Should We Insure Workers or Jobs During Recessions?

Giulia Giupponi Camille Landais Alice Lapeyre *

July 13, 2021

Abstract

What is the most efficient way to respond to recessions in the labor market? To this question, policymakers on both sides of the pond gave two diametrically opposed answers during the recent crisis. In the US, the focus was on insuring workers, by aggressively increasing the generosity of unemployment insurance (UI). In Europe, to the contrary, policies were concentrated on saving job matches, with the massive use of labor hoarding subsidies through short-time-work (STW) programs, on which so little is actually known. In this article, we try to understand who got it right. Building on the vast literature on UI and on a recent stream of papers on STW, we first provide a framework to determine the relative welfare effects of STW versus UI. We then show that UI offers more insurance value than STW, but tends to exhibit larger fiscal externalities, due to moral hazard. We finally focus on how STW and UI affect labor market equilibrium and how this interacts with inefficiencies in the labor market. We review recent evidence showing that STW can be an effective way to reduce socially costly layoffs in recessions. Overall, we conclude that STW is an important and useful addition to the labor market policy-toolkit during recessions, with strong and positive complementarities with UI.

Keywords:

JEL-codes:

*Giupponi: Department of Social and Political Sciences, Bocconi University (email: giulia.giupponi@unibocconi.it); Landais: Department of Economics, London School of Economics (email: c.landais@lse.ac.uk); Lapeyre: Department of Economics, Center for Research in Economics and Statistics (email: alice.lapeyre@ensae.fr). We thank David Autor, Pascal Michaillat, Daniel Reck, Emmanuel Saez, and Johannes Spinnewijn for helpful comments and suggestions. We are grateful to Andrea Salvatori for kindly sharing OECD data on STW take-up. We also thank Nicolas Grimprel and Colombe Ladreit de Lacharrière for excellent research assistance. We gratefully acknowledge support from ERC grant #679704 -DYNAMICSS, STICERD, ESRC, and the INPS "Valeria Solesin" Fellowship. The findings and conclusions expressed are solely those of the authors and do not represent the views of INPS.

Introduction

In the wake of the COVID crisis, labor market policy responses have been immediate, absolutely unprecedented in scope, but also diametrically opposed in nature on both sides of the pond. The United States responded to the sudden labor market freeze and historical surge in layoffs by aggressively extending unemployment insurance (UI) generosity. The Coronavirus Aid, Relief, and Economic Security (CARES) Act 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.[1] European countries, to the contrary, did not do much to adjust their UI policies. But they swiftly responded to the crisis by generously subsidizing hours reductions and temporary layoffs through short-time-work (STW) or related schemes. Under STW schemes, firms can temporarily reduce their labor demand on the intensive margin and decrease the number of hours worked by their employees without severing the employment relationship. The state takes over by subsidizing these reductions in hours and complementing the employees' wage.[2] In April 2020, at the onset of the crisis, the European Union announced that it would provide financial assistance for up to €100 billion to EU countries to help mitigate the consequences of the pandemic on the labor market by developing or extending STW schemes.[3] The United Kingdom also created its own furlough scheme - the Coronavirus Job Retention Scheme - in March 2020. To put it simply, the focus of the labor market policy response in the US was clearly on insuring workers against the cost of job losses. In Europe, the emphasis was on preserving the relationship between workers and firms, on insuring job matches, rather than workers.

Panel A of Figure 1 gives a visual representation of these polar strategies, and an idea of the magnitude of the respective policy responses. In the US, the fraction of the working age population on UI benefits surged from about 2 to 12% 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. In Europe, defined here as a weighted sum of Germany, France, Italy and the UK, the increase in UI recipients was very limited, but STW take-up immediately skyrocketed, with more than 16% of the working age pop-

[1] Under the Federal Pandemic Unemployment Compensation (FPUC), unemployment benefits were increased by $600 a week from March to July 2020. 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 UI measures put in place by the CARES Act.

[2] Online Appendix B provides a description of the main institutional characteristics of STW programs and how they have been used during the COVID crisis.

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

ulation enrolled in such schemes in April 2020. There was no such increase in STW take-up in the US, although more than 26 US states have operational work-sharing schemes similar to STW. The consequences of these opposite labor market strategies on non-employment rates are laid bare in Panel B. While the US experienced a spike in non-employment, and continue 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 STW usage.

Did the US get it right by focusing its labor market policy response to the COVID crisis on insuring workers through UI? Or should they have used more STW, and focused more on preserving jobs, like in Europe? And what are the potential consequences of these polar policy choices for the dynamics of the labor market during the recovery? Will aggressive UI extensions lead to jobless recoveries? Or should we worry more about slower reallocation in Europe because of massive STW take-up?

Providing answers to these questions is complicated by the remarkably small attention devoted to STW, relative to the sprawling literature on UI. An issue this piece intends to remedy.

1 UI or STW? A Simple Framework

To make progress, the first necessary ingredient is a simple and general framework, to clarify the relative welfare gains and costs of increasing the generosity of UI versus STW during recessions. A good starting point is the variational approach abundantly used in the public finance literature: it teaches us that the optimal generosity of a social insurance transfer balances the insurance value of the transfer against its induced fiscal externality (Baily [1978], Chetty [2008]). The insurance (or redistributive) value stems from the fact that, with decreasing marginal utility, it is socially desirable to transfer money to individuals who have been hit by labor market shocks, and have lower income and consumption as a result. But transferring a dollar to these individuals will cost more than one dollar, as moral hazard may induce them to adjust their behavior in a way that is costly to the government: this is the fiscal externality.

Following the same logic, let us imagine, in the midst of recession, to increase the generosity of social insurance by one dollar. Should this dollar be put into more generous UI or into more generous STW? The answer will lie in the comparison of the *relative insurance value* of an extra dollar of UI versus an extra dollar of STW, with the *relative*

fiscal externality of a marginal increase in UI versus STW generosity.[4]

This standard public finance trade-off (also known as Baily-Chetty trade-off) is nevertheless missing a key piece of the puzzle. Its focus is on partial equilibrium, and does not account for firms' behaviors, nor for sources of inefficiencies other than moral hazard. In practice though, social insurance like UI or STW affects both workers' and firms' behaviors, and therefore has an impact on equilibrium in the labor market. These equilibrium effects in turn interact with the many potential sources of frictions that characterize labor markets, such as information asymmetries, market power, wage rigidities, inefficient bargaining, etc. When determining the optimal generosity of social insurance programs, it is therefore necessary to account for interactions between pre-existing distortions and equilibrium adjustments (as done in e.g. Landais et al. [2018b]). More precisely, we need to know (i) the sign and magnitude of pre-existing welfare distortions in the current equilibrium, and (ii) how social insurance affects the equilibrium. Among the important labor market inefficiencies that social insurance may interact with during recessions, three deserve particular attention.

1. Inefficient separations: in the face of productivity shocks, firms and workers may fail to optimally preserve productive job matches, creating an excess sensitivity of separations to labor market fluctuations (e.g. Hall and Lazear [1984], Jäger et al. [2019]). Social insurance may amplify this excess sensitivity by subsidizing separations (UI) or, to the contrary, hamper it by subsidizing labor hoarding (STW).

