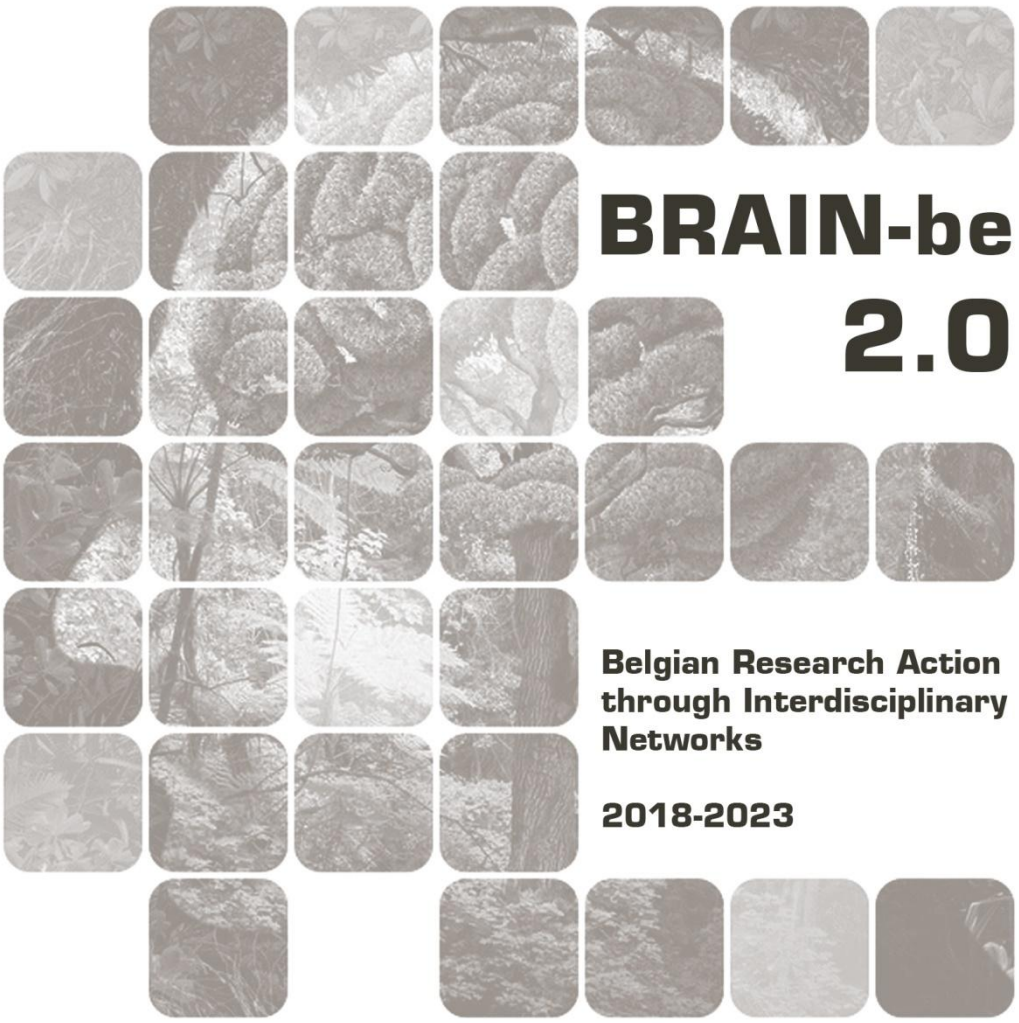

BESWEP

The Belgian Short-Time Work scheme: Economic and Psychological impacts

- Muriel Dejemeppe (Coordinator)
  UCLouvain – LIDAM – Institut de recherches économiques et sociales

Pillar 3: Federal societal challenges

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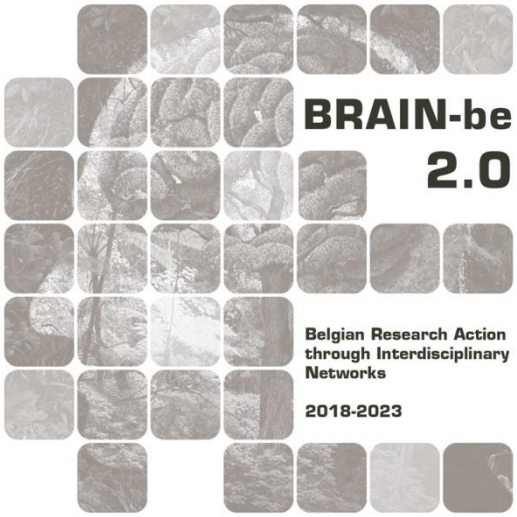

NETWORK PROJECT

BESWEP

The Belgian Short-Time Work scheme: Economic and Psychological impacts

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FINAL REPORT

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ABSTRACT

Short-time work (STW) has been a cornerstone of Belgium's response to major economic shocks and remains an important tool outside crises to protect firms against firm- and sector-specific shocks. STW allows firms to temporarily reduce or suspend working hours during downturns while preserving employment contracts and providing workers with partial income replacement for unworked hours. This project evaluates the economic and psychological impacts of Belgium's STW schemes. Combining economic and psychological approaches, it assesses whether STW preserved jobs while safeguarding worker well-being and limiting public costs. From an economic perspective, STW proved most effective in manufacturing during the Great Recession and in lockdown-affected sectors during the COVID-19 crisis, where employment risks were highest. In contrast, broader take-up—especially among blue-collar-intensive firms in less affected sectors—generated limited employment gains and fiscal inefficiencies. Financial incentives for employers reduced overuse at the intensive margin but did not fully prevent inefficiencies outside major crises. From a psychological perspective, STW mitigated the adverse effects of job loss but often entailed heightened job insecurity, stress, and reduced perceived employability, particularly when usage was prolonged or poorly explained. Overall, the findings highlight the need for better targeting, stronger financial incentives, and clearer communication to enhance both economic efficiency and worker well-being.

Keywords

Short-time Work

Employment retention

Economic downturns

Unemployment insurance

Great Recession

COVID-19 pandemic

Experience-Rated Premiums

Financial incentives

LIST OF ABBREVIATIONS

ERP: Experience-rated premium

ITT: Intention to treat

IV: Instrumental Variable

JC: Joint Committee

LATE: Local average treatment effect

RDD: Regression discontinuity design

RKD: Regression kink design

STW: Short-time work

TSLS: Two-stage least squares

UI: Unemployment insurance

1. INTRODUCTION

Short-time work (STW) is a central policy instrument in the social security systems of many European countries to mitigate the adverse labor market effects of economic downturns. By allowing firms to temporarily reduce or suspend working time[1] in response to transitory declines in economic activity—while preserving employment relationships and partially compensating workers for unworked hours—STW aims to reconcile job preservation with temporary flexibility for firms and income protection for workers. Beyond major crises, STW may also serve as a buffer against firm-specific and sector-specific shocks, thereby contributing to labor market resilience.

In Belgium, access to STW for economic reasons varies according to worker type. For blue-collar workers, firms are required only to demonstrate a temporary decline in economic activity, which is defined broadly. For white-collar workers, access is more restrictive: the use of STW must be supported by a collective labor agreement or an approved firm-level recovery plan, and firms must justify significant economic difficulties, such as a decline in turnover of at least 10%. This historical distinction reflects the fact that, until January 1, 2014, white-collar workers benefited from stronger employment protection and were considered less exposed to cyclical fluctuations. STW was therefore initially designed to protect blue-collar workers, who were more vulnerable to work interruptions. Its gradual extension to white-collar workers since the Great Recession mirrors structural changes in labor markets and policymakers' efforts to adapt the scheme to evolving sectoral realities.

Other forms of STW, such as those related to weather conditions, are also available to employers but are not considered in this report, as they fall outside the scope of the STW scheme designed to insure against unexpected economic fluctuations.

The financing of the STW system relies primarily on the federal government through social security, which compensates workers for hours not worked at a rate of 60% of their capped gross wage. Employers typically supplement this allowance to mitigate income losses, often through sectoral agreements. Despite this co-financing, workers may still experience substantial income reductions, particularly when employer or sectoral top-ups are limited and the scheme allows extended use due to weakly defined maximum duration limits. To discourage excessive use of the scheme, blue-collar workers may be subject to an experience-rated contribution ("*cotisation de responsabilisation*"), paid by employers to social security funds and calibrated to past usage of STW, thereby introducing financial incentives for more responsible take-up.

During the COVID-19 pandemic, the standard STW scheme for economic reasons was temporarily replaced by a simplified procedure for force majeure. This exceptional regime was more generous for workers, raising the replacement rate to 65% of capped gross wages, and substantially eased access conditions for firms by removing co-financing requirements over a prolonged period lasting nearly two years.

[1] In Belgium, this reduction is measured in working days rather than hours, unlike in other European countries.

Belgium has a long-standing tradition of STW use and stands out for both the generosity of its scheme and its sustained take-up. During the Great Recession, 5.6% of salaried workers were placed in STW at least once, while participation peaked at around 30% in April 2020 during the COVID-19 crisis. Even outside periods of major economic disruption, STW take-up remains high by European standards. This sustained intensity of use suggests that the scheme responds not only to temporary cyclical shocks but also to more structural needs for flexibility in certain segments of the labor market, raising important questions about its effectiveness, targeting, and long-term implications.

