November 2020. At least four more waves are planned to take place in 2021.

More than 8,000 individuals responded to the first survey and were then invited to take part in the subsequent waves. Above 80% of them participated in at least one other survey wave, with up to 45% participating to all four. The survey is aimed at collecting detailed information on individuals' living conditions and mental health during the pandemic, as well as identifying recent changes and events that might have affected their lives. Standard sociodemographic characteristics such as age, gender, education, labour force status, and country and region of residence were also collected.

In each survey round, respondents were asked to report the level of their household disposable income two to three months prior to the survey using the following bands: "0 to 1250 euros", "1250 to 2000 euros", "2000 to 4000 euros", "4000 to 6000 euros", "6000 to 8000 euros", "8000 to 12500 euros" and ">12500 euros".[2] Respondents were then asked whether their current household disposable income changed since and, if so, by how much in percentage points of the previously reported household income. Answers were restricted to the following categories: ">100%", "75-99%", "50-74%", "25-49", "1-24", "0%". Combining all the income variables, we can reconstruct the history of recent changes in household disposable income from January 2020 (that we here consider as being the pre-COVID-19 level of income) to November 2020.

Respondents were also asked to report a variety of labour market outcomes and recent labour market events, such as whether they recently lost their job (or were unable to do paid work), whether they earned less or worked less since the last survey (conditional on having a job), and whether their partner lost their job.

[1] Representativeness was ensured in terms of gender, region, and age. Ethics approval was granted by the Ethics Review Panel of the University of Luxembourg.

[2] Reference periods for the recalled household income were the following: January 2020 (asked in wave 1), April (wave 2), May (wave 3), and September (wave 4).

2.2. Empirical Strategy

We aim to monitor household income changes and estimate whether the policy responses to the pandemic had an effect. We therefore estimate the following equation via OLS:

$$HH\ Income\ Change_{it} = \alpha SI_{it} + \beta ESI_{it} + \gamma X_{it} + \mu_i + \lambda_t + \epsilon_{it}. \quad (1)$$

As described earlier, recent changes in household disposable income of the respondent *i* at time *t* are banded. Hence, we use the mid-point of each category to build $HH\ Income\ Change_{it}$ which respectively takes values -100, -88, -63, -38, -13, 0, and 20 for current income categories (in percentage of previously reported income) "0%", "1-24%", "25-49%", "50-74%", "75-99%", "No change", and ">100%". Note that we attribute an arbitrary positive number (20) the category ">100%".[3]

SI_{it} and ESI_{it} are, respectively, the Stringency Index and the Economic Support Index, which are part of the Oxford COVID-19 Government Response Tracker produced by the Blavatnik School of Government - University of Oxford. Over one hundred students and staff members of the University of Oxford from every part of the world collect data from public sources to produce indices measuring policy responses to COVID-19 at the national level and updated on a daily basis (see more details on www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker#data). The Stringency Index is composed of the nine following sub-indexes, measuring various aspects of containment policies: "school closing", "workplace closing", "cancellation of public events", "restriction on gathering", "public transport closing", "stay-at-home requirements", "restriction on internal movement", "restriction on international travel" and "public information campaign". The Economic Support Index is instead based on only two components, namely "income support" and "debt relief". The "income support" component measures the extent to which governments provide their citizens with direct cash payments, universal basic income, or income support for people

[3] As less than 4 percent of survey respondents reported household income gains, we do not believe this coding to meaningfully affect results. Nevertheless, in robustness checks we show that results are the same when attributing a variety of different values to individuals who report gains in household income (see Figure A1).

who lost their job or cannot work. The "debt relief" component pertains to governmental decisions to freeze financial obligations of households (such as loan repayments). Both the Stringency and Economic Support indices are rescaled so that they range from 0 to 100. The higher the value of the Stringency Index, the more stringent one country's lockdown-style policy response to COVID-19 is. Similarly, higher values of the Economic Support Index refer to countries spending more in the attempt to counterbalance the adverse economic effects of COVID-19 born by individuals. As explained by the data producers (Hale *et al.*, 2020), the Indexes do not reflect the effectiveness of a government's response to limit the spread and the negative economic consequences of COVID-19; they rather provide a synthetic measure of the strictness of the different containment policies (for SI_{it}) and of the economic support (for ESI_{it}) implemented by governments in responses to the COVID-19 emergency meant to be used for cross-country comparisons over time. In our main regressions, SI_{it} and ESI_{it} are the average values of the Stringency and Economic Support Indices two weeks prior to the interview date, and are always standardised (mean = 0, s.d. = 1). We show in the robustness checks that our results are similar when we use either the average values of the indexes one month prior to the interview date or the values of the indexes from the interview date.

X_{it} is a set of standard individual characteristics (age and its square, the log of monthly household disposable PPP-adjusted income in January 2020, and dummies for gender, partnership status, education level, labour force status, and country of residence). We neutralise the influence of macro-trends and individual time-invariant heterogeneity by respectively controlling for wave fixed-effects λ_t and individual fixed-effects μ_i. Standard errors are clustered at the individual level.[4] We will also present a number of robustness checks to show that our conclusions hold even after changing some features of our main specification.

[4] As the Stringency and Economic Support Indices vary at the country level, clustering standard errors at that same level of variation might be more appropriate. However, our analysis sample only includes five countries, and Bertrand *et al.* (2004) showed that a small number of clusters leads to greatly over rejecting the null hypothesis, in some cases at more than double the critical value. We address this problem using Wild Cluster Bootstrap methods (with Webb weights and 999 replications as in O'Connor, 2020). Standard errors are somewhat larger, but still such that estimates for the two policy indices are always significant at conventional levels (results available upon request).

We consider a sample of adult respondents across the first four COME-HERE waves, who were present in at least two out of the four current survey waves and with valid information on household income changes and socio-demographic variables. Our analysis sample consists of 20,337 observations (6,039 individuals). Descriptive statistics for the analysis sample appear in Table 1. French, German, Italian and Spanish residents make up for 22 to 23% of the sample, while Swedish ones only represent 12% of the observations. 30% of the observations come from the first wave, while the rest is somewhat evenly distributed across the three remaining waves (with the June one accounting for only 21% of the estimation sample). As for any longitudinal survey, there is attrition. While we do restrict our analysis to individuals observed at least twice in the survey, of which over 50% are observed in all four waves, we discuss the extent to which residual attrition might affect our estimates in the robustness checks section. Just under half of the sample is made up by women and high-educated individuals (i.e. with a diploma from post-secondary education). Unsurprisingly given the scale of the variable, the average change in household income is a negative one, with a magnitude of -8.57 percentage points. One may wonder if such prevalence of household income losses depends on the scale of the variable and the arbitrary attribution of the value "20" to positive income changes. Table 2 shows the distribution of the original banded income changes in our analysis sample, separately for each wave. It is clear that, on average, most respondents in the sample report either no change or a reduction in their household income – with more losses being reported in April 2020 as compared to the other waves. However, the band ">100%" having no upper limit, we could be underestimating the magnitude of income gains in the sample. In order for the average change in the sample to be zero, the gain experienced in the 715 occurrences of individuals reporting ">100%" would need to be around a 265% increase with respect to previously reported income – which is likely unrealistic.

Figure 1 shows the evolution of the Stringency and Economic Support Indices across the five countries of COME-HERE from April to November 2020. For each wave, points in the figure represent average values of the indices across interview dates (where the value taken by the indices at any point in time is itself an average across the two weeks prior to the interview date). In almost every country, the Stringency Index followed a U-shaped curve: the index

decreased after the first COVID-19 wave and the end of the first lockdowns in Europe (from April to August) and increased with the second COVID-19 wave and the new series of lockdowns (from August to November). The only country with a different pattern is unsurprisingly Sweden, where no lockdowns were implemented: here the Stringency Index remained somewhat stable during 2020 and its average level is the lowest among the COME-HERE countries. The right Panel of Figure 1 reveals a more nuanced evolution of the Economic Support Index across countries. The Index remained high and stable in Spain throughout the sample period, while it progressively reached higher levels in Italy and Sweden and lower levels in France and Germany. This is in line with the key economic responses summarised by the International Monetary Fund's policy tracker (see www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19). Economic support measures in Spain were first implemented as early as the beginning of March – with an overall expenditure budget of 47 billion euros (4.2% of the Spanish GDP) agreed upon by the government over the course of 2020. Among other things, the measures implemented by the Spanish government aimed at easing the access to unemployment benefits, increasing the sick pay for COVID-19 infected workers, supporting self-employed workers affected by the suspension of their economic activity, introducing a new means-tested minimum income scheme, and subsidising new rental programs for vulnerable renters. The governments of the other countries of COME-HERE implemented somewhat similar economic support schemes, but these were either implemented later on (Italy and Sweden), or became more targeted over time (France and Germany).