2. Search inefficiencies: recessions are generally times of slack in the labor market, meaning that there are too few job openings relative to the large number of individuals searching for a job (e.g. Michaillat [2012]). By alleviating counter-productive rat-races for jobs, incentivizing workers to search less may therefore be welfare enhancing.

3. Inefficient reallocation: there is significant reallocation of workers during recessions, as less productive firms downsize or disappear, and workers move towards more productive job matches. By reducing incentives to search for more productive job matches, or by keeping alive less productive matches, UI and STW may delay the efficient reallocation of workers in the labor market.

To determine how much we want to insure workers versus jobs during recessions, we therefore need to account for the relative impact of UI and STW on these three critical

[4]This approach allows to compare the welfare impact of two policies, bypassing the thorny issue of expressing the MVPF in monetary terms for each policy separately. For an application of this logic to the optimal profile of UI benefits, see for instance Kolsrud et al. [2018].

labor market inefficiencies. To sum up, the optimal STW/UI mix is such that, at the margin:

$$\begin{aligned} \text{Relative Value of UI vs STW Transfer} &= \text{Relative Fiscal Externality} \\ &+ \text{Relative Correction of LM Externalities} \end{aligned} \tag{1}$$

With this simple framework at hand, let us now explore what we know empirically about the various terms of that trade-off.[5] Table 1 summarizes the available empirical evidence on those key terms.

2 The Insurance Value of UI & STW

The value of insurance against labor market shocks depends on how workers value insurance (i.e. their risk aversion) as well on whether they have access to alternative means of consumption smoothing (self-insurance). In general, the literature has devoted much less empirical attention to identifying the value of social insurance programs compared to measuring their moral hazard cost. Of course, as both UI and STW are mandated, the absence of insurance choice poses important challenges: one cannot simply elicit the value of insurance against job loss or labor market fluctuations through a direct revealed-preference approach. To get around these difficulties, the literature has mostly focused on measuring consumption dynamics around labor market shocks like job loss (e.g. Gruber [1997]), and usually finds significant but small consumption responses, that translate into a moderate value of insurance. Recent research using alternative revealed-preference methods (e.g. Hendren [2017], Landais and Spinnewijn [forthcoming]) instead suggests that the value of insurance against unemployment shocks is much larger than previously thought, and is also strongly heterogeneous across individuals.

Unfortunately, we know very little about the insurance value of STW specifically and how it compares to UI. But two elements indicate that the value of UI may be somewhat larger than the value of STW.

First, recipients of STW and recipients of UI are quite distinct populations. Online Appendix Table C1, which uses data from the HOPP survey in Germany, a country where both generous UI and STW are available, shows unambiguously that during

[5] We provide a formal treatment of this conceptual framework in Online Appendix A. An important feature of the variational approach is to allow the welfare evaluation of marginal reforms around the current policies. This implies that all statistics in the trade-off are endogenous to both UI and STW: for instance the fiscal externality of STW depends on the generosity of UI. We come back to this important issue in the following sections.

the COVID crisis, STW tended to protect mostly insiders, individuals with higher incomes, and better self-insurance options. UI, to the contrary, was mostly protecting outsiders of the labor market, like younger individuals at the beginning of their career, individuals with lower education and with fewer means to smooth household consumption (such as the presence of a working partner).[6]

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 experienced upon transitioning to the program. As shown in Figure 2, STW clearly insures smaller shocks. The figure builds on administrative data from Germany (Tilly and Niedermayer [2016]) and Italy during the Great Recession (Giupponi and Landais [2020]), and compares, using an event study design, the evolution of total earnings plus transfers around the onset of an unemployment spell and a STW spell. 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 STW. But we also see an interesting difference between the two panels. In Germany, the earnings of workers who experienced a STW spell had fully recovered after three years. In Italy, to the contrary, they were still 30% lower than the year before entering STW, and they were converging to the level of earnings of workers having experienced an unemployment shock instead. 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 STW tends to insure against temporary shocks, but is less effective at insuring against permanent shocks: if the shock persists, a firm will not hold onto its workers and will eventually lay them off.

3 The Relative Moral Hazard Costs of UI & STW

When social insurance programs like UI or STW are made more generous, it will usually affect both the probability that workers claim these benefits, and how much they claim conditional on being in these programs. If these behavioral responses induce a fiscal externality, this is because of the existence of asymmetric information, that prevents the government from observing all actions of workers and firms, and from designing insurance contracts that are fully conditional on those actions. Hence, it is hard to monitor the search effort of unemployed individuals for instance, or the hours worked by individuals on STW. This in turn gives rise to moral hazard.

The literature on the moral hazard costs of UI is plethoric (Schmieder et al. [2016]). Its

[6] As noted by Cahuc and Carcillo [2011], because STW tends to protect insiders, it is perhaps not suprising that it tends to be more prevalent in countries with strong labor/employment protection regulations.

main conclusion is that the duration of unemployment spells is strongly responsive to the generosity of UI. A smaller literature also investigates the impact of UI generosity on the probability of entering UI, and finds moderate responses.[7] But overall, the consensus is that the fiscal externality of increasing the generosity of UI is relatively large: the cost to the government of an additional dollar of UI ranges from 1.5 to 2.5 dollars.

The evidence on the moral hazard costs of STW is much more limited. A priori, two elements suggest that these costs might be significant. First, while access to STW 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, STW subsidizes hours *reductions*, which requires an effective monitoring of hours worked by employees, a notoriously difficult task for administrations. As a result, the massive extension, during the COVID crisis, of STW access to 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 STW comes almost exclusively from the Great Recession, but suggests, interestingly, that these costs are smaller than anticipated. In the context of Italy for instance, Giupponi and Landais [2020] identify behavioral responses to STW using variation in eligibility rules across firms, and find that for every €1 transferred to a worker on STW during the Great Recession, the total cost to the government implied by behavioral responses was around €1.07. This means that, for the marginal euro spent on STW to be efficient, society should have been willing to pay a mark-up of about 7%. Siegenthaler and Kopp [forthcoming], comparing firms who were successful to firms who were unsuccessful in their STW application during the Great Recession in Switzerland, even find a negative mark-up: in other words, STW paid for itself. What can explain these small (or even negative) fiscal externalities of STW, in contrast with the relatively large moral hazard cost of UI? 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 STW does not respond significantly to the generosity of her STW subsidies. Online Appendix Figure C1 illustrates this point using a large discontinuity in the STW subsidy amount available to workers in Italy at a particular wage threshold. Panel A shows, using Italian administrative data, that the average

[7] There is indeed less scope for moral hazard along the extensive margin of unemployment, as layoffs are well-defined and well-monitored events, and quits have strongly restricted access to UI in many countries.

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

STW subsidy increases by 12% at the wage threshold. Yet, there is no sign of discontinuity in the probability that a worker is put on STW at the threshold. Rigidities or frictions to individual level bargaining within the firm may explain why STW 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 variation in the firm's rather than the worker's side of the job surplus (Jäger et al. [2019]). Evidence shows indeed that firms are responsive to how UI/STW is financed. There is for instance evidence that layoffs decrease when the level of experience-rating of the UI system increases. Time-series evidence also suggests that the take-up of STW by firms declines significantly with the tightening of STW's experience rating.