In particular, concerns have emerged regarding both the employment effects and the worker-level well-being consequences of sustained STW use. On the employment and fiscal side, these concerns relate to deadweight effects, the protection of jobs that were not genuinely at risk or not viable in the medium term—and that would have been destroyed even in the absence of support—as well as the adequacy of existing financial incentives, such as experience-rated premiums, to limit excessive use. At the worker level, intensive reliance on the program may also disrupt well-being and alter workers' perceptions of their job, its meaning, and of their employer.

The BESWEP project (2021–2025), funded by the Belgian Science Policy Office (BELSPO), provides a comprehensive and policy-relevant evaluation of Belgium's STW scheme. Integrating economic and psychological perspectives, the project assesses the program's effectiveness as well as its unintended consequences. On the economic side, it evaluates STW's effectiveness in preserving employment, its targeting efficiency across firms and workers, and the role of financial incentives (e.g., through the experience-rated premium) within the current system in shaping firm behavior. On the psychological side, the project examines how STW affects workers' well-being and future career prospects, including whether it protects against the long-term negative effects of job loss, how its effects vary across workers, and how it influences concerns about job quality and perceived employability. By combining rigorous causal impact evaluations with evidence on workers' experiences, the overarching objective is to identify the conditions under which STW can be designed and implemented more effectively—maximizing job preservation where it is genuinely needed while limiting deadweight costs and unintended consequences for firms and workers.

Using rich administrative datasets and quasi-experimental econometric approaches, the analysis examines the short- and medium-term impacts of STW during the Great Recession and the COVID-19 pandemic, as well as the role of financial incentives in shaping firms' take-up and intensity of use. The results first show that STW preserved a substantial number of jobs in firms genuinely affected by adverse shocks during both crises. At the same time, the large-scale use of STW, facilitated by broad access, entailed significant fiscal costs, as part of the public resources were allocated to firms that would not have resorted to layoffs in the absence of the scheme. Moreover, the evaluation of the experience-rated premiums indicates that firms responded to financial incentives by reducing the intensity of STW use, demonstrating that the mechanism can influence behavior. Although key features of the experience-rated mechanism—such as deferred payments and worker-level determination—are desirable, its overall effectiveness remains limited. Under the current rules, the relatively high threshold of STW days per worker (starting at 110 days per year), above which firms must pay the

experience-rated contribution, means that only a small number of firms and workers are held financially responsible for excessive use, which has proven insufficient to fully curb inefficiencies outside major crises.

Complementing these findings, the project also examines workers' experiences of STW using survey-based evidence and insights from the psychological literature, focusing on how STW affects workers' well-being and influences future career prospects. While STW generally constitutes a lesser evil compared to layoffs—by preventing prolonged unemployment and its detrimental effects on well-being—it can nonetheless be a source of stress. Workers may experience heightened job insecurity and a loss of control over their work situation. For those affected by such negative perceptions, forming positive expectations about the future becomes more difficult, as fears of job loss are often accompanied by lower perceived employability both within the organization and on the external labor market. These effects vary across worker profiles and contexts, and in some cases STW may also provide opportunities for rest, career reflection, or training, thereby partially mitigating its negative psychological consequences.

Overall, the findings highlight that STW can be an effective employment stabilization tool when well targeted, but that its extensive and prolonged use can entail efficiency and welfare trade-offs. The results underscore the need for improved targeting, more effective financial incentives, and greater attention to workers' experiences to enhance both economic efficiency and social sustainability. This report presents the main results of the BESWEP project and discusses their implications for the future design of STW schemes in Belgium and beyond.

2. STATE OF THE ART AND OBJECTIVES

The primary objective of this project is to evaluate the effectiveness of STW, as well as its unintended consequences, from both economic and psychological perspectives. This section presents a comprehensive review of the academic literature on STW, structured around these two components. It situates previous research and lays the theoretical foundations for the current study. Finally, it identifies gaps in the literature and outlines the specific objectives that this study seeks to pursue.

2.1. Economic Literature on STW

Rationale and insurance value of STW. STW schemes constitute a central adjustment tool in European labor markets, allowing firms to respond to temporary negative shocks by reducing working hours rather than headcount employment. In institutional settings characterized by strict employment protection legislation and limited wage and working time flexibility, STW provides an alternative margin of adjustment that allows to preserve job matches while avoiding the cost of dismissals during downturns and its broader consequences afterwards. By subsidizing hours not worked, STW enables firms to smooth labor demand over the business cycle and avoid costly separations when shocks are transitory.

The economic rationale for integrating STW into the social insurance system builds on several complementary arguments around the fact that layoffs may become inefficiently high during downturns (Cahuc and Carcillo, 2011). First, during temporary downturns, firms face a trade-off between labor hoarding—retaining workers in anticipation of recovery—and short-term liquidity constraints that may force layoffs. Financial frictions are typically exacerbated during recessions, limiting firms' ability to absorb temporary revenue losses (Giroud and Mueller, 2017; Melcangi, 2024). STW relaxes these constraints by subsidizing part of the wage bill of workers whose working hours are reduced, thereby providing income insurance and sustaining employment relationships. Second, collective bargaining arrangements and institutional rigidities often restrict firms' ability to adjust wages or working hours unilaterally, further increasing the risk of inefficient layoffs (Jäger et al., 2023; Acemoglu, 1995; Hall and Lazear, 1984; Giupponi and Landais, 2023). In this context, STW allows internal flexibility without undermining existing labor market institutions.

Another argument is related to the limited incentives that firms have to internalize the broader social costs of layoffs, such as increased government spending through the dependence on unemployment insurance (UI), lower tax revenues, and long-term unemployment scarring (Boeri and Cahuc, 2023). Standard UI programs typically do not fully align firms' private incentives with these social costs. An experience rating system, where employers financially contribute to the UI system, can address this by linking firms' UI contributions to their layoff histories, thus incentivizing them to limit excessive dismissals (Blanchard and Tirole, 2008; Cahuc and Malherbet, 2004; Feldstein, 1976). However, this is suboptimal during downturns where firms are on average financially constrained, as it could worsen firms' financial distress, increasing insolvency risk, and reducing hiring (Cahuc and Carcillo, 2011; Johnston, 2021). Given these limitations, UI alone may not be sufficient to curb layoffs, underscoring STW's role in offering firms greater flexibility.

Other institutions and policies may also address the risk of inefficiently high unemployment during downturns, including strict employment protection legislation (EPL), temporary layoffs, partial UI, and wage subsidies. EPL can deter excessive dismissals by directly restricting layoffs; however, maintaining stringent EPL requirements during temporary economic shocks may exacerbate financial strain for affected firms (Boeri and Cahuc, 2023). Once dismissals occur, alternative policies focus on mitigating unemployment rather than preventing it. Wage subsidies, for example, facilitate the reintegration of dismissed workers by lowering labor costs for hiring firms, but they do not preserve existing employment relationships and tend to benefit primarily long-tenured workers. Temporary layoff schemes with recall options, as applied in the United States and Australia, allow firms to fully suspend working time while workers receive unemployment benefits, with the possibility—but not always the obligation—of recall. During the COVID-19 pandemic, only about 30% of temporarily laid-off workers were recalled in Australia (Borland and Hunt, 2021), while in the United States roughly half of jobs lost in April 2020 had returned to the same employer by June 2020 (Forsythe et al., 2020). Partial UI schemes, such as those operating in Canada and the United States, also reduce income losses during periods of reduced activity by allowing unemployed workers to accept part-time or short-duration jobs while retaining part of their benefits. However, by incentivizing acceptance of marginal jobs, these schemes may reduce incentives for stable full-time employment, increase income uncertainty, weaken

human capital investment, and worsen long-term career prospects (Ek and Holmlund, 2015; Boeri and Cahuc, 2023).

STW provides insurance value at multiple levels. For workers, it reduces the risk of unemployment and associated scarring effects by maintaining labor market attachment, while partially compensating income losses due to reduced hours, compared to a situation of unemployment. For firms, it preserves firm-specific human capital, avoids firing costs, and lowers future hiring and training costs once demand recovers. At the aggregate level, STW limits inflows into UI, stabilizes household income and consumption (Jaravel, 2022; Dengler et al., 2025), and benefits non-users by lowering their expected future risk of job loss (Cahuc, 2024) as firms internalize the availability of STW for future shocks. Furthermore, it mitigates rat-race dynamics or congestion externalities in in the labor market that occur when jobseekers compete for a small number of vacancies during economic downturns (Montenegro and Hijzen, 2024).

Despite these advantages, the insurance role of STW is inherently conditioned on its temporary nature and its ability to target firms facing genuine, short-lived shocks. When these conditions are met, STW facilitates efficient labor hoarding and accelerates post-crisis recovery. When they are not, it may generate inefficiencies.

Gap in the literature. While the theoretical rationale for STW as an adjustment instrument is well established, existing research provides limited guidance on how effectively STW schemes screen, in practice, between temporary and a non-temporary shocks. In particular, there is insufficient empirical evidence on how institutional features interact with sectoral exposure to determine whether STW stabilizes viable jobs or merely postpones inevitable adjustments. This gap motivates a closer examination of the conditions under which STW delivers efficient insurance rather than distortionary support.

The policy trade-offs. Designing STW as an efficient insurance instrument entails fundamental trade-offs that stem from information asymmetries between governments and firms, and incentive problems. Information asymmetries arise when policymakers cannot perfectly identify which firms genuinely face large, temporary shocks and would otherwise resort to layoffs without incurring slow and costly verification procedures (Burdett and Wright, 1989; Jaravel, 2022). Moreover, administrations often struggle to distinguish temporary, unexpected shocks from predictable seasonal (Cahuc and Nevoux, 2018; Boeri and Cahuc, 2023) or structural fluctuations (Mosley and Kruppe, 1996), leading to inefficiencies when firms outside the program's intended target are nevertheless protected.

