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Should We Insure Workers or Jobs During Recessions?

Giulia Giupponi, Camille Landais, and Alice Lapeyre

In the wake of the COVID crisis, labor market policy responses on both sides of the Atlantic have been immediate, absolutely unprecedented in scope—and also diametrically opposed in nature. To put it simply, the focus of the US labor market policy response was on insuring the income of workers against the cost of job losses. This was done by aggressively increasing the generosity of unemployment insurance. In Europe, the emphasis was on preserving the relationship between workers and firms, which translated into generous subsidies for hours reductions and temporary layoffs through short-time work or related schemes.

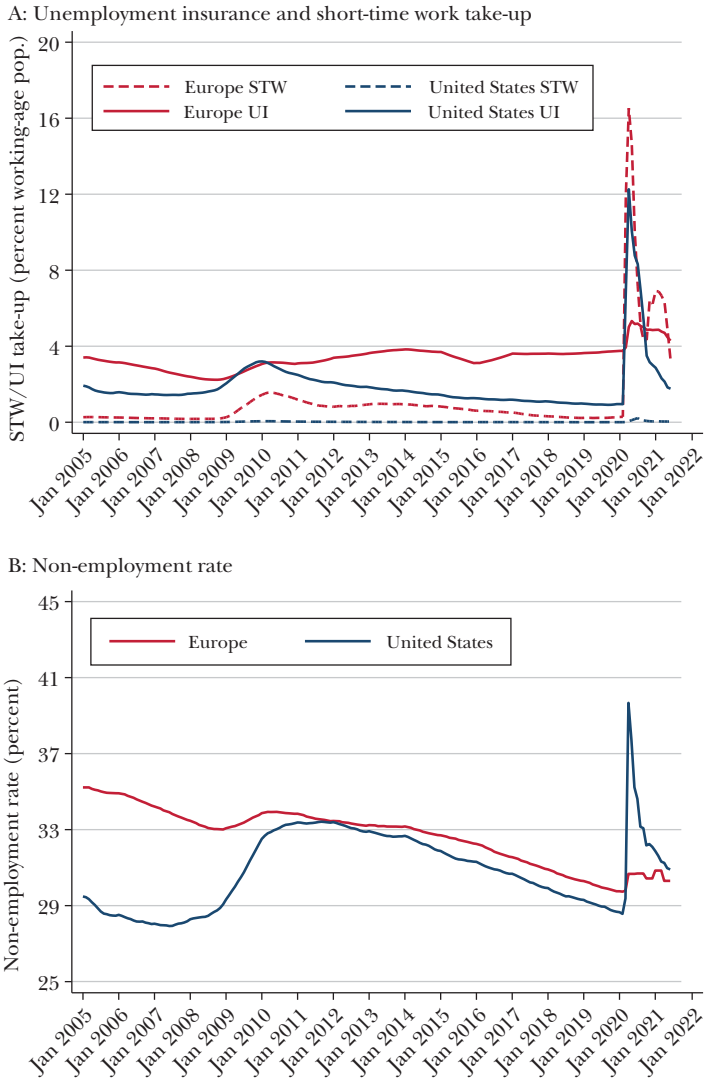
Panel A of Figure 1 gives a visual representation of these polar strategies. In the United States, the fraction of the working-age population on unemployment insurance benefits surged from about 2 to 12 percent in April 2020, and, although it declined very quickly after that, at the end of 2020 it was still higher than at the peak of the Great Recession of 2007–09. If we look at the weighted sum of the four largest European economies—Germany, the United Kingdom, France, and Italy—the increase in the number of unemployment insurance recipients was very limited, but take-up of short-time work skyrocketed, with more than 16 percent of the working-age population enrolled in this type of scheme in April 2020. There was no such increase in short-time work take-up in the US economy, although about 25 US states have operational work-sharing schemes similar to short-time work.

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Figure 1

Labor Market Policy Responses to Recessions and Non-Employment Rates in the United States and Europe



Note: Panel A reports the evolution of short-time work (dashed lines) and unemployment insurance (solid lines) take-up in Europe (red lines) and the United States (blue lines), each computed as the ratio of the number of individuals in the program in a given month, as a percent of the quarterly working age population. The series for Europe is a weighted average of the series for Germany, France, Italy, and the United Kingdom, weighted by the working-age population. Panel B reports the evolution of the non-employment rate—that is, one minus the employment rate (and thus including both the unemployed and those out of the labor force). In both panels, the plotted series are moving averages of the raw series over the period up to June 2021. The moving average is based on twelve lagged terms, one forward term, and uniform weights. Data on employment come from OECD. Data on short-time work and unemployment insurance take-up come from the OECD and national statistics. See Online Appendix C for details on data sources and the construction of short-time work/unemployment insurance take-up.

Some consequences of these opposite labor market strategies on non-employment rates are laid bare in Panel B. While the US economy experienced a spike in non-employment, and continued to see high rates of non-employment in late 2020, employment rates did not bulge in Europe despite the severity of the shock. Interestingly, the much larger cyclicality of the US labor market relative to that of European countries was already visible in past recessions, during which Europe already experimented, although to a much lower degree, with short-time work usage. Do US policymakers get it right by focusing their labor market policy response to recessions on insuring workers through unemployment insurance? Or should they use more short-time work and focus more on preserving jobs, as in Europe?

Addressing these questions is complicated by the remarkably small attention devoted to short-time work relative to the sprawling literature on unemployment insurance—an imbalance we hope to remedy.

Short-Time Work and Unemployment Insurance

Some Institutional Features

While most people are familiar with unemployment insurance policies, short-time work schemes are not as well-known. How do they work in practice? What countries use them and how long have they been in place? How do they compare with unemployment insurance in terms of generosity, coverage, or eligibility? Let us start by clarifying a bit the institutional background.

Short-time work—also known as short-time compensation, work sharing, or shared-work programs—is a subsidy for temporary reductions in the number of hours worked in firms experiencing temporary drops in demand or production. Short-time work programs allow employers facing temporary shocks to reduce their employees' hours instead of laying them off. The program provides a subsidy to employees put on reduced hours (that is, put on short-time work) equivalent to a fraction of their lost earnings. Short-time work cushions the adverse effect of reductions in business activity on both firms and workers, averting the risk of layoffs and insuring workers against the cost of drops in hours worked. Unemployment insurance programs, instead, provide a temporary subsidy to laid-off workers who lost their job through no fault of their own. Hence, while both programs provide insurance against labor market shocks, short-time work programs insure job matches against temporary hours reductions, while unemployment insurance insures workers against job loss. We now provide a general description of the features of both programs.

Several European countries and US states have short-time work schemes in place.[1] Whilst different schemes are characterized by different requirements and generosity, they all share a common feature in that the application process must be initiated by

[1] At the time of writing, 25 states are operating active programs in the United States: Arizona, Arkansas, California, Colorado, Connecticut, Florida, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Washington, and Wisconsin. Vermont ceased to operate its short-time work program on July 1, 2020.

the employer, who must submit an application to the relevant administrative agency. If successful, the application grants a number of subsidized hours of short-time work that can be used by the firm. Workers' subsidies are computed as a percentage of the earnings lost due to hours not worked, typically up to a cap. The disbursement of the subsidy is usually advanced to the worker by the firm, who is subsequently reimbursed by a social insurance administration via lower contribution payments. In exceptional cases, the social insurance agency pays the subsidy directly to the worker. Short-time work schemes are usually funded through a combination of social insurance contributions—paid by eligible firms and workers—and an experience rating component, paid only by those firms and workers that benefit from the program.