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

4 How Do UI & STW Affect Inefficiencies in the Labor Market?

4.1 Inefficient Layoffs

STW intends to preserve matches by subsidizing jobs rather than job seekers. It is therefore critical to establish to what extent STW effectively saves jobs. But if it does, the welfare impact will of course depend on whether separations are *inefficiently* high in recessions to begin with. So let us first review the evidence on the employment effects of STW, before delving into the reasons why layoffs may be inefficient, and determining whether subsidizing labor hoarding may be socially desirable.

The Employment Effects of STW To determine whether STW effectively saves jobs, a natural place to start is to leverage the large variation in STW usage during the COVID crisis across countries. Figure 3 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 STW and the evolution of the non-employment rate during the crisis. One additional worker enrolling in STW is correlated with .34 fewer

workers being non-employed. This strong correlation between employment and STW usage echoes time-series and cross-country evidence from previous recessions (e.g. Van Audenrode [1994], Abraham and Houseman [1993], Boeri and Bruecker [2011], Hijzen and Venn [2011], Cahuc and Carcillo [2011]).

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

However, three recent papers focusing on the Great Recession address these selection problems and provide credible evidence of a positive, strong and causal relationship between STW and employment. Siegenthaler and Kopp [forthcoming] compare Swiss firms whose STW application was granted to similar firms whose application was rejected. The unsuccessful establishments provide a valid counterfactual for the successful ones because cantonal approval practices are partly idiosyncratic. They find that STW prevented a large number of dismissals, and significantly reduced the incidence of long term unemployment. Cahuc et al. [2021] instrument STW take-up among French firms using the proximity to other firms that used STW before the recession. As an alternative instrument, they use response-time variation in the administrative treatment of STW applications across French departments. They find large and significant employment effects of STW treatment. Finally, Giupponi and Landais [2020] exploit plausibly exogenous variation in STW eligibility rules across Italian firms based on the interaction between industry and firm size. Their approach and main results are presented in Figure 4. Panel A starts by showing, around the time of the Great Recession, the evolution of the difference in STW take-up between eligible firms and similar counterfactual firms without access to STW. The figure confirms that after the onset of the crisis, the take-up of STW among eligible firms quickly surged. Panel A further reports the evolution of hours and total employment in eligible firms relative to counterfactual non-eligible firms. It demonstrates that STW had large and significant effects on firms' employment at both the intensive and extensive margin. Compared to counterfactual firms, firms treated by STW experienced a 40% 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 Siegenthaler and Kopp [forthcoming], 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 [2020] also find no effect of STW on the wages of incumbents, nor on the wages of new hires.

The Welfare Value of Labor Hoarding Subsidies Overall, recent evidence confirms that STW does preserve jobs. But why is that valuable? 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 obvious 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 (e.g. Sullivan and 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 frictions may prevent socially efficient hoarding in practice leading to too many separations. Among these frictions, liquidity constraints are probably the most obvious and prevalent ones: a firm may lack the funds necessary to pay wages and retain its workers in the face of a temporary shock. Giroud and Mueller [2017] for instance document that during the Great Recession, 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 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. Wage and hours rigidities may therefore interact with liquidity constraints to amplify the employment response to negative shocks (Schoefer [2016], Jäger et al. [2019]). Finally, note that generous and imperfectly experience-rated UI may also already distort workers' and firms' choices in favor of (socially inefficient) dismissals.[9]

If separations are indeed inefficiently high during recessions because of liquidity constraints and other bargaining frictions, subsidizing labor hoarding can be efficient. Evidence from Giupponi and Landais [2020], reproduced in Panel B of Figure 4, 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 STW. Moreover the treatment effects of STW 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 STW on the probability for the firm to survive.

In sum, the liquidity constraint channel seems critical in explaining the excess sensitivity of employment adjustments to productivity shocks, and supports the idea of

[9]This interaction between STW and the pre-existing distortions caused by UI is for instance central to the welfare analysis of STW in Braun and Brügemann [2014].

having job match subsidies to correct for inefficiently high separations. Yet two important questions remain.

First, what is the exact 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 precisely measure, and on which there is little consensus in the literature.

Second, why would STW be the only way to implement such subsidies? What about other policy instruments? Could they not address such inefficiencies? A natural alternative instrument would be "recall" UI for instance. By allowing workers to get back to their former employer after a UI spell, recall UI can prevent the job match to be severed, and can offer similar benefits to STW. Yet, recall UI entails in practice much less commitment to preserving the job match. Furthermore, contrary to STW, it does not have 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 US? If liquidity constraints are in fact the main underlying source of inefficiency, tools addressing these financial constraints directly may be more appropriate than STW. Yet, two arguments can play in favor of STW: expediency and targeting. Expediency because STW can almost immediately provide the funds necessary to cover a firm's payroll, while dedicated loan programs, as demonstrated by the experience of the PPP, can take more time to be activated, and for funds to actually reach firms. Targeting because STW channels liquidity to firms that are willing to reduce their hours, which tends to be an effective screening mechanism. In practice, evidence shows that STW 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 [2020], Siegenthaler and Kopp [forthcoming]). This screening property makes STW more effective than non-targeted wage subsidies, that can end up subsidizing a lot of non-marginal matches.

4.2 Search Inefficiencies

Recessions are times of intense reallocation between workers and firms (e.g. Foster and Haltiwanger [2016]). They are also usually characterized by slackness in the labor market: many workers are searching for jobs and firms post few vacancies. This slackness can be socially inefficient: if jobs are rationed, search can become a rat race (Michaillat [2012], Landais et al. [2018b]). Because they impact workers' search effort

and firms' labor demand, both STW and UI affect labor market tightness and, in turn, interact with search inefficiencies. The welfare consequences of such interactions will depend on (i) the direction and magnitude in which UI and STW affect tightness, and (ii) on how inefficiently tight or slack the labor market is to begin with.

Let us review what we know about the first point. As it turns out, it is a conceptually thorny issue. The direction in which equilibrium tightness responds to the generosity of social insurance is indeed theoretically ambiguous. A priori, if during recessions labor demand is rigid and the labor market exhibits job rationing, this will lead to rat-race externalities. In such contexts, reducing search effort through more generous UI, or reducing the number of unemployed looking for jobs through generous STW, can increase tightness. But if generous UI increases wages (as in the standard Diamond-Mortensen-Pissarides framework with wage bargaining) or if STW strongly reduces the need for new hires, more generous insurance might reduce the number of vacancies posted by firms, and make the labor market even more slack in recessions, delaying recovery (Landais et al. [2018b]).

In the end, it is therefore mostly an empirical question. So what do the data tell us about the impact of UI and STW on equilibrium tightness in practice? As a starter, we can again exploit the large variation in STW and UI usage across countries and over time during the recent crisis. For this purpose, we built consistent measures of job-filling probabilities, as 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 STW and in UI take-up across countries and across quarters during the current recession. Results, reported in Figure 5, show that increases in both STW and UI usage are correlated with a decline in the job-filling probability. In other words, STW and UI both seem to increase labor market tightness in a recession, which is consistent with the presence of significant job rationing in downturns. The effect of UI on tightness appears much stronger, though, than that of STW, implying that increasing the generosity of UI in a recession is a much more effective way of alleviating 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 et al. [2015] exploit a massive expansion in the generosity of UI to a large subgroup of workers in Austria and show that non-eligible workers have significantly higher job finding rates, lower unemployment durations, and a lower risk of long-term unemployment as a result. Marinescu [2017] uses job board data and exploits quasi-random variation in UI expansions across states in the US during the Great Recession: she finds that UI reduced search effort significantly

but did not affect job vacancies, so that tightness went up significantly as a result. Marinescu et al. [2020] and Marinescu et al. [2021] exploit variation in UI across labor markets stemming from the CARES Act and the Federal Pandemic Unemployment Compensation (FPUC). Using granular data from the online job platform Glassdoor, they show in both cases that increases in UI generosity significantly increased labor market tightness. Finally, using exogenous variation across local labor markets in exposure to STW, Giupponi and Landais [2020] find that greater access to STW decreases the job finding probability in the labor market, but that the magnitude of the effect is small. So overall, these results confirm that both UI and STW increase tightness during downturns, and the effect seems to be more pronounced for UI.

