

Inequalities in the pandemic

SUMMARY

This paper summarizes some of the major inequalities that have been exacerbated by the COVID-19 pandemic and discusses avenues for policy intervention over the medium and long runs.

JEL codes: E24, E3, H20, J24, J6, J81

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Inequalities in the times of a pandemic

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1. INTRODUCTION

COVID-19 has exacerbated existing inequalities. This paper reviews the evidence to date on how long-standing fractures have been put into sharp relief by the pandemic and discusses policies to address them.

The inequalities described take many forms and express themselves along various dimensions that interact with one another. Across the income distribution, pre-tax income inequalities, consumption and savings, job losses and opportunities for remote work have evolved very differently. Across genders, and across parents and non-parents, the toll of school closures, lack of child care and additional housework has been uneven. Across regions, sectors and occupations, the pandemic has brought vastly different burdens and opportunities.

The policies discussed in this paper are medium and longer-term actions to address the long-standing inequalities that predate and have been widened by COVID-19,

* I thank Ferdinand Carré, Martha Fiehn, Jelena Todorovic and Venance Riblier for outstanding research assistance. This paper would not have been possible without their incredible input and hard work.

The Managing Editor in charge of this paper was Moritz Schularick.

rather than short-run crisis mitigation responses. Given the challenges and complexities of the issues, these policy actions need to occur at multiple levels and we offer a framework to think about the various possible stages of interventions.

The paper is organized as follows: The first four sections review the evidence on the evolution of inequalities along several dimensions: across income levels (Section 2); across sectors and regions (Section 3); across genders (Section 4) and across children from different backgrounds (Section 5). Section 6 considers policy responses at different stages of the economic process. The [Online Appendix](#) provides additional materials on each of these topics.

2. INEQUALITIES ACROSS THE INCOME DISTRIBUTION

This section reviews recent work that has investigated the evolution of inequalities across the income distribution in different countries during the pandemic, while also considering remote work opportunities, employment losses, changes in consumption and savings and the digital divide.

2.1. Evolution of income inequalities

The evolution of income inequalities since the start of the pandemic is similar for European and Anglo-Saxon countries. Accounting for government support during the pandemic through a combination of existing redistributive mechanisms and special measures taken, income inequalities have been reduced in post-tax terms. However, without governmental support, the pandemic would have increased income inequalities, hitting the bottom of the income distribution even harder. [Figure 1](#) shows that, for G7 countries, household incomes have generally increased during the pandemic, while the countries' GDP sharply declined, suggesting important government financial support for households. The lower inequality relative to a counterfactual scenario without government intervention is thus the result of policy responses to the pandemic, which have been able to support low-income households. [Figure 2](#) illustrates the importance of government interventions on reducing the negative impact of the pandemic on income. The pathways for the regressive impact of the pandemic will be covered in the next subsections and include regional disparities, sectoral and occupational composition and unequal opportunities for remote work.

The effects of policy intervention on measures of inequality such as the Gini index are studied for a number of European countries by [Palomino *et al.* \(2020\)](#), [Almeida *et al.* \(2020\)](#) and [Clark *et al.* \(2020\)](#). [O'Donoghue *et al.* \(2020\)](#), [Brunori *et al.* \(2020\)](#), [Aspachs *et al.* \(2020\)](#) and [Li *et al.* \(2020\)](#) focus instead on the cases of Ireland, Italy, Spain and Australia, respectively. [Table 1](#) summarizes their findings (see also [Online Appendix A.1](#)). The dynamics of income inequality during the pandemic also suggest that policy responses have more than offset the regressive effect of the virus, but with lagged effects

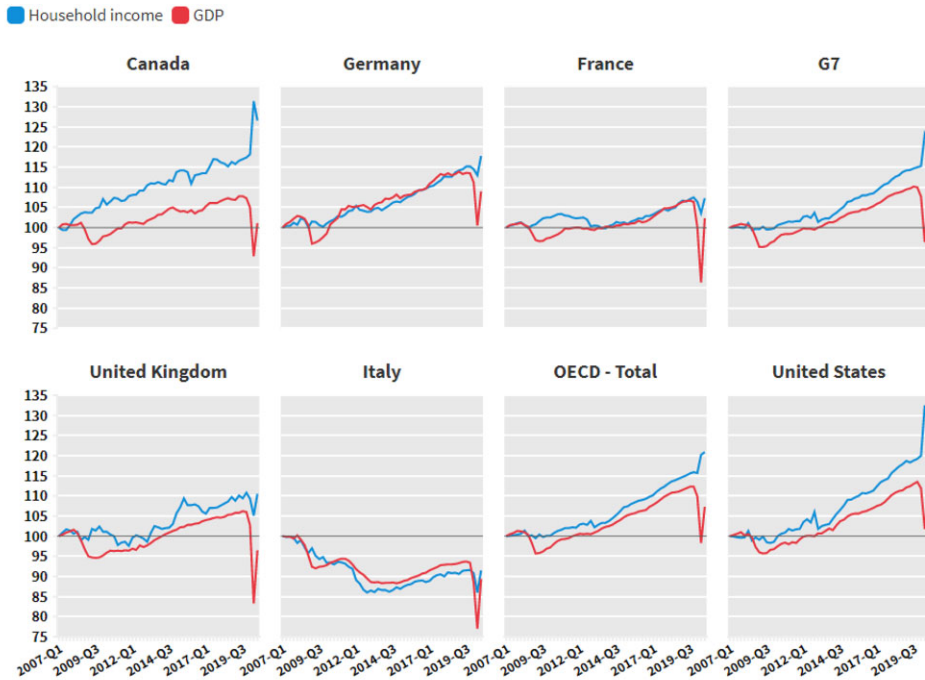


Figure 1. Evolution of household income per capita and real GDP from 2007-Q1 to 2020-Q3 in OECD countries

Notes: This figure shows the evolution of real household income per capita and real GDP per capita until the third quarter of 2020. The first quarter of 2007 is normalized to 100.

Source: OECD (2020), Household dashboard database.

in Europe. Clark *et al.* (2020) show that in Germany, Spain, France, Italy and Sweden, inequality – as measured by the shares of income going to different income groups – first widened from January to May 2020 and then decreased back to pre-crisis levels by September 2020.

Overall, statistics pointing to declining income inequality during the pandemic may be misleading. This decrease relies entirely on short-term policy responses to the pandemic outbreak, suggesting that the interventions have been effective to fight inequalities in the short run. However, the direct impact of the pandemic has been regressive and this can persist for at least two reasons. First, at the bottom of the distribution, workers who have been permanently laid off may experience long-term scarring effects of unemployment and human capital depreciation, as well as difficulties finding jobs again. Second, the establishment of remote work as a common practice might widen the gap in the long run, as the subsequent wage premium is unevenly distributed across the income distribution. Some initial insights on the possible long-term consequences of the pandemic on the income distribution are uncovered by Angelopoulos *et al.* (2021) who simulate the evolution of wealth accumulation over the next two decades in the United

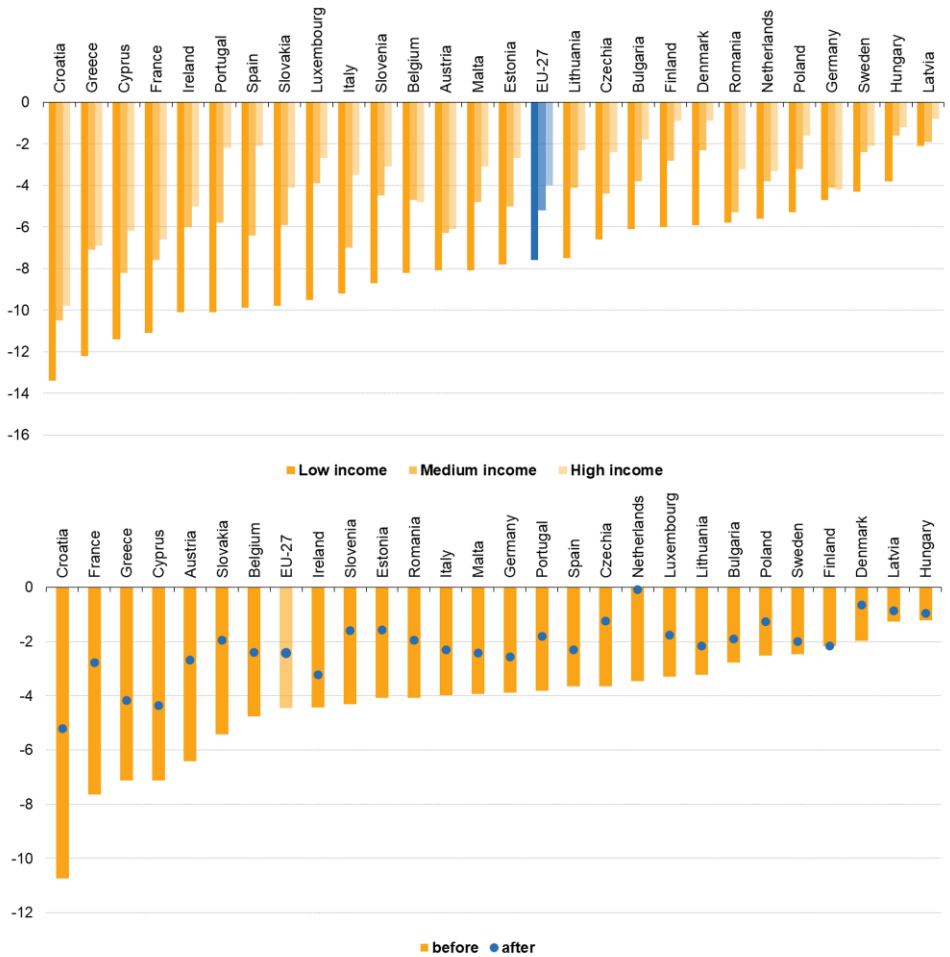


Figure 2. Loss of income from employment between 2019-Q2 and 2020-Q2 in the EU, before and after government compensation, by income

Notes: In the top figure, each bar represents the percentage employment income loss between the second quarter of 2019 and the second quarter of 2020, by income group. Low-income group refers to the third lowest decile of income distribution, high-income to the third highest and medium to the four intermediate deciles. In the second figure, each bar (dot) represents the percentage employment loss of employees between second quarter of 2019 and second quarter of 2020, before (after) wage compensation. Wage compensation refers to the monetary compensation to employees absent from work due to COVID-19 restrictions that have been provided by European states in response to the pandemic. The changes in income are obtained using the microsimulation model Euromod, calibrated with Eurostat data.