3. Household income changes and policy responses to COVID-19

3.1. Main Results

Table 3 shows how the stringency of policy responses to COVID-19 and the economic support measures predict changes in household income between January and November 2020 across different model specifications. We here use the analysis sample described in Table 1. Columns 1 to 3 investigate the effect of the Stringency and Economic Support indices, separately first and then jointly, in simplified versions of equation 1 where only time and

country fixed effects are controlled for.[5] Column 4 further adds the remaining individual controls included in X_{it} to the specification. Lastly, Column 5 presents the full model as reported in equation 1, with individual fixed effects.

As displayed in column 1, a one standard-deviation (SD) increase in the Stringency Index is associated with a drop in household disposable income of 1.1 percentage points, which is roughly the equivalent to 13% of the average fall in household disposable income we observe in our estimation sample. Column 2 shows the Economic Support Index predictably affecting household income in the opposite way: a one-SD increase in the index is associated with a 1.4 pp increase in household income (albeit larger, the magnitude of the effect is not statistically different from that of the Stringency Index). When controlling for both indices in column 3, their effect sizes are slightly lower – although not statistically different from those in columns 1 and 2. This is unsurprising, as the two indices likely find a common source of variation in the worsening of COVID-19 scenarios and, as such, are positively correlated (unconditional raw correlation of 0.18).

As a function of government decisions, there is no reason to believe that the policy indices should strongly correlate with individual characteristics and, as such, we expect them to be conditionally exogenous once time and country characteristics are taken into account. Columns 4 and 5 empirically confirm the indices' orthogonality with respect to individual characteristics, showing coefficients that are robust to the sequential introduction of individual controls and individual fixed effects. The estimates in the last column of Table 3 indicate that one-SD increase in the Stringency Index predicts a 0.9 pp drop in household disposable income and the same increase in the Economic Support Index predicts a household income gain of 1.2 pp. These estimates are sizeable: they respectively represent 14% and 18% of the income changes produced by a transition between full-time employment and unemployment in our estimation sample (see the full set of results from the last two columns of Table 3, including the estimated coefficients on all of the control variables, in Appendix Table A1).

[5] Given the great degree of time and country heterogeneity shown in Figure 2, we do not report here simple bivariate associations between the indices and income changes in the whole sample.

Last, we ask whether the effects of the Stringency and the Economic Support Index on income changes are interdependent. To address this question, we re-estimate Equation 1 and add an interaction term between the Stringency Index and the Economic Support Index. When we do so, the two Indexes still attract estimates significant at the 5% level at least and, more importantly, they attract a positive and highly significant interaction term. In other words, a high level of Economic Support attenuates the negative effect of the Stringency Index on income changes. Similarly, the higher the value of the Stringency Index, the larger is the positive effect of the Economic Support Index on income changes. We report in the left panel of Figure 2 the independent standardised effect of the Stringency Index for different plausible values of the Economic Support Index (that is, values ranging from the minimum to the maximum value taken by the Index in our estimation sample). It shows that an increase of the Stringency Index of one standard deviation has no effect on income changes when the Economic Support Index is greater than 85. The right panel of the same Figure reveals that the independent standardised effect of the Economic Support Index doubles when the Stringency Index increases from 70 to 95, *ceteris paribus*. Policy responses to COVID-19 appear to be highly interdependent: with a sufficient level of economic support, stringent policies are less likely to be responsible for significant income losses.

3.2. Robustness Checks

We now turn to a number of sensitivity tests. The analyses that we will carry out here refer to the specification displayed in column 5 of Table 3, as in equation 1. All the main robustness checks appear in Table 4, where the first column reproduces the baseline estimate for easiness of comparison. A first concern that one may have relative to the results illustrated in Table 3 is non-random attrition. In particular, if individuals who drop out of the sample after the first wave are also systematically more likely to experience household income losses (or gains), then selection might constitute a source of bias. It appears that attrition in the COME-HERE sample is negatively correlated with age and education and that it increases with income losses. We reduce this selection bias by calculating weights to deflate the influence of 'oversampled' respondents using Inverse Probability Weighting (IPW). We re-run our baseline model using

IPW weights and show the results in column 2 of Table 4: the point estimates (of slightly larger magnitude than the baseline for the Stringency Index and lower magnitude for the Economic Support Index) are qualitatively unchanged.

A causal interpretation of our baseline estimate supposes that we take care of all endogeneity biases. As for most of empirical work, the most important threat is the one of omitted variables. We here discuss the existence of unobserved factors that would confound the association between the Stringency and Economic Support Indices and household income changes. As described above, conditional on country-of-residence and wave fixed-effects, our effects of interest are relatively insensitive to the introduction of observable individual characteristics and individual fixed-effects. Combined to the fact that both indices depend on governments' decisions, it seems then reasonable to assume that unobserved individual time-varying factors are unlikely to simultaneously influence the dependent and independent variables. However, the indices are not random variables: their values depend on the degree of containment strategies and economic assistance governments decide to adopt in order to limit the spread of COVID-19 and prevent national health systems from reaching a saturation point. Even when controlling for country and wave fixed-effects, our baseline estimates might partly capture the time-varying effects of the COVID-19 emergency itself on the economy. We check that our main estimates do not pick up the effect of the latter by keeping constant the average number of cases per country in the two weeks prior to the interview, divided by the population size. Results are displayed in column 3, where the number of COVID-19 cases does not appear to significantly affect household income changes other than via the two indices (the effect sizes of which remain robust). In additional results (available upon request), we control for other variables aimed at capturing the influence of the COVID-19 spread, namely the flow and the stock of confirmed cases (from two weeks to one month before the interview took place). Again, the Stringency and Economic Support indices attract significant estimates, statistically identical to the baseline ones.

In our baseline regressions, we use the average values of the Stringency and Economic Support Indices two weeks prior to the interview date. This is to capture a medium-run trend in policy responses, that takes into account the influence of measures that have possibly only

recently been lifted. However, it could be the case that the snapshot provided by the values of the indices at the interview date provide an accurate enough picture of a country's current restrictions and economic support strategies, or that individuals' responses are affected by the internalisation of announced policy changes — so that current values of the stringency and economic support indices are better predictors of reported household income than past values. On the contrary, one may think that a two-week window is not large enough to accurately measure the influence of policy changes on reported household income changes from a recalled time period that dates at least one month prior to the interview date. Columns 4 and 5, explore the sensitivity of our results to the time window used to define our measures of stringency and economic support, using respectively the indices' value at the interview date and their average value in the 30 days prior to the interview date. Results are qualitatively similar, with larger point estimates in column 5 suggesting that 30-day average values of the indices explain a larger fraction of reported income changes.

Household income losses are more frequent than gains in our sample, columns 6 uses a dichotomous definition of income change by focussing only on losses. Here the dependent variable is a dummy equal one in case any household income loss is reported, and zero in cases of no change or gains. Results for the linear probability model presented in column 6 are somewhat consistent with the baseline estimates: a one-SD increase in the Stringency Index makes household income losses 2.3 pp more likely to happen, whereas a one-SD increase in the Economic Support Index is associated with a 1.4 pp lower risk of income losses.

Lastly, we assess the sensitivity of our results to the attribution of the value "20" to positive income changes. In Figure A1 we re-estimate our main specification arbitrarily assigning various positive values to the income change category ">100%". Results are robust and statistically significant up to a 119 income gains value for the Stringency Index, and up to 238 for the Economic Support Index.

3.3. Heterogeneity Analysis

The synthetic policy measures we use here are unlikely to affect all individuals in our sample in the same way. Individual characteristics could indeed influence how sensitive

respondents' household income is to changes in confinement and economic support measures. In order to assess the presence of any sample heterogeneity based on observable characteristics, we estimate a set of augmented versions of Equation 1, where the Stringency and Economic Support Indices are interacted with a set of subgroup indicators (one per regression). To ensure that none of the sources of heterogeneity is affected by either the COVID-19 emergency or the policy responses it provoked, we only use variables that are either arguably fixed at birth (e.g. gender) or refer to January 2020 (prior to the first European COVID-19 wave). In particular, we use indicators for being a woman, having a tertiary education degree, living with a partner in January 2020, being either retired or employed (either in a key sector or in a different sector) in January 2020, and having a high income (household income above the national median in January 2020).

Results are displayed in Table 5, reporting the coefficients for the Stringency and Economic Support indices and their interaction terms with heterogeneity sources. When looking at the Stringency Index, column 1 shows that the negative effect on household income changes is asymmetric in terms of gender, with women's family incomes being the most affected. Respondents appear to suffer income losses from more stringent containment measures whatever their education level (column 2), while living with one's partner partly counterbalances the negative impact of more intense lockdowns (column 3). Addressing heterogeneity with respect to employment status, column 4 shows that the losses in terms of household income produced by an increase of the Stringency Index are significantly larger for non-essential sector employees and not-employed individuals (unemployed and respondents out of the labour force).[6] Predictably, individuals with a high household income in January 2020 report income losses that are significantly lower when more stringent policies are implemented.[7]

[6] We also checked whether the effect of the Stringency Index was different along the age distribution. We found negative and significant effects for respondents between age 18 and 65 and no effect for older respondents. This age difference likely reflects differences of statuses on the labour market. We did not report the estimates for this source of heterogeneity because it is somewhat redundant with the estimates in column 4 of Table 5. Results remain available upon request.