Now, the welfare consequences of increasing tightness depend on whether tightness is too low or too high in recessions. Historically, labor markets tend to be very slack during downturns. Michaillat and Saez [2020] offer a general characterization as well as a measure of the efficient level of tightness (or relatedly of the Beveridgean unemployment gap) in the US and 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 US in Online Appendix Figure E3, it is striking to see that it has remained at a historic low during the crisis. There was clearly a brief surge in the second quarter of 2020, but this short episode can be entirely explained by early recalls from unemployment. Overall, this recession seems unique: it is a tight recession in the labor market. Can this sustained level of tightness actually be explained by the large expansion of UI generosity and coverage in the US at the onset of the COVID crisis? And would the situation be different if the US had resorted more to STW, which seems to put less upward pressure on tightness? As shown in Online Appendix Figure E4, it seems that European countries have also experienced a tight recession, which suggests that the mix of social insurance policies used during the COVID crisis is probably not responsible for the current tension in the labor market. But this implies that there is probably no need to push tightness further up going forward. And exploring the factors behind this uniquely high level of tightness during a slump is important to guide the policy response during the recovery.

4.3 Reallocation Inefficiencies

Recessions trigger shocks that are asymmetric across firms and sectors, and that are heterogeneous in their persistence. As a result, significant reallocation usually follows in the labor market: workers move away from firms persistently hit by bad shocks, towards 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 (e.g. Barrero et al. [2021]).

Both UI and STW have the potential to hinder reallocation, although the mechanism by which they do so differs. In theory, UI 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. STW is a specific brake to sectoral/firm reallocation: it prevents workers in firms/sectors that are hit by productivity shocks to reallocate to other firms/sectors by keeping them in their jobs. How problematic that is for aggregate productivity depends on whether the shock is temporary or permanent: if the shock is permanent, then STW may subsidize persistently unproductive matches and hinder reallocation towards more productive job matches.

How serious are these negative reallocation effects of UI and STW in practice? Regarding UI, we know surprisingly little on its overall impact on reallocation and aggregate efficiency in the labor market. As far as STW is concerned though, evidence from Giupponi and Landais [2020] sheds some interesting light on its impact on reallocation. First, it confirms that STW tends to subsidize persistently low productivity matches, as low productivity firms tend to over-select into STW. As shown in Panel B of Figure 4, firms who were already below the median of labor productivity before the onset of the recession, were twice as likely to select into STW during the Great Recession in Italy. As the figure shows, the employment effects of STW are also significantly lower for these low productivity firms. Furthermore, exploiting variation across local labor markets, they show that (exogenously) higher exposure to STW 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 STW. While this clearly supports the idea that STW slows down reallocation, it is important to note that the magnitude of the estimated effects remains small. However, the level of take-up of STW was also much smaller during the Great Recession than in the current crisis, and one cannot exclude that STW may have much stronger negative effects on reallocation in the current recovery.

4.4 Further Externalities

Besides the three main sources of labor market inefficiencies discussed above, it is worth pointing to a few further externalities that STW and UI may interact with.

Aggregate demand externalities A usual argument in favor of generous social insurance during recessions relates to their fiscal multiplier effects: UI and STW transfer money to individuals who tend to have higher than average marginal propensities to consume (MPC). These high MPCs, 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 (e.g. McKay and Reis [2016], Michaillat and Saez [2019], Guerrieri et al. [2020], Kekre [forthcoming],). So how large are these fiscal multiplier effects? And which program commands the larger fiscal multipliers: STW or UI?

UI, as explained above, tends to insure individuals experiencing larger shocks, and with lower means to smooth consumption: this suggests that UI recipients have larger MPCs. But STW, by preserving employment and improving expectations regarding future employment and income, may reduce the need for precautionary savings, and thus raise MPCs compared to UI.

Evidence confirms that the MPCs of UI recipients are large, and significantly larger than those of employed people. Comparing the same individuals over time in Sweden, Landais and Spinnewijn [forthcoming] find that the MPC is around 25% higher when unemployed than employed. But much less is known on the MPCs of individuals on STW. Online Appendix Table C1, using elicited MPCs *à la* Jappelli and Pistaferri [2014], suggests that the MPCs of German STW recipients was slightly larger than that of employed workers, but smaller than that of UI recipients.

However, moderate differences in MPCs between UI and STW recipients are unlikely to translate into sizeable differences in aggregate demand externalities between these two policies. This is because the fraction of the labor force receiving UI or STW is small relative to the size of the employed population. For that reason, simulations, such as in McKay and Reis [2016], suggest that, quantitatively, the stabilization effects of social insurance are small.[10] In summary, the difference between UI and STW in terms of stabilization effects is likely to be second-order.

[10]For social insurance to have large multiplier effects, it would need to strongly affect 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.

Other externalities: fairness, health Fairness appears to be an important institutional tenet in European labor markets (Saez et al. [2012], Goldschmidt and Schmieder [2017], Saez et al. [2019]). In the presence of fairness concerns, STW may prove a more desirable 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 STW programs.

Finally, it is worth mentioning that, in the current pandemic, the ability, granted by STW, to flexibly reduce hours of work, and keep workers away from the workplace may have had some large positive health externalities by reducing the spread of the virus.

5 Conclusion

While very little was known about STW schemes and their potential welfare effects, this did not prevent European policymakers to aggressively resort to them during the COVID crisis. The evidence gathered in this paper, and summarized in Table 1, shows they probably did the right thing. In countries with already generous UI and/or strong employment protection, like Europe, strong cyclical STW programs can be an extremely valuable complement to UI to respond to recessions. The value of insurance provided by their transfers is clearly lower than that of UI benefits, but the moral hazard they entail seems more limited than for UI (although the level of experience-rating of STW programs seems to matter a lot too). Importantly, recent evidence confirms that STW can also be an efficient way to attenuate the social costs created by "excess" layoffs in recessions.

But what this paper has showcased as well is that social insurance critically interacts with equilibrium in the labor market, and this has 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 UI and STW affect reallocation will be key to determine the optimal policy path for the recovery. Attention should in particular be devoted to determining how UI and STW should be coordinated with other instruments such as hiring subsidies, in order to boost labor demand and prevent reallocation issues.

References

Abraham, Katharine G and Susan N Houseman, "Does Employment Protection Inhibit Labor Market Flexibility? Lessons from Germany, France, and Belgium," Working Paper 4390, National Bureau of Economic Research June 1993.