Source: Figure from Eurostat, impact of COVID-19 on employment income – advanced estimates (December 2020).

Kingdom. Even under a short recession scenario, where full recovery is reached by 2024, the effect on inequalities will be long-lasting. Indeed, the poorest households, which were more exposed to unemployment shocks, have experienced a decrease in their level of wealth, while high-income households, which were more affected by

Table 1. Evolution of Gini coefficients during the pandemic

Citation Countries	Method	Without policy response	With policy response (Overall effect)
Almeida <i>et al.</i> (2020) EU (27)	Simulating effect of policies	+3.6%	-0.7%
Aspachs <i>et al.</i> (2020) ES	Evolution over time	+24.4% (0.560)	-23.21% (0.430)
Brunori <i>et al.</i> (2020) IT	Simulating effect of policies	+0.67% (0.3396)	-0.67% (0.3396)
Clark <i>et al.</i> (2020) DE, ES, FR, IT, SE	Evolution over time	+2.17% (0.322)	-2.48% (0.322)
Li <i>et al.</i> (2020) AU	Comparison market and post-tax and transfers income	+3.33% (0.539)	-7.57% (0.330)
O'Donoghue <i>et al.</i> (2020) IE	Comparison market and post-tax and transfers income	+20.64% (0.499)	-6.62% (0.317)
Palomino <i>et al.</i> (2020) Euro (29)	Simulating effect of policies	+3.5% to +7.3%	NA

Notes: Figures in parentheses refer to initial level of Gini coefficient, when available. Almeida *et al.* (2020) and Brunori *et al.* (2020) simulate income distribution changes after spring 2020, under scenarios with and without policy response. They estimate the change in Gini coefficient of disposable income, adjusted for household size and composition. Aspachs *et al.* (2020) compute Gini coefficient of payroll income and labour market-related benefits during the first months of the crisis (February 2020–May 2020) and compare it to the values in the same months in 2019. Figures presented in the table refer to April 2020. Clark *et al.* (2020) estimate the change in Gini coefficient of adjusted disposable income between January and May 2020 and between January and September 2020 using longitudinal survey data from a representative sample of 7,302 respondents. Li *et al.* (2020) and O'Donoghue *et al.* (2020) simulate income distribution changes after COVID-19, accounting for the policy response, and estimate the changes in Gini coefficient of market income and of adjusted disposable income, during spring 2020. Palomino *et al.* (2020) simulate the wage distribution induced by a two-month lockdown, with full and partial recovery and estimate the change Gini coefficient under the different scenarios. EU(27) stands for the 27 countries in the European Union. ES is the country code for Spain, IT for Italy, DE for Germany, FR for France, SE for Sweden, AU for Australia and IE for Ireland. Euro (29) refers to the 29 countries in Europe included in the study.

restrictions on their consumption and less exposed to unemployment, have increased their savings. Consequently, an increase in wealth inequality is likely to persist (Online Appendix Figure A.4).

2.2. Remote work opportunities as a vector of inequalities

Remote work has surged dramatically during the pandemic. Research suggests that, while working from home induces a wage premium, the ability to work from home is unevenly distributed across the income distribution. Lower-income employees have fewer opportunities for remote work (see Table 2). In addition, while higher-income employees may, on average, earn a wage premium working from home, the productivity gains of lower-income employees seem much more limited. Thus, the rise and spread of remote work might be a new vector of inequalities, especially if it becomes a norm.

In Europe, Sostero *et al.* (2020) estimate that 37% of employees and dependent contractors in the European Union (EU) in 2018 were in occupations where remote work

Table 2. Potential for remote work is unequal by income

Countries	Citation	Potential for remote work is higher at high incomes
GB	Adams-Prassl et al. (2020c)	In spring 2020, 60% of work tasks could be done at home for high-earners, compared with 20% for low-earners.
US	Bick et al. (2020)	In May 2020, the share of high-income remote workers was 45.5%; for low-income workers it was 18.4%.
IT	Bonacini et al. (2021)	In 2018, average labour income for workers with low remote work potential was €24,731, against €27,320 for those with high potential
EU (27)	Sostero et al. (2020)	In 2018, 74% of high earners could work remotely, while just 3% of low earners could.

Notes: In [Adams-Prassl et al. \(2020c\)](#), high-earners refer to households with gross labour income above £70,000 and low-earners to those with less than £10,000 in 2019. The estimate is based on a representative survey of 24,924 respondents. In [Bick et al. \(2020\)](#), high-income households earn more than \$100,000 in 2019 and low-income households earn less than \$50,000. The estimate is based on a representative survey of 5,000 respondents. [Bonacini et al. \(2021\)](#) use the index proposed by [Barbieri et al. \(2020\)](#) to measure remote work potential with the Italian Labour Force Survey. Workers with low (high) remote work potential are those below (above) the median value they compute. In [Sostero et al. \(2020\)](#), high- and low-earners refer to top and bottom quintile of wage distribution. Their estimate is based on the European Labour Force Survey. GB is the country code for the United Kingdom, US for the United States, IT for Italy, and EU (27) refers to the 27 countries in the European Union.

was possible. This is consistent with [Dingel and Neiman \(2020\)](#), who estimate that 37% of jobs in the United States in 2018 could be done entirely at home. The analysis of [Sostero et al. \(2020\)](#) also suggests that the potential for remote work increases as one moves higher up the wage distribution. Across European countries, 74% of employees in the top wage quintile can work remotely, compared with only 3% in the bottom quintile. In the United States, the analysis of [Bick et al. \(2020\)](#) confirms that high-income workers have been more able to work from home. In May 2020, the share of employees with 2019 annual income greater than \$100,000 working remotely was 45.5% compared with 18.4% for employees with 2019 annual income below \$50,000.

This unequal potential for remote work is likely to reinforce existing inequalities. In Germany, [Irlacher and Koch \(2021\)](#) have estimated that, pre-COVID-19 in 2018, workers who were able to work remotely on average received a 12% wage premium. [Bonacini et al. \(2021\)](#) show that in Italy, an increase in the ability to work from home is correlated with an increase in labour income, thus potentially deepening inequalities between workers who can work remotely and those who cannot. In addition, the wage premium for working from home is higher for workers who already earn more, so that inequalities would increase even among those able to work remotely.

Workers' productivity has been affected heterogeneously by remote work. This seems to be at least partially driven by the sectoral composition at different income levels, as different sectors have different potentials for remote work. It may also be the result of worse working conditions at home for lower-income households. Based on a representative survey on self-reported productivity conducted in June 2020 in the United Kingdom, [Etheridge et al. \(2020\)](#) show that while on average workers report being as

productive as one year before the pandemic, low-income workers report being less productive. In particular, workers in the education, administrative, entertainment and accommodation sectors report significant decreases in their productivity, while those in the financial, insurance and information technology sectors report increases in their productivity (see [Online Appendix Figure A.6](#)).

Remote work may also become a driver of regional inequalities, as its feasibility varies starkly across regions. [Irlacher and Koch \(2021\)](#) find that poorer regions in Germany exhibit a lower share of jobs that can be done remotely. In the United Kingdom, [De Fraja et al. \(2020\)](#) have also documented a highly heterogeneous potential for remote work across regions, with the share of residents that can work from home varying between 30% and 60%. These regional imbalances can also partially be seen as the result of the differential potential for remote work across sectors, and the clustering of specific sectors in some regions [see [Bonacini et al. \(2021\)](#) and [Online Appendix Figure A.5](#) for Italy and [Crowley and Doran \(2020\)](#) for Ireland]. [Online Appendix A.2](#) summarizes further findings on remote work.

2.3. Employment loss

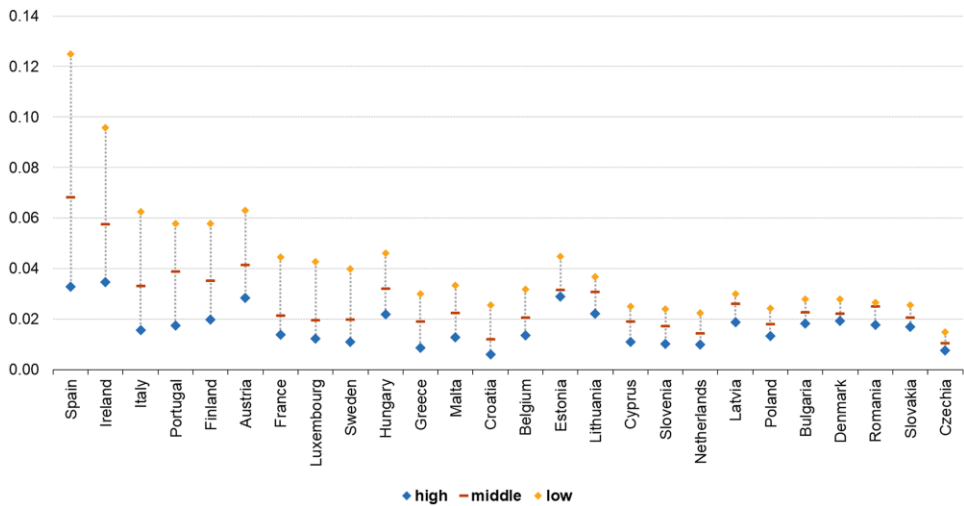
2.3.1. During the pandemic. When it comes to the employment loss due to the pandemic, lower-income workers face two countervailing forces. On the one hand, they are more likely to work in ‘essential’ occupations, which suffered less from layoffs or furloughs. On the other hand, they are also more likely to work in occupations with lower potential for remote work or which were more exposed to adverse labour demand shocks.