Policymakers must balance the objective of rapid and broad employment stabilization against the risks of fiscal inefficiency and distorted labor market dynamics. These trade-offs are intrinsic to STW and arise precisely because the program relies on firms' private information about the nature and severity of the shocks they face.

As a result of information asymmetry, firms may strategically overstate distress, reduce working hours excessively (Burdett and Wright, 1989), or enroll workers whose jobs are not truly at risk (Bossler et al., 2023), a moral hazard problem. These behaviors weaken the effectiveness of STW and undermine its role as a temporary insurance device. Unlike standard UI—where moral hazard primarily affects workers—STW shifts the incentive problem to firms, complicating enforcement and monitoring.

The incentive problems translate into fiscal externalities and deadweight costs. When STW subsidizes jobs that would have been preserved even in the absence of the program, public resources are spent without generating additional employment gains (Burdett and Wright, 1989; Cahuc, 2019; Van Audenrode, 1994). Deadweight losses may also arise if STW supports structurally non-viable jobs, delaying necessary adjustments and increasing the overall cost of the program.

A further trade-off relates to labor market reallocation. By preserving existing jobs, STW can slow the reallocation of labor from declining to expanding firms and sectors, potentially reducing aggregate productivity (Cahuc et al., 2014; Cahuc, 2019). While some degree of delayed reallocation is desirable during temporary downturns, prolonged or poorly targeted STW use may crowd out job creation in more productive firms and hinder structural adjustment (Mosley and Krupper, 1996; Giupponi and Landais, 2023; Cahuc, 2024). These distortions are particularly relevant when shocks are persistent or plagued with high recovery uncertainty.

Taken together, these trade-offs highlight that STW performance depends on how program design manages information frictions, internalizes fiscal costs, and limits adverse effects on reallocation—while still allowing for timely and effective employment stabilization.

Gap in the literature. Although economic theory clearly identifies the key trade-offs underlying STW, empirical evidence on how these trade-offs play out a role in practice remains limited. In particular, there is limited causal evidence on how specific design features—such as employer co-financing, experience-rated premiums, or duration limits—mitigate moral hazard and fiscal externalities without undermining the program's stabilizing role. Bridging the gap between theoretical insights and observed policy outcomes requires design-based empirical evaluations that exploit institutional variation, a gap that the present project seeks to address.

Evidence during recent major economic crises. The effectiveness of STW schemes during major economic crises has been widely discussed, yet rigorous causal evidence is still comparatively scarce. Evidence from the Great Recession and the COVID-19 pandemic nonetheless provides critical insights into their impact, limitations, and heterogeneous effects across firms and workers. Early cross-country studies during the Great Recession suggested that STW helped stabilize aggregate employment curbing unemployment (e.g., Boeri and Bruecker, 2011; Cahuc and Carcillo, 2011; Hijzen and Martin, 2013). However, while these studies offer valuable insights, they are limited in identifying causal responses due to non-random policy adoption and country-specific confounding factors—such as institutional environments and crisis severity—that simultaneously shape STW take-up and employment outcomes. A key methodological challenge lies in constructing a credible counterfactual—what would have

happened to the same firms in the absence of STW—given that participation is non-random. Firms using STW typically experience larger shocks, differ in liquidity, productivity, or demand exposure, and employ distinct workforce compositions.

To address these challenges, microeconometric studies relying on quasi-experimental designs and rich administrative data have estimated causal firm-level effects within fixed institutional settings. These studies reveal a consistent pattern: while STW reduces hours per worker, its effects on headcount employment and firm survival depend on the severity of the shock, firms' financial characteristics, and program targeting. For instance, during the Great Recession, STW in France generated sizable reductions in hours per worker, but employment gains were concentrated among firms facing severe demand shocks; firms experiencing milder shocks exhibited limited employment gains, suggesting substantial deadweight effects (Cahuc et al., 2024). Similarly, evidence from Belgium (Bermudez et al., 2025) shows that employment gains were confined to manufacturing—the sector most exposed to the crisis—while less affected sectors displayed no significant effects, implying high fiscal costs under broad eligibility. Studies from Italy (Giupponi and Landais, 2023; Biancardi et al., 2022) and Switzerland (Kopp and Siegenthaler, 2021) further emphasize that STW supports short-run employment and firm survival, particularly among liquidity-constrained firms, but that sustained gains depend on whether the program targets viable firms and whether the downturn is persistent. In Switzerland, stricter monitoring, selective access, and a less protracted crisis were associated with more persistent medium-term employment effects, thereby reducing deadweight losses.

The COVID-19 pandemic introduced a distinct context: an abrupt collapse in economic activity driven by mandated lockdowns, coupled with rapid expansions of STW schemes through emergency measures such as simplified access, broader eligibility, higher replacement rates, and lower employer costs. Emerging evidence suggests that these measures prevented mass layoffs during the crisis peak (Bennedsen et al., 2023; Beņkovskis et al., 2025; Montenegro and Hijzen, 2024), particularly in sectors unable to operate under lockdowns (OECD, 2026). However, the generosity and broad eligibility of these programs also raised concerns about moral hazard and deadweight costs, as public support risked flowing to firms and jobs not genuinely at risk of destruction or structurally unviable. Studies across multiple countries documented moral hazard responses, deadweight effects, and negative selection, particularly when eligibility remained broad and program re-adjustments were slow (e.g., Albertini et al., 2022; Kagerl, 2024; Dengler et al., 2025; Bossler et al., 2023). The COVID-19 experience thus highlighted a trade-off between rapid stabilization and cost-effectiveness: while generous and simplified rules preserved employment at scale, they also subsidized jobs with no risk of destruction, distorting incentives as sectors reopened.

Heterogeneous effects across firms and workers further shape the effectiveness of STW. At the firm level, STW consistently reduces hours per worker, but its impact on employment and survival varies with exposure to shocks, liquidity constraints, and productivity. Firms facing severe yet temporary demand shocks, or those that are liquidity-constrained but productive, tend to translate reduced hours into short-run employment preservation and higher survival rates (Cahuc et al., 2024; Giupponi and Landais, 2023). In contrast, firms with mild shocks or low pre-crisis productivity often exhibit limited or

no employment gains, resulting in deadweight losses. At the worker level, STW provides short-term insurance by preventing layoffs and limiting income losses, but medium-term outcomes depend on firm viability and job quality. Workers in productive firms experience smoother recoveries in earnings and employment, while those in low-productivity firms face delayed unemployment (Giupponi and Landais, 2023). Additionally, STW generally disproportionately protects workers with high replacement costs, such as those on permanent contracts or with firm-specific skills, exacerbating labor market segmentation (Cahuc, 2024).

Taken together, the evidence demonstrates that STW schemes are most effective when economic shocks are severe yet temporary, when supported firms have recovery potential, and when program design ensures targeted support for jobs genuinely at risk. Broad eligibility, streamlined access, and low employer costs increase deadweight losses, often resulting in limited and short-lived employment gains. The COVID-19 pandemic underscored these dynamics, revealing both the potential and the limitations of STW as a crisis-response tool.

Gaps in the literature. Despite substantial progress, important gaps remain. First, existing studies provide limited evidence on the medium-term consequences of crisis-era STW, particularly on whether short-run employment stabilization translates into persistent gains or merely delays structural adjustment. Second, heterogeneous effects remain underexplored, with insufficient insight into how firm characteristics and workforce composition jointly shape STW effectiveness. Third, there is a lack of guidance on optimizing program design—such as targeting rules and financial incentives—to concentrate support where effects are strongest while minimizing deadweight losses. This project directly addresses these gaps by examining the medium-term outcomes of STW and its heterogeneous effects across firms and workers.

Financial incentives within program design. Financial incentives in STW schemes are designed to align firms' behavior with policy objectives by discouraging opportunistic use while avoiding excessive financial burdens on distressed firms. These incentives typically manifest in two forms: co-insurance and experience-rated premiums (ERP). Co-insurance requires firms to share a portion of the costs associated with STW during its implementation, with financial contributions increasing in proportion to reduced hours or wages. In contrast, ERP systems impose deferred and progressive financial contributions based on past STW use. These systems may operate at the worker level, where they aim to limit excessive reductions in working time and optimize these reductions within the firm, or at the firm level, where they seek to restrict prolonged reliance on STW and mitigate distortions to labor reallocation.

For instance, in France, firms are required to pay a 10% co-payment on idle hours for workers earning up to 4.5 times the minimum wage. In Belgium, levies are applied when blue-collar workers exceed a predefined threshold of STW days within a calendar year. Similarly, Italy employs progressive premiums calculated over a three-year firm participation window. While these mechanisms are central to efficient program design, they were largely suspended during crisis to facilitate take-up and alleviate liquidity constraints for firms (OECD, 2021).