Short-time work regulations can include *work-sharing requirements*, specifying a minimum and/or maximum hours reduction, a minimum number of employees or share of the workforce to be involved in the program, and how hours reductions should be distributed across the workforce. In the majority of countries, there is no maximum hours reduction per worker, meaning that short-time work can cover both partial and full hours reductions (that is, down to zero hours worked). In the United States, instead, work weeks must be reduced by at least 10 percent and no more than 60 percent to benefit from the program.

Eligibility requirements set the conditions under which employers or employees can take part in the scheme. For employers, the main requirement is proof of economic need, such as a reduction in business activity above a certain threshold. In some countries, access to the program is restricted to firms operating in certain sectors of the economy or with size above given thresholds. An agreement with union representatives can also be required. To be eligible for short-time work, workers are typically required to have been employed and contributing to social insurance for a minimum amount of time. Some short-time work schemes do not cover workers on temporary contracts.

Conditionality requirements for employers can include the prohibition of dismissals and the development of a recovery plan, while for workers, either training or job search requirements could be in place.[2]

Unemployment insurance provides temporary financial assistance to eligible unemployed workers who become unemployed through no fault of their own. To receive unemployment insurance, laid-off workers must file a claim with the relevant administrative agency. To be eligible, a worker is typically required to have worked for a minimum amount of time, and in some cases to have earnings above a certain threshold. Workers on fixed-term contracts are usually not covered by unemployment insurance once their contract expires. If eligible, the unemployed worker receives an unemployment benefit in cash for a given amount of time. Benefits are defined as a fraction of recent earnings, usually up to a cap, with a replacement rate that is in most cases lower than that of short-time work at zero hours (and the more so at partial hours). The disbursement of unemployment benefits is made directly to the worker by the social insurance agency, typically ensuring swift payments. To retain their

[2]For a comprehensive illustration of short-time work schemes in OECD countries, see Hijzen and Venn (2011).

benefits, unemployed workers may need to fulfill job-search and availability-to-work requirements—features aimed at ensuring that recipients do not become inactive.

Whilst in their purest form, as we have described them so far, short-time work and unemployment insurance are polar schemes insuring jobs on the one hand and workers on the other, in practice there exists a continuum of more nuanced labor market policies between those two extremes. Taking the United States as an example, workers can qualify for unemployment insurance both when on permanent and temporary layoffs. Temporary unemployment—also called "recall" unemployment—is a situation in which an employer lays off a worker or a group of workers but plans to rehire them by a given date. In this circumstance, the worker is eligible for unemployment benefits and job search requirements are usually waived. Employers also have the option to put full-time employees who work less than full time during a pay period due to lack of work on partial unemployment insurance. In this case, workers are eligible for partial unemployment benefits, provided that they do not earn more than a maximum amount of labor income per week. Apart from this, eligibility conditions for partial unemployment insurance are usually identical to those for full unemployment insurance.

We can therefore think of there being a spectrum of policies offering different types of flexibility to employers: from short-time work for partial hours reductions offering only intensive margin flexibility, to short-time work at zero hours and partial unemployment offering both intensive and extensive margin flexibility, to recall unemployment offering only flexibility at the extensive margin. Besides differences in flexibility, the programs also insure different shocks and, consequently, are characterized by different types of moral hazard responses. On the one hand, programs that ensure intensive-margin adjustments tend to insure job matches: they trigger moral hazard responses on the employer side, because employers may have incentives to rely excessively on subsidized hours reductions. This possibility is especially relevant in contexts—like European countries—in which short-time work is only mildly experience-rated. On the other hand, unemployment insurance schemes insure workers rather than jobs and trigger moral hazard responses in the form of lower job search effort exerted by the unemployed.

It is worth noting that, whilst at first sight short-time work and partial or recall unemployment might seem to serve the same insurance needs, they are fundamentally different in how they affect employers' commitment to retain workers. The possibility to make take-up conditional on the prohibition of dismissal is a key advantage of short-time work programs compared to partial or recall unemployment. For these, it is hard to envisage a mechanism whereby firms are held to their commitment to retain or recall workers, since such a commitment can neither be monitored nor enforced.

Short-Time Work and Unemployment Insurance During the COVID Crisis

At the onset of the COVID crisis, the United States responded to the sudden labor market freeze and historical surge in layoffs by aggressively extending the generosity of unemployment insurance. In particular, the Coronavirus Aid, Relief, and Economic Security (CARES) Act signed into law in March 2020 granted i) additional payments

to everyone who qualified for unemployment benefits; ii) an extension to individuals who would have otherwise exhausted their benefits; and iii) eligibility to self-employed and gig workers. Specifically, the CARES Act authorized Federal Pandemic Unemployment Compensation, in which unemployment benefits were increased by $600 a week from March to July 2020. Moreover, the CARES Act was complemented by two additional stimulus packages in 2021—the Consolidated Appropriations Act (January) and the American Rescue Plan (March)—both of which extended the unemployment insurance measures put in place by the CARES Act.

European countries, on the contrary, responded through short-time work or related schemes. In April 2020, the European Union announced that it would provide financial assistance for up to €100 billion to EU countries to develop or expand short-time work schemes.[3] The majority of OECD countries had a short-time work program in place prior to the COVID crisis: *Activité Partielle* in France, *Kurzarbeit* in Germany, and *Cassa Integrazione Guadagni* in Italy. Several of those who did not have a scheme in place introduced it (as in Hungary and the United Kingdom), and most of those with existing short-time work schemes implemented measures to ensure rapid access to and wide take-up of the program. Combinations of such measures have been necessary for short-time work schemes to work swiftly and effectively (Giupponi and Landais 2020a).[4]

Insurance versus Moral Hazard

Let us imagine that, in the midst of recession, we decide to increase the generosity of social insurance by $1. Should this $1 be put into more generous unemployment insurance or into more generous short-time work?

To approach the choice between unemployment insurance and short-time work, our starting point is the standard trade-off that both policies have to solve between providing insurance to workers against labor market shocks and distorting the behaviors of firms and workers (Baily 1978; Chetty 2008). Indeed, the goal of both policies is to provide insurance against labor market shocks. For unemployment insurance, the shock is the cost of being unemployed. For short-time work, it is the cost of having to reduce working hours when a firm is hit by a negative shock.

Providing such insurance is likely to be socially desirable, as it transfers money to individuals who have lower income and consumption. But transferring $1 to these individuals will cost more than $1 because these policies also tend to distort behaviors, a problem often called moral hazard. Individuals will search less actively for a new job when they have unemployment insurance and will cash benefits for longer as a result. Firms may reduce hours more than otherwise necessary if their

[3]For more details on the Support to mitigate Unemployment Risks in an Emergency (SURE) program, see https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/funding-mechanisms-and-facilities/sure_en.

[4]Online Appendix A provides an overview of measures that have been put in place during the COVID crisis to facilitate access to short-time work. See also Scarpetta et al. (2020) for an overview of short-time work schemes during COVID in OECD countries.

workers receive short-time work benefits. From the perspective of the government, these changes in behavior increase the cost of providing such insurance benefits. We say that moral hazard creates a fiscal externality on the government.

What do we know about the respective moral hazard costs of unemployment insurance and short-time work schemes? And which program is better at providing insurance?

Willingness to Pay for Unemployment Insurance versus Short-Time Work Benefits

The value of any form of social insurance against labor market shocks depends on how workers value insurance (that is, the extent of their risk aversion) as well on whether workers have access to alternative means of consumption smoothing (self-insurance). Estimating this value poses challenges. Given that both unemployment insurance and short-time work are mandated by the government, one cannot simply look at a market price to measure workers' willingness-to-pay for insurance against labor market shocks.

In general, the research literature has devoted relatively little attention to this problem. The literature has mostly focused on measuring consumption dynamics around labor market shocks like job loss (for example, Gruber 1997). This approach usually finds significant but small consumption responses, which in turn translate into a moderate value of social insurance. Recent research using alternative revealed-preference methods (for example, Hendren 2017; Landais and Spinnewijn 2021) suggests instead that the value of insurance against unemployment shocks is much larger than previously thought, but is also strongly heterogeneous across individuals.