Overall, the unemployment shocks were heterogeneous across the income distribution, and low-income workers have been more vulnerable to them (see [Table 3](#)). Compared to medium- and high-income workers, low-income workers from all EU member states had a much higher likelihood of losing a job between first and second quarter of 2020 (see [Figure 3](#)). In the United Kingdom, [Piyapromdee and Spittal \(2020\)](#) show that the likelihood of being laid off or furloughed decreases with higher earnings and wealth. Using data from the UK Household Longitudinal Study, they estimate that in April 2020, 52.7% of individuals in the bottom quintile of the earnings distribution were either furloughed or fired, compared with just 15.1% of people in the top quintile. This finding is consistent with those of [Adams-Prassl et al. \(2020b\)](#), who use a representative survey to show that in the United Kingdom, from February to 25 March 2020, 12% of workers earning less than \$20,000 lost their jobs because of the pandemic, against 5% of workers earning more than \$40,000. For Australia, [Li et al. \(2020\)](#) estimate the propensity of dropping out of employment, conditional on being employed in the previous month, by market income quintile. Their results suggest that labour market disruptions peaked in April 2020, when the propensity is estimated at 14.17% for the bottom quintile against 2.58% for the top quintile. In June 2020, this propensity was reduced to 1.78% for the top quintile, while it decreased only to 6.97% for the bottom quintile. In the United States, the fall in employment rates has also been more

Table 3. Unemployment across the earnings distribution

Citation	Stronger employment shock for low earners
Country studied	
Adams-Prassl <i>et al.</i> (2020b) GB	From February to March 2020, employment decreased by 12% for low-earners, 5% for high-earners, because of COVID-19.
Chetty <i>et al.</i> (2020) US	From January to mid-April 2020, employment decreased by 37% for low-earners and by 14% for high-earners.
Li <i>et al.</i> (2020) AU	In April 2020, the propensity of dropping out of employment was 14.17% for low-earners and 2.58% for high-earners.

Notes: In Adams-Prassl *et al.* (2020b), high-earners refer to households with gross labour income above £40,000 and low earners to those with less than £20,000 in 2019. The data are from a representative survey in which respondents reported the cause of their unemployment. In Chetty *et al.* (2020), high and low-earners refer to top and bottom quartile of wage distribution. The authors construct a detailed new database to estimate the changes in employment. In Li *et al.* (2020), high- and low-earners refer to top and bottom quintile of market income (wage and business revenue) distribution. This paper uses the Monthly Longitudinal Labour Force Survey to estimate the change in employment. GB is the country code for the United Kingdom, US for United States, and AU for Australia.

**Figure 3. Risk of job loss in Europe between first and second quarter of 2020, by income and country**

Notes: This figure shows the probability of losing a job between the first and second quarters of 2020, by country and by income. Eurostat estimates the probability of losing a job on a 0–1 scale, using a logit model with controls for age, gender, skill level required by the occupation, sector of activity and type of work contract (permanent, temporary or self-employment), with the European Labor Force Survey data. ‘Low-income’ group refers to the lowest one-third decile of income distribution, ‘high-income’ to the highest one-third and ‘medium-income’ to the remaining intermediate deciles.

Source: Figure from Eurostat, COVID-19 labour effects across the income distribution (December 2020).

pronounced for low-income workers. About 37% of those in the bottom wage quartile lost their jobs between January and April 15, 2020, compared with 14% of those in the top quartile (see Chetty *et al.* (2020) and Online Appendix A.3). For workers in the top wage quartile, the evolution of employment seems to have been V-shaped (see Online

Appendix Figure A.7), that is, their employment has quickly recovered. This is not the case for people at the bottom of the income distribution.

2.3.2. Longer-term effects. Prolonged periods of unemployment are known to be harmful for human capital, reducing the likelihood of reintegrating into the labour market (Phelps, 1972; Blanchard and Summers, 1986). Unemployment during the pandemic can become even more challenging to escape, as, in addition to the decline in economic activity, it may come with more domestic work, such as home child-care duties, which can make the search for jobs even more difficult.

These effects on unemployment might not only turn out to be long-lasting, they could also widen the gap between low- and high-wage workers. As highlighted by Tyson and Lund (2021), low-income workers will face higher pressure to reallocate since they are over-represented in occupations with lower potential for remote work and in sectors more adversely hit by the pandemic. Furthermore, the pandemic has also accelerated automation and digitization and these trends favour more skill-intensive sectors. In a nutshell, the pandemic has increased the supply of low-skilled labour and the demand for high-skilled labour, thus creating a mismatch. The analysis by Stiglitz (2020) reaches the same conclusion. Modelling the macroeconomic consequences of the uncertainty surrounding the pandemic and the resulting precautionary behaviour using US data, the author shows that labour-intensive sectors are less attractive, thus reinforcing automation and inequalities. Moreover, as shown by Pieh *et al.* (2020), low-income households have suffered greater mental health deterioration, which can compound their difficulties in searching for a job.

2.4. Consumption and savings

Thanks to high-frequency, transactional data provided by banking institutions, researchers have been able to draw a picture of individuals' spending and savings patterns during the pandemic. At the aggregate level, the COVID-19 outbreak seems to have induced an increase in savings and a drop in consumption. There is consensus in the literature that mainly high-income households have contributed to these additional savings. There is less agreement on the extent to which low-income households have reduced their consumption.

The aggregate drop in consumption has been stark since the first mobility restriction measures. In Denmark, after seven weeks of lockdown (March 11–May 3, 2020), aggregate spending was 27% below what it was expected to be absent COVID-19 (Andersen *et al.*, 2020). In the United Kingdom, Hacıoğlu-Hoke *et al.* (2021) find that median expenditures were almost 40% lower in April 2020 compared with April 2019. During the first lockdown period in France, Bounie *et al.* (2020) report a fall in spending based on credit and debit card transactions of about 50% during the French lockdown between mid-March and mid-May 2020.

In several countries, this trend has been highly heterogeneous across the income distribution. Low-income households undertook smaller percentage cuts to their spending, and more rapidly returned to pre-COVID-19 spending levels. Higher-income earners have reduced their spending by a higher percentage, and this effect, if not permanent, seems to be longer-lasting. [Online Appendix Table A.1](#) provides evidence of these patterns in several countries.¹ In the United States, [Chetty *et al.* \(2020\)](#) find that spending decreased by 30% between February and March 2020 for the top income quartile and by 20% for the bottom quartile. In July 2020, spending of low-income households had returned to its 2019 level, while spending of high-income households was 13% below their baseline level. A disproportionate part of the aggregate fall in spending is thus mechanically driven by higher-income households' spending cuts. In the United Kingdom, [Hacıoğlu-Hoke *et al.* \(2021\)](#) suggest that households earning more than £40,000 before the pandemic contributed to 45.3% of the decline in consumption in the second quarter of 2020, relative to the same period in 2019, against 9.8% for households with an annual income less than £20,000.

The mirror image of this phenomenon is the unequal distribution of the excess savings, that is, savings that seem to be due to COVID-19. In France, [Bounie *et al.* \(2020\)](#) estimate that the pandemic has generated an excess of financial wealth by €45 billion when compared with the counterfactual (no pandemic) levels. In total, 55% of this amount went to households in the top decile by level of total expenditure in 2019 and 70% went to households in the top quintile.

Non-essential spending represents a higher share of the spending of high-income households with respect to low-income ones (e.g., it amounts to 67% of the spending of the top income quartile and 59% for the bottom one in the United States). Unsurprisingly, it was mainly non-essential spending that dropped during the pandemic, contributing 84% of the aggregate drop in the United States in April 2020 relative to April 2019 ([Cox *et al.*, 2020](#)). Low-income households are much more constrained in their ability to cut spending and a rebound in their spending is more likely to reflect the necessity to satisfy subsistence needs rather than an improvement in their condition.

Importantly, government support might have played a key role in helping low-income groups recover their previous consumption levels and, hence, in supporting aggregate demand. As reviewed by [Falconetti and Nygaard \(2021\)](#), stimulus checks in the United States had a larger impact on low-income household spending. By contrast, in Spain, in June 2020, low-income households' spending had not recovered faster than that for other groups. [García-Montalvo and Reynal-Querol \(2020\)](#) argue that insufficient government assistance to the poorest households is the main reason for this lack of recovery.

1 See [Online Appendix A.4](#) for a summary of research on spending using high-frequency data.

2.5. Digital divides

Digital literacy and infrastructure are unevenly distributed across the income distribution, leading to highly unequal opportunities and experiences during the pandemic.