Baily, Martin Neil, "Some Aspects of Optimal Unemployment Insurance," *Journal of Public Economics*, 1978, *10* (3), 379–402.

Barrero, Jose Maria, Nicholas Bloom, Steven J. Davis, and Brent H. Meyer, "COVID-19 Is a Persistent Reallocation Shock," Working Paper 2021-02, University of Chicago,Becker Friedman Institute for Economics 01 2021.

Boeri, Tito and Herbert Bruecker, "Short-Time Work Benefits Revisited: Some Lessons from the Great Recession," *Economic Policy*, 2011, *26* (68), 697–765.

Braun, Helge and Björn Brügemann, "Welfare Effects of Short-Time Compensation," CESifo Working Paper Series 5063, CESifo Group Munich 2014.

Cahuc, Pierre and Stéphane Carcillo, "Is Short-Time Work a Good Method to Keep Unemployment Down?," *Nordic Economic Policy Review*, January 2011, *1* (1), 133–165.

_ , Francis Kramarz, and Sandra Nevoux, "The Heterogeneous Impact of Short-Time-Work: From Saved Jobs to Windfall Effects," Discussion Paper 12269, CEPR 2021.

Chetty, Raj, "Moral Hazard Versus Liquidity and Optimal Unemployment Insurance," *Journal of Political Economy*, 2008, *116* (2), 173–234.

Giroud, Xavier and Holger M Mueller, "Firm Leverage, Consumer Demand, and Employment Losses during the Great Recession," *Quarterly Journal of Economics*, 2017, *132* (1), 271–316.

Giupponi, Giulia and Camille Landais, "Subsidizing Labor Hoarding in Recessions: The Employment and Welfare Effects of Short Time Work," Discussion Paper 13310, CEPR 2020.

Goldschmidt, Deborah and Johannes F. Schmieder, "The Rise of Domestic Outsourcing and the Evolution of the German Wage Structure," *The Quarterly Journal of Economics*, 04 2017, *132* (3), 1165–1217.

Gruber, Jonathan, "The Consumption Smoothing Benefits of Unemployment Insurance," *American Economic Review*, 1997, *87* (1), 192–205.

Guerrieri, Veronica, Guido Lorenzoni, Ludwig Straub, and Iván Werning, "Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages?," Working Paper 26918, National Bureau of Economic Research April 2020.

Hall, Robert .E. and Edward P. Lazear, "The Excess Sensitivity of Layoffs and Quits to

Demand," *Journal of Labor Economics*, 1984, *2* (2).

Hendren, Nathaniel, "Knowledge of Future Job Loss and Implications for Unemployment Insurance," *American Economic Review*, 2017, *107* (7), 1778–1823.

Hijzen, Alexander and Danielle Venn, "The Role of Short-Time Work Schemes During the 2008-09 Recession," Technical Report 115, OECD Social, Employment and Migration Working Papers 2011.

Jäger, Simon, Benjamin Schoefer, and Josef Zweimüller, "Marginal Jobs and Job Surplus: A Test of the Efficiency of Separations," Working Paper 25492, National Bureau of Economic Research January 2019.

Jappelli, Tullio and Luigi Pistaferri, "Fiscal Policy and MPC Heterogeneity," *American Economic Journal: Macroeconomics*, 2014, *6* (4), 107–136.

Kekre, Rohan, "Unemployment Insurance in Macroeconomic Stabilization," *Review of Economic Studies*, forthcoming.

Kolsrud, Jonas, Camille Landais, Peter Nilsson, and Johannes Spinnewijn, "The Optimal Timing of Unemployment Benefits: Theory and Evidence from Sweden," *American Economic Review*, 2018, *108* (4-5), 985–1033.

Lalive, Rafael, Camille Landais, and Joseph Zweimuller, "Market Externalities of Large Unemployment Insurance Extension Program," *American Economic Review*, 2015, *105* (12), 3564–3596.

Landais, Camille and Johannes Spinnewijn, "The Value of Unemployment Insurance," *Review of Economic Studies*, forthcoming.

_ , Pascal Michaillat, and Emmanuel Saez, "A Macroeconomic Approach to Optimal Unemployment Insurance: Application," *American Economic Journal: Economic Policy*, May 2018, *10* (2), 182–216.

_ , _ , and _ , "A Macroeconomic Approach to Optimal Unemployment Insurance: Theory," *American Economic Journal: Economic Policy*, May 2018, *10* (2), 152–181.

Lucia, Cheryl Grim Foster and John Haltiwanger, "Reallocation in the Great Recession: Cleansing or Not?," *Journal of Labor Economics*, 2016, *34* (S1), S293 – S331.

Marinescu, Ioana Elena, "The General Equilibrium Impacts of Unemployment Insurance: Evidence from a Large Online Job Board," *Journal of Public Economics*, June 2017, *150*, 14–29.

_ , Daphné Skandalis, and Daniel Zhao, "Job Search, Job Posting and Unemployment Insurance During the COVID-19 Crisis," SSRN Scholarly Paper ID 3664265, Social Science Research Network July 2020.

_ , _ , and _ , "The Impact of the Federal Pandemic Unemployment Compensation on Job Search and Vacancy Creation," SSRN Scholarly Paper ID 3801802, Social Science

Research Network, Rochester, NY March 2021.

McKay, Alisdair and Ricardo Reis, "The Role of Automatic Stabilizers in the U.S. Business Cycle," *Econometrica*, January 2016, *84* (1), 141–194.

Michaillat, Pascal, "Do Matching Frictions Explain Unemployment? Not in Bad Times.," *American Economic Review*, 2012, *102* (4), 1721–1750.

_ and Emmanuel Saez, "Optimal Public Expenditure with Inefficient Unemployment," *The Review of Economic Studies*, 2019, *86* (3), 1301–1331.

_ and _ , "Beveridgean Unemployment Gap," *Working Paper*, 2020.

Saez, Emmanuel, Benjamin Schoefer, and David Seim, "Payroll Taxes, Firm Behavior, and Rent Sharing: Evidence from a Young Workers' Tax Cut in Sweden," *American Economic Review*, May 2019, *109* (5), 1717–63.

_ , Manos Matsaganis, and Panos Tsakloglou, " Earnings Determination and Taxes: Evidence From a Cohort-Based Payroll Tax Reform in Greece," *The Quarterly Journal of Economics*, 01 2012, *127* (1), 493–533.

Schmieder, Johannes F., Till von Wachter, and Stefan Bender, "The Effect of Unemployment Benefits and Nonemployment Durations on Wages," *American Economic Review*, March 2016, *106* (3), 739–777.

Schoefer, Benjamin, "The Financial Channel of Wage Rigidity," 2016 Meeting Papers 1605, Society for Economic Dynamics 2016.

Siegenthaler, Michael and Daniel Kopp, "Short-Time Work and Unemployment in and after the Great Recession," *Journal of the European Economic Association*, forthcoming.