For present purposes, the key question is how the insurance value of short-time work compares to that of unemployment insurance. The evidence on this point is limited. However, two elements indicate that the value of unemployment insurance may be somewhat larger than the value of short-time work.

First, recipients of short-time work and recipients of unemployment insurance are often quite distinct populations. For example, Germany is a country where both generous unemployment insurance and short-time work are available. We exploit newly collected data starting in May 2020 from the High-frequency Online Personal Panel Survey (HOPP), a longitudinal survey launched by the German Institute for Employment Research (Haas et al. 2021). It shows unambiguously that during the COVID crisis, short-time work tended to protect mostly insiders, individuals with higher incomes and better self-insurance options. Unemployment insurance, to the contrary, was mostly protecting the outsiders of the labor market, like younger individuals at the beginning of their career, or individuals with lower education and fewer means to smooth household consumption (such as the presence of a working partner).[5] As noted by Cahuc and Carcillo (2011), because short-time work tends to protect insiders, it is perhaps not surprising that it tends to be more prevalent in countries with strong employment protection regulations.

Second, the value of insurance is a direct function not only of the availability of self-insurance options, but also of the size of the consumption (or income) shock

[5]For these results and additional details on the HOPP survey, see online Appendix B.

experienced upon transitioning to the program. As shown in Figure 2, short-time work clearly insures smaller shocks. The figure builds on administrative data from Germany (Tilly and Niedermayer 2016) and Italy during the Great Recession of 2007–09 (Giupponi and Landais 2020b), and compares, using an event study design, the evolution of total earnings plus transfers around the onset of an unemployment spell and a spell of short-time work. In both panels, we see that the drop in earnings and transfers is much more severe and persistent for the unemployed than for workers on short-time work. But we also see an interesting difference. In Germany, the earnings of workers who experienced a short-time work spell had fully recovered after three years (Panel A). In Italy, to the contrary, they were still 30 percent lower than the year before entering short-time work, and they were converging to the level of earnings of workers having experienced an unemployment shock instead (Panel B). The main explanation for this discrepancy is that the Italian recession was much more protracted, and the shock to firms was therefore much more persistent. This, in turn, reminds us that short-time work tends to insure against temporary shocks, but is less effective at insuring against persistent or permanent shocks: if the shock persists, a firm will not hold onto its workers and will eventually lay them off.

The Relative Moral Hazard Costs of Unemployment Insurance and Short-Time Work

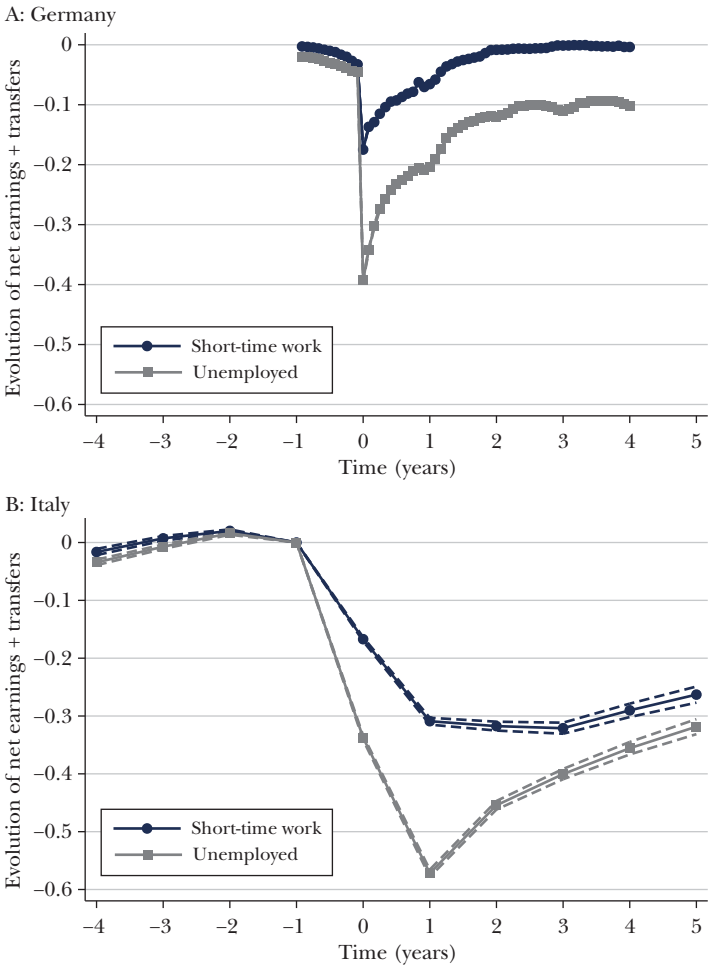
The literature on the moral hazard costs of unemployment insurance is abundant (for example, see Schmieder, von Wachter, and Bender 2016). A main conclusion is that the duration of unemployment spells is strongly responsive to the generosity of unemployment insurance. A smaller literature also investigates the impact of unemployment insurance generosity on the probability of entering an unemployment insurance program, and finds moderate responses. In general, there is less scope for moral hazard along the extensive margin of becoming unemployed (as opposed to the intensive margin of being unemployed for a longer time), as layoffs are well-defined and well-monitored events, and those who quit are quite restricted in their ability to access unemployment insurance in many countries.[6] Overall, the consensus is that the fiscal externality of increasing the generosity of unemployment insurance is relatively large: the cost to the government of an additional $1 of unemployment insurance ranges from $1.50 to $2.50.

Evidence on the moral hazard costs of short-time work is much more limited, but two elements suggest that these costs might be significant. First, while access to short-time work is generally made conditional on firms experiencing economic or financial distress, the definition of distress is not always very precise and can prove hard to enforce, leaving some room for manipulation. Second, short-time work subsidizes hours *reductions*, which requires an effective monitoring of hours actually worked by employees, a notoriously difficult task for government administrators. As a result, the massive extension across Europe during the COVID crisis of access to

[6]Recent papers hint towards layoff date being responsive to discontinuities in eligibility or generosity of unemployment insurance, one potential explanation being workers and firms bargaining over the timing of the layoff: for example, see Khoury (2021) for evidence on France, and Albanese, Picchio, and Ghirelli (2020) for evidence on Italy.

Figure 2

Evolution of Earnings and Transfers Around the Events of Job Loss and Short-Time Work During the Great Recession



Note: The figure reports the evolution of earnings and transfers around job loss (in grey) or around the start of a short-time work spell (in blue). It shows that job loss is associated with a much larger and much more persistent drop in resources than short-time work, implying that the marginal insurance value is likely greater for unemployment insurance than for short-time work. Panel A reproduces estimates from Tilly and Niedermayer (2016) which uses German administrative data from the Institute for Employment Research (IAB). It corresponds to a weighted average of the effect of short-time work and unemployment insurance on income by tenure category using as weights their share in the population. Panel B reproduces estimates from Giupponi and Landais (2020b) and uses administrative data from INPS on the universe of employer-employee matches and social security payments in the private sector in Italy.

short-time work for small businesses, where the difficulty of monitoring hours can be even more acute, has generated fears of a surge in moral hazard.