Because of the increased network bandwidth usage at the global level, the least well-equipped households have suffered higher reductions in Internet speeds. In addition, households with insufficient technological equipment for each member have suffered higher constraints in their potential to perform online activities at home. These two effects have strongly segmented the ability to cope with the pandemic across the income distribution. For instance, [Chiou and Tucker \(2020\)](#) study the ability to self-isolate in response to state requirements in the United States in March 2020 and found that households living in high-income areas, benefiting from faster Internet speeds, were more able to respect social distancing. The digital divide has also hampered low-income households in other ways, such as via reduced possibilities for online learning ([Ong *et al.*, 2020](#)), as well as fewer opportunities to maintain a social life online, and adverse consequences for mental health ([Beaunoyer *et al.*, 2020](#)). The digital divide has further played out at the regional level, with rural regions in the United States being more negatively affected in these categories ([Lai and Widmar, 2021](#)).

In short, the pandemic has widened the digital divide. Financially constrained households were most in need of investment in adequate and up-to-date equipment and network services. Yet, their experience of adverse income shocks further reduced their ability to pay for such technological investments. This in turn has reduced the possibility to leverage digital and online opportunities to make up for lost in-person ones. Overall, there has been a negative feedback effect between the pandemic and the digital divide, to the detriment of more vulnerable households ([Beaunoyer *et al.*, 2020](#)).

3. INEQUALITIES ACROSS SECTORS AND REGIONS

3.1. Sectoral inequalities

The pandemic has affected distinct sectors differently. Inequalities between sectors and across firms can be traced back to the ability to (i) stay open during lockdowns, (ii) substitute online for in-person activity and (iii) provide critical services during the pandemic.

Regarding the first aspect, firms fared differently based on whether they were essential or non-essential businesses and the extent to which their activity requires physical proximity to work sites, customers or colleagues. In the United States, small businesses in the leisure and hospitality sectors experienced sharper declines in revenue (57% in March 2020) than those in the retail and transportation (of goods and people) sector (26%) (see [Chetty *et al.* \(2020\)](#) and [Online Appendix Figure B.2](#)). During the lockdown in Denmark, consumer spending increased by 10% in sectors that were able to stay open and decreased by 70% in those that were not, relative to where it would have been absent COVID-19 ([Andersen *et al.*, 2020](#)).

Some sectors and firms have been able to maintain a sizeable share of their activity by substituting in-person sales with online ones. In France, Bounie *et al.* (2020) show that sectors such as personal care, clothing and fashion and jewellery have substantially increased their share of online sales during the lockdown (mid-March to mid-May 2020). Across 13 countries (Albania, Chad, Cyprus, Georgia, Greece, Guinea, Italy, Moldova, Niger, Russia, Togo, Zambia and Zimbabwe), financially constrained firms were 22% more likely to shut down their operations and also more likely to lay off workers between May and July 2020 (Chundakkadan *et al.*, 2020).

Sectors that have been at the forefront of the fight against the pandemic, for example, healthcare and pharmaceuticals, have seen improved financial performance. Bellucci *et al.* (2020) show that venture capital investment has been strongly reallocated during the pandemic, with health-related sectors experiencing increases in investments of 39% in the first half of 2020.

Sectors that have been critical to coping with the lifestyle impacts of the pandemic, for example, IT, have also benefited from higher inflows of capital and better financial performance. Sherif (2020) shows that this sector significantly outperformed the market in the United Kingdom in the first half of 2020, while sectors centred around consumer discretionary services, such as transportation (of people), tourism and leisure, significantly underperformed. Online Appendix B.1 provides more detailed findings on sectoral inequalities.

3.2. Regional inequalities in health impacts and the consequences of remote work

Poorer regions have experienced higher COVID-19-related mortality during the pandemic, in line with the fact that social distancing was less feasible and harder to implement there. In the United States, Weill *et al.* (2020) have shown that mobility has decreased significantly more in wealthier counties in response to state-level measures from January to April 2020. The lower potential for implementing social distancing can be explained in part by a sectoral and occupational composition effect. As shown by Brandily *et al.* (2020) for France, there is a higher concentration of occupations that involve physical proximity and are ‘essential occupations’ in poorer areas. This effect is magnified by the prevalence of poor housing conditions, air pollution, deficient health infrastructure and higher shares of elderly people. Overall, mortality from COVID-19 has been higher in poorer European regions (Kapitsinis, 2020), as well as in poorer US regions (Siddique *et al.*, 2020).

As already alluded to in Section 2.2, the potential to work remotely is highly heterogeneous within countries. In all OECD countries, cities and urban areas benefit from higher opportunities for such work [see Ozguzel *et al.* (2020) and Figure 4 and Online Appendix Figure B.3]. But the pandemic may have led to a more long-lasting shift in remote work, which could reshape cities and suburban areas. As higher-paid

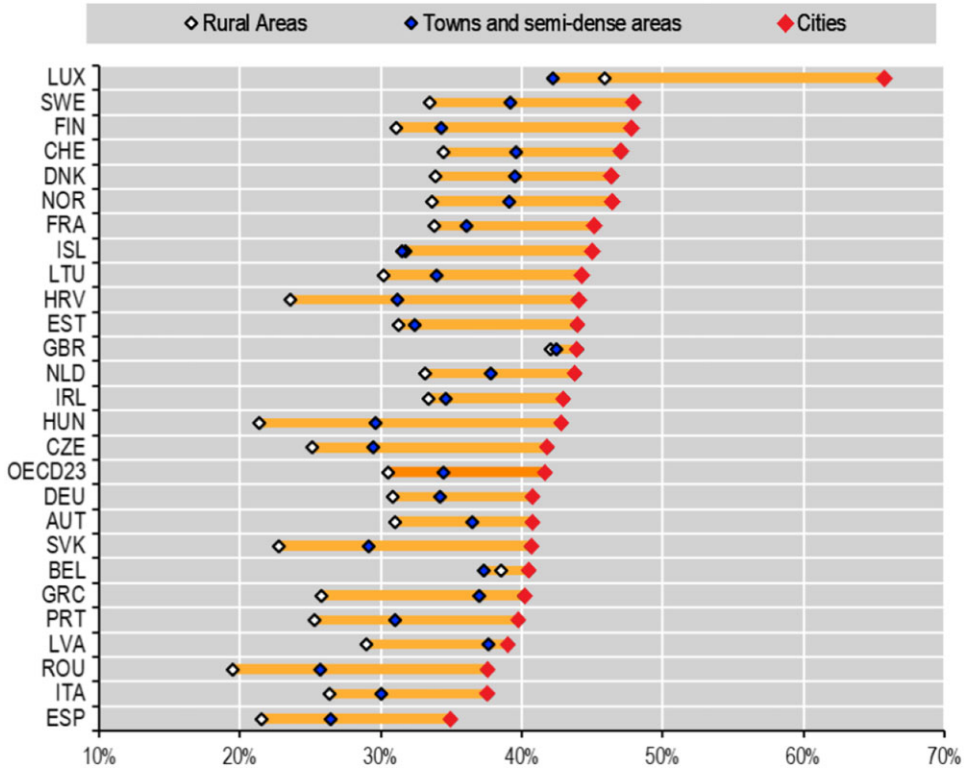


Figure 4. Share of jobs that can potentially be performed remotely, in cities, towns and rural areas in Europe, 2018

Notes: This figure shows the number of jobs in each country or region that can be carried out remotely as the percentage of total jobs. Countries are ranked in descending order by the share of jobs in total employment that can be done remotely at the national level. Regions correspond to NUTS-1 or NUTS-2 regions depending on data availability. The authors classify occupations based on their potential for remote work using the analysis in [Dingel and Neiman \(2020\)](#) and apply it to data from the European Labour Force Survey.

Source: [Ozguzel et al. \(2020\)](#).

employees, who are able to work remotely, move to less densely populated areas and suburbs with more affordable housing, they may be rebalancing the differences in opportunities and prices between areas. If metropolitan areas and cities then become more affordable, employees who cannot work remotely may then also be given a chance to move to these areas ([Delventhal et al., 2021](#)). These patterns may have countervailing and complex long-term consequences for productivity and inequality across regions.

4. INEQUALITIES ACROSS GENDER

This section summarizes an abundant literature on the unequal impacts of the pandemic across gender. Note that we can only focus on men and women as defined in each of the papers reviewed below. This is restrictive, but there is no systematic data for other

gender groups. We also do not know whether these categories reported correspond to the people's identity.

Women experienced higher unemployment and larger reductions in work hours. School closures and additional child care responsibilities – while challenging for all parents – have especially increased unpaid domestic work for women. This section will cover remote work hours and unemployment, child care and housework.

4.1. Remote work, work hours and unemployment

Compared with men, women have had a higher likelihood of being laid off, furloughed or seeing their work hours reduced. The term 'she-cession' has been employed to emphasize the unequal impacts of the pandemic-induced recession on men and women (Alon *et al.*, 2020). This is in stark contrast to previous downturns, where women were less likely to lose their job.

The major causes of this disparity appear to be, first, that women tend to be more represented in some of the occupations that were hardest hit by lockdowns (e.g., hospitality and in-person services). Second, a larger share of women had part-time or alternative work contracts pre-COVID-19, while firms are more likely to shelter workers in permanent work contracts more. Thus, women were more represented among the first ones to absorb the negative shock of the recession (Adams-Prassl *et al.*, 2020b). Third, women quit their jobs or significantly reduced their working hours due to the increased need for childcare caused by school closures.