Financial incentives address distinct forms of ex-post misuse but involve inherent trade-offs. On the one hand, they internalize the social cost of STW use, particularly when reliance on the program reflects predictable or mild shocks rather than a genuine risk of job destruction. On the other hand, by increasing labor costs during downturns, these incentives may exacerbate employment losses for firms already under financial stress. Additionally, financial incentives can generate distributional consequences across the workforce. STW schemes combined with financial levies tend to favor permanent workers and those with firm-specific skills, as labor hoarding is more valuable for jobs with high replacement costs. This dynamic risks reinforcing labor market segmentation, as workers with low replacement costs—such as temporary or low-skilled workers—may benefit less or face reduced access to STW (Guo and Johnston, 2021; OECD, 2021). Moreover, because firm savings from STW are proportional to workers' wages, firms receive smaller monetary benefits when placing low-wage workers in STW. If employer levies are lump-sum, these benefits fall short of the associated costs earlier, reducing firms' incentives to use STW for low-wage workers.

The impact of STW financial levies on labor markets remains an open question, requiring design-based methods and large administrative datasets. However, empirical measurement faces challenges. First, large-scale microdata that link STW tax rates to firm behavior are often not publicly available. Second, tax rates are endogenous by design, making it difficult to isolate the causal effect of taxes from other confounding factors, which can lead to negative selection biases among firms subject to higher tax rates. In other words, tax hikes are not random; they often reflect the financial health of a firm. Finally, in nearly all OECD countries, STW taxes on firms were suspended during both the Great Recession and the COVID-19 crisis (OECD, 2021). This policy change aimed to boost STW participation and alleviate liquidity constraints for firms impacted by the shocks. However, this suspension resulted in a lack of variation in regulatory frameworks, limiting the opportunities to use natural experiments for causal inference during periods of heightened STW take-up.[2]

To date, Lapeyre (2023) provides the only causal evaluation of STW co-insurance during the COVID-19 period. By exploiting a kink in the French co-payment schedule, the study demonstrates that a 10-percentage-point increase in employer contributions reduced STW use by 21% at the extensive margin and 33% at the intensive margin, highlighting firms' sensitivity to financial incentives.

Gaps in the literature. Despite these insights, significant gaps in the economic literature persist in understanding the role of financial incentives in STW schemes. First, there is limited evidence on the impact of financial incentives on STW insurance outside France, as most studies focus on single-country contexts and do not generalize findings across institutional settings. Second, the literature provides little insight into the comparative effects of different types of financial taxes, such as ERP systems versus co-insurance schemes, leaving open questions about their relative efficiency and effectiveness. Third, while studies like Lapeyre (2023) demonstrate the sensitivity of STW take-up to financial incentives,

[2] To address selection biases, researchers, similar to those studying UI design (Landais, 2015; Johnston, 2021), might exploit kinks in the STW tax schedules (Lapeyre, 2023). However, it is important to note that the treatment effect identified through this approach would be local to the kink point in the tax rate schedule, which may limit the external validity of the findings.

there is scant evidence on the broader firm-level impacts of these taxes beyond usage at the extensive and intensive margins. This includes their effects on employment retention, firm survival, and financial performance. This project directly addresses these gaps by exploiting policy-driven variation in the Belgian ERP system to provide causal evidence on how financial incentives shape firms' behavior and economic outcomes.

2.2. Psychological Literature on STW

STW has attracted much attention from economic scholars on financial implications for governments, unemployment rate, and effects on firms' survival rates (e.g., Boeri and Bruecker, 2011). Comparatively little is known about the psychological impact of STW on employees (Stuart et al., 2021). STW is intended to create a win-win for employers and employees. It helps organizations going through economic turmoil and protects employees from unemployment and negative outcomes associated with unemployment (Lee and Sanders, 2013). Yet, this does not mean that STW is without risks. While STW is well-intentioned, some have argued that it may also have a dark side, potentially harming workers' well-being (Klug et al. 2024). This gave rise to a new strand of literature. In this regard, a distinction can be made between research conducted before the pandemic and the research conducted during the pandemic. Beyond well-being, some authors have also looked at how STW affects the relationship with the employer. Their research shows that STW may increase turnover intentions. Research examining career-related outcomes other than turnover intentions is, however, nonexistent at the current stage. We briefly discuss these points in the sub-sections below.

Research conducted on well-being before the pandemic. Pre-pandemic research mainly focused on the implementation of furlough (i.e. a government policy, used in the U.S., that - like STW - allows employers to place workers on temporary leave, but without necessarily guaranteeing income) in public administrations. These studies (e.g. Halbesleben et al., 2013; Hohman et al., 2013; Mandeville et al., 2019; Osborne et al., 2012; Pelletier et al., 2015) showed that furloughs and STW can have ambivalent consequences for workers.

On the bright side, furlough and STW offer the opportunity to engage in recovery experiences, such as relaxation or psychological detachment from work, which may positively affect well-being (Grandey et al., 2021; Halbesleben et al., 2013).

On the dark side, past empirical research found that being affected by furlough or STW may trigger negative emotions such as sadness, fear, and anger in workers (Osborne et al., 2012). In the longer term, this experience may be associated with emotional exhaustion, lower levels of life satisfaction, and psychological health due to stress (see for e.g. Baranik et al., 2018; Jones et al., 2014; Halbesleben et al., 2013). Indeed, the implementation of furlough or STW has been associated with the loss of various resources, including material resources, social status and pride, career stability, social relationships, or sense of purpose at work (e.g., Baranik et al, 2018; Hohman et al., 2013; Mandeville et al., 2021; Zheng et al., 2022). Such a loss can increase strain despite restoration of pay at the end of furlough or STW (Baranik et al., 2018).

As insightful as this field of research can be, most of the studies took place in the U.S. and in contexts characterized by the lack of entitlement to unemployment benefits, whereas such an entitlement tends to be the standard for STW workers. Furthermore, most studies have examined the impact of furlough and STW at the time of their implementation. This may give the impression that STW does not pose a real threat to employees once the measure ends. However, a recent study shows that STW can create job insecurity for the future, with long-term consequences for employee well-being (Klug et al., 2024). This aligns with the idea that job insecurity is a chronic stressor that can leave a lingering 'scar'– a reminder of potential future job loss – whose psychological effects persist over time (De Witte, 2016).

Research conducted on well-being during the pandemic. Recently, the massive use of STW in the pandemic context sparked the interest of scholars examining the general impact of the Covid-19 crisis on individuals' well-being. In this context, some studies started comparing the negative effects of STW (or other job-retention schemes) with those of job loss. It is well established that job loss is detrimental for workers' mental and physical well-being in the long term (McKee-Ryan et al., 2005). Although research suggests that STW is a lesser evil compared to job loss in the short-term, it remains unclear whether it provides full or only partial protection against the negative consequences of job loss. The answer to this question is still unclear for two reasons. First, most research has focused on short-term well-being (i.e., less than one year after the implementation of STW; see the literature reviews by Blomqvist et al., 2022; Zheng et al., 2022). Yet, the return to normal may not be immediate for individuals who experience STW. Second, findings are inconclusive (Blomqvist et al., 2023). Some studies (e.g., Abrams et al., 2022; Grace, 2022; Wels et al., 2022) suggest that STW harms well-being, but less than job loss. In contrast, other studies (e.g., Blomqvist et al., 2023; Ferry et al., 2021) found no significant differences between STW and the control group (i.e., employees kept on stable employment). Authors have proposed several hypotheses to explain these mixed findings, such as differences in labor market dynamics and STW policies (e.g., Blomqvist et al., 2023), or variations in worker profiles (e.g., Möhring et al., 2021; Wang et al., 2022).

Research conducted on the employee-employer relationship and turnover intentions. STW, as an organization-wide hardship (see Levi et al., 2019), may lead to psychological contract breach (Huffman et al., 2022). The psychological contract refers to the unwritten promises and informal agreements between an employee and their employer. A breach of this contract can occur when employees feel that their employer has failed to provide the stability and support they expected in their role (De Cuyper and De Witte, 2007). Because STW alters the expected employment situation and creates insecurity, it may threaten the psychological contract. This may explain the positive relationship observed between STW and turnover intentions (Hohman et al., 2013; Huffman et al., 2022).

In this context, perceptions of fairness can play an important role. In general, STW decision tends to foster negative workers' perceptions in a limited way because it is more often perceived as appropriate and unavoidable in a difficult economic context (Lee and Sanders, 2013). When the employer spreads the burden of the economic downturn across the entire workforce, STW may easily be perceived as fairer than other cost-cutting strategies, such as layoffs (Reid, 1982; Sucher and Winterberg, 2014). However, this perception may change if employees are treated differently. For instance, Huffman and

colleagues (2022) found that perceptions of fairness regarding STW implementation have an impact on perceptions of psychological contract breach and subsequent turnover intentions. Findings from a qualitative study also suggest that the quality of managerial communication about STW, as well as the level of contact with managers and the opportunity to share one's views whilst placed on STW might preserve organizational commitment (Szulc and Smith, 2021).

The absence of research on career-related outcomes. Scholars have not yet investigated how STW affects individual careers - except for turnover intentions. The view that contextual factors - such as STW - which are beyond individual control and trigger insecurity, may interfere with perceived employability (i.e., how confident employees feel about finding a new job if needed) is, however consistent with prior findings (Kirves et al., 2014). Previous studies (Kirves et al., 2014; Mäkikangas et al., 2013; Törnroos et al., 2017) revealed unstable trajectories of perceived employability among certain profiles of workers. In particular, workers with high levels of job insecurity seem more likely to experience negative changes in perceived employability (Mäkikangas et al., 2013). Interestingly, interviews conducted during the pandemic (Szulc and Smith, 2021) unveiled that STW workers tend to perceive skillsets as important criteria when selecting workers to be put on STW. This perception could particularly explain why certain individuals reflect upon their employability following STW.