The existing evidence on the moral hazard costs of short-time work comes almost exclusively from the Great Recession, but it suggests, interestingly, that these

costs are smaller than anticipated. In the context of Italy, for instance, Giupponi and Landais (2020b) identify behavioral responses to short-time work using variation in eligibility rules across firms, and find that for every €1 transferred to a worker on short-time work during the Great Recession, the total cost to the government implied by behavioral responses was around €1.4. In the context of Switzerland, Kopp and Siegenthaler (2021) compared firms who were successful to firms who were unsuccessful in their short-time work application during the Great Recession and find a negative mark-up: in other words, short-time work paid for itself.[7]

What can explain these relatively small (or even negative) fiscal externalities of short-time work, in contrast with the relatively large moral hazard cost of unemployment insurance? First, it seems that, at least during the Great Recession, there was not much manipulation in the reporting of hours worked.[8] Second, it appears that the probability of an individual worker being put on short-time work did not respond significantly to the generosity of short-time work subsidies, at least not during the Great Recession. Figure 3 illustrates this point using a large discontinuity in the short-time work subsidy amount available to workers in Italy at a particular wage threshold. Panel A shows, using Italian administrative data, that the average short-time work subsidy increases by 12 percent at the wage threshold. Yet, there is no sign of discontinuity at the threshold in the probability that a worker is put on short-time work, conditional on being employed by a firm using it (Panel C), nor in the share of potential working hours spent on short-time work conditional on being on reduced hours (Panel E).[9]

Figure 3 also shows evidence of large moral hazard responses to unemployment insurance benefits in the same Italian context (Scrutinio 2018). In Italy, potential unemployment benefit duration is entirely based on age at layoff: workers fired before turning 50 are eligible for eight months of unemployment benefits, while workers fired after turning 50 can receive up to twelve months of benefits (Panel B).[10] Panel D plots the density of layoffs by age in months and shows a sharp response to the increase in benefit duration at age 50, suggesting that workers manipulate their layoff date to obtain more generous benefits. Panel F shows that the average number of weeks on unemployment insurance—that is, the intensity of utilization—increases sharply from 23 to 31 weeks at the threshold (based on evidence from Scrutinio 2018).

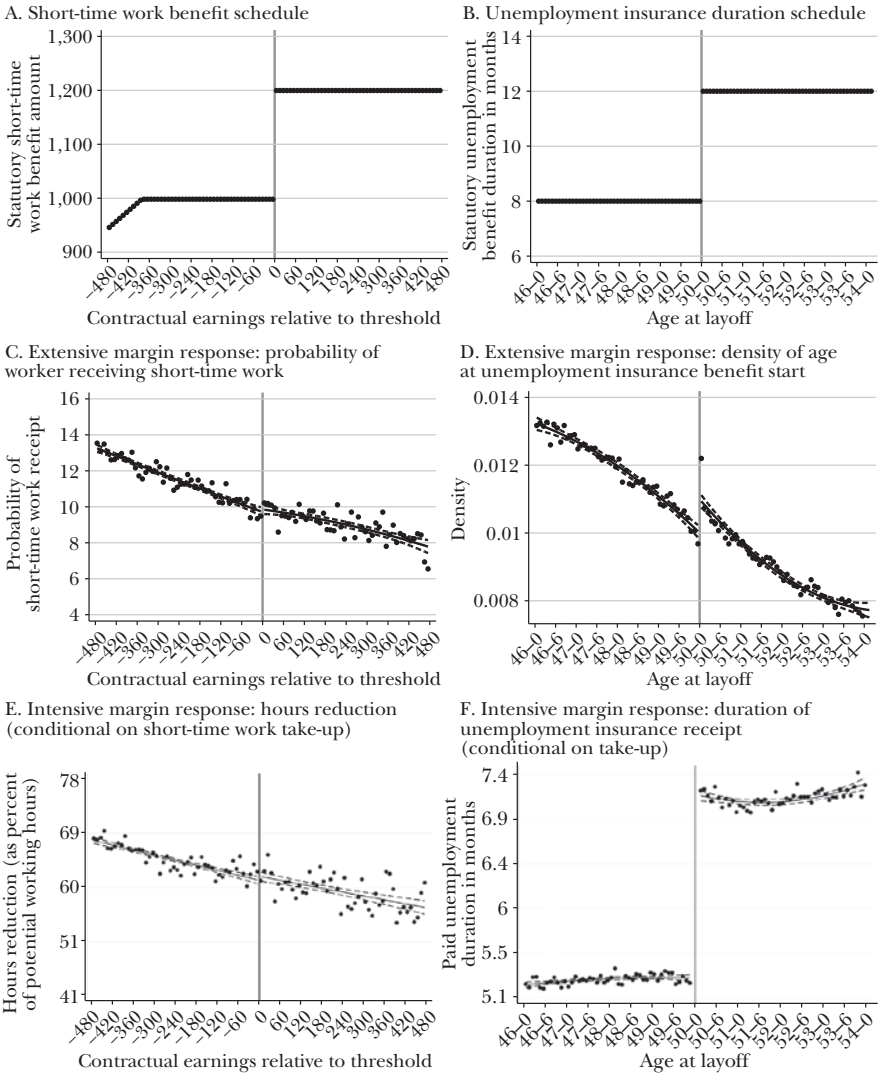
[7]Evidence from Germany shows that, during the Great Recession, the utilization of short-time work was concentrated among large firms hit by the trade collapse (Boeri et al. 2011). The extension of short-time work schemes to smaller firms during the COVID crisis, as well as the much larger scale of utilization of the program, may limit the applicability of evidence on moral hazard from the Great Recession to the COVID one.

[8]Using data on firm balance sheets, Giupponi and Landais (2020b) show that in firms taking up short-time work, value-added per worker fell significantly, and by about the same magnitude as hours per worker. This indicates that reduction in hours upon take-up of short-time work is in large part a real response rather than a reporting response.

[9]In Italy, the amount of short-time work subsidy received by the worker is equivalent to 80 percent of forgone earnings due to hours not worked, up to a cap established by law each year. For example, in 2021, workers with contractual monthly earnings above €2,159.48 can receive benefits up to €998.19. For those with contractual earnings above €2,159.48, the cap is €1,119.72.

[10]The benefit amount is proportional to average wages earned in the three months before layoff up to a cap. Workers receive 60 percent of their average wage for the first six months, 50 percent for the following two months, and 40 percent for the remaining four months, if still eligible.

Figure 3
Short-Time Work versus Unemployment Insurance Generosity and Take-Up



Note: The figure reports a set of regression-discontinuity graphs to illustrate the relationship between short-time work/unemployment insurance generosity and take-up. Left-hand side panels report evidence on short-time work, right-hand side ones on unemployment insurance and are based on Scrutinio (2018). Panel A shows the short-time work benefit schedule as a function of a wage threshold. The benefit amount is based on a 70 percent hour reduction and 2021 short-time work cap parameters. Panel C reports the probability for a worker to be put on short-time work in a given year (pooling years 2011–2014), conditional on being employed in a firm that uses short-time work in that year. Panel E reports the average number of hours a worker spends on short-time work per month (as a percent of total potential working hours), conditional on being on short-time work in that month. Panel B plots unemployment insurance potential benefit duration as a function of a worker's age at layoff. Panel D reports the density of layoffs by age at layoff. Panel F shows the average duration of unemployment insurance in months, conditional on unemployment insurance take-up. Panels C–F are based on Italian Social Security data.

Rigidities or frictions to individual level bargaining within the firm may explain why short-time work take-up does not respond much to variation in the generosity of the subsidy at the individual level. These rigidities in turn can also rationalize why firms' behavior is generally much more responsive to a variation in the firm's rather than the worker's side of the job surplus (Jäger, Schoefer, and Zweimüller 2019). Firms appear to be responsive to how social insurance programs like unemployment insurance or short-time work are financed: for instance, if unemployment insurance is funded by experience-rated premia on firms (that is, firms where more workers claim unemployment insurance pay somewhat higher premia), this tends to reduce layoffs significantly. Time-series evidence also suggests that the take-up of short-time work by firms declines significantly with the tightening of short-time work's experience rating.