Working mothers were hit hardest. Alon *et al.* (2020) argue that the main reason for this is the massive closures of schools and daycare centres. Using the US Current Population Survey to examine changes in mothers' and fathers' work hours from February to April 2020, Collins *et al.* (2020) find that mothers with young children reduced their working hours four to five times more than fathers. Andrew *et al.* (2020a) examine how parents in England spend their time during a lockdown. They find that mothers' paid work has taken a larger hit than the work of fathers on both the extensive and intensive margins. Hipp and Bünning (2020) report similar results for Germany, where mothers were more likely to work fewer hours than fathers, and this discrepancy grew over time (from March to August 2020). Using two new online surveys from May and November 2020 in Spain, Martinez-Bravo and Sanz (2021) find that as a result of the COVID-19 shock, women saw a substantially larger decline in income than men. The largest drop in the incomes of women relative to men is for households in the middle of the income distribution (second and third quintiles). This effect seems to be driven by women in middle-income households with children.

Online Appendix C summarizes findings on disparities in remote work by gender.

4.2. Childcare and housework

The pandemic has also deepened the gender gap in unpaid work at home. School and nursery closures increased the demand for childcare, especially because grandparents, family members or friends could not help out easily because of social distancing

measures. Research shows that even though fathers increased their time spent on childcare compared with pre-COVID-19 times, mothers were the ones who absorbed most of the additional childcare work and overall housework. The results are summarized in [Table 4](#) and in more detail in [Online Appendix C](#).

[Alon et al. \(2020\)](#) point out that single mothers were the most vulnerable group during the pandemic. There are two reasons for this. First, single parents that were laid off during the pandemic heavily depended on external financial help. Second, school closures were particularly challenging for single parents, not the least because this study shows that they had less opportunities to work remotely. Seventeen percent of all households in the United States are single-parent households and single mothers account for just under 70% of all single-parent households. Twenty-one percent of all children in the United States live only with their mother, compared with 4% living only with their father.

The pandemic seems to also have had disproportionately negative effects on women's mental health [Etheridge and Spantig \(2020\)](#). [Online Appendix C.3](#) summarizes the research on this issue.

5. INEQUALITIES IN EDUCATION

Nursery, kindergarten, school and university closures were some of the earliest and most widespread responses to the pandemic. In April 2020, UNESCO reported that 192 countries had closed all their schools and universities, affecting more than 90% of the world's students. The impacts on children in the short run have been striking and research has tried to estimate the longer-term consequences.

5.1. Time spent learning and learning delays

In the short term, children, especially those from disadvantaged socio-economic backgrounds, have spent significantly less time on school work during school closures, which has had consequences for their education.

For younger children, the lack of face-to-face time can translate into substantially less learning. [Bao et al. \(2020\)](#) predict a 31% lower reading gain from January to September 2020, relative to a business-as-usual scenario for kindergarten children whose schools were closed. They also find that parental input can help, but not make up for this: children who have books read to them daily had lower, but nonetheless substantial learning loss.

[Huber and Helm \(2020\)](#) conducted a survey and tracked students' efforts on school-related work in Switzerland, Austria and Germany for two weeks, in the very early stages of the lockdowns (March 24–April 5, 2020). During that period, very few online classes had been put into place, meaning that students had to study on their own. The authors find that a substantial proportion of students reported learning at home during school lockdown for at most 2 h per day (see [Online Appendix Figure D.2](#)). Only a third of students reported a relatively high level of learning commitment (more than 5 h per day).

Table 4. COVID-19-induced changes in paid and unpaid work for women

Citation	Countries	Figure
Panel A: Increase in women's transition to working from home during COVID-19 pandemic		
Reichelt <i>et al.</i> (2020)	US, DE, SG	Women are 7 p.p. more likely to work remotely than men.
Mongey and Weinberg (2020)	US	Women are 10 p.p. more likely to be in high work-from-home occupations than men.
Farre <i>et al.</i> (2020)	ES	Women are 6.5 p.p. more likely to work remotely than men.
Bonacini <i>et al.</i> (2021)	IT	Women are 5 p.p. more likely to work remotely than men.
Del Boca <i>et al.</i> (2020)	IT	Women are 10 p.p. more likely to work remotely than men.
Hatayama <i>et al.</i> (2020)	53 countries	Women are more likely to work remotely than men.
Panel B: Decline in working hours of women during COVID-19 pandemic		
Reichelt <i>et al.</i> (2020)	US, DE, SG	Women are 5 p.p. more likely to have reduced weekly hours than men (by at least 10 h).
Collins <i>et al.</i> (2020)	US	Mothers of young children reduced their working hours four to five times more than fathers.
Andrew <i>et al.</i> (2020a)	GB	Mothers reduced working hours by 22% compared with a 16% drop for fathers.
Oreffice and Quintana-Domeque (2020)	GB	Women reduced working hours by 50%.
Hipp and Bünning (2020)	GB	Women have a 4 p.p. higher likelihood to reduce working hours than men.
Panel C: Increase in women's unemployment during COVID-19 pandemic		
Reichelt <i>et al.</i> (2020)	US, DE, SG	Women have a 3 p.p. higher likelihood of having transitioned to unemployment.
Adams-Prassl <i>et al.</i> (2020b)	US GB, DE	Women have a 7 (5) (0) p.p. higher likelihood of losing jobs compared with men in the United States (United Kingdom) (DE).
Sevilla and Smith (2020)	GB	Women have a 7 p.p. higher likelihood of losing their job compared with men.
Andrew <i>et al.</i> (2020a)	GB	Mothers have a 9 p.p. higher likelihood of losing their job compared with fathers.

(continued)

Table 4. Continued

Citation	Countries	Figure
Oreffice and Quintana-Domeque (2020)	GB	Women have a 4.2 p.p. higher likelihood to have lost jobs than men.
Farre <i>et al.</i> (2020)	ES	Women have a 2.5 p.p. higher likelihood to have lost jobs than men.
Panel D: Increase in women's childcare responsibilities during COVID-19 pandemic		
Adams-Prassl <i>et al.</i> (2020b)	US, GB, DE	Women spend on average 1.5 h more on childcare than men.
Alon <i>et al.</i> (2020)	US	Women provide 60% of childcare hours.
Sevilla and Smith (2020)	GB	Women do 30.3 more hours of childcare per week compared with 19.4 done by men.
Andrew <i>et al.</i> (2020a)	GB	Mothers engage in childcare over 25% more hour-long slots than fathers.
Hupkau and Petrongolo (2020)	GB	Women do 9.5 more hours of increased childcare compared with 6.9 h done by men.
Farre <i>et al.</i> (2020)	ES	Mothers spend 34.6 h on childcare per week compared with 24.9 h spent by fathers.
Fodor <i>et al.</i> (2020)	HU	Women spend an additional 5 h a week on childcare compared with men.

Notes: The table summarizes results from a variety of studies on the effects of COVID-19 on paid and unpaid work for women and mothers. 'P.p.' stands for percentage points. US is the country code for the United States, DE for Germany, SG for Singapore, GB for the United Kingdom, ES for Spain, IT for Italy, and HU for Hungary.

Grewnig *et al.* (2021) collected detailed time-use information on students before and during school closures in Germany in June 2020, when online classes had mostly been put in place. They find that students on average reduced their daily learning time of 7.4 h by about half, and that the reduction was significantly larger for students with lower test scores (4.1 h) than for those with higher test scores (3.7 h) (see [Online Appendix Figure D.1](#)). Unfortunately, parental or teachers' inputs could not substitute for school closures and students with lower test scores appear to have substituted learning time with leisure activities such as TV or video games.

Andrew *et al.* (2020b) confirm these results and find that there is considerable heterogeneity by family income in children's learning experiences. Not only does the time children spend on learning differ between lower- and higher-income families, but so do the resources available at home and provided by schools. Bacher-Hicks *et al.* (2021) use high-frequency Internet search data to study in real time how US households sought out online learning resources once schools closed. Urban areas with higher income and better Internet access exhibited substantially larger increases in searches for

online learning resources. The analysis of [Jæger and Blaabæk \(2020\)](#) for Denmark also suggests that higher income groups have enjoyed greater learning opportunities during the pandemic. [Agostinelli et al. \(2020\)](#) employ a theoretical framework to predict that school closures could have a large and persistent effect on educational outcomes that is highly unequal.

In the Netherlands, [Engzell et al. \(2020\)](#) find that primary school closures essentially halted learning and that some students even regressed in their educational attainment. Furthermore, the learning delays were much more pronounced among students with less-educated parents (see [Online Appendix Figure D.4](#)). These results are particularly concerning given that the Netherlands could be considered a ‘best-case’ scenario, suggesting that countries with higher educational inequality at baseline and fewer resources could face even worse outcomes. These findings are echoed by those in [Maldonado and De Witte \(2021\)](#) for Flemish primary schools in Belgium.

5.2. Unequal technical and resource constraints

After schools physically closed due to the pandemic, many tried to create an online learning environment. This was not an easy transition for neither schools nor for students, in part because not all schools and students had access to adequate technical equipment for online schooling. The lack of technical equipment, robust curricula adapted to online environments and missing digital infrastructure further amplified educational inequalities. [Huber and Helm \(2020\)](#) document the starkly different technical capacities for digital instruction across schools in different countries and conclude that Switzerland and Austria have significantly more resources and technical capacities for digital teaching than Germany (see [Online Appendix Figure D.3](#)). Another side of the problem is documented in England, where [Andrew et al. \(2020b\)](#) find that one in ten students in primary school and one in seven students in secondary school relied only on a cellphone or had no digital device to access school materials online.