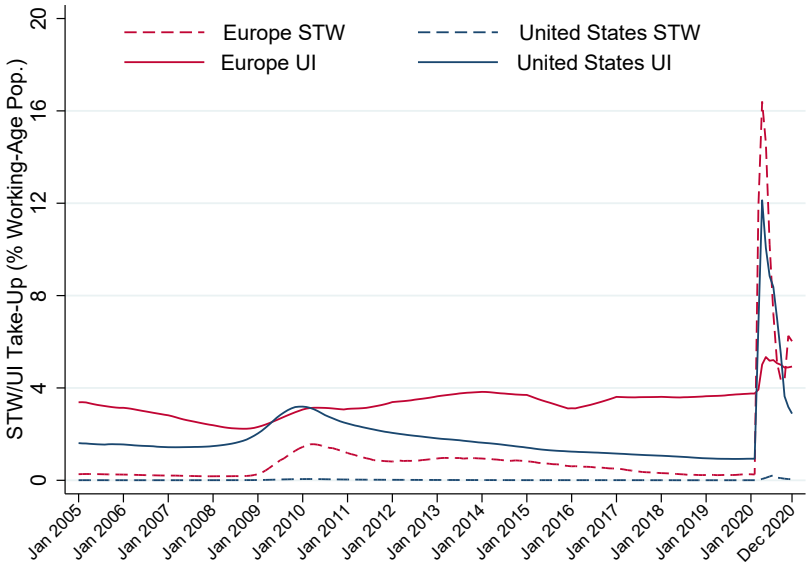
Sullivan, Daniel G. and Till von Wachter, "Job Displacement and Mortality: An Analysis using Administrative Data," *Quarterly Journal of Economics*, 2009, *124* (3), 1265–1306.

Tilly, Jan and Kilian Niedermayer, "Employment and Welfare Effects of Short-Time Work," Working Paper 2016.

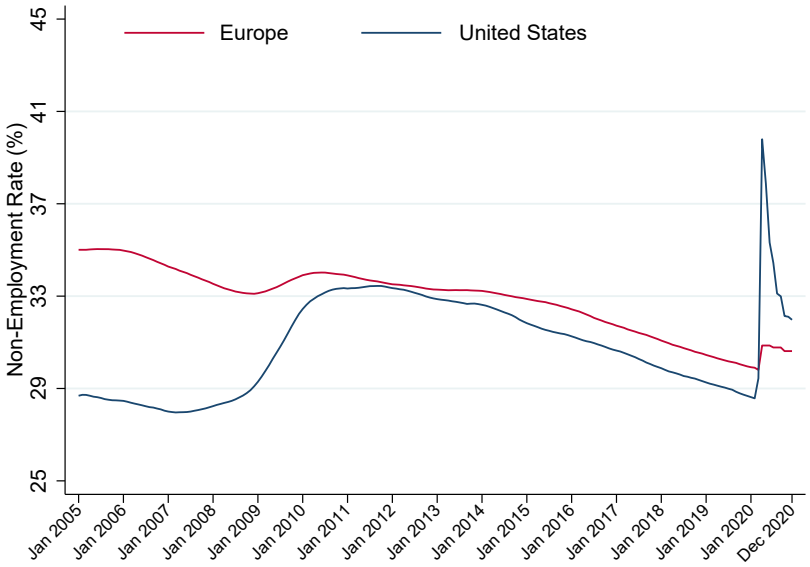
Van Audenrode, Marc A., "Short-Time Compensation, Job Security, and Employment Contracts: Evidence from Selected OECD Countries," *Journal of Political Economy*, 1994, *102* (1), 76–102.

Figure 1: LABOR MARKET POLICY RESPONSES TO RECESSIONS & NON-EMPLOYMENT RATES IN THE UNITED STATES AND EUROPE

A. UI & STW Take-Up



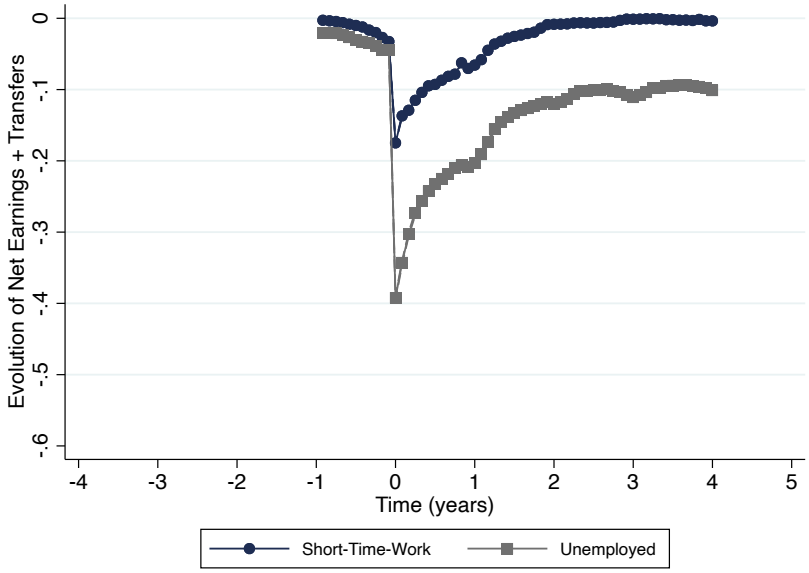
B. Non-Employment Rate



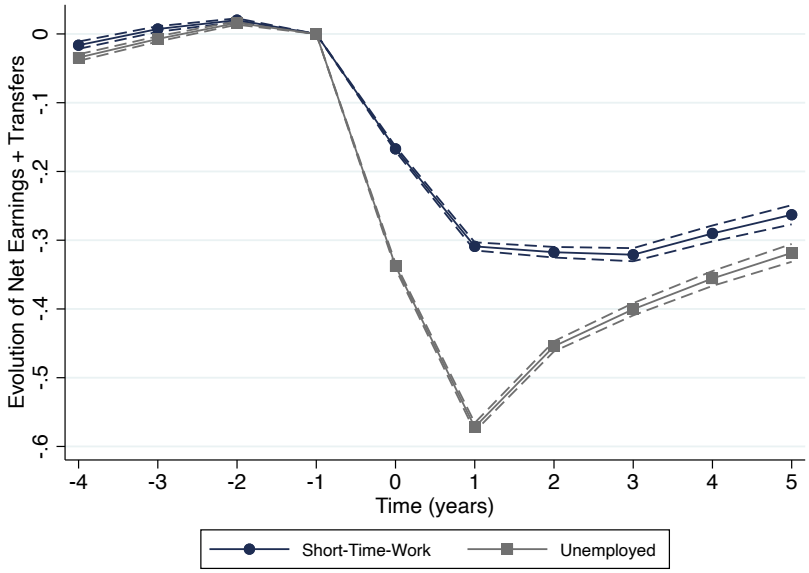
Notes: Panel A reports the evolution of STW (dashed lines) and UI (solid lines) take-up in Europe (red lines) and the United States (blue lines). STW and UI take-up are computed as the ratio of the number of individuals in the program in a given month, as a percent of the quarterly working age population. 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, i.e. one minus the employment rate (employed people as a percent of the working age population). In both panels, the plotted series are moving averages of the raw series over the period up to February 2020. The moving average is based on twelve lagged terms, one forward term and uniform weights. Data on employment come from OECD. Data on STW and UI take-up come from the OECD and national statistics. See Online Appendix D for details on data sources and the construction of STW/UI take-up.