The last reason why the fiscal cost of short-time work appears limited, and probably the main reason for it, is that the fiscal cost of short-time work is of course endogenous to the generosity of unemployment insurance. If more generous short-time work prevents layoffs, these positive employment effects mechanically reduce the fiscal cost to the unemployment insurance system, as fewer workers end up collecting unemployment insurance. In turn, the more generous the unemployment insurance system relative to short-time work, the larger will such savings be for the government. This leads us to the central question: does short-time work effectively save jobs? If so, what are the welfare consequences?

Short-Time Work and Job Destruction

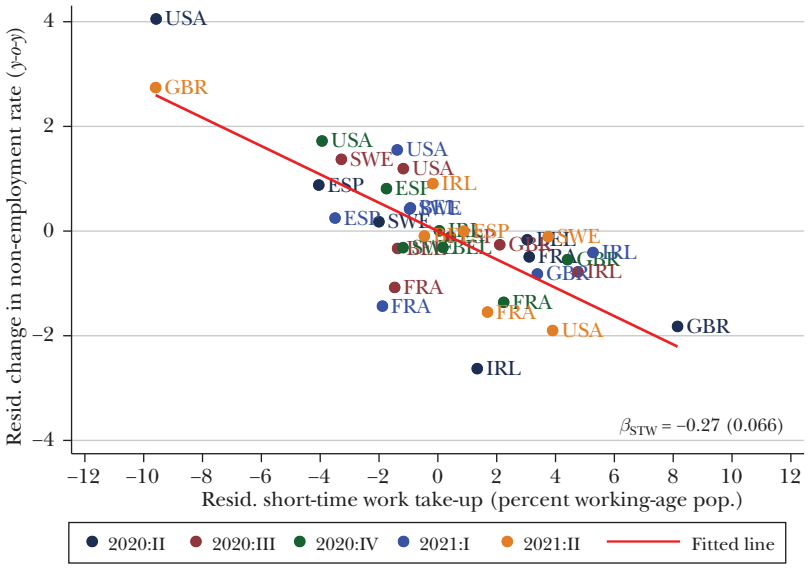
While both unemployment insurance and short-time work offer insurance against labor market shocks, they differ in a fundamental way. Short-time work seeks to preserve labor market matches by subsidizing jobs rather than job-seekers. In other words, short-time work, contrary to unemployment insurance, aims at reducing job separations. It is therefore critical to establish to what extent short-time work effectively saves jobs. Moreover, the social welfare impact of saving jobs will depend on whether separations are *inefficiently* high in recessions to begin with. So let us first review the evidence on the employment effects of short-time work, before delving into the reasons why layoffs may be inefficient and determining whether subsidizing labor hoarding may be socially desirable.

The Employment Effects of Short-Time Work

To determine whether short-time work saves jobs, a natural place to start is to leverage the large variation in short-time work usage during the COVID crisis across countries. Figure 4 provides such a macro perspective and shows the presence of a very robust negative correlation between the fraction of the working-age population that took up short-time work and the evolution of the non-employment rate during the crisis. One additional worker enrolling in short-time work is correlated with .27 fewer workers being non-employed. This strong correlation between employment and short-time work usage echoes time-series and cross-country evidence from previous recessions (for example, Van Audenrode

Figure 4

Short-Time Work Usage and Non-Employment During the COVID Crisis: Cross-Country Evidence



Note: The figure reports a scatter plot of the relationship between the year-on-year change in the quarterly non-employment rate and in the rate of short-time work take-up at the country level. Data are not seasonally adjusted. To remove the seasonal component, we take the year-on-year change—i.e., for a given year-quarter YYQX, we apply the following transformation to the data: $\tilde{x}_{YYQX} = x_{YYQX} - x_{(YY-1)QX}$. Short-time work take-up is computed as the ratio of the number of individuals in the program over the working-age population. For short-time work take-up in 2020 we take the variable in level as take-up was close to 0 in 2019. Outcomes are residualized against year-quarter fixed effects, the year-on-year change in the number of COVID cases (linear and quadratic), and in unemployment insurance take-up. The red line represents the linear fit. The figure reports the slope coefficient and associated standard error (in parentheses), clustered at the country level. Data on employment come from OECD. Data on short-time work and unemployment insurance take-up come from the OECD and national statistics (Scarpetta, Carcillo, and Hijzen 2022). Data on COVID cases come from the Johns Hopkins Coronavirus Resource Center. See online Appendix C for details on data sources and the construction of short-time work/unemployment insurance take-up.

1994; Abraham and Houseman 1993; Boeri et al. 2011; Hijzen and Venn 2011; Cahuc and Carcillo 2011).

Going beyond such correlations is complicated, and direct causal evidence on the employment effects of short-time work is scant.[11] The issue lies in the lack of credibly exogenous sources of variation in short-time work treatment across firms—an issue that will become even more acute for the current recession, as most countries have purposefully extended short-time work access to every firm. This situation severely complicates identification, with no obvious method to control for the selection of firms into short-time work.

[11] Using firm survey and administrative data in Denmark at the onset of the COVID pandemic, Bennedsen et al. (2020) compare actual furlough decisions and counterfactual decisions in the absence of aid. They find that the policy was effective in preserving job matches at the beginning of the pandemic.

Three recent papers focusing on the Great Recession do seek to address these selection problems and provide credible evidence of a positive, strong, and causal relationship between short-time work and employment. Looking at Swiss firms, Kopp and Siegenthaler (2021) compare firms whose short-time work application was granted to similar firms whose application was rejected. The unsuccessful establishments provide a valid counterfactual for the successful ones because approval practices across Swiss cantons are partly idiosyncratic. They find that short-time work prevented a large number of dismissals and significantly reduced the incidence of long-term unemployment.

Looking at French firms, Cahuc, Kramarz, and Nevoux (2021) use the proximity of a firm to other firms that used short-time work in the past as an instrumental variable for short-time work take-up during the Great Recession. As an alternative instrument, they use response-time variation in the administrative treatment of short-time work applications across French departments. They find large and significant employment effects of short-time work treatment.

Finally, looking at data from Italy, Giupponi and Landais (2020b) exploit plausibly exogenous variation in short-time work eligibility rules based on the interaction between industry and firm size. Their approach and main results are presented in Figure 5. The figure shows the evolution of the difference in short-time work take-up between eligible firms and similar counterfactual firms without access to short-time work, around the time of the Great Recession (blue diamonds). The evidence confirms that after the onset of the crisis, the take-up of short-time work among eligible firms surged quickly. The chart further reports the evolution of hours (red triangles) and total employment (purple circles) in eligible firms relative to counterfactual non-eligible firms. It demonstrates that short-time work had large and significant effects on firms' employment at both the intensive and extensive margin. Compared to counterfactual firms, firms treated by short-time work experienced a 40 percent reduction in hours worked per employee, which was met by an increase of similar magnitude in the number of headcount employees. Consistent with the findings of Kopp and Siegenthaler (2021) using Swiss firms, further results show that the employment effects are mostly driven by a reduction in dismissals among firms that would otherwise experience mass layoffs. Interestingly, Giupponi and Landais (2020b) also find no effect of short-time work on the wages of incumbents nor on the wages of new hires.