Overall, the literature review highlights several gaps in the existing research, which we aim to partially address. We revisit these gaps in the following section about the objectives of the research.

2.3. Objectives of the Research

This study aims to provide a comprehensive evaluation of STW programs in Belgium, integrating economic and psychological perspectives to assess their effectiveness and unintended consequences. The research offers timely and policy-relevant insights for decision-makers, employers, workers' representatives, and society at large. Robust scientific evidence on the program's benefits and risks is essential to inform debates on the effectiveness of this policy tool.

To achieve this overarching goal, the project defines specific objectives corresponding to the economic and psychological components of the research.

2.3.1. Economic component

Within the economic component, the research pursues three specific objectives, each addressing critical gaps in the literature through three distinct studies.

1. Evaluate the impact of STW on firm-level outcomes during economic crises

Despite a growing body of economic literature on STW programs, their causal effects on firm-level outcomes—particularly in Belgium—remain underexplored. Belgium, which had the highest STW take-up rate in Europe during the Great Recession (OECD, 2010) and a generous STW program during the COVID-19 pandemic (OECD, 2023), presents a unique case for analysis. However, identifying the short-

and medium-term effects of STW during aggregate shocks is challenging, as programs often become less targeted in such contexts, limiting exogenous variation for credible microeconometric identification.

This project addresses this gap through two microeconometric impact evaluations:

- First, it provides a novel analysis of the effects of STW on firm employment in Belgium during the Great Recession. Using aggregated administrative data, which is more easily accessible at the location-sector level, this approach captures spillover effects—such as job creation, job destruction, and firm entry and exit within local labor markets—dimensions typically unobserved in firm-level studies (Cahuc et al., 2021; Giupponi and Landais, 2023; Kopp and Siegenthaler, 2021). Additionally, it documents dynamic effects over time, a topic scarcely addressed in the literature.
- Second, it investigates the short- and medium-term effects of STW on employment and firm bankruptcy during the COVID-19 pandemic. This period was characterized by government-mandated lockdowns and historically high STW participation rates. In March 2020, Belgium implemented a highly generous and simplified STW procedure, reducing administrative burdens to enhance coverage. Unlike other OECD countries, Belgium made only one temporary modification to this simplified system during the first three years of the pandemic: in September 2020, access to the simplified STW program was restricted to firms and workers directly affected by lockdowns. The analysis leverages the variation generated by this temporary change.

Together, these two studies provide the first causal evidence on the firm-level effects of STW in Belgium across two major crises characterized by distinct economic environments and policy designs. By exploiting credible sources of exogenous variation and rich administrative data, they contribute new insights into both the employment-preserving capacity of STW and its effects on firm survival during aggregate shocks. Beyond documenting average short-term effects, the analyses shed light on dynamic responses, thereby offering a more comprehensive understanding of how STW operates during major crises. These findings contribute not only to the national policy debate but also to the broader international literature on the effectiveness of STW schemes during crises.

2. Examine the heterogeneous effects of STW across firms and workers

A key gap in the literature concerns how STW programs should be targeted toward jobs genuinely at risk of destruction. Existing studies document inefficiencies—such as subsidizing jobs that would have survived without support (Cahuc et al., 2021) or preserving structurally unviable jobs (Giupponi and Landais, 2023)—but provide limited guidance on the criteria that allows us to distinguish such jobs and the incentives that different types of jobs have from using STW. This is, the value of preserving a match and the incentives to use the scheme both vary with wages, contract types, and access facilities.

This project addresses this gap by analyzing heterogeneous responses to STW across

- firms with different exposure to aggregate sectoral shocks, and
- workforce composition, especially skill structure (e.g. blue- versus white-collar workers).

The literature shows that STW allows firms to hoard labour and avoid separations, particularly when replacement costs and firm-specific human capital are high. Consistently, take-up is higher for stable and long-tenured jobs (Giupponi and Landais, 2023). However, less evidence exists on whether employment protection differs across skill groups. Such heterogeneity may depend both on exposure to the shock and on incentives created by program design — including wage caps, replacement rates, and eligibility conditions.

In Belgium, blue-collar, lower-skilled, and lower-wage workers are the main users of the program, partly due to easier access procedures but also because capped benefits generate higher effective replacement rates for low-wage workers. This increases the joint surplus from preserving low wage matches and therefore the likelihood and duration of STW take-up in these jobs. Their concentration in seasonal and cyclically volatile sectors further contributes to higher usage.

Importantly, stronger participation incentives do not necessarily imply stronger employment effects: because replacement rates decline with wages, STW may raise take-up among low wage matches without proportionally increasing jobs saved, reflecting a larger share of inframarginal retention. During the COVID-19 crisis, the largest short-term employment gains were observed in occupations most exposed to the shock, particularly among low-skilled workers in Germany and France (Brinkmann et al., 2024; Albertini et al., 2022), as contact-intensive activities were heavily affected. However, less is known about persistence over time. As the crisis evolves, high-skilled jobs may adapt more easily through alternative arrangements such as telework, reducing STW reliance to jobs genuinely at risk of destruction.

Examining these mechanisms contributes to a more targeted and cost-effective design of STW programs in the Belgian context, where separate procedures currently apply to blue- and white-collar workers.

3. Analyze the effects of STW design changes on effectiveness, with a focus on financial incentives

While the literature has extensively examined STW's role in cushioning economic shocks, far less is known about the consequences of financial incentives—such as ERP (i.e., *cotisation de responsabilisation* in French)—on firm behavior and program effectiveness. ERP systems, which impose deferred and progressive financial contributions based on past STW use, aim to limit excessive or inefficient program participation. However, their impact on firm-level outcomes—such as employment, profitability, and liquidity—remains poorly understood.

This study fills this gap by leveraging quasi-experimental policy designs and high-frequency administrative data to assess the causal effects of ERP implementation in Belgium. Specifically, it examines:

- The 2005 reform, which introduced a marginal ERP of €46 per day for firms in the Joint Committee (JC) construction whose workers exceeded 110 STW days.
- The 2012 reform, which extended ERP economy-wide and introduced five kinks in the tax schedule (at 110, 130, 150, 170, and 200 STW days per worker), with marginal ERP increasing from €20 to €100 at the highest threshold.

The analysis addresses two key questions:

I. To what extent do ERP incentives reduce STW use?

   - Does ERP lead to a measurable drop in the intensive margin of STW usage (i.e., the number of STW days per worker)?
   - Do firms diffuse working time reductions across a broader set of employees rather than concentrating them on a few?

II. Do ERP incentives affect broader firm-level outcomes?
   - Does reduced STW intensity coincide with job destruction, or do firms retain only the most profitable job relationships?
   - How do ERP reforms impact firm performance, including liquidity, leverage, profitability (return on assets), and wage-setting behavior?

A particular emphasis is placed on distinguishing the effects of the 2005 and 2012 reforms, which imposed different ERP magnitudes, and on mediating factors such as financial constraints (cash flow) and labor productivity. By doing so, this study provides actionable insights into the design of financial incentives in STW programs.[3]

These objectives are pursued through three distinct studies. Objectives 1 and 2 are addressed jointly in Studies 1 and 2. Study 1 evaluates the impact of STW during the Great Recession, while Study 2 examines the effects of STW on employment and firm survival during the COVID-19 crisis. Study 3 addresses Objective 3 by evaluating the effects of the ERP system within the current design of STW in Belgium.

2.3.2. Psychological component

From a psychological perspective, the project examines how STW affects (1) well-being and (2) career development. In particular, we focus on the role of uncertainty and job insecurity in STW because they can have psychological effects that persist even after workers return to their jobs. The literature review,

[3] In effect, liquidity is critical for labor hoarding via STW — especially during downturn ns when revenues fall and financial constraints tighten — plus the 2012 ERP reform was introduced during Belgium's double-dip recession, a period marked by both liquidity shortages and rising indebtedness. Responses to the ERP may also vary with firm level labor productivity. More productive firms may already allocate working time and STW usage efficiently across employees — a factor that could partly explain their higher productivity — and thus exhibit limited scope for adjustment following the ERP's implementation.

along with interviews conducted with affected workers and managers, helped identify several gaps that the project aims to address. Accordingly, four research objectives have been defined:

1) It is well established that job loss can negatively impact well-being—and that these effects can last well beyond the period of unemployment. In response to this, STW is often presented as a desirable alternative to lay-off. However, it is unclear whether STW protects against the long-term negative effects of job loss in Belgium (i.e., more than a year after implementation). There are three main reasons for this: First, no study has compared the long-term effects of STW and job loss. Second, no research has been conducted in the Belgian context. Third, existing studies have produced inconclusive results (see the literature reviews by Blomqvist et al., 2023; Zheng et al., 2022). The first research objective can therefore be formulated as follows:

Research objective 1: *To assess to what extent STW is a lesser evil than job loss in the long term*

2) Most studies focus on how STW reduces income and resources temporarily (see for e.g. Baranik et al., 2018; Jones et al., 2014; Halbesleben et al., 2013). Yet, STW may still cause worry about the future. In a recent study, Klug and colleagues (2024) found that STW led employees to feel insecure about the future of their jobs. However, it remains unclear whether this worry is only about losing the job, or also about changes in job quality. This question matters because future-related concerns may negatively impact well-being even after the STW period has ended. It leads us to our second research objective, formulated as follows:

Research objective 2: *To examine whether the insecurity associated with STW also concern valued job features (i.e., qualitative job insecurity)*

3) We know little about how STW affects individual careers—except for turnover intentions. One missing piece is how STW influences perceived employability (i.e., how confident employees feel about finding a new job if needed). This perception is critical, as it reflects how prepared workers feel to respond to job insecurity and potential job loss. In this sense, exploring the impact of STW on perceived employability provide a more nuanced picture of how STW affects workers and future career prospects. Accordingly, we formulate the third research objective as follows:

Research objective 3: To explore how feelings of job insecurity and perceived employability may combine among workers affected by STW

4) Current studies on STW often ignore that it may affect workers differently. They treat all workers as one group. However, personal situations and contextual factor could help explain why results on the effects of STW on well-being are inconclusive. In this project, we focus on two key elements that are particularly relevant in the Belgian context: (a) the extent of the crisis (i.e., the prevalence of STW or other employment disruptions) and (b) workers' characteristics (i.e., their industry and organizational role). Accordingly, we formulate the final research objective as follows:

Research objective 4: *To investigate whether and how the extent of the crisis and workers' characteristics influence perceptions of or reactions to STW.*

To address these four research questions, we developed three studies. In Study 1, we examined how well STW protects employees from the negative effects of job loss on well-being more than a year after implementation. In Study 2, we explored the relationship between STW and concerns about the future quality of the job. In Study 3, we investigated the link between STW, job insecurity and perceived employability. Table I presents an overview of the research objectives and the studies that address them.

Table I. Overview of research objectives and studies

Objective	Study 1	Study 2	Study 3
1. To assess to what extent STW is a lesser evil than job loss in the long term	✓		
2. To examine whether the insecurity associated with STW also concern valued job features (i.e., qualitative job insecurity)		✓	
3. To explore how feelings of job insecurity and perceived employability may combine among workers affected by STW			✓
4. To investigate whether and how: (a) the extent of the crisis; (b) workers' characteristics influence perceptions or reactions to STW	✓	✓	

Overall, we adopt a nuanced approach across the three studies. More concretely, we use an analytical framework that consistently highlights two key aspects in the interpretation of the results. First, we consider both **the dark and the bright sides** of STW. Second, we pay close attention to the **heterogeneity** within the STW worker population and how this may influence the impact of STW.

3. METHODOLOGY

This section describes the methods implemented and their originality relative to existing research. It also presents the data sources used and highlights key methodological choices that were subject to discussion or trade-offs.

Given the policy-oriented nature of this report, the description below focuses on the intuition and purpose of the methods, while further technical details are documented in the corresponding academic papers.

3.1. Economic Evaluation

To address the research questions, the project conducted a set of empirical evaluations aimed at estimating causal effects of STW on firm outcomes and understanding how program design, including financial incentives (e.g., ERP), shapes firms' behavior.

Two main approaches are used to evaluate the impact of STW on firm-level employment and survival during the Great Recession and the COVID-19 crisis, respectively: (i) an Instrumental Variable (IV) strategy and (ii) a Fuzzy Regression discontinuity design (RDD).

In addition, to assess how financial incentives embedded in STW—through ERP—affect firm behavior, employment, and financial outcomes, the analysis relies on three complementary quasi-experimental designs: (i) cross-sectional bunching, (ii) dynamic bunching, and a (iii) regression kink design (RKD). The use of multiple designs is a choice, allowing us to capture different behavioral margins and to cross-validate results.

3.1.1. Administrative Data Sources

The economic analysis is based on linked Belgian administrative data, covering firms' employment, STW use, and financial outcomes. Data access and preparation constituted a major activity of the project.

Two main datasets are used.

- The first dataset, provided by the National Social Security Office (NSSO), consists of micro-aggregated firm-level employment in terms of number of workers and volume of work in FTE, as well as STW statistics, disaggregated by sector, region, firm size, and worker type (i.e., identifying a blue-collar and white-collar worker). This structure allows us to identify precisely the group of workers concerned by STW. These data are linked to aggregated VAT information from the National Bank of Belgium (NBB) and are used to evaluate the impact of STW during the Great Recession. The analysis focuses on firms employing between five and 50 workers, which, according to the European Commission definition (EU Recommendation 2003/361), are classified as small firms. Because we do not observe whether firms operate as single- or multi-establishment entities, and because STW take-up is measured at the establishment level whereas VAT information is reported at the headquarters level, restricting the sample to this size bracket ensures internal consistency: more than 90% of firms in this category operate a single establishment. This restriction yields a dataset covering approximately 30% of employers and 30% of private-sector employees, while accounting for more than 50% of STW users.
- The second dataset is drawn from the Crossroads Bank for Social Security (CBSS) and covers the full population of private-sector firms in Belgium over the period 2003–2022. It combines

information from several administrative sources, including NSSO employment records, firm annual balance sheets and VAT declarations from the NBB, firm characteristics from the Crossroads Bank for Enterprises (CBE), and monthly STW participation data from the National Employment Office (NEO/ONEM) for the COVID-19 period. The dataset also includes variables that identify firms exposed to the ERP system. This is based on the number of STW days accumulated by workers within each firm in a year. It also provides information on the sex, age, and contract type of each of these workers. These sources are linked using a unique firm identifier, resulting in a longitudinal and anonymized firm-level database suitable for causal analysis. Take-up of temporary unemployment due to force majeure during the COVID-19 crisis is tracked using monthly ONEM data. To preserve confidentiality, the analyses include only firms with five employees or more, and multi-establishment firms are excluded, as STW decisions are taken at the establishment level. These filters exclude micro-enterprises (68%)[4] and multi-establishment firms (4%), but the resulting dataset still covers roughly half of private-sector employees, providing a strong basis for robust empirical analyses. This dataset is used both to study the employment effects of STW during the COVID-19 crisis and to evaluate the impact of the ERP system.

3.1.2. Micro-econometric Evaluation Methods

Evaluating the causal impact of STW presents important methodological challenges because firms' participation in the scheme is not random. In practice, firms experiencing economic difficulties are more likely to use STW, while financially stronger firms rely on it in a lower magnitude. As a result, simple comparisons between firms that do and do not use STW would conflate the effect of the policy with underlying differences in firm performance. Firms using STW would typically exhibit weaker outcomes even in the absence of the program.

To overcome this challenge, the project relies on quasi-experimental evaluation methods. These methods exploit institutional rules, eligibility thresholds, or policy changes that generate variation in STW use that is plausibly unrelated to firms' underlying employment trends. This allows us to compare firms that are similar in all relevant dimensions except for their exposure to STW, thereby approximating a credible counterfactual: what would have happened to firms using STW had they not had access to the scheme.

In an ideal setting, the causal effect of STW would be identified through a randomized experiment, in which eligible firms are randomly granted access to the program. However, such experiments are rarely feasible in practice. Instead, this project leverages natural experiments embedded in Belgian institutional rules and policy reforms. These quasi-experiments are summarized below and correspond to three distinct empirical studies.

Study 1 – Impact of STW during the Great Recession (2008–2009)

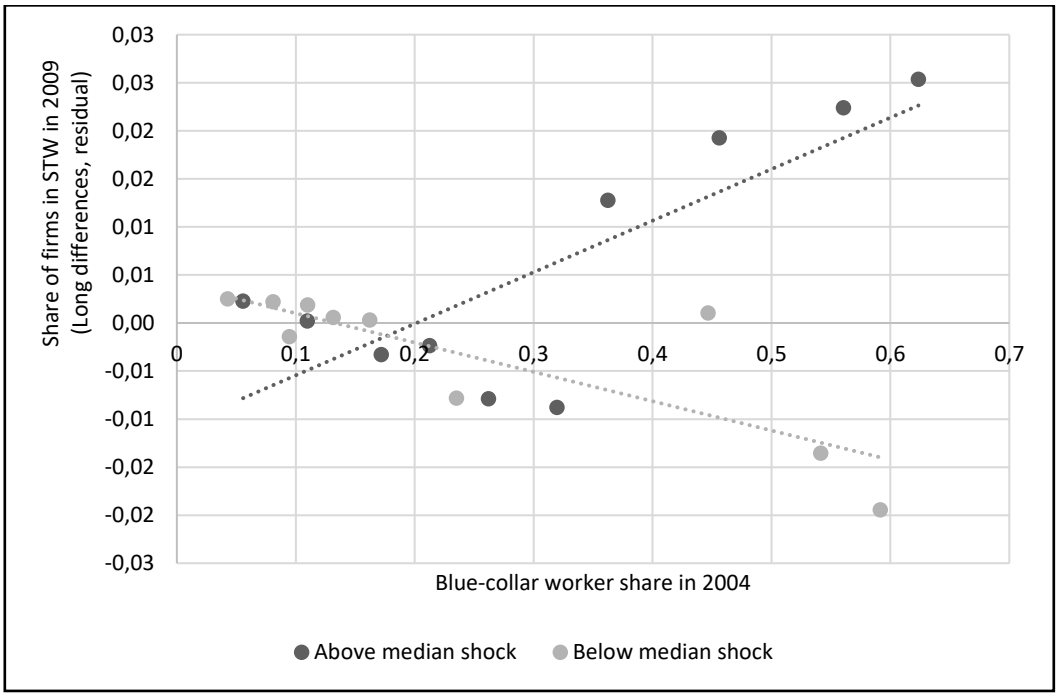
[4] The share of microenterprises is very large in Belgium. See Desiere, Toniolo and Bijnens (2025) for a reference.