5.3. Longer-term impacts

The longer-term impacts stem from the immediate loss of schooling time, but also from the dynamic effects of human capital accumulation, whereby earlier acquisitions improve the productivity of future human capital investments. Disruptions earlier on in life can have longer lasting and more severe effects. This implies that younger children may be more heavily impacted than older ones. [Psacharopoulos et al. \(2020\)](#) estimate that a 4-month school interruption results in an earnings loss of \$11,117 over the course of a lifetime of an individual. Using a theoretical framework and simulations matched to US data, [Fuchs-Schündeln et al. \(2020\)](#) find that the share of the population without a high school degree will increase by 3.8% and the share with a college degree will decrease by 2.7%. Earning losses amount to about -1% over the lifetimes.

6. POLICY PROPOSALS

The policy ideas proposed here are not short-term interventions to dampen the effects of the pandemic. Rather, they suggest directions for the medium and longer term with the goal of addressing the fiscal challenges ahead and to start healing some of the inequality fractures that preexisted and have been exacerbated by COVID-19.

The challenges of inequality deepened by COVID-19 are substantial and they need to be tackled at various levels. Rather than thinking about only ‘standard’ redistribution, or only labour market or education policies, they must be considered jointly. Redistribution is crucial, but it needs to be combined with appropriate ‘pre-redistribution’, that is, with interventions to expand education and quality employment (so-called ‘good jobs’). This is not only a contribution to reduce inequality, but also to eventually improve productivity. Without more equal opportunities for people in different regions and with different backgrounds, new technologies and resources remain bottled up in a few companies and among a few ‘elite’ groups of employees – mainly in urban metropolitan areas – and do not trickle down and benefit others. Many are left behind, as documented in the first part of this paper.

A post-COVID-19 world can be inspired by the idea of a ‘good jobs welfare state model’ that is built on three components: First, updated traditional welfare state policies that focus on education, social insurance and progressive taxation; second, a new focus on directly fostering good jobs and labour market experiences for all, through labour market policies that partner with business and industrial or innovation strategies that more explicitly target quality employment and third, a better communication between government and citizens.

This section builds heavily on [Rodrik and Stantcheva \(2021\)](#) and the references cited therein.

6.1. A general framework: intervening at several stages

A useful way to think about policy interventions is with the matrix in [Figure 5](#). First, one can consider the income group that is mostly targeted by the policy: those at the very bottom of the income distribution, the middle class or those at the very top? Second, one can think about the stage at which the intervention takes place: pre-redistribution policies directly influence how markets work and can usefully be split into ‘pre-production’ policies and ‘production policies’. Pre-production policies shape the endowments that individuals bring to the labour market, as well as their opportunities. Production stage policies influence the functioning of the labour market, including firms’ decisions. Post-production policies are ex-post redistribution policies, that is, government transfers or progressive taxation.

Many traditional welfare states in Europe rely heavily on the first and third columns: fostering education and training to prepare people for the labour market on the one hand and progressive taxes and transfers, as well as social insurance against

		At what stage of the economy does policy intervene?		
		pre-production stage	production stage	post-production stage
Which income segment do we care about?	bottom incomes	primary education and early-childhood programs; vocational training	minimum wage; apprenticeships; reduced social security contributions by firms; in-work benefits	social transfers (housing, family, child benefits); guaranteed minimum income
	middle class	public higher education; adult retraining programs	cluster policies; SME support programs; EU Structural and Investment Funds; occupational licensing; on-the-job training; collective bargaining & work councils; EU trade policies	unemployment insurance; pensions
	top incomes	inheritance & estate taxes	R&D tax credits; EU competition policies	top income tax rates; wealth taxes

Figure 5. A policy matrix

Source: Rodrik and Stantcheva (2021).

unemployment, illness or disability on the other hand. Production stage policies – except perhaps the minimum wage, collective bargaining regulations and labour protection – are not systematically geared towards reducing inequality and creating better jobs. They are instead targeted towards market competition, physical investment and R&D, along a traditional divide between ‘social policies’ to tackle inequality and economic policies to improve productivity, innovation and growth.

However, such traditional welfare state systems are built upon the assumption that nearly everyone who wants a good job can find one. COVID-19 has shown very clearly the extent of existing inequalities in the quality of jobs accessible to different groups and how unequal the opportunities are. Good jobs, which were the pillar of the welfare state in past decades, have been disappearing. It is not possible to define what a ‘good job’ is in the absolute, as it depends on local circumstances and people’s preferences (e.g., for flexibility). Nevertheless, some clear criteria are safe and reasonable work conditions; sufficient pay that enables a good living standard; access to benefits such as healthcare, childcare and pensions in the future, adequate social insurance and career opportunities and progress.

In a world in which middle-class good jobs are disappearing due to longer-run trends such as technological change and globalization, and shocks such as COVID-19 exacerbate the cleavages, there is a need to act on all three pillars in a coherent manner. Inequalities are in part perpetuated by the production stage, when firms make innovation, employment and investment decisions without necessarily internalizing the far-reaching spillovers on current and future employees or the communities they operate in.

6.2. Pre-production policies

This section considers policies that can improve overall opportunities.

6.2.1. Inheritance taxation. An important tool to dampen the persistence of wealth across generations and to level the playing field between people from families with different levels of wealth is a tax on the transfers between generations. Such taxes are currently a small source of revenue for most governments, but are projected to increase as private wealth concentration rises. They can be either beneficiary-based (e.g., the inheritance tax in France) or donor-based (e.g., the estate tax in the United Kingdom and the United States). Inheritances are in general very concentrated because wealth itself is.

Inheritance taxes are very unpopular, but research shows that this is in large part due to misunderstandings of how they work and who actually bears them (Kuziemko *et al.*, 2015; Stantcheva, 2020). In particular, such taxes are made unpopular by the belief that they represent double taxation and that they hit the middle class particularly harshly.

Most current inheritance or estate tax systems suffer from being essentially myopic, in the sense that different transfers to the same person, coming from either different people or at different points in time, will be to a large extent treated independently. In addition, they typically contain too many loopholes and, hence, suffer from abundant avoidance.

One avenue to improve the taxation of gifts, inheritances and estates would be to move towards a beneficiary-based regime that takes into account inheritances and gifts all together and is progressive in the cumulative amount received. Rather than taxing transfers at each transfer (i.e., at each moment, a gift is made or each death), such a system would tax the total transfers (gifts, inheritances, from all sources) received by the heir, and those who receive more would be taxed at higher rates (progressivity). It is possible to put the exemption threshold relatively high in that case, truly exempting the middle class, while still being able to tax very wealthy families. It is also feasible to allow for some preferential treatment of transfers based on the closeness of the family link between the donor and the heir. Such a beneficiary-based system could at once be more progressive and also much more accepted and better understood by citizens, as it addresses their concerns outlined

above. A similar system currently exists in Ireland under the name of Capital Acquisition Tax (Irish Department of Finance, 2019; Nolan *et al.*, 2020).²

6.2.2. Education policy. Existing disparities in the quality of education have also been put into sharp relief by the pandemic (see Section 5). Going forward, the challenge is to reduce disparities in the quality and outcomes of education for children from different socioeconomic backgrounds. While countries in the EU in general invest substantially in free public education, there is significant variation in quality across schools in different areas and for children from disadvantaged families (OECD, 2020). Better targeting of public investments towards disadvantaged schools and children is needed. Furthermore, children from different backgrounds may not benefit to the same extent from any given schooling inputs because of ‘missing family inputs’. There are ongoing promising initiatives to try to level the playing field by substituting partially for inputs that children in poorer families may be lacking. These need to be expanded and fostered.

As the pandemic was unfolding, several simple and low-cost interventions were very rapidly tested. They carry some lessons for the future and could be scaled up for the longer term. Carлана and La Ferrara (2021) evaluate the effectiveness of an intervention implemented in Italian middle schools that provided free individual tutoring online to disadvantaged students during lockdown. Tutors were university students who volunteered 3–6 h per week. The study shows that the programme substantially increased students’ academic performance and that it significantly improved their socio-emotional skills, aspirations and psychological well-being. Hardt *et al.* (2020) evaluate the effects of remote peer mentoring at a German university that switched to online teaching due to the COVID-19 pandemic. Mentors and mentees met one-on-one online and discussed topics like self-organization and study techniques. The authors find positive impacts on motivation, studying behaviour and exam registration. Lastly, Angrist *et al.* (2020) provide some of the first experimental evidence on strategies to minimize learning loss when schools close. They run a randomized trial of low-technology interventions in Botswana – SMS messages and phone calls – with parents to support their school children. The results show that learning improves by 0.12 standard deviations. Thus, the value of even remote tutoring seems quite large. Such interventions could continue to be beneficial even after COVID-19, as they allow children in more remote areas or with fewer parental resources to have access to extra time, mentoring and support.

One pre-COVID-19 example is from France, where the programme ‘*Devoirs faits*’ (‘Homework Done’) since 2017 has children spend time on homework with supervision and the help of staff in their own school. This provides some compensating input for children whose parents cannot help with homework. The general concept behind such initiatives is critical and generalizable. It helps children from disadvantaged backgrounds

2 See the report at <https://assets.gov.ie/19127/bf33c368730e4dc58cc7c7930c9b8487.pdf>

receive at least some of the inputs that other children get from their families, in terms of training and skills acquisition, as well as extracurricular activities.