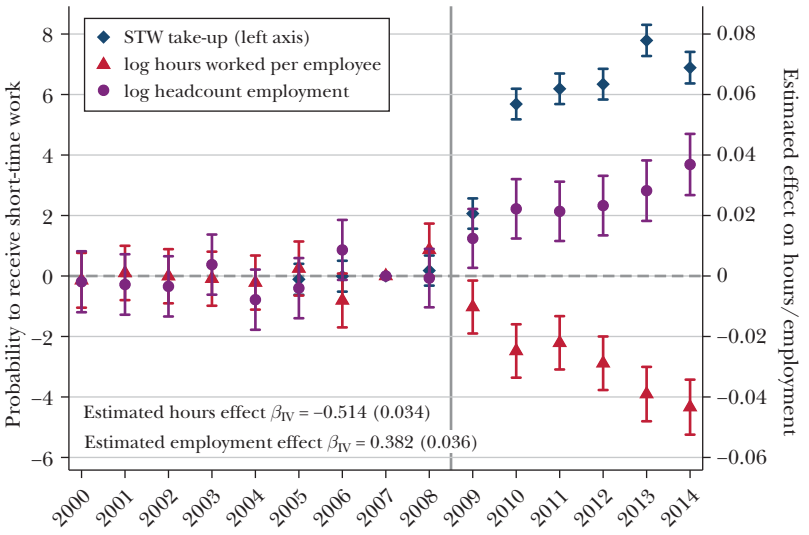
The Welfare Value of Labor Hoarding Subsidies

Overall, short-time work does seem to preserve jobs. But why is that valuable? In other words, why are employment adjustments at the intensive margin (hours reduction) versus extensive margin (layoffs) not equivalent in terms of welfare?

Preserving job matches is valuable for at least three reasons. First, frictions in the labor market, as well as hiring and training costs, make it costly for firms to replace workers and for workers to change jobs. Second, workers may accumulate human capital that is specific to their job, and separations risk destroying this valuable source of idiosyncratic productivity. Finally, unemployment often entails long-run scarring effects for workers (as discussed, for example, by Sullivan and

Figure 5

Employment Effects of Short-Time Work in Italy: Evidence from Quasi-random Eligibility Variation across Firms



Note: The figure reproduces estimates from Giupponi and Landais (2020b) on the effect of short-time work eligibility on the probability of short-time work take-up, the log of hours worked per employee, and the log of employment headcount at the firm level. The graph reports the estimated coefficients and associated confidence intervals (capped vertical bars) from a reduced-form regression of the outcome of interest on an indicator of short-time work-eligibility at the firm level interacted with year dummies. All results are relative to 2007. The graph also reports the instrumental variable coefficient (and standard errors in parentheses) of the effect of short-time work take-up on log hours worked per employee and log employment headcount.

von Wachter 2009). As a consequence, we should observe significant *labor hoarding*: firms and workers should be willing to preserve matches when hit by negative shocks.

But in practice, the socially efficient level of labor hoarding may not be achieved. Liquidity constraints are probably the most obvious and prevalent reason: during a shock, a firm may lack the funds necessary to pay wages and retain its workers. Giroud and Mueller (2017) document that, during the Great Recession, US firms facing higher liquidity constraints, as proxied by pre-crisis levels of leverage, were (all else equal) more likely to reduce employment in response to a consumer demand shock. Of course, employers could try to negotiate temporary wage or hours adjustments with their employees to deal with such liquidity constraints. But bargaining costs and commitment issues may often make such renegotiation impractical. Therefore, wage and hours rigidities may interact with liquidity constraints to amplify the employment response to negative shocks (Schoefer 2016; Jäger, Schoefer, and Zweimüller 2019). Finally, note that generous and imperfectly experience-rated unemployment insurance may also already distort workers' and firms' choices in favor of (socially inefficient) dismissals. As pointed out by Braun and Brügemann (2014), this interaction

between short-time work and the pre-existing distortions caused by unemployment insurance is critical to the welfare analysis of short-time work.

If separations are indeed inefficiently high during recessions because of liquidity constraints and other bargaining frictions, subsidizing labor hoarding can be efficient. Indeed, evidence from Giupponi and Landais (2020b) regarding Italian firms strongly supports this idea. It shows that liquidity-constrained firms, identified using various indicators from balance-sheet data, were much more likely to take up short-time work. Moreover, the treatment effects of short-time work were much more positive for these firms. The number of jobs saved per subsidized hour was significantly larger for them, and so was the effect of short-time work on the probability that the firm survived.

In sum, the liquidity constraint channel seems critical in explaining the excess sensitivity of employment adjustments to productivity shocks and supports the idea of having job match subsidies to correct for inefficiently high separations. Yet two important questions remain.

First, what is the welfare value of saving these jobs? The answer depends on the value of the surplus of the marginal job match saved: the larger the value of a match, the larger the positive welfare effect of preserving it. Unfortunately, this value is an object that is hard to fathom, let alone to measure precisely, and on which there is little consensus in the literature.

Second, why should short-time work be the only way to implement such subsidies? What about other policy instruments? A natural alternative instrument would be "recall" unemployment insurance, under which workers can return to their former employer after a spell on unemployment insurance, thus preserving the job match. But in practice, recall unemployment insurance entails much less commitment to preserving the job match. Furthermore, it lacks the flexibility to insure against partial reductions in hours, a flexibility which can prove effective in addressing financial constraints and in preserving employment. What about direct wage subsidies, or direct provision of liquidity with temporary loans, such as the Paycheck Protection Program in the United States? If liquidity constraints are in fact the main underlying source of inefficiency, tools addressing these financial constraints directly may be more appropriate than short-time work.

But even with these alternatives in mind, two arguments tend to support short-time work. The option of short-time work offers expediency: it can almost immediately provide the funds necessary to cover a firm's payroll. In contrast, dedicated loan programs, as demonstrated by the experience of the US Paycheck Protection Program, can take more time to be activated and for funds to actually reach firms. Short-time work also may offer superior targeting, because it channels liquidity to firms that are willing to reduce their hours, which tends to be an effective screening mechanism. In practice, short-time work selects firms effectively hit by negative shocks, as measured by revenues, labor productivity, or the predicted probability to engage in mass layoffs (Giupponi and Landais 2020b; Kopp and Siegenthaler 2021). This screening property makes short-time work more effective than non-targeted wage subsidies, which can end up subsidizing a lot of non-marginal matches.

Reallocation in the Labor Market

Recessions are times of intense reallocation between workers and firms (Foster, Grim, and Haltiwanger 2016). They are also usually characterized by slackness in the labor market: many workers are searching for jobs while firms demand less labor and post fewer vacancies.

Both short-time work and unemployment insurance affect workers' search effort and firms' labor demand. To assess the social desirability of both programs, we must therefore also factor in how they impact labor market reallocation. We start by focusing on the effect of both social insurance schemes on the overall tightness of the labor market. We then delve into the impact of both policies on the optimal sorting of workers into firms in the labor market.

Social Insurance and the Tightness of the Labor Market

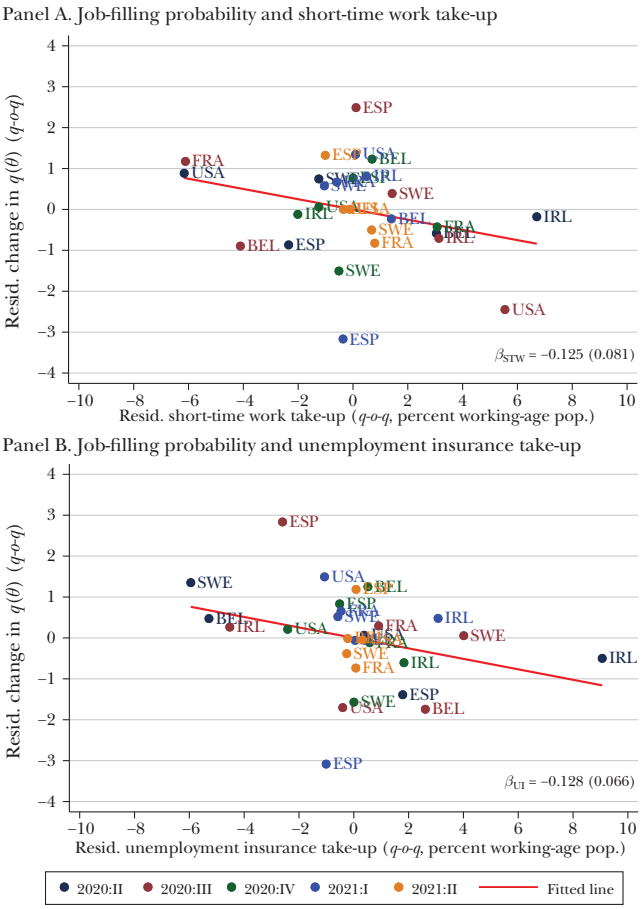
Reallocation in the labor market occurs as workers search for new jobs and firms hire new workers. When there are a lot of workers searching for jobs, it is easy for firms to hire new workers: the labor market is "slack," which is good for firms, but bad for workers. When, to the contrary, there are a lot of vacancies but few workers searching for jobs, the labor market is "tight."