[7] We may worry that there are mechanically less variations in banded changes in household income for "High Income" individuals: the higher the initial income, the larger the absolute income loss needed to produce large percentage points losses. We replicate our income heterogeneity analysis by using the probability to report an

Two patterns emerge from Table 5. First, the cost in terms of household income of more stringent lockdown-style measures is disproportionally born by individuals who generally have weak ties to the labour market (women and not employed) and those whose economic activity was more at risk and subject to greater likelihood of disruption due to the COVID emergency (employees from non-essential sectors). Figure A2, reporting net effects of the Stringency and Economic Support Indices on household income changes for each subgroup in Table 5, shows that the retired and key-sector employees did not experience any income losses in 2020 as a consequence of more stringent confinement measures. Second, having a partner or a high income significantly play protective roles against income losses due to more stringent lockdowns. This is unsurprising: being in a partnership can serve as an insurance mechanism, provided that the exogenous income shocks experienced by each partner are not perfectly positively correlated and that couples can adjust their relative labour supply (Weiss, 1997; Hess, 2004; Stevenson and Wolfers, 2007; Shore, 2010; Clark *et al.*, 2020a). Similarly, a respondent with a high household income likely holds a stable and strong position on the labour market and/or lives with someone who does.

Turning to the Economic Support Index, Table 5 shows that results are statistically similar across heterogeneity subgroups, suggesting that individuals' incomes benefited from the support measures regardless of the characteristics analysed here. The only exception, in column 4, is employment status: here it appears that non-employed respondents and respondents in non-essential sectors equally benefited from higher economic support measures, whereas key-sector workers benefited less from such measures — the net effect not being statistically different from zero at the 90% level (panel d of Figure A2).

3.4. The Role of Labour Market Outcomes

Our heterogeneity analysis above suggests that labour market outcomes might act as mediators for our main estimates. To investigate this possibility, we re-estimate Equation 1 and

income loss as the dependent variable — a measure that does not mechanically depend on the initial income level. Consistently with estimates in Table 5, results (available upon request) suggest that respondents with "High Income" in January 2020 were partially insured against income losses due to higher values of the Stringency Index. However, relatively rich respondents also appear less likely to experience an income loss as a result of higher economic support measures, as compared to poorer ones.

control for life event dummies pertaining to the labour market that are likely to produce income changes. The respondents of the COME-HERE survey were asked to report whether they recently lost their job (or were unable to do paid work), whether they earned less and worked more since the last survey (conditional on having a job) and whether their partner lost her job. If these life events are mediators, we should expect our main estimates for the Stringency and Economic Support Indexes to converge towards zero once we control for them. Note that we replaced the missing values of the life events by zero and use a missing-indicator flag.

Table 6 shows the results. In column 1, we replicate our baseline estimate for ease of comparison. We separately control for each of the life events ("job loss", "earn less", "work less" and "spouse lost job") in columns 2 to 5. While every life event attracts unsurprisingly a negative and significant estimate, none of them fully mediates the effects of the Stringency and Economic Support Indexes. When we control for all the potential mediators at once (in column 6), the effect of the Economic Support Index remains relatively stable. Keeping in mind that our heterogeneity analysis revealed no significant differences across respondents' characteristics, this suggests that the economic support provided by the governments during 2020 was not a highly targeted response and it benefited most of the population. The change in the estimate attracted by the Stringency Index suggests a somewhat different story. Once all the labour market outcomes are kept constant, the effect of the Stringency Index decreases by 16% (from 0.930 to -0.784). Although the estimate remains positive and significant, the results in column 6 indicates that a part of the negative effect of more-stringent policies is mediated by worse labour outcomes.

4. The Risk of Falling into Poverty

4.1. Measuring the Risk of Poverty

So far we have focussed on household income changes (in percentage points of previously reported income) on a continuous scale. Looking at average effects, our analysis in section 3.1 gives us no a priori reason to believe that income losses should have any effect on poverty: if everyone experiences the same income change as a result of policy measures, then the income distribution should shift parallelly to itself. As such, the relative position of each individual in

the income distribution should then remain the same and relative poverty (the proportion of people below the relative poverty line) should be unaffected. However, heterogeneity results in section 3.3 have shown that individuals with particular characteristics (e.g. women, respondents employed in a non-essential sector) were likely to experience larger income losses than others. While these results suggest that shifts in national income distributions were accompanied by a change in the shape of the income distribution (a thinning of the right tail), we cannot say whether the higher density towards the centre-left of the income distribution translated into higher poverty rates.

Menta (2021) describes the evolution of a set of poverty measures in the COME-HERE sample. The headcount ratio appears to have increased in all countries between January and May 2020, stabilizing in September around 1 pp higher than its initial average level. We here use a different definition of poverty based on income changes, mirroring the timeline of our analysis in Section 3, to investigate the effect of countries' policy responses to COVID-19 in shaping the risk of poverty in our sample. In order to do so, we first derive relative poverty lines from the distribution of the past net household income reported by COME-HERE respondents; incomes are equivalised using a square-root equivalence scale in order to account for economies of scale within family members. As household income is reported in bands (see section 2.1 for further details), we here take the mid-point of each income band as a proxy for latent household income (as in Clark and Senik, 2010); section 4.2 discusses the sensitivity of results to this choice. Poverty lines are then computed as 60% of the median equivalised household income (as in Menta, 2021), separately for each country and wave. Next, we derive the percentage change in respondents' equivalised income that would be needed in order for a person to fall below their relative poverty line of reference. Lastly, we compare that change with the actual reported percentage income change experienced by survey respondents in order to determine whether a person is likely to have entered poverty between the period recalled in the household income question and the interview date.

Descriptive statistics for our measure of poverty are displayed in the second row of Table 1. The average risk of falling into poverty in the sample is 30%, with wave-specific averages spanning from 0.34 in April to 0.26 in November. Risk-of-poverty figures in the sample are

similar (1 pp higher on average) when using in all waves the relative poverty lines derived from the January 2020 income distribution.

4.2. Results

Table 7 replicates Table 2, using the risk of poverty as the dependent variable. Results for this measure are consistent with what we found for household income changes: looking at the full model specification in column 5, a one-SD increase in the Stringency Index is associated with a 0.7 pp larger risk of being poor, while a similar increase in the Economic Support Index decreases the risk of poverty by 1.5 pp. Moving from column 1 to 5 in the table, the coefficients of the two indices remain robust — suggesting again orthogonality between the indices and individual characteristics and fixed effects.[8]

Table A2 shows how sensitive the poverty results are to the same set of robustness checks in columns 2 to 5 of Table 3 and to the choice of the poverty lines. Column 1 replicates the baseline poverty results (same as column 5 of Table 7). Moving from column 2 to 5 of Table A2, the coefficient for the Economic Support Index remains negative and significant in all specifications (respectively, when using attrition weights, controlling for the confirmed cases of COVID-19, and using different time-windows for the two policy indices). The Stringency Index on the other hand, while displaying a somewhat stable point estimate across columns 1 to 5, is not always statistically significant at conventional levels — unsurprisingly so, given the 10% significance of the baseline estimate. Columns 6 and 7 use different relative poverty lines to compute the risk of falling into poverty. In the former, poverty is measured based on the January 2020 relative national poverty lines derived from the COME-HERE estimation sample (differently from the baseline, where poverty lines are computed based on the income distributions of each wave); in the latter, Eurostat relative poverty lines for year 2019 are used instead. These are in the form of "at-risk-of-poverty" thresholds, computed as 60% of median equivalised income in nationally representative samples from the EU-SILC and ECHP

[8] Since the dependent variable here is binary, non-linear estimation methods such as probit or logit would be more appropriate instead of simple OLS regressions. Effect sizes are statistically the same when using marginal effects from logistic regressions instead of OLS – except for the fixed-effects logit, where point estimates are larger in absolute terms. For ease of interpretation and because our OLS estimates are always conservative with respect to logit ones, the remainder of this section will be based on linear regressions.

surveys.[9] We then attribute individuals in the COME-HERE survey their relative poverty line of reference, based on their country of residence and family structure.[10] The two exercises, displayed in the last two columns of Table A2, have in common the use of pre-COVID poverty lines. When doing this, the coefficient for the Economic Support Index has a significantly lower magnitude (and is significantly different from zero only in column 6) as compared to the baseline. The Stringency Index coefficient on the other hand appears more relevant and significant in shaping the risk of falling into poverty as compared to the baseline in column 1 — although the coefficients are not statistically different from each other at conventional levels. Whether the actual risk of poverty in the period covered by our sample is more accurately reflected by moving poverty lines or pre-COVID poverty lines is an open question. What these results seem to suggest, however, is that when relative poverty lines shift to the left together with income distributions during the COVID-19 crisis (thus potentially underestimating the proportion of individuals at risk of poverty), the Economic Support Index is more effective in counterbalancing the adverse income effects of COVID, while the Stringency Index does not capture much of the higher risk of poverty. Combining this intuition with results in column 6 and 7, the Stringency Index might be more relevant in explaining the higher risk of falling into poverty for those people whose income is just above the wave-specific poverty lines, but would be poor when using the pre-COVID poverty lines. The Economic Support, on the other hand, might be more effective for (or targeted to) individuals below both kinds of poverty lines.