Another important challenge ahead is the digital divide among children and students. This was described in Section 5 and made particularly salient by COVID-19. Unequal access to the Internet and to computers hinders learning opportunities. Schools can play a role in offering quiet, safe study spaces with Internet connections and computers for children who cannot access these at home. Even better would be public funding for broadband and computers for children from disadvantaged backgrounds. Access to digital technologies, in line with the COVID-19 interventions just described above, can help equalize access to learning opportunities. A successful example comes from South Korea, where the Cyber Home Learning System is a self-study platform with the goal to reduce gaps in access to extracurricular materials and learning between students in urban areas and those in more remote ones. In the United States, the Cognitive Tutor programme teaches mathematics with a customized software complementing a textbook. Finally, the UK's Shireland Learning Gateway is a portal developed by Shireland Collegiate Academy in cooperation with Microsoft to help students and parents track student performance and behaviour, facilitate contact with the school and give access to extracurricular materials. Regardless of the exact structure of these programmes, teachers should be involved in their design, which should also be subject to regular experimentation and evaluation.

Further down the road, it is critical to facilitate the transition between school and the labour market in a way that provides opportunities for students from all backgrounds. Joblessness early in one's career can be particularly detrimental and yet youth unemployment is widespread in Europe. To better achieve this transition, boosting vocational and dual vocational-academic tracks seems particularly promising, as is the provision of better guidance for students on their choice of higher education.

Dual education tracks and vocational training have been shown to generate much better labour market outcomes in countries such as Germany. New initiatives are happening in France and in the Netherlands, where the '*Katapult*' system brings together public-private partnerships made of businesses, R&D centres and schools to train students, particularly those in Vocational Education and Training (VET) programmes.

To help students choose their graduate training, more information on the prospects of different majors and tracks is needed. This can also boost productivity as it may help align the demand and supply of skills. The Netherlands launched a graduate tracking programme in 2018, through which the careers of a large sample of graduates are analyzed, with results available to prospective students choosing their field of study.

6.2.3. Gender disparities. Inequalities across men and women in the labour force have been rendered particularly stark during COVID-19, but they are the consequences of long-standing cleavages.

Kleven *et al.* (2019) consider six countries that span a wide range of institutional features, policies and social norms: Denmark, Sweden, Germany, Austria, the United

States and the United Kingdom. They find that the earnings of men and women evolve similarly before parenthood but diverge sharply afterwards. Women experience a large, immediate and persistent drop in earnings after the birth of their first child, while men are essentially unaffected. Ten years after childbirth, women have not recovered and the convergence has stopped. In the Scandinavian and Germanic countries, women's overall participation suffers less, implying that a substantial share of the earnings penalty for mothers is driven by the intensive margin of labour supply and changes in their wage. In the United States and the United Kingdom, reduced participation in the labour market seems to be a key driver for the earnings penalty. Considering the causes for differences across countries, the authors show that longer-paid and job-protected parental leave implies larger short-run child penalties in both earnings and employment. Nevertheless, parental leave cannot explain the longer-run effects and cross-country differences. Instead, the study points to social norms about gender roles as a major explanatory factor.

There is some evidence that the pandemic may change some of these social norms related to gender roles. Reichelt *et al.* (2020) analyse survey data from a representative sample of respondents in the United States, Germany and Singapore and ask whether COVID-19-related changes, such as becoming unemployed, reducing working hours or working from the home of respondents and their partners are associated with their views on gender roles. Online Appendix Figure C.2 shows that women's egalitarian views are diminished when they become unemployed; while their partner's attitudes are not affected. Men's gender-role attitudes become more egalitarian when they themselves become unemployed or work from home, potentially as a result of their increased participation in household labour. Nevertheless, a deep change in attitudes takes time and needs to be supported by concrete policy action.

Expanded parental leave has been suggested as a possible buffer of the unequal consequences of the pandemic. Yet, as Kleven *et al.* (2019) show, there is no definite evidence that this helps mothers particularly. The literature has instead offered some early evidence on the potential effects of earmarked parental leave on women's labour market participation and earnings. In such schemes, each parent gets allocated a given length of leave, sometimes with a requirement that it has to be taken. Dunatchik and Özcan (2021) use the introduction of a 'daddy quota' – non-transferable paternity leave policies – in Quebec, Canada, as a natural experiment and study its impact on a range of mothers' career outcomes. Mothers were 5 percentage points more likely to participate in the labour force and to work full-time, 5 percentage points less likely to work part-time (relative to a baseline labour force participation of 75%) and 4 percentage points less likely to be unemployed (relative to a baseline unemployment rate of 9.3%, baseline full-time employment of 65% and part-time employment of 33%). Johansson (2010) investigates the effect of parental leave – both own and spousal – on subsequent earnings in Sweden. The results show that spousal leave is important for mothers: every additional month for which the father is on parental leave has a larger positive effect on maternal earnings. Andersen (2018) tests how a father's paternity leave affects the within-

household gender wage gap among heterosexual couples in Denmark. When fathers take longer leave, mothers reduce their own leave and experience wage gains, which, on balance, increases total household earnings. [Drue Dahl *et al.* \(2019\)](#) estimate the causal effect of increasing the earmarked paternity leave of fathers on the relative labour income of women within couples in Denmark. They find that the reform led to shorter maternal leave and an increase in mothers' earnings for up to 8 years after birth.

Much more research is urgently needed on these issues to inform the design of policies to buffer some of the stark inequalities across genders amplified by COVID-19.

6.3. Production-stage policies

6.3.1. Employer-focused active labour market policies. Active labour market policies (ALMPs) are defined as “all social expenditure (other than education) which is aimed at the improvement of the beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity” ([OECD, 2007](#), p. 14). They encompass skill training and certification, employment subsidies, public sector work programmes and assistance with job search and matching with employers and are often administered through Public Employment Services (PES). In many EU countries, ALMPs cost less than 1 percentage point of GDP and cover around 20–40% of people looking for employment ([European Commission, 2016](#)). Yet the evidence on their success is mixed in regard to training and wage subsidies or public work programmes. More consensus exists on the positive effects of job search assistance ([Heckman *et al.*, 1999](#); [Kluve *et al.*, 2002](#); [Card *et al.*, 2010](#); [Kluve, 2010](#); [Caliendo and Schmidl, 2016](#)).

Other 'sectoral training programmes' in the United States have repeatedly been shown to be quite successful. They differ from standard ALMPs in that they are specifically geared towards the needs of the local employers and cooperate tightly with them, including on the design of training. They are managed by community organizations or private agencies; entail training in specific occupational and soft skills; follow up with services after job placement to ensure employees get paid a sufficient wage and closely involve employers ([Kruglaya, 2017](#); [Autor *et al.*, 2019](#)). Examples are Project Quest in San Antonio, Texas; Per Scholas in the Bronx, New York; Madison Strategies Group in Tulsa, Oklahoma and Wisconsin Regional training partnerships in Milwaukee, Wisconsin.

Such successful sectoral training programmes can provide inspiration for more employer-focused ALMPs in Europe, with closer involvement of employers, especially at the local level, to ensure the appropriate training based on the skills needed. Currently, the European PES are the closest analogy to such schemes, but they are in general large public bodies that cannot be as flexible and locally adaptable as may be needed. They are also not directly involved in the design of training programmes and they have weaker links with employers than successful sectoral training programmes. Nevertheless, there are encouraging trends in the right directions ([Rodrik and Stantcheva, 2021](#)).

6.3.2. Business incentives focused on good jobs. Many business incentives today take the form of subsidies for physical investment and new technologies. These are very important policies, but there is some evidence that they may not be the most direct way of helping workers.

In the United States, there are many tax incentives provided by firms in order to attract businesses from other states. They amounted to \$47 billion in 2015 (Bartik, 2020a). Slattery and Zidar (2020) summarize such incentives and find that, on average, their recipients are likely to be large firms in manufacturing, technology and high-skilled service industries. They find some evidence of direct employment gains from attracting a firm, but on balance conclude that there is no ‘strong evidence that firm-specific tax incentives increase broader economic growth at the state and local level’ (p. 91).

On the contrary, Criscuolo *et al.* (2019) study the effects of the Regional Selective Assistance (RSA) programme in the United Kingdom, a system of subsidies mainly targeted at manufacturing to prop up and expand employment in low-income, high-unemployment areas. Firms in the areas covered can submit proposals to the government with specific investment plans and then the government can finance up to a third of selected proposals. The criteria for evaluation explicitly include the creation of new employment or protection of jobs that would otherwise have disappeared – the programme thus directly targets employment, unlike many others. Yet, it still subsidizes spending on physical capital and not direct job creation. The scheme has been found to have significant effects on local employment, especially on the employment of small firms with fewer than 50 employees. The cost per job saved or created (\$3,683 at 2010 prices) is at the lower end of most programmes, including the aforementioned business tax incentives. Cost per job estimates range from \$18,000 for Empowerment Zones in the United States to more than \$68,000 for investment subsidies in southern Italy [see Criscuolo *et al.* (2019) and Online Appendix Table E.1]. Indeed, as Bartik (2020b) writes, ‘cash incentives to encourage local job creation have high costs per job created because it takes a lot of cash to tip a business location or expansion decision’ (p. 117).

Guidance on how to ameliorate business incentives at the regional level comes from Bartik (2020b) and Bartik (2020a). Current systems to improve productivity growth in distressed areas are not very effective for helping workers because they offer significant tax breaks that often mainly benefit large companies and are poorly designed or targeted. Instead, business incentives should focus only on areas that are distressed. Second, if job creation is the goal, such policies need to centre around sectors or firms that have high potential to actually create jobs. Third, tax incentives should not be the main tool. Rather, the focus should be on specific public services needed by firms, such as customized business services, zoning or infrastructure policies, local amenities and skills training. Related to this, business assistance should be taken as a portfolio of services that is adapted to the local conditions. The overall goal is to create a structure for assistance to local firms or potential investors, with a portfolio of services that help them

increase productivity while creating good jobs. Existing networks of agencies or new agencies could take on these roles.