Figure 2: EVOLUTION OF EARNINGS & TRANSFERS AROUND THE EVENTS OF JOB LOSS & STW DURING GREAT RECESSION

A. Germany

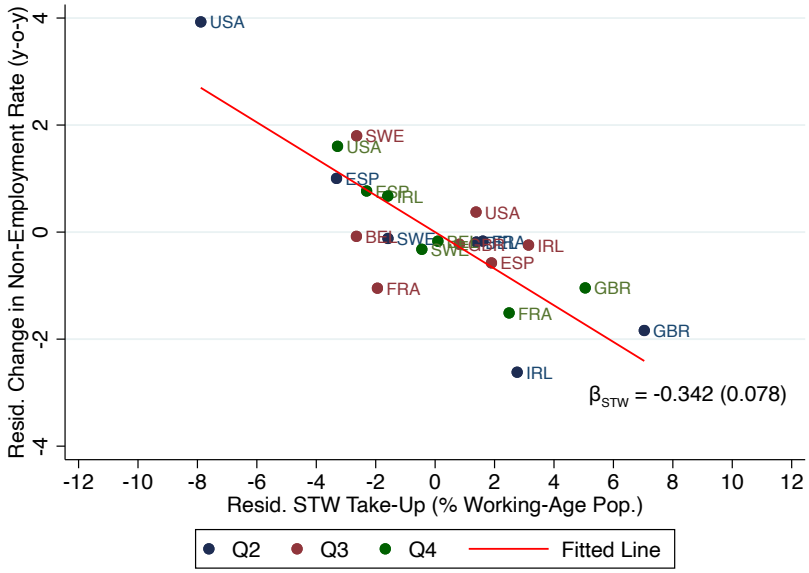


B. Italy



Notes: The Figure reports the evolution of earnings and transfers around job loss (in grey) or around the start of a STW spell (in blue). It shows that job loss is associated with a much larger and much more persistent drop in resources than STW, implying that the marginal insurance value is likely greater for UI than for STW. Panel A reproduces estimates from Tilly and Niedermayer [2016] which uses German administrative data from the Institute for Employment Research (IAB). Panel B reproduces estimates from Giupponi and Landais [2020] and uses administrative data from INPS on the universe of employer-employee matches and social security payments in the private sector in Italy.

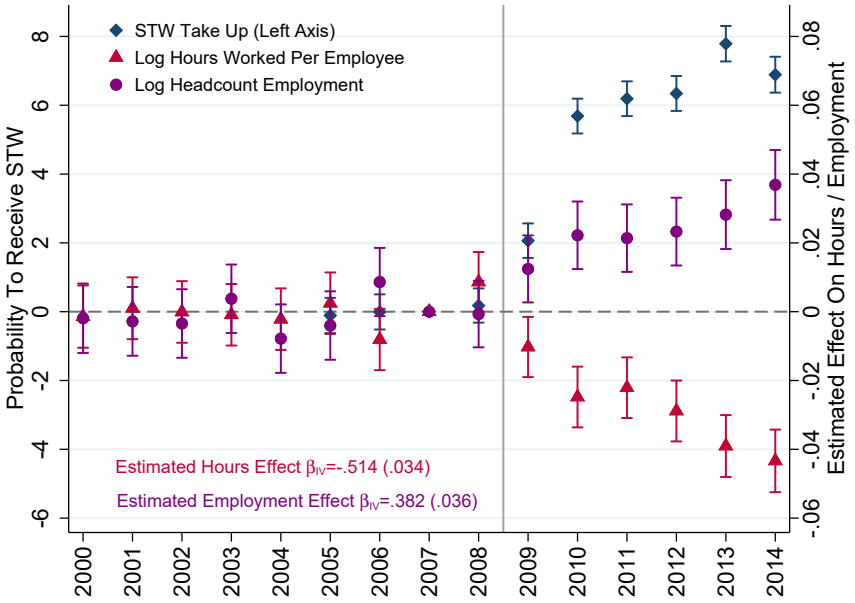
Figure 3: STW USAGE & NON-EMPLOYMENT DURING THE COVID CRISIS: CROSS-COUNTRY EVIDENCE



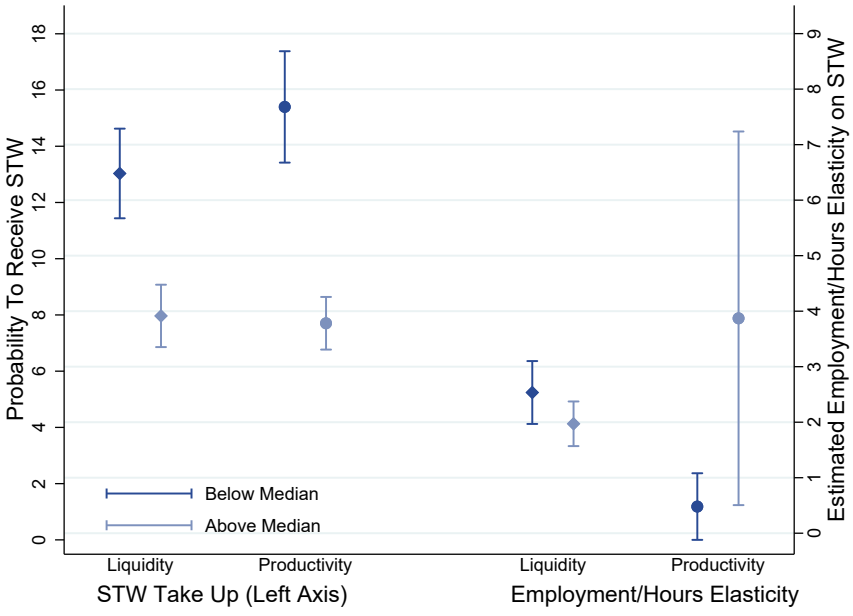
Notes: The figure reports a scatter plot of the relationship between the year-on-year change in the quarterly non-employment rate and the rate of STW take-up at the country level. Data are not seasonally adjusted. To remove the seasonal component, we take the year-on-year change - i.e. for a given quarter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

Figure 4: EMPLOYMENT EFFECTS OF STW IN ITALY: EVIDENCE FROM QUASI-RANDOM ELIGIBILITY VARIATION ACROSS FIRMS

A. STW Take-Up, Hours & Employment
In Eligible versus Non-Eligible Firms



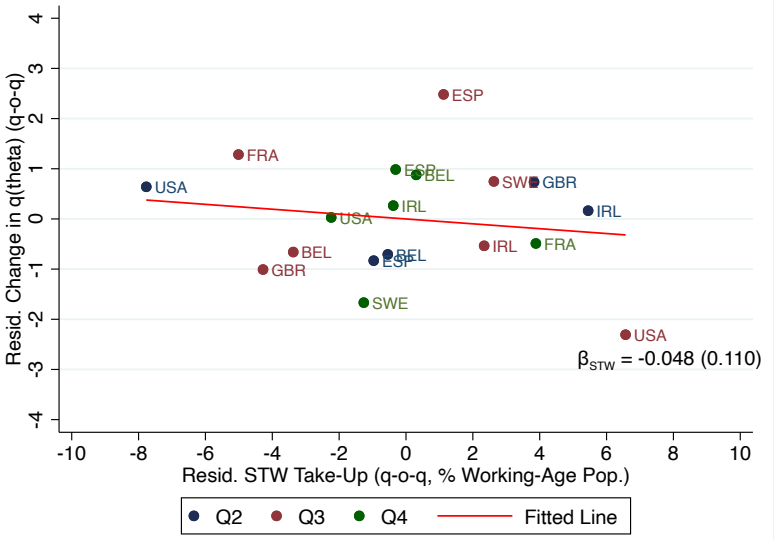
B. Heterogeneous Effects By Liquidity Constraints
& Productivity Levels