As we did with income changes, we now ask whether the effects of the policy responses to COVID-19 are interdependent by adding an interaction term between the Stringency Index and the Economic Support Index to our baseline model. It attracts a negative and significant estimate (at the 10% level) and we report in Figure A3 the independent standardised effect of the Stringency Index for different values of the Economic Support Index in the left panel (and

[9] The latest available figures refer to year 2019 for all countries in the survey. Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li01&lang=en. Last accessed on December 4th 2020.

[10] The country specific "at-risk-of-poverty" thresholds are available for two types of households: single person households and households made up of two adults with two children below 14 years old. In order to account for economies of scale in two- and three-persons households, we interpolate a linear fit across the two poverty lines in each country (the thresholds, by family size, are reported in Table A3).

vice-versa in the right panel). In line with our results for income changes, policy responses to COVID-19 are interdependent and stringent policies cause less transition towards poverty when the level of economic support is sufficiently high.

Figure A4 further checks whether the baseline poverty results are sensitive to the use of the income band mid-point as a measure of income. In the figure, we plot the baseline coefficients for the Stringency and Economic Support indices when poverty is determined by using income changes from other points of the reported household income bands — namely dividing the band's range into twenty equally spaced intervals and taking their extremes (values on the x-axis are expressed in percentage of the range). Results for the Stringency Index are robust and statistically significant at least at the 10% level in almost all cases, with point estimates ranging from 0.006 to 0.024. Similarly, the Economic Support Index is always robust and statistically significant, with values ranging from -0.021 to -0.008.

Last, we ask whether the effects of the policy responses to the COVID emergency were different according to individual characteristics. To do so, we replicate the heterogeneity analysis we carried out in Table 5 using the risk of poverty as the dependent variable. Results are shown in Table A4 and somewhat similar to the ones we found for income changes: the Economic Support Index predicts an equally lower probability of being poor for all respondents, while more stringent policies increases the likelihood of transitioning into poverty for those with weaker ties to the labour market and low levels of income. Although it is not significantly different from zero, the interaction between the Stringency Index and the dummy "partnered" is negative, consistent with partnerships being a source of insurance. The only noticeable difference with respect to results from Table 5 is the absence of gender heterogeneity. Net marginal effects for each subgroup represented in Table 5 are displayed in Figure A5.

5. Conclusion

The paper investigates how household income reacts to the governments' policy responses to the COVID-19 crisis, across five European countries, at four different moments of year 2020. Results suggest that a one-SD rise in lockdown-style measures, as measured by the Oxford

Covid-19 Government Response Tracker's Stringency Index, increases the probability of experiencing household income losses by almost one percentage point. This negative reaction can be effectively counterbalanced by high-enough economic support measures, to which individuals' income respond positively. Importantly, these effects are not confounded by the parallel evolution of the COVID-19 pandemics, as proxied by the number of confirmed cases.

Our analysis suggests that individual characteristics, such as gender and pre-lockdown employment status, play a role in shaping individual exposure to income losses as a result of stringent confinement policies. Women, individuals with a weaker labour market presence (either due to their employment status or their sector of activity), and those with relatively low incomes in January are those who are more likely to suffer household income losses.

Consistent with the results on income losses, governments' policy responses to the COVID-19 emergency additionally affect individuals' risk of transitioning into poverty: the probability to become poor increases with stringency (more so for those with weak ties to the labour market) and reduces with economic support.

Our results have several important policy implications. First, although stringent confinement policies aim at reducing the spread of COVID-19 and prevent health systems from collapsing, we quantify their direct and negative impact on household economic resources and hope it would be useful to produce accurate cost-benefits analyses.

Results presented in this paper illustrate some of the economic costs borne by individuals as a result of the implementation of lockdown-type measures and the extent to which economic support measures were effective in counterbalancing these costs. While governments responses to the COVID-19 emergency have focussed on the minimisation of casualties and the maintenance of health systems below full capacity, such containment strategies did not come without collateral damages on the economic and social lives of individuals. Although this paper shows that high levels of countercyclical measures providing economic support to households (measured by the OxCGRT's Economic Support Index) were effective in balancing out the higher likelihood of experiencing household income losses and transitioning into poverty, we here do not examine other indirect costs linked to higher lockdown stringency, such as negative externalities on mental and physical health. Additionally, our heterogeneity analysis has

potentially important implications in terms of income inequality, as stringent confinement measures appear to exacerbate pre-existing differences in household disposable income.

Some caveats hold when interpreting the results of this paper. The external validity of our conclusions might be limited because the COME-HERE survey covers Western European countries only (France, Germany, Italy, Spain and Sweden). Although we do believe that our identification strategy is sufficient to interpret our estimates causally, we do not know what would have happened in the absence of stringent confinement policies and we cannot exclude the possibility of unobserved time-varying confounders biasing our estimates. Despite the limitations, changes in policy responses within and across countries provide an interesting source of quasi-experimental variation, which could be further exploited in order to assess additional consequences of lockdown regimes.

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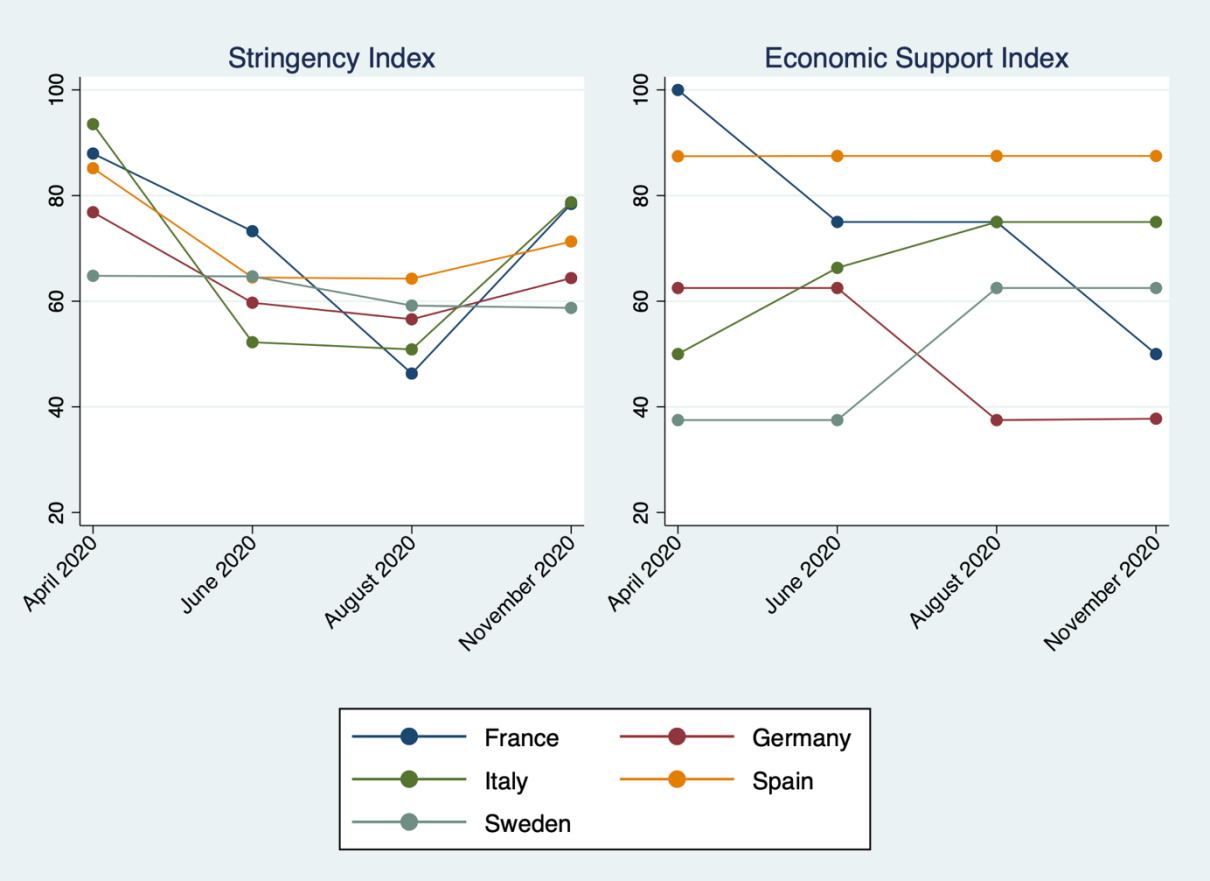
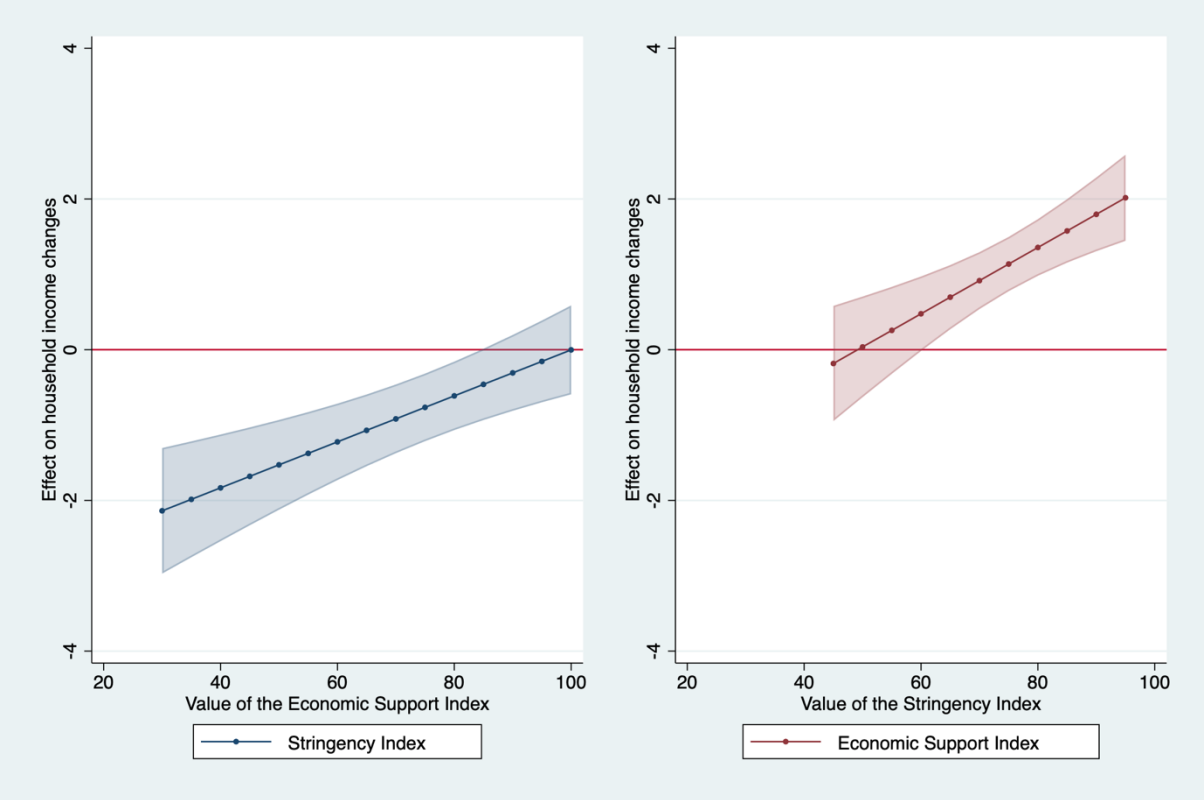
Figures and Tables:

Figure 1: The Stringency and Economic Support Indices by country and wave



Note: Points represent the average value of the Stringency Index and the Economic Support Index across interview dates in each of the four waves of the COME-HERE survey, by country of residence.

Figure 2: Policy Indices and Household Income Change – Interactions Between Policy Indices



Notes: Points in the graph represent estimated marginal effects of the standardised Stringency Index (left plot) and the Economic Support Index (right plot) from an augmented version of Equation 1 that includes an interaction term between the two policy indices. Marginal effects are computed for each index for different plausible values of the other index (that is, values ranging from the minimum to the maximum value taken by each index in the estimation sample), as indicated on the x-axis. Shaded areas represent 90% confidence intervals.

Table 1: Descriptive Statistics

	Mean	SD	Min	Max
Household Income Change (in pp)	-8.57	22.62	-100	20
Risk of poverty	0.30		0	1
OxCGRT measures:				
Stringency Index	69.16	13.26	46.3	93.5
Economic Support Index	67.57	19.11	29.7	100
Individual characteristics:				
Log Household Income (Jan 2020)	8.18	0.68	6.7	10.1
Family size	3.07	1.36	1	10
Age	50.01	15.96	18	93
Female	0.48		0	1
Partnered	0.61		0	1
Primary education	0.19		0	1
Secondary education	0.38		0	1
Tertiary education	0.43		0	1
In full-time employment	0.47		0	1
In part-time employment	0.10		0	1
In marginal employment	0.01		0	1
Not in employment	0.43		0	1
Key sector employee (Jan 2020)	0.25		0	1
Other sector employee (Jan 2020)	0.32		0	1
Wave:				
W1: April 2020	0.30		0	1
W2: June 2020	0.21		0	1
W3: August 2020	0.24		0	1
W4: November 2020	0.25		0	1
Country of residence:				
France	0.23		0	1
Germany	0.22		0	1
Italy	0.22		0	1
Spain	0.22		0	1
Sweden	0.12		0	1
Observations	*20,337*			
Individuals	*6,039*			

Note: These numbers refer to adult respondents between from the first four waves of the COME-HERE survey.

Table 2: The Distribution of Household Income Changes, by Wave

	Interview date			
	April (1)	June (2)	August (3)	November (4)
Reference income:	January	April	May	September
Change from reference income to interview day:				
0%	1.4%	0.6%	0.8%	0.7%
1-24%	3.8%	2.6%	3.5%	2.9%
25-49%	4.5%	2.2%	2.9%	2.3%
50-74%	10.6%	4.6%	4.7%	4.2%
75-99%	13.6%	7.6%	7.4%	6.4%
No change	62.9%	79.1%	76.4%	80.2%
>100%	3.2%	3.3%	4.3%	3.4%
Observations	6039	4318	4966	5014

Note: These numbers refer to the estimation sample described in Table 1.

Table 3: Policy Indices and Household Income Change – Pooled and Panel Results

	Household Income Change (in percentage points)				
	(1)	(2)	(3)	(4)	(5)
Stringency Index	-1.095***		-0.861***	-0.890***	-0.930***
	(0.278)		(0.277)	(0.277)	(0.278)
Economic Support Index		1.382***	1.284***	1.299***	1.234***
		(0.218)	(0.217)	(0.218)	(0.221)
Observations	20337	20337	20337	20337	20337
Wave and Country FE	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes
Individual FE	No	No	No	No	Yes

Notes: These are linear regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. Controls are age and its square, gender, family size and relationship status (measured in wave 1), the log of household disposable income in January 2020 in PPP, and dummies for education level and current employment status. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table 4: Policy Indices and Household Income Change –Robustness Checks: Panel Results

	Household Income Change (in percentage points)					Loss
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency Index	-0.930***	-1.099***	-0.894***	-0.853***	-1.271***	0.023***
	(0.278)	(0.348)	(0.284)	(0.267)	(0.305)	(0.005)
Economic Support Index	1.234***	0.986***	1.213***	1.279***	1.343***	-0.014***
	(0.221)	(0.272)	(0.222)	(0.221)	(0.223)	(0.004)
Confirmed cases (over population)			-0.317			
			(0.348)			
Observations	20337	20337	20337	20337	20337	20337

Notes: The table displays linear regressions with individual fixed-effects. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index, the Economic Support Index, and the number of confirmed cases are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. All regressions control for dummies for current employment status, and wave and individual fixed-effects. Column (2) replicates the baseline estimate reported in column (1) using inverse-probability attrition weights. Column (3) controls for the number of COVID-19 cases in the country of residence at the time of the interview. Columns (4) and (5) replicates the baseline specification using different measures of the Stringency and Economic Support Indices (respectively, the exact value of each index in the interview date and its average value across the 30 days prior to the interview). In column (6) the dependent variable is a dummy for having experienced any household income loss. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table 5: Policy Indices and Household Income Change – Individual Heterogeneity Analysis: Panel Results

	(1)	(2)	(3)	(4)	(5)
Stringency Index	-0.619**	-0.899***	-1.300***	-1.526***	-1.164***
	(0.307)	(0.320)	(0.355)	(0.505)	(0.316)
Stringency interacted with:					
Female	-0.622**				
	(0.307)				
Tertiary education		-0.072			
		(0.305)			
Partnered			0.607*		
			(0.324)		
Retired				1.997***	
				(0.486)	
Key sector employee				0.917*	
				(0.374)	
Other sector employee				-0.361	
				(0.544)	
High income					0.538*
					(0.300)
Economic Support Index	1.220***	1.191***	1.457***	1.631***	1.070***
	(0.276)	(0.286)	(0.342)	(0.643)	(0.312)
Econ. Support interacted with:					
Female	0.030				
	(0.406)				
Tertiary education		0.104			
		(0.406)			
Partnered			-0.381		
			(0.418)		
Retired				-0.335	
				(0.682)	
Key sector employee				-1.179	
				(0.749)	
Other sector employee				-0.167	
				(0.765)	
High income					0.407
					(0.395)
Observations	20337	20337	20337	20337	20337