6.3.3. Labour-friendly innovation policies. Contrary to prevailing beliefs, the direction of technological change is not ineluctably determined or exogenous to policy incentives. Tony Atkinson already called for policymakers to pay attention to the direction of policy change. Innovation could potentially be encouraged to augment labour, improve the productivity of workers and help generate good jobs, rather than purely and simply replace labour. This is a relatively understudied area. But there are clear directions for policy makers to explore. First, existing fiscal regimes may be systematically creating an excessive incentive for automation (see Section 6.4). Second, existing tax incentives for R&D and innovation could possibly be made contingent on employment outcomes. Third, when determining which innovation areas to fund, the government could use an ‘employment test’ as a criterion. For example, Artificial Intelligence (AI) systems could potentially complement low and middle skills, rather than only high skills. Fourth, the government can encourage ‘learning organizations’ that empower workers and teamwork; development of cognitive, social and soft skills and workers’ autonomy and continuous learning instead of the Taylorist or ‘lean’ models.

6.4. Post-production policies

Raising sufficient tax revenues has been a perennial challenge, but is particularly binding given the large sums of government funds deployed during the pandemic. In many OECD countries, taxation has gradually shifted from capital to labour, including through social security and payroll taxes. This may be correlated with deepening inequalities, contribute to labour market rigidity and polarization and exacerbate social tensions with feelings of unfairness. More generally, letting the tax gap between capital and labour income grow too wide could cause a range of problems, starting from the creation of incentives to shift income between these tax bases (e.g., pass-through entities incorporating or wages in private businesses being paid out as dividends). In addition, financing the bulk of social programmes (bound to grow due to demographic change and ageing) by labour taxation and social security contributions on labour income, rather than through general taxation on all income, can create an incentive to shift away from labour income, reduce labour market participation, increase labour market duality (e.g., between standard and non-standard employment) and diminish labour productivity and growth. Finally, over the longer run, a disproportionate burden on labour income taxation can create incentives to direct innovation towards labour-substituting technologies and invest more in automation. This can reinforce the shift away from labour (Acemoglu *et al.*, 2020).

To a large extent, this shift has been the consequence of the increasing mobility of capital and corporations with the rise of globalization. Yet pressure to tax better and

more fairly is likely to intensify post-COVID-19. Inequality and polarization have further increased, which will deepen dissatisfaction with globalization and the inequality in treatment of capital and labour incomes. Public tolerance for tax evasion and avoidance is shrinking given the stark demand for revenue generated by the pandemic and the secular rise in public revenue needs stemming from ageing populations and demographic changes. At the same time, there are more opportunities now than in the last decades to tax capital income thanks to the exchange of information between countries as well as improved information technologies and data analytics. Some of the fatalistic views that it is impossible to tax internationally mobile capital and corporations in a globalized world may need to be reconsidered.

6.4.1. Exchange of information and tax cooperation.

6.4.1.1. On capital income There have been major improvements in international cooperation through the Automatic Exchange of Information (AEOI) practices implemented and pushed by the OECD Global Tax Forum, which offer renewed opportunities to tax capital more efficiently and improve compliance. In addition, it may make progressive taxes on capital more conceivable, given the feasibility to track the capital income of a taxpayer across countries.

6.4.1.2. On labour income and people People, like capital, can be internationally mobile. This is especially true for higher-income, highly skilled professionals with non-location-specific human capital. In a review of recent evidence on international tax mobility, [Kleven et al. \(2020\)](#) conclude that preferential tax regimes for foreigners – whereby foreigners coming to the country are given tax breaks for a few years – are widespread. While this may be individually beneficial for a country, it is a beggar-thy-neighbour policy. At the moment, retaliation is not widespread, presumably because the countries with such schemes have relatively high taxes, but there is the possibility of a race to the bottom. Such preferential tax treatments may become more attractive to individual countries if their revenue needs increase, but they nevertheless want to remain attractive destinations for highly skilled foreigners, and if remote work, digital communications, and travel continue to become easier. There is a lot to gain from at least some amount of international cooperation on labour income taxation at the EU level.

6.4.2. Reducing fiscal leakages by reducing avoidance and evasion.

Raising revenues to finance much-needed public spending, particularly after the pandemic, entails not only thinking about tax rates and bases, but also about tax compliance. To reduce fiscal leakages, sufficient resources for tax authorities are needed, so that they can leverage new data analytics and digital tools. Third-party reporting can also be expanded.

6.4.2.1. Expanding third-party reporting Third-party reported income is barely evaded, yet there are income flows not subject to it. Top incomes may have a larger share of

their incomes that are not third party-reported, for example, private business and proprietorship income. [Sarin and Summers \(2020\)](#) propose a way to resolve some of the challenges around private businesses and partnerships. In their proposal, business owners and entrepreneurs with income above a given threshold would be required to report to the tax authority the bank accounts that host their business income. Banks would then act as third parties and be bound to report the flows – deposits and disbursements – on those accounts to the tax authority.

6.4.2.2. Data analytics to identify non-compliance Tax authorities could leverage big data and analytics to improve methods of detecting fraud or mistakes among taxpayers and profit from substantial progress made in predictive algorithms, machine learning and AI. Combined with the tax data available in many countries, these data analytics methods could help track and enforce compliance more cost-efficiently and better allocate the tax authority's scarce time and resources.³

This may go hand in hand with making data available to and cooperating with researchers. Many academic papers on avoidance and evasion by individual taxpayers, small businesses or large corporations identify behaviours and markers for noncompliance that can be used by the tax authority. They also estimate models of taxpayers' or firms' behaviours that can help predict noncompliance.

6.4.2.3. Giving resources to tax enforcement Resources are needed by tax administrations in many countries in order to leverage the aforementioned big data and analytics opportunities. Tax administrations need investment in their technology infrastructure (software and hardware) and advanced analytical capacities, as well as regular training of their staff. [Sarin and Summers \(2020\)](#) lament the outdated information technology of the Internal Revenue Service (IRS). A recently piloted return review programme mentioned by the authors improves the matching of taxpayer filings with information returns to flag and freeze fraudulent refunds and showcases a gigantic 50-1 return, much higher than that of traditional enforcement programmes. Outdated systems are not unique to the United States, so the EU and other developed countries can also learn from this experience.

6.4.3. Corporate taxation and multinational taxation. Sources of revenue shortfall in many countries are the shortcomings in the taxation of corporations, particularly multinationals. In addition, there is a fairness argument in the eyes of many citizens: multinationals and their shareholders are considered not only to have benefited tremendously from globalization, but also to have received extensive government help during

3 For instance, for small- and medium-sized enterprises, it is possible to combine datasets across years and agencies and use predictive models to estimate the expected revenues of businesses, in order to flag those that fall short. Private sector methods (e.g., from finance and private equity) could be used to value even relatively illiquid assets for tax purposes.

COVID-19. The goal is not to just tax ‘foreign’ companies, but also national companies that operate abroad. A company’s ‘nationality’ is complex, as a domestic company can be partially owned by foreigners, whether it operates domestically or not and domestic shareholders can own stock in foreign companies as well.

The important Base Erosion and Profit Shifting initiative by the G20 and the OECD in the Global Tax Forum has produced and pushed a set of recommendations to ensure a better taxation of multinationals. In a nutshell, it is based on two pillars. Pillar 1 focuses on the allocation of taxing rights and aims for the coherence of the profit allocation and tax nexus rules. Pillar 2 – called ‘GloBE’ (Global Anti-Base Erosion) proposal – focuses on multilateral ‘backstop’ rules that would give countries the right to ‘tax back’ in cases where other jurisdictions have not exercised their primary taxing rights, or where the tax payment by the company has been ‘too low’ according to some benchmark. It shares many features with GILTI⁴ implemented by the United States (which would be considered a ‘compliant income inclusion rule’ under Pillar 2, so that both mechanisms can coexist). It is important to not ring-fence ‘digital companies’ in these initiatives. Digital technologies pose particular challenges, but they are not limited to digital companies *per se*, given that many companies now have sizeable shares of digital activities.

These comprehensive initiatives are critical and valuable and should be pushed forward. The EU has to play a major role in being a leader and supporter of this tax cooperation.

6.5. Surveys as a key tool for understanding citizens and designing policies

Implementation of the policies described here will hinge on data collection, experimentation and rigorous evaluation. Data are also needed on what people think. Surveys are a way of getting into citizens’ minds and to elicit perceptions, knowledge, understanding, attitudes and views. Large-scale surveys should become a continuously used, well-designed and interactive policy tool that the government leverages to better understand citizens, as well as employers and companies. They are not simple opinion polls, but rather in-depth studies and scaled-up versions of town halls and direct debates. They can complement the dialog between constituents at different levels, using mobile phone and Internet technologies to rapidly reach a large and diverse set of people. They can also help give a voice to citizens who may otherwise not always be heard. As an iterative policy design and test tool, surveys can be used to collect valuable input and feedback from constituents, test reform ideas, detect implementation challenges and study the impacts of policies in real time.

It will be key for such surveys to have a serious reputation, with a regular and predictable schedule, as well as the sense that views will be heard, even if not all

4 Global intangible low-taxed income.

directly implemented. This, too, is an area in which the involvement of researchers can be very fruitful. Indeed, this approach has been deployed to a variety of issues by researchers, as exemplified by the studies of the Social Economics Lab at Harvard (socialeconomicslab.org).

SUPPLEMENTARY DATA

Supplementary data are available at *Economic Policy* online.

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