Unemployment insurance and short-time work affect at the same time the aggregate search effort of workers and the incentives for firms to hire new workers: their overall effect on the tightness of the labor market is therefore a priori ambiguous. If generous unemployment insurance increases wages or if short-time work strongly reduces the need for new hires, more generous social insurance might strongly reduce the number of vacancies posted by firms and make the labor market even more slack in recessions, delaying recovery. To the contrary, if labor demand is rigid during recessions and the labor market exhibits job rationing, workers searching for jobs find themselves in a rat race. In such contexts, reducing search effort through more generous unemployment insurance or short-time work can benefit workers by increasing the tightness of the labor market (Landais, Michaillat, and Saez 2018b).

What do the data tell us about the overall effect of unemployment insurance and short-time work on equilibrium tightness? As a starter, we can again exploit the large variation in short-time work and unemployment insurance usage across countries and over time during the recent crisis. For this purpose, we built consistent measures of job-filling probabilities, using the ratio of hires to vacancies. These measures are direct proxies of the slackness of the market: the tighter the market, the harder it is for firms to hire workers, and the lower the job-filling probability as a result. We then correlate the change in job-filling probabilities with the change in short-time work and in unemployment insurance take-up across countries and across quarters during the current recession. Our results, reported in Figure 6, show that short-time work (Panel A) and unemployment insurance (Panel B) both seem negatively correlated with job-filling probabilities (or equivalently positively correlated with labor market tightness) in a recession, which is consistent with the presence of significant job rationing in downturns. The evidence suggests that increasing the

Figure 6

Cross-Country Correlation between Job-Filling Probability and Take-Up of Short-Time Work and Unemployment Insurance



Note: The figure shows how short-time work and unemployment insurance take-up during the COVID crisis correlate with tightness in the labor market. We use the vacancy-filling probability $q(\theta)$ as a proxy for labor market tightness. The higher the vacancy-filling probability, the easier it is for firms to hire workers when opening a vacancy, and the slacker the labor market as a result. Both panels report scatter plots of the relationship between the quarter-on-quarter change in $q(\theta)$ and in the rate of short-time work/unemployment insurance take-up at the country level. Data are not seasonally adjusted. To remove the seasonal component, we take the quarter-on-quarter change—that is, for a given year-quarter YYQX, we apply the following transformation to the data: $\tilde{x}_{YYQX} = x_{YYQX} - x_{YYQ(X-1)}$. Short-time work and unemployment insurance take-up are computed as the ratio of the number of individuals in the program over the working-age population. Outcomes are residualized against year-quarter fixed effects, the quarter-on-quarter change in the number of COVID cases (linear and quadratic), and in the take-up of the other policy instrument. The red line represents the linear fit. The figure reports the slope coefficient and associated standard error (in parentheses), clustered at the country level. Data for European countries come from the Job Vacancy Statistics and Labor Force Survey, and for the United States from the Job Openings and Labor Turnover Survey. For European countries, hires are proxied by recent job starters—i.e., individuals who reported having started their employment in the last three months before the interview. Job openings are restricted to the private sector. Data on short-time work and unemployment insurance take-up come from the OECD and national statistics (Scarpetta, Carcillo, and Hijzen 2022). Data on COVID cases come from the Johns Hopkins Coronavirus Resource Center. See online Appendix C for details on data sources and the construction of short-time work/unemployment insurance take-up.

generosity of short-time work or unemployment insurance in a recession can be an effective way of alleviating the search inefficiencies created by rat-race externalities.

This cross-country evidence is corroborated by a stream of recent papers that identify the impact of social insurance on search externalities and equilibrium tightness using quasi-experimental designs. Lalive, Landais, and Zweimüller (2015) exploit a massive expansion in the generosity of unemployment insurance to a large subgroup of workers in Austria and show that non-eligible workers have significantly higher job finding rates, lower unemployment durations, and lower risk of long-term unemployment as a result. Marinescu (2017) uses job board data and exploits quasi-random variation in unemployment insurance expansions across US states during the Great Recession: she finds that unemployment insurance reduced search effort significantly but did not affect job vacancies, so that tightness went up significantly as a result. Marinescu, Skandalis, and Zhao (2020, 2021) exploit variation in unemployment insurance across US labor markets stemming from the CARES Act and Federal Pandemic Unemployment Compensation (FPUC). Using granular data from the online job platform Glassdoor, they show in both cases that increases in unemployment insurance generosity significantly increased labor market tightness. Finally, using exogenous variation across local labor markets in Italy in their exposure to short-time work, Giupponi and Landais (2020b) find that greater access to short-time work decreases the job finding probability in the labor market, but that the magnitude of the effect is small. Overall, these results confirm that both unemployment insurance and short-time work increase tightness during downturns, and the effect seems to be more pronounced for unemployment insurance.

Of course, the welfare consequences of increasing tightness depend on whether tightness is inefficiently low or high in recessions. Historically, labor markets tend to be very slack during downturns. Michaillat and Saez (2021) offer a general characterization as well as a measure of the efficient level of tightness in the United States. They find that the labor market has been particularly inefficiently slack during past recessions. The intuition is that the social cost of unemployment is very large relative to firms' recruiting costs during downturns. Pushing tightness up and increasing the job-finding probability of workers is then socially desirable: the reduction in the social cost of unemployment greatly outweighs the increased costs of recruiting for firms.

However, evidence from the current crisis suggests that this time *is* different. Looking at the long-run evolution of the average vacancy-filling probability in the United States, it is striking to see that it has remained at a historic low during the crisis. Overall, this recession seems unique: it is a tight recession in the labor market.[12]

Can this sustained level of tightness actually be explained by the large expansion of unemployment insurance generosity and coverage in the United States at the onset of the COVID crisis? Would the situation be different if US policymakers had resorted more to short-time work, which seems to put less upward pressure

[12]For more information on labor market tightness during the pandemic, including figures showing the hires-to-vacancies ratio for the US and various European economies, see online Appendix D. In the US data, the brief surge in the second quarter of 2020 can be entirely explained by early recalls from unemployment.

on tightness? When we consider comparable data for European countries, we find that they have also experienced what appears to be tight labor markets during the pandemic recession, which suggests that the mix of social insurance policies used during the COVID crisis is probably not responsible. But this pattern also implies that there is probably no need to push tightness further up going forward. Exploring the factors behind this uniquely high level of tightness during a slump is important to guide the policy response during the recovery.

Slowing Down Reallocation across Firms and Sectors

Recessions trigger shocks that are asymmetric across firms and sectors. As a result, significant reallocation usually follows in the labor market: workers move away from firms persistently hit by bad shocks and toward more productive job matches, a movement which enhances aggregate efficiency. In recent months, concerns have emerged again on the impact that higher social insurance might have on the pace of this sectoral and firm reallocation (for example, Barrero et al. 2021).