Notes: The table displays fixed-effects regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. All regressions control for dummies for current employment status, and wave and individual fixed-effects. "Female" is a dummy for the respondent being female; "Tertiary education" is a dummy for the respondent having a tertiary education degree; "Partnered" is a dummy equal to one for respondents cohabiting with their partner. "Key sector employee" and "Other sector employee" are dummies for being employed, respectively, in a key sector or in any other sector in wave 1, while "Retired" is a dummy for being retired in wave 1; the reference category here is respondents who are not employed in wave 1. "High Income" is a dummy equal to one for respondents with a household disposable income in January 2020 that is above the national median. Net effects for each category are illustrated in Figure A2. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table 6: Policy Indices and Household Income Changes – Channels

	Household Income Change (in percentage points)					
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency Index	-0.930***	-0.898***	-0.838***	-0.880***	-0.929***	-0.784***
	(0.278)	(0.277)	(0.277)	(0.278)	(0.278)	(0.276)
Economic Support Index	1.234***	1.296***	1.198***	1.263***	1.238***	1.283***
	(0.221)	(0.221)	(0.220)	(0.221)	(0.221)	(0.221)
Job loss		-5.898***				-5.645***
		(1.651)				(1.653)
Earn less			-6.442***			-5.904***
			(1.083)			(1.112)
Work less				-2.330***		-1.319*
				(0.737)		(0.754)
Spouse lost job					-2.427*	-2.531*
					(1.422)	(1.422)
Observations	20337	20337	20337	20337	20337	20337

Notes: The table displays fixed-effects regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. All regressions control for dummies for current employment status, and wave and individual fixed-effects. "Job loss", "Earn less", and "Work less" are dummies for, respectively, having lost a job, reporting lower earnings, reporting lower working time since the last interview. "Spouse lost job" is a dummy for the respondent's partner having lost their job or being unable to do paid work since the last interview. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

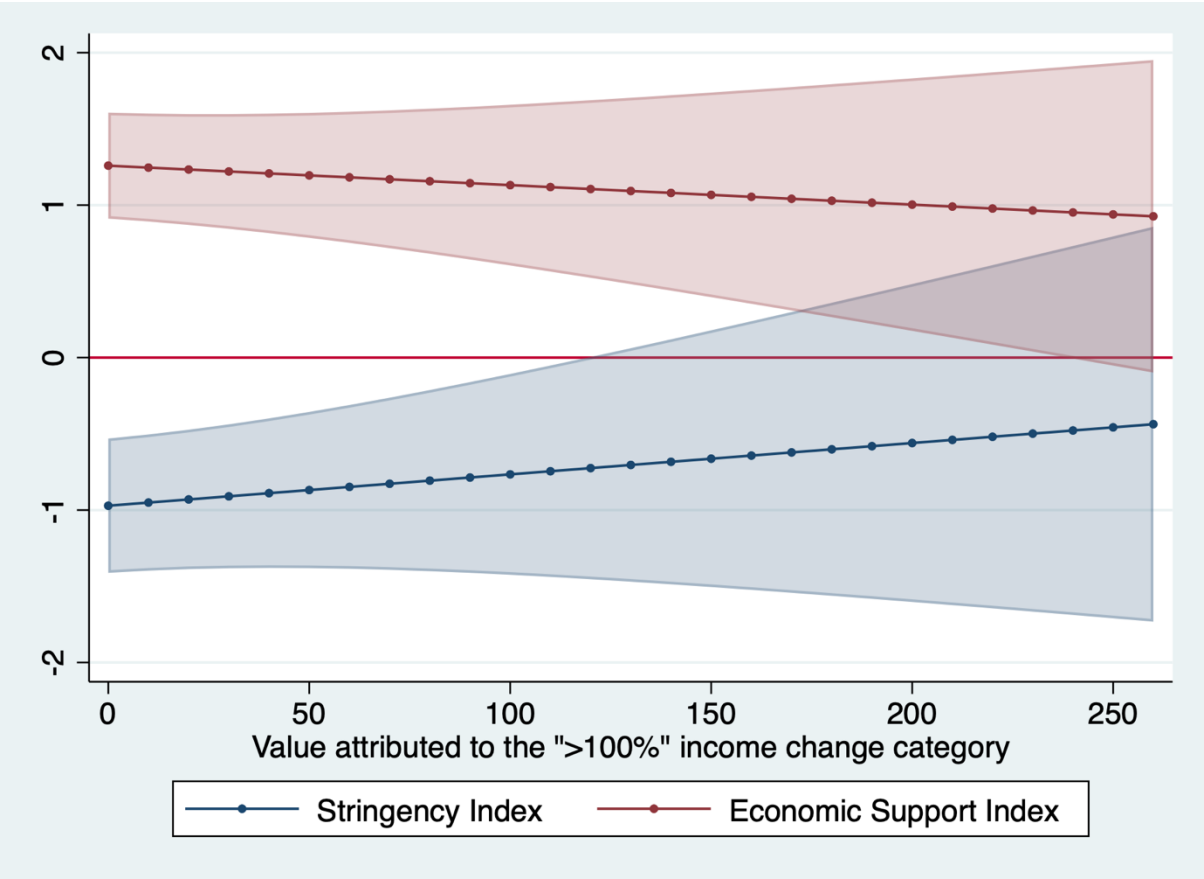
Table 7: Policy Indices and the Risk of Poverty – Pooled and Panel Results

	Risk of falling into poverty				
	(1)	(2)	(3)	(4)	(5)
Stringency Index	0.010**		0.008	0.009**	0.007*
	(0.005)		(0.005)	(0.004)	(0.004)
Economic Support Index		-0.016***	-0.015***	-0.015***	-0.015***
		(0.003)	(0.004)	(0.003)	(0.003)
Observations	20337	20337	20337	20337	20337
Wave and Country FE	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes
Individual FE	No	No	No	No	Yes

Notes: These are linear probability models. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. Controls are age and its square, gender, family size and relationship status (measured in wave 1), the log of household disposable income in January 2020 in PPP, and dummies for education level and current employment status. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

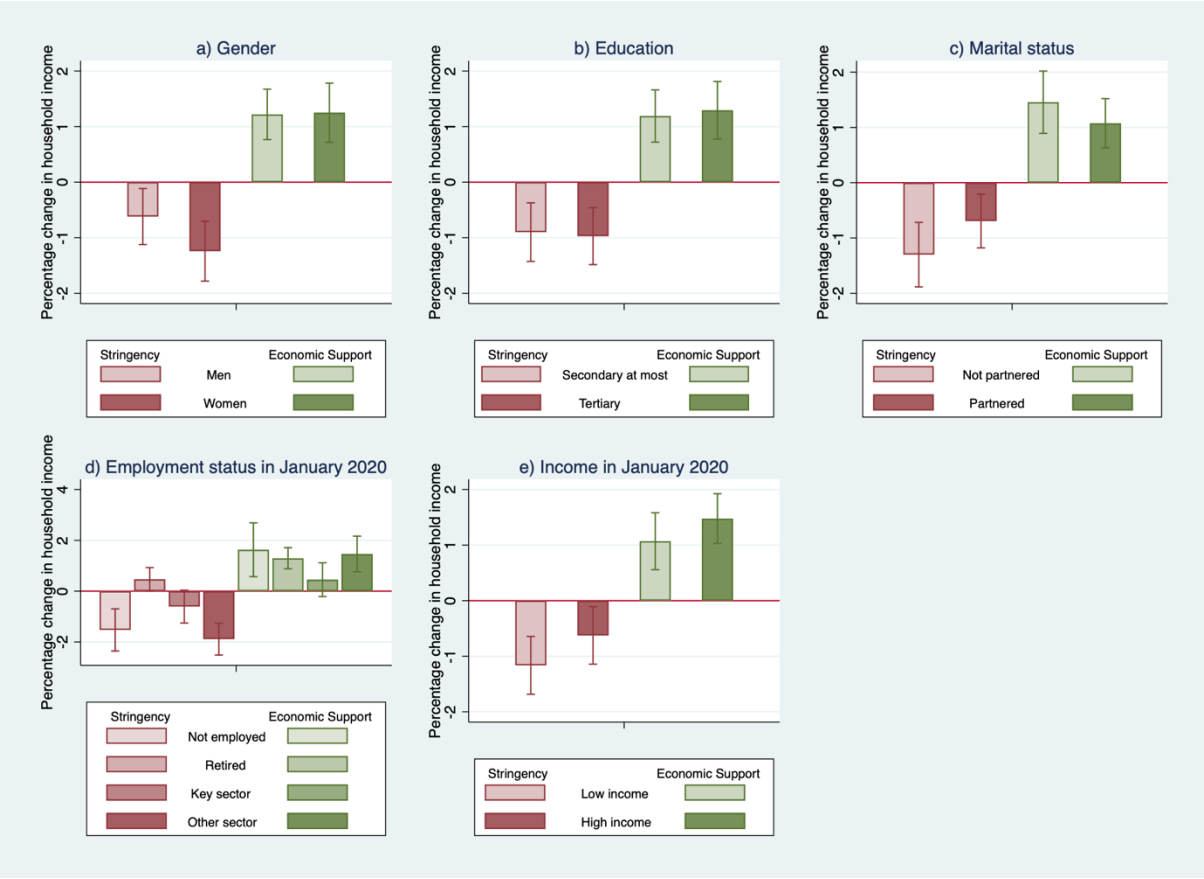
Appendix:

Figure A1: Sensitivity of results to the definition of positive income change values



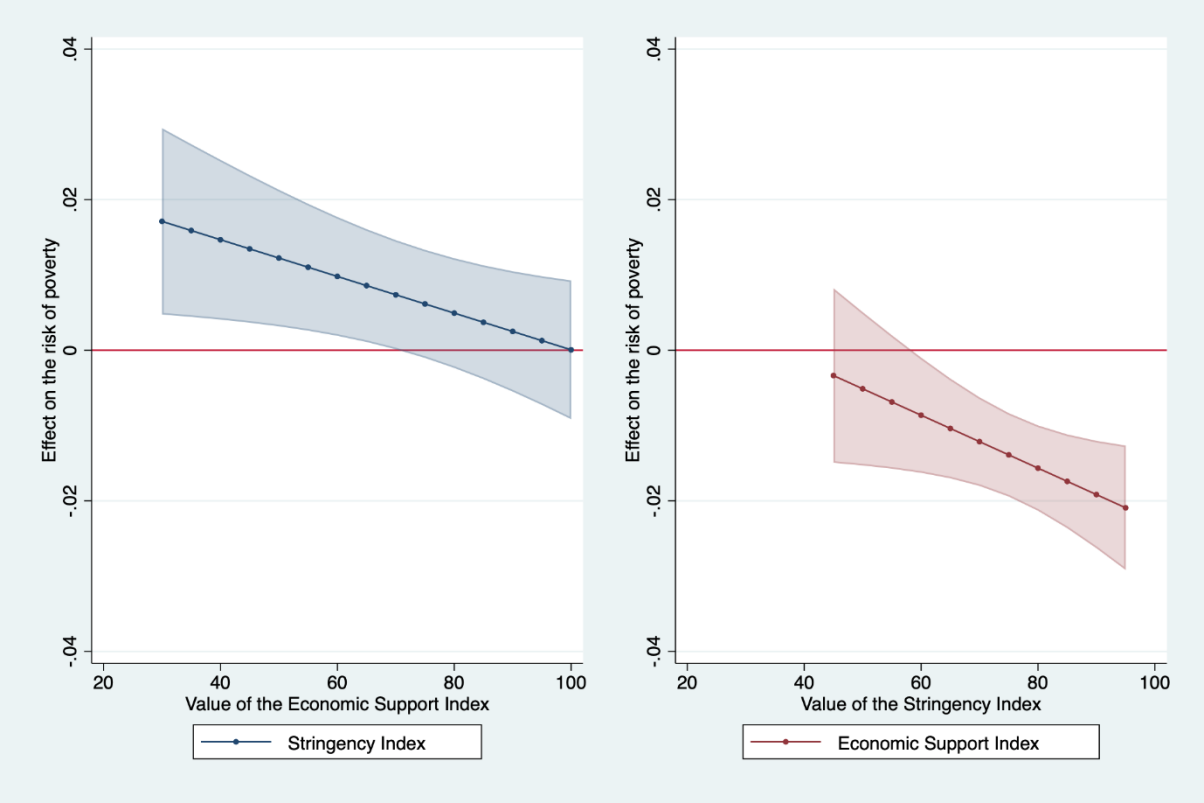
Notes. Points in the graph represent estimated coefficients of the standardised Stringency Index and the Economic Support Index from equation (1), for different values attributed to the top income change category of the dependent variable. Shaded areas represent 90% confidence intervals.

Figure A2: Policy Indices and Household Income Change – Individual heterogeneity (net effects)



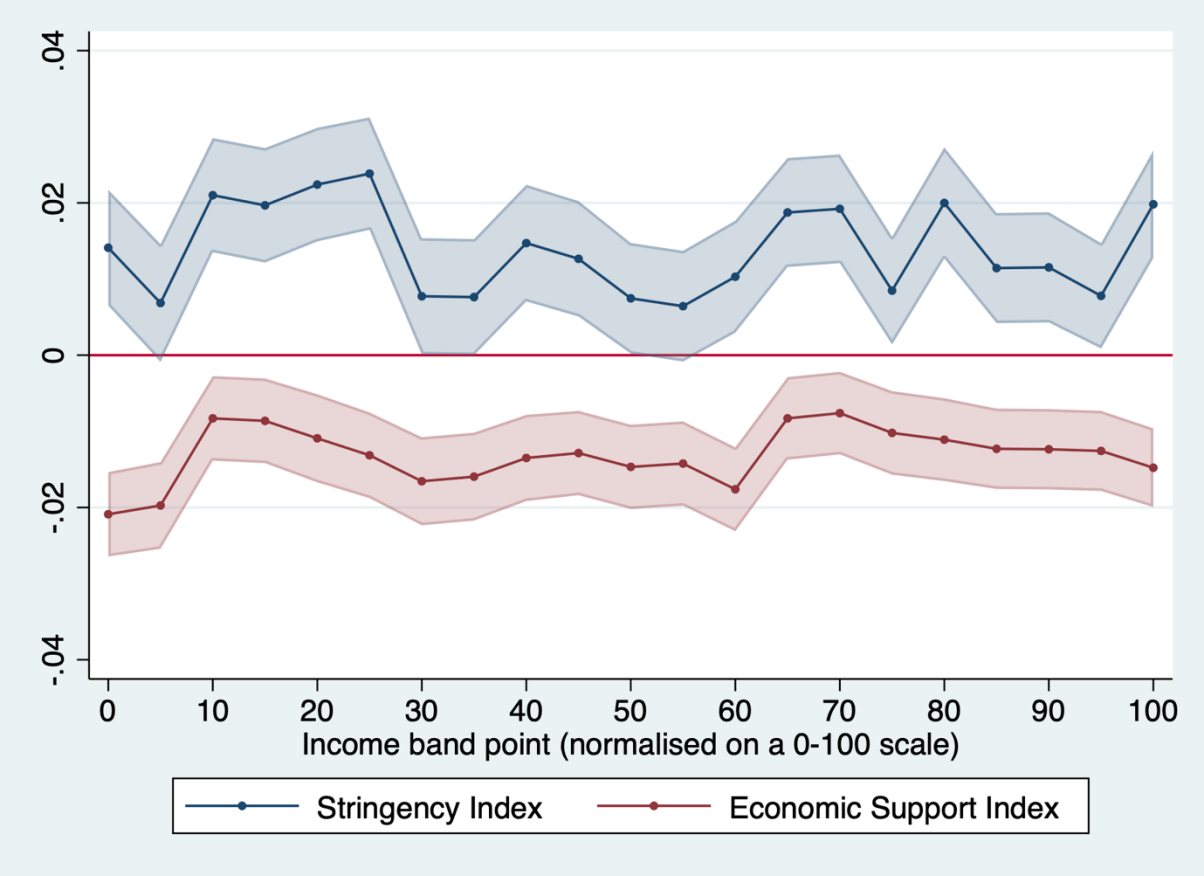
Notes. Bars represent net effects of the Stringency Index and the Economic Support Index on household income change for different categories. Effect sizes are derived from results displayed in Table 5, where the policy indices are interacted with gender (panel a), a dummy for having a tertiary education degree (panel b), a dummy for being in a cohabiting relationship (panel c), dummies for being employed in a key sector or in a different sector in January 2020 (panel d), and a dummy for having a higher income than the national median in January 2020 (panel e). Spikes are for 90% confidence intervals.