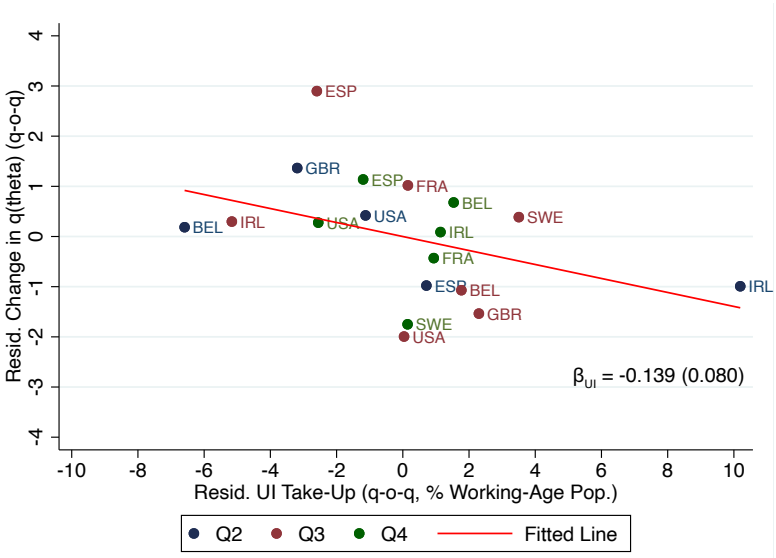
Notes: Panel A reproduces estimates from Giupponi and Landais [2020] on the effect of STW eligibility on the probability of STW take-up, the log of hours worked per employee and the log of employment headcount at the firm level. The graph reports the estimated coefficients and associated confidence intervals (capped vertical bars) from a reduced-form regression of the outcome of interest on an indicator of STW-eligibility at the firm level interacted with year dummies. All results are relative to 2007. The graph also reports the IV coefficient (and s.e. in parenthesis) of the effect of STW take-up on log hours worked per employee and log employment headcount. Panel B reproduces estimates from Giupponi and Landais [2020] on the effect of STW-eligibility on STW take-up and on the elasticity of employment to hours by measures of firm liquidity and firm productivity. Liquidity is defined as cash or cash equivalents over total assets, and productivity as value added per employee. The sample is then split between firms with below versus above median level of liquidity/productivity in 2008. The left-hand side of the panel reports the estimated effect of STW-eligibility on STW take-up. The right-hand side of the panel instead reports the the elasticity of employment with respect to the hour reduction $\varepsilon_{n,h} = -\frac{d\log n/d\text{STW}}{d\log h/d\text{STW}}$, with confidence intervals computed using the Delta-method.

Figure 5: CROSS-COUNTRY CORRELATION BETWEEN JOB-FILLING PROBABILITY AND STW/UI TAKE-UP

A. Job-Filling Probability $q(\theta)$ versus STW Take-Up



B. Job-Filling Probability $q(\theta)$ versus UI Take-Up



Notes: The figure shows how STW and UI 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 year-on-year change in q(θ) and the rate of STW (UI) 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 quarter X, we apply the following transformation to the data: $\tilde{x}_{2020QX} = x_{2020QX} - x_{2019QX}$. STW and UI take-up are computed as the ratio of the number of individuals in the program over the working age population. Outcomes are residualized against quarter fixed effects, the number of COVID cases (linear and quadratic), and 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 parenthesis), clustered at the country level. Data for European countries come from the Job Vacancy Statistics and Labor Force Survey and from the Job Openings and Labor Turnover Survey for the United States. 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 STW and UI take-up come from the OECD and national statistics. Data on COVID cases come from the Johns Hopkins Coronavirus Resource Center. See Online Appendix D for details on data sources and the construction of STW/UI take-up.

Table 1: THE WELFARE EFFECTS OF INSURING WORKERS VERSUS JOBS: A SUMMARY OF THE EVIDENCE

	Value of Transfer	Moral Hazard / Fiscal Externality	Correction Of Other Inefficiencies		
			Excess Layoff	Search Extern.	Reallocation
Short-Time-Work	+ [1]	+/- [2]	++ [3]	? [4]	- [4]
Unemployment Insurance	+ + [1]	- - [5]	?	+ [6]	?

Notes: As illustrated in Section 1, the relative desirability of STW and UI is a function of the relative value of insurance, the relative size of the fiscal externality and the relative magnitude of the labor market inefficiency correction (layoff and search externalities, and reallocation effects) associated with the two schemes. The table provides a review of the literature evaluating features of STW and UI programs that map onto those key elements of welfare analysis. 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.

[1] While early evidence using consumption drops at job loss pointed to a limited value of UI, more recent research, e.g. Landais and Spinnewijn [forthcoming], provide evidence of a large value of UI using more robust approaches to estimating the value of insurance. Much less is known on the value of STW transfers, but evidence from Tilly and Niedermayer [2016] and Giupponi and Landais [2020] suggests that STW insures smaller shocks, and a population that has better means to smooth consumption than UI.

[2] Giupponi and Landais [2020] estimate a small negative fiscal externality of STW of 1.07 in Italy: the total cost of transferring one euro of STW is 1.07 euro. Siegenthaler and Kopp [forthcoming] find that the UI cost savings generated by STW are large enough to fully offset the cost of the STW program, suggesting the program pays for itself.

[3] Siegenthaler and Kopp [forthcoming], Cahuc et al. [2021] and Giupponi and Landais [2020] provide evidence that STW has large positive employment effects, that these effects are larger for firms hit by large shocks, and for firms subject to liquidity constraints. This suggests that – absent STW – the level of layoffs may be inefficiently high.

[4] Giupponi and Landais [2020] provide evidence that larger access to STW within the labor market increases labor market tightness, and that by subsidizing unviable matches, STW has aggregate reallocation effects. It significantly decreases employment growth among non-treated firms, and has a significant negative impact on TFP growth in the labor market.

[5] Schmieder et al. [2016] summarize estimates of the moral hazard cost of UI – equal to one plus the elasticity of unemployment to UI generosity – from 18 studies in 5 different countries, and find a median of estimate of 1.53. This means that, for the marginal euro spent on UI to be efficient, society should be willing to pay a mark-up of about 53%.

[6] Lalive et al. [2015] exploit a large UI duration increase applying to a subgroup of workers in Austria to demonstrate the presence of sizable market externalities of UI. They show that non-eligible workers have higher job finding rates, lower unemployment durations, and a lower risk of long-term unemployment. Landais et al. [2018a,b] provide theoretical grounds and empirical evidence on the optimality of countercyclical UI generosity. They show that labor market tightness is inefficiently low in slumps and inefficiently high in booms, and that an increase in UI generosity can have general equilibrium effects by pushing tightness closer to its optimal level. Marinescu et al. [2020] exploit variation in UI replacement rates across occupation $\times$ US states cells due to the CARES Act and show that the larger the replacement rate increase the stronger the reduction in job search effort (as measured by applications on Glassdoor.com) in the three months after the start of the pandemic.