Both unemployment insurance and short-time work have the potential to hinder reallocation, although the mechanism by which they do so differs. In theory, unemployment insurance is a general brake to aggregate reallocation: by lowering the search effort of the unemployed, it can slow the pace at which workers who have been dismissed from lower productivity jobs may move to more productive matches. Short-time work is a specific brake to sectoral/firm reallocation: it discourages workers in firms/sectors that are hit by productivity shocks from reallocating to other firms/sectors by keeping them in their jobs. The extent to which this is problematic for aggregate productivity depends on whether the shock is temporary or permanent: if the shock is permanent, then short-time work may subsidize persistently unproductive matches and hinder reallocation towards more productive job matches.

How serious are these negative reallocation effects of unemployment insurance and short-time work in practice? Regarding unemployment insurance, we know surprisingly little on its overall impact on reallocation and aggregate efficiency in the labor market. For short-time work, evidence from Giupponi and Landais (2020b) on Italian firms sheds some interesting light on its impact on reallocation. It finds that short-time work tends to subsidize persistently low productivity matches, as low productivity firms tend to over-select into short-time work. Italian firms that were already below the median of labor productivity before the onset of the recession were twice as likely to select into short-time work during the Great Recession, and the employment effects of short-time work are also significantly lower for these low productivity firms. Furthermore, exploiting variation across local labor markets, they show that (exogenously) higher exposure to short-time work is significantly and negatively correlated with the employment growth of high productivity firms. In other words, high productivity firms have a harder time growing in a local labor market where low productivity firms have more access to short-time work. While this clearly supports the idea that short-time work slows down reallocation, the magnitude of the estimated effects remains small. However, the level of take-up of short-time work was also much smaller during the Great Recession than in the current crisis, and one

cannot exclude that short-time work may have much stronger negative effects on reallocation in the current recovery.

Further Externalities

Besides inefficient separations and reallocation frictions, it is worth pointing to a few further externalities with which short-time work and unemployment insurance may interact: aggregate demand externalities, fairness, and health.

A usual argument in favor of generous social insurance during recessions relates to their fiscal multiplier effects: unemployment insurance and short-time work transfer money to individuals who tend to have higher-than-average marginal propensities to consume. These high marginal propensities to consume, in turn, may help trigger positive aggregate demand externalities in a slump. A small literature has tried to embed social insurance into New Keynesian models to quantify the size of these multiplier effects (for example, McKay and Reis 2016; Michaillat and Saez 2019; Guerrieri et al. 2020; Kekre forthcoming). How large are these fiscal multiplier effects? Which program commands the larger fiscal multipliers: short-time work or unemployment insurance?

Unemployment insurance, as explained above, tends to insure individuals experiencing larger shocks with lower means to smooth consumption: this suggests that unemployment insurance recipients are likely to have larger marginal propensities to consume. But short-time work, by preserving employment and improving expectations regarding future employment and income, may reduce the need for precautionary savings and thus raise marginal propensities to consume compared to unemployment insurance.

The marginal propensities to consume of recipients of unemployment insurance are large, and significantly larger than those of employed people. Comparing the same individuals over time in Sweden, Landais and Spinnewijn (2021) find that the marginal propensity to consume is around 25 percent higher when unemployed than employed. But much less is known on the marginal propensities to consume of individuals on short-time work. We looked at the data from the German High-Frequency Online Personal Panel Survey (HOPP) mentioned earlier, and elicited marginal propensities to consume following the approach of Jappelli and Pistaferri (2014). We find that the marginal propensities to consume of German short-time work recipients was slightly larger than that of employed workers, but smaller than that of unemployment insurance recipients.[13]

However, moderate differences in marginal propensities to consume between unemployment insurance and short-time work recipients are unlikely to translate into sizeable differences in aggregate demand externalities between these two policies, because the fraction of the labor force receiving unemployment insurance or short-time work is small relative to the size of the employed population. For that

[13] For details and additional discussion, see online Appendix Table B1.

reason, simulations such as in McKay and Reis (2016) suggest that, quantitatively, the stabilization effects of these forms of social insurance are small and second-order.[14]

Fairness appears to be an important institutional tenet in European labor markets (Saez, Matsaganis, and Tsakloglou 2012; Goldschmidt and Schmieder 2017; Saez, Schoefer, and Seim 2019). Fairness concerns suggest that short-time work may prove a more equitable way to insure against labor market fluctuations. If firms avoid layoffs and instead reduce hours of work per worker, the costs of recessions are less concentrated on a small number of workers who suffer large losses in income and other job-related benefits. Interestingly, this argument is often mentioned in the policy debate in countries with strong short-time work programs.

Finally, in the current pandemic, the ability granted by short-time work to flexibly reduce hours of work and keep workers away from the workplace may have had positive health externalities by reducing the spread of the virus.

Conclusion

While very little was known about short-time work schemes and their potential welfare effects, this did not prevent European policymakers from resorting to them aggressively during the COVID crisis. The evidence gathered in this paper and summarized in Table 1 shows they probably did the right thing. The value of insurance provided by short-time work transfers is clearly lower than that of unemployment insurance benefits, but the moral hazard they entail seems more limited than for unemployment insurance, especially when experience-rating of social insurance is limited. Importantly, recent evidence confirms that short-time work can be an efficient and expedient way to attenuate the social costs created by "excess" layoffs in recessions.

But while the policy debate has tended to discuss a choice between short-time work and unemployment insurance, this paper has revealed two important points. First, the frontier between unemployment insurance and partial unemployment or short-time work policies can often be quite tenuous. In other words, in certain circumstances, unemployment insurance schemes can be made to mimic the functioning of short-time work or furlough schemes by maintaining important ties between the unemployed and their employers.

Second, far from being substitutes, these two types of policies exhibit strong complementarities. Unemployment insurance and short-time work do not insure the same types of workers nor the same labor market risks. They do not distort the same margins of behaviors. There are important fiscal spillovers between the two programs, as more generous short-time work reduces the risk of layoffs. Their effects on reallocation in the labor market are also complementary. Short-time work

[14] For social insurance to have large multiplier effects, it would need to have a strong effect on the consumption behavior of the large population of the employed as well. But in practice, the precautionary savings channel (by which employed individuals save less when they have access to more generous social insurance against labor market shocks) seems too small to sustain large aggregate demand externalities.

Table 1
The Welfare Effects of Insuring Workers versus Jobs: A Summary of the Evidence

			Correction of other inefficiencies		
	Value of transfer	*Moral hazard/ fiscal externality*	*Excess layoff*	*Tightness extern.*	*Reallocation*
Short-time work	+	+/-	++	?	-
Unemployment insurance	+ +	- -	?	+	?

Note: The table provides our own summary evaluation of the empirical literature evaluating features of short-time work and unemployment insurance programs that map onto those key elements of welfare analysis. For discussion of the underlying studies, see the text of the paper. The symbols reported in the table refer to the magnitude of the welfare effect for each feature, as per the following legend: (+ +) large positive, (+) positive, (+/-) both positive and negative, (-) negative, (- -) large negative, (?) no evidence.

is an efficient policy to deal with temporary shocks, while unemployment insurance can take care of shocks that end up being more persistent. In countries with already generous unemployment insurance and/or strong employment protection, like European countries, strong cyclical short-time work programs are therefore a valuable complement to unemployment insurance as a policy response to recessions. And, in general, having both programs is a great way to handle any type of recession in the labor market. In other words, we should insure workers *and* jobs during recessions.

But this paper has also emphasized that social insurance critically interacts with equilibrium in the labor market, with important consequences for reallocation and efficiency. On this front, much more research needs to be done. As the current crisis seems to be unique in maintaining high tightness in the labor market, a better understanding of how unemployment insurance and short-time work affect reallocation will be key to determine the optimal policy path for the recovery. Attention should in particular be devoted to determining how unemployment insurance and short-time work should be coordinated with other instruments, such as hiring subsidies, in order to boost labor demand and prevent reallocation issues.

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