Figure A3: Policy Indices and the Risk of Poverty – Interactions Between Policy Indices



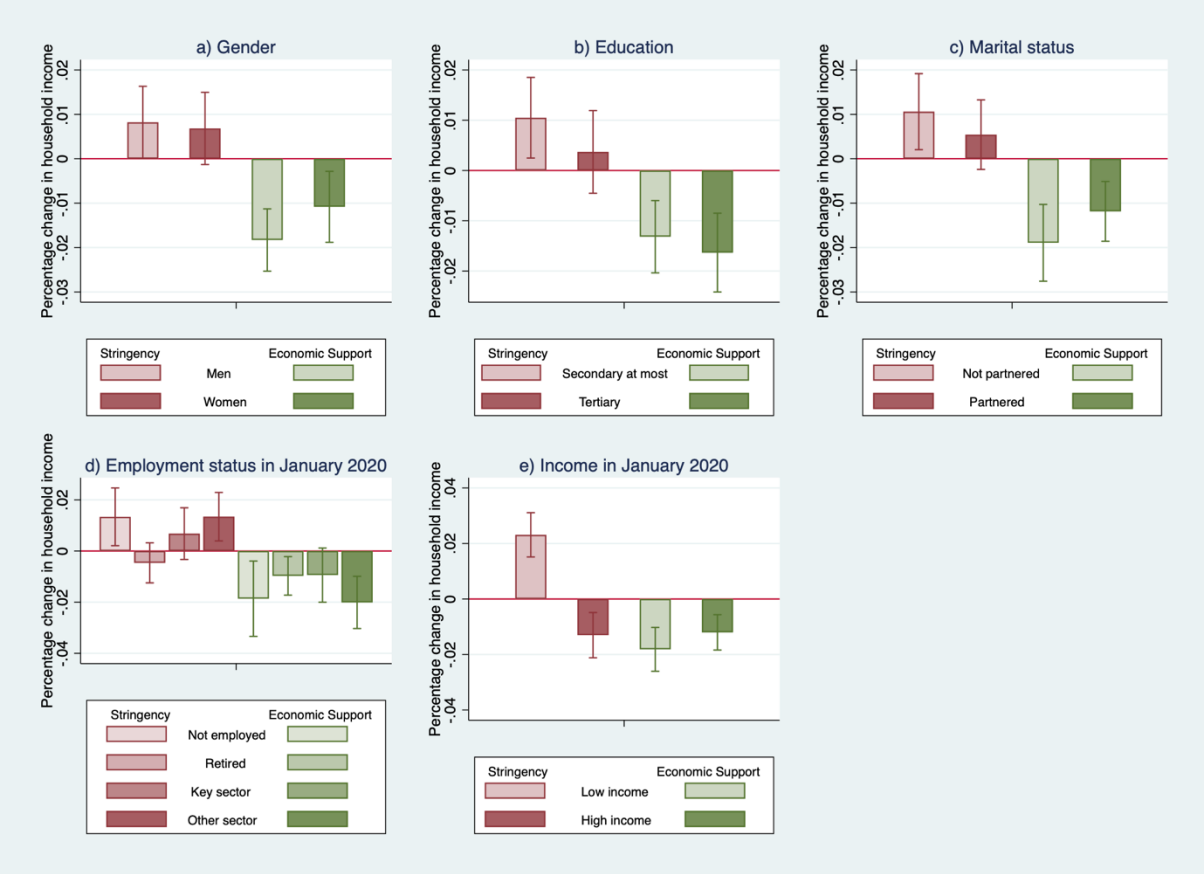
Notes: Points in the graph represent estimated marginal effects of the standardised Stringency Index (left plot) and the Economic Support Index (right plot) from an augmented version of Equation 1 that includes an interaction term between the two policy indices. Marginal effects are computed for each index for different plausible values of the other index (that is, values ranging from the minimum to the maximum value taken by each index in the estimation sample), as indicated on the x-axis. Shaded areas represent 90% confidence intervals.

Figure A4: Policy Indices and the Risk of Poverty – Sensitivity to the Income Band Point Choice



Notes. Points in the graph represent estimated coefficients of the standardised Stringency Index and the Economic Support Index from a version of equation (1) where the risk of poverty is the dependent variable. Values along the x-axis refer to the point of the reported household income band used for each regression (this value, together with information on income changes, is used to determine whether a household is at risk of falling into poverty – that is, the dependent variable). Shaded areas represent 90% confidence intervals.

Figure A5: Policy Indices and the Risk of Poverty – Individual heterogeneity (net effects)



Notes. Bars represent net effects of the Stringency Index and the Economic Support Index on the risk of poverty for different categories. Effect sizes are derived from results displayed in Table A3, where the policy indices are interacted with gender (panel a), a dummy for having a tertiary education degree (panel b), a dummy for being in a cohabiting relationship (panel c), dummies for being employed in a key sector or in a different sector in January 2020 (panel d), and a dummy for having a higher income than the national median in January 2020 (panel e). Spikes are for 90% confidence intervals.

Table A1: Policy Indices and Household Income Change – Pooled and Panel Results with All Controls

	(1)	(2)
Stringency Index	-0.890***	-0.930***
	(0.277)	(0.278)
Economic Support Index	1.299***	1.234***
	(0.218)	(0.221)
Female	-1.483***	
	(0.397)	
Age	-0.004	
	(0.083)	
Age-squared	0.002**	
	(0.001)	
Family size	-1.152***	
	(0.188)	
Partnered	-0.854*	
	(0.481)	
Secondary education	-0.009	
	(0.545)	
Tertiary education	-0.216	
	(0.567)	
In full-time employment	-1.275**	6.048***
	(0.551)	(1.826)
In part-time employment	-7.019***	2.475
	(0.861)	(2.205)
In marginal employment	-13.787***	-2.065
	(2.038)	(2.988)
Log household income (Jan 2020)	2.299***	
	(0.374)	
Observations	20337	20337
Wave and Country FE	Yes	Yes
Controls	Yes	Yes
Individual FE	No	Yes

Notes: These are linear regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. Controls are age and its square, gender, family size and relationship status (measured in wave 1), the log of household disposable income in January 2020 in PPP, and dummies for education level and current employment status. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table A2: Policy Indices and the Risk of Poverty – Robustness Checks: Panel Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Stringency Index	0.007*	0.005	0.008*	0.007	0.010**	0.012***	0.012***
	(0.004)	(0.006)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Economic Support Index	-0.015***	-0.016***	-0.015***	-0.015***	-0.016***	-0.006*	-0.004
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Confirmed cases (over population)			-0.002				
			(0.005)				
Observations	20337	20337	20337	20337	20337	20337	20337

Notes: The table displays fixed-effects regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index, the Economic Support Index, and the number of confirmed cases are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. All regressions control for dummies for current employment status, and wave and individual fixed-effects. Column (2) replicates the baseline estimate reported in column (1) using inverse-probability attrition weights. Column (3) controls for the number of COVID-19 cases in the country of residence at the time of the interview. Columns (4) and (5) replicates the baseline specification using different measures of the Stringency and Economic Support Indices (respectively, the exact value of each index in the interview date and its average value across the 30 days prior to the interview). Column (6) uses national relative poverty lines derived from the January 2020 income distribution in the COME-HERE survey (as opposed to the wave specific poverty lines of columns 1 to 5). Column (7) uses Eurostat national relative poverty lines for year 2019. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table A3: At-risk-of-poverty thresholds by country and household type

	(1)	(2)	(3)	(4)
France	1128.08	1541.69	1955.31	2368.92
Germany	1175.75	1606.83	2037.92	2469.00
Italy	858.25	1174.44	1490.64	1806.83
Spain	750.75	1026.03	1301.30	1576.58
Sweden	1223.67	1672.36	2121.06	2569.75

Notes. Source: Menta (2021). Poverty lines are expressed in euros per month. Columns 1 and 4 reports at-risk-of-poverty thresholds from Eurostat for year 2019 for a one-person household and a two-adults two-children household, respectively. Columns 2 and 3 report results from a linear interpolation of the Eurostat poverty lines and are meant to represent at-risk-of-poverty thresholds for a two- and a three-persons household, respectively.

Table A4: Policy Indices and the Risk of Poverty – Individual Heterogeneity Analysis: Panel Results

	(1)	(2)	(3)	(4)	(5)
Stringency Index	0.008*	0.011**	0.011**	0.013*	0.023***
	(0.005)	(0.005)	(0.005)	(0.007)	(0.005)
Stringency interacted with:					
Female	-0.001				
	(0.004)				
Tertiary education		-0.007			
		(0.004)			
Partnered			-0.005		
			(0.005)		
Retired				-0.018***	
				(0.007)	
Key sector employee				-0.007	
				(0.007)	
Other sector employee				0.000	
				(0.007)	
High income					-0.036***
					(0.004)
Economic Support Index	-0.018***	-0.013***	-0.019***	-0.019**	-0.018***
	(0.004)	(0.004)	(0.005)	(0.009)	(0.005)
Econ. Support interacted with:					
Female	0.007				
	(0.006)				
Tertiary education		-0.003			
		(0.006)			
Partnered			0.007		
			(0.006)		
Retired				0.009	
				(0.010)	
Key sector employee				0.009	
				(0.011)	
Other sector employee				-0.001	
				(0.011)	
High income					0.006
					(0.006)
Observations	20337	20337	20337	20337	20337

Notes: The table displays fixed-effects regressions. The sample here is respondents from the first four waves of the COME-HERE survey. The Stringency Index and the Economic Support Index are standardised over the estimation sample. Standard errors in parentheses are clustered at the individual level. All regressions control for dummies for current employment status, and wave and individual fixed-effects. "Female" is a dummy for the respondent being female; "Tertiary education" is a dummy for the respondent having a tertiary education degree; "Partnered" is a dummy equal to one for respondents cohabiting with their partner. "Key sector employee" and "Other sector employee" are dummies for being employed, respectively, in a key sector or in any other sector in wave 1, while "Retired" is a dummy for being retired in wave 1; the reference category here is respondents who are not employed in wave 1. "High Income" is a dummy equal to one for respondents with a household disposable income in January 2020 that is above the national median. Net effects for each category are illustrated in Figure A1. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.