To estimate the causal effect of STW on firm-level employment during the Great Recession, the analysis exploits a specific feature of the Belgian STW system: access conditions were historically more flexible for blue-collar workers than for white-collar workers. As a result, firms with a higher share of blue-collar workers faced lower administrative costs when applying for STW.

The evaluation compares firms that were similarly exposed to the economic shock but differed in their likelihood of using STW due to their pre-crisis workforce composition. Figure 1 shows that, for a given negative demand shock above the median, firms with larger pre-crisis shares of blue-collar workers use STW more during the outset of the recession, even after controlling for confounding factors. This positive relationship is absent when firms experience smaller demand shocks.

This institutional feature generates a quasi-experimental source of variation in STW use that is independent of firms' underlying employment trajectories, conditional on dynamic fixed effects. By comparing firms facing similar demand shocks but different access costs to STW, the analysis isolates the causal impact of the program on employment outcomes.

Figure 1. The share of firms in STW om 2009 vs the blue-collar workers share in 2004



Notes: This figure shows the residual of the average change in the share of firms in STW in 2009 with respect to 2004 and the blue-collar worker share in 2004, above and below the median of a turnover shock experienced in 2009 with respect to 2008. The residual is obtained after regressing the share of firms in STW on location-sector specific trends between 2004 and 2009 and potential confounders (e.g., the blue-collar worker share in 2004 interacted with time indicators, the growth rate of the residual of the share of firms in STW 2009.

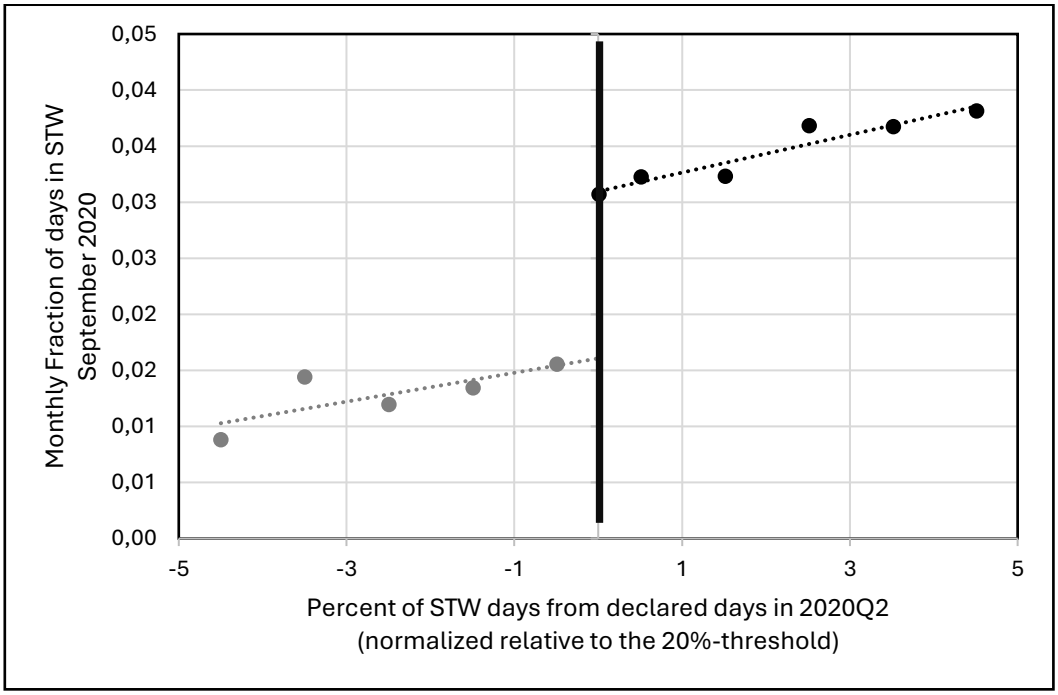
Key methodological choice and debate. A central concern is whether differences in workforce composition might reflect pre-existing trends unrelated to the crisis. To address this, the analysis includes a series of time-varying controls and placebo tests using pre-crisis data. These adjustments demonstrate that the identifying variation is no longer correlated with pre-crisis outcomes once applied. The estimated effects thus capture the impact of STW for firms whose participation was induced by this institutional rule at the very onset of the crisis.

Study 2 – Impact of STW during the COVID-19 crisis (2020–2022)

The evaluation of STW during the COVID-19 crisis exploits a temporary policy change introduced in September 2020, which restricted access to the simplified "force majeure" STW procedure.

Under this temporary reform, firms operating in sectors not directly affected by lockdowns could access the simplified STW procedure only if they had used STW for at least 20% of contractual working days in the second quarter of 2020. Firms just above and just below this threshold were very similar in terms of size, sector, and pre-crisis characteristics, but differed in their access to the simplified procedure.

Figure 2. The fraction of days in STW in September 2020 at the cutoff



Notes: This figure illustrates the empirical relationship between the average fraction of days in STW in September and the share of contractual days in STW in 2020-Q2 (normalized to zero) within a 5 p.p. bandwidth around the cutoff, for partially lockdown-affected firms. The dependent variable is constructed by approximating the total number of contractual days at the firm level using quarterly ONSS/RSZ data, as this information is not available at the monthly level. The graph plots average STW take-up across firms in bins of 1 p.p. on either side of the cutoff. The estimated discontinuity is 1.5 p.p. (SE = 0.25). The corresponding graph for lockdown-unaffected firms is reported in Bermudez (2025).

This threshold created a natural comparison group. Firms located just above the cutoff could access STW under simplified rules, while those just below faced a more restrictive procedure to access which was in place prior the crisis and was stricter for white-collar workers than for blue-collar workers. The analysis therefore compares firms on either side of the 20% threshold, allowing the identification of the causal effect of simplified access to STW.

Because not all eligible firms actually used STW and some ineligible firms still relied on alternative procedures, the research design is based on a fuzzy RDD (see Hahn, Todd, and Van der Klaauw, 2001). The estimated effects capture the impact of STW for firms whose use of the scheme was induced by the policy change.

Figure 2 illustrates the intuition behind this empirical strategy. We compare firms that, because they lie above the 20% threshold, fall on the right-hand side of the cutoff and have access to the simplified procedure with firms on the left-hand side, which face more restrictive access. As shown in the figure, the two groups differ in the intensity of STW use, measured by the fraction of contractual days spent in STW: firms on the right-hand side that are eligible for the simplified procedure exhibit more intensive STW use.

Key methodological choice and debate. The estimated effects are local to firms near the threshold and may not generalize to all firms. Moreover, the restriction applied only for a short period (September 2020), requiring careful interpretation of dynamic effects. These limitations are explicitly acknowledged, and extensive validity checks confirm the credibility of the comparison around the threshold.

Study 3 – Evaluation of financial incentives: the ERP system

The third study examines how financial incentives embedded in the STW system affect firms' behavior. In 2005, Belgium introduced an ERP system for firms in the JC construction. This system increases firms' costs when individual workers exceed 110 days of STW per year. The objective of this mechanism is to discourage excessive use of the scheme while preserving its protective role.

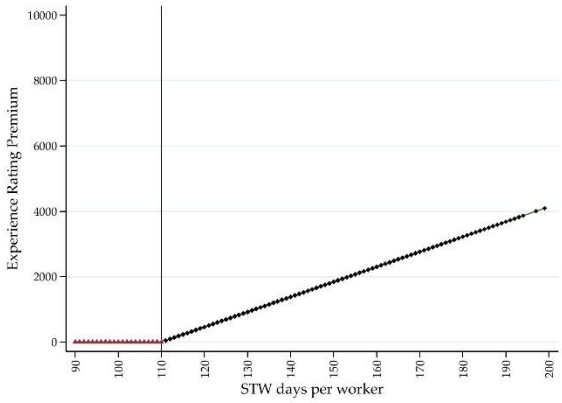
This reform created a sharp kink in the firm-level tax schedule, whereby the marginal cost of additional STW use for a worker increases discretely once the 110-day threshold is exceeded (Panel (a) of Figure 3). In 2012, a second reform extended this structure to all *other* sectors of the economy by introducing five kinks—at 110, 130, 150, 170, and 200 days—with marginal ERP rates rising in €20 increments, from €20 to €100 (Panel (b) of Figure 3). Despite this progressive structure, empirical distributions of STW use indicate that the first threshold at 110 days is the most salient, with behavioral responses concentrated at this point. Accordingly, the empirical analysis primarily focuses on the first kink, which exhibits the strongest responses and offers the clearest identifying variation.[5]

[5] A third reform in 2017 does not feature in this study due to the absence of evidence on behavioral responses. Under this reform, ERP was no longer calculated based solely on STW days exceeding 110 but on the total number of STW days per worker. This adjustment shifted the ERP schedule from a progressively increasing marginal contribution rate to a

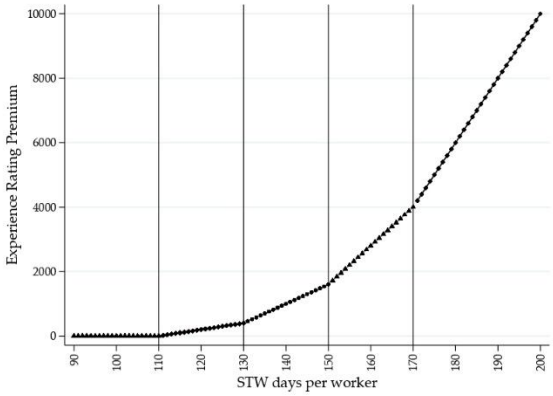
The evaluation exploits these discrete changes in marginal costs at well-defined thresholds (Figure 3). If firms respond to financial incentives, they should adjust STW intensity to avoid crossing these thresholds.

Figure 3. ERP Formulas as a Function of STW days for individual worker

Panel (a) – JC construction



Panel (b) – All sectors beside construction



Notes: These figures show the ERP tax in the Belgian STW for the JC construction from 2005, in Panel (a), and for all other sectors from 2012 until 2015, in Panel (b). The ERP tax is a piece-wise linear function of the number of STW days for individual worker within the calendar year, with a kink (relative to five kinks) for the 2005 (relative to 2012 formula).

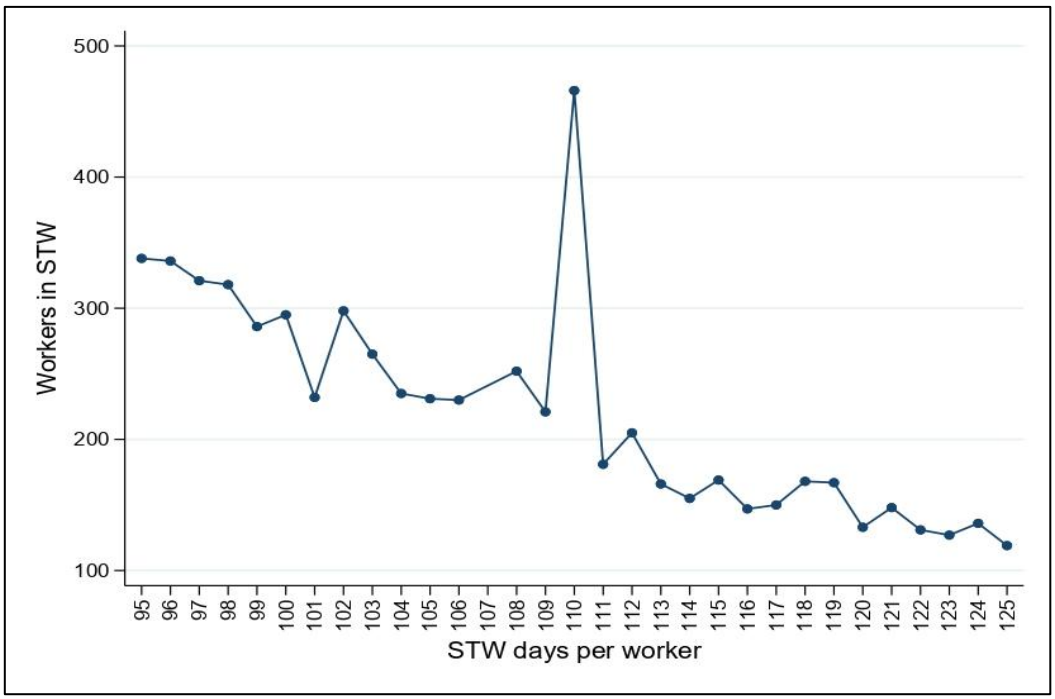
The project uses three complementary quasi-experimental approaches:

- *Static bunching design.* We assess firms' behavioral responses to the ERP using a static bunching design that exploits sharp increases in the marginal cost of STW at specific thresholds of worker-level STW use. Focusing on the 110-day threshold introduced for the construction sector, the approach follows Saez (2010) and Kleven (2016) and rests on the idea that, absent the kink in financial incentives, the distribution of STW days per worker would be smooth around the threshold. Any excess mass of observations just below the cutoff—combined with missing mass above—can therefore be attributed to firms adjusting STW intensity to avoid higher ERP levies. Figure 4 provides visual evidence of this behavioral response and of the identifying variation exploited in the design. The figure displays the distribution of workers by their number of STW days during the post-2012 reform period, focusing on the range around the 110-day threshold. We observe clear excess mass below the 110-day kink, together with missing mass above. We implement the design by estimating the counterfactual distribution of STW days in the absence of the kink and comparing it to the observed distribution. This comparison quantifies the extent of bunching and allows us to recover the elasticity—that is,

progressively increasing average contribution rate, with the five *kinks* replaced by five *notches*. The lack of behavioral responses likely reflects firms' prior adjustments to the earlier reform. Additionally, ERP payments switched from annual to quarterly, calculated based on STW usage in the current and previous three quarters. As of the final quarter of 2016, 6.4% of firms and 1.8% of workers were affected by this new ERP.

the responsiveness—of firms' STW intensity to changes in marginal costs. The analysis is restricted to workers whose STW use lies in a narrow window around the threshold, isolating responses among firms that use STW but adjust its intensity in response to financial incentives.

Figure 4. Bunching at ERP Kinks from the 2012 ERP Reform



Notes: This figure shows the post-reform empirical density of STW days per worker, focusing on the sample of firms in all sectors, except for construction, and pooling observations from 2012 to 2015. The vertical solid line stands for the kink in the 2012 ERP formula. Each dot is the share of workers by the STW days count for workers with STW days within 95 and 125 in the post-reform period. Bins of 1 STW day.

- *Dynamic bunching design.* We use a dynamic bunching design (Garbinti et al., 2023) to examine whether firms respond to ERP incentives by reallocating STW days across a larger number of workers rather than by reducing total STW use. The approach exploits the longitudinal structure of the data and firms' repeated exposure to the ERP schedule to trace behavioral responses over time. Focusing on the 2012 reform, the design captures if and how firms redistribute STW across workers after the reform. Firms are classified into treatment and control groups based on their pre-reform exposure to the ERP, measured by STW days per worker relative to the schedule thresholds. We analyze annual growth rates in the number of STW-enrolled workers within firm–worker demographic cells over 2010–2015. Identification comes from post-reform divergences in the distribution of these growth rates between treated and control firms. If ERP incentives encourage firms to spread STW more broadly, treated firms should display excess mass above zero growth and missing mass below, relative to controls—constituting the dynamic analogue of bunching. Under standard assumptions, this framework

identifies a local average treatment effect (LATE) for responsive ("bunching") firms. This effect is interpreted as a positive growth in STW enrollment rates induced by ERP exposure.

- *Regression kink design (RKD).* With this approach, we examine the effects of the ERP on broader firm-level outcomes, including employment, wage bills, and financial performance. In contrast to the bunching analyses, which focus on firms that actively adjust behavior at the kink, this approach targets non-bunching. These firms are still operating above the 110-day threshold after the reform and therefore exposed to the marginal ERP. The design exploits the change in the slope of the STW tax schedule at the kink while excluding observations in a narrow neighborhood around the threshold to mitigate bias from manipulation. Identification relies on comparing firms just above and below the kink, under the assumption that they are locally comparable except for the marginal tax rate they face. Continuity of potential outcomes and observable characteristics around the kink is supported by density and covariate balance tests. This framework identifies the average causal effect of the marginal ERP on extensive-margin firm outcomes, such as employment adjustments, wage-bill responses, and liquidity changes. By focusing on firms that internalize the ERP rather than avoid it, this strategy complements the bunching evidence and allows us to study heterogeneity by pre-policy financial constraints and labor productivity, shedding light on how STW taxation shapes firm adjustments.

Together, these approaches allow the analysis to distinguish between intensive-margin responses (how many days per worker) and distributional adjustments within firms, as well as broader firm-level consequences.

Key methodological choice and debate. A central issue is whether the ERP discourages excessive use without undermining employment protection. The combination of methods allows the project to assess both behavioral responses and potential unintended effects, offering a comprehensive evaluation of the incentive mechanism.

3.2. Psychological Evaluation

For the psychological part, we first carried out a **preliminary study**: we conducted ten exploratory interviews with employees and managers affected by STW. The goal was to better understand how people experience STW in real life and in the Belgian labor market. This helped uncover potential psychological mechanisms and outcomes that might not have been previously identified. Based on these insights and the literature review, we then developed **three survey-based studies** to test specific hypotheses about the psychological impact of STW.

3.2.1. Preliminary study: Interviews with employees and managers

In November 2021, we conducted 10 in-depth interviews with employees and managers who had experienced STW either themselves or in their teams during the period of the pandemic. In recruiting interviewees, we paid specific attention to heterogeneity in experiences. Said differently, our aim was

not so much to identify the most common experiences, but rather to identify different perspectives. The interviews served as input for the studies under step 2. The interviews were semi-structured: This provided structure and consistency across the interviews, yet also openness for the story of the interviewees and flexibility for the natural flow of the conversation.

The set of questions we started from were:

- why and how was STW put in place?
- how did you, in your role of employee or manager, experienced STW? (*Note: in the follow-up questions, we prompted for both positive and negative aspects)*
- how did STW change the way you see you job and career?
- how did STW change the way you relate to your organization?
- For managers in particular: how do you see your role in putting STW in place and what was the impact on the team?

Table II shows the background of the interviewees below. The interviews lasted on 58 minutes on average. They were recorded and transcribed, with full respect for the anonymity of the participants.

Table II. Profiles of the interviewees

	Industry (status)	Gender	Age	Family status	STW characteristics	Additional comment
I1	Transport (White-Collar)	Woman	29	Single	50% (3 months)	Made a career change after STW
I2	Engineering (White-Collar)	Man	43	Married & Father	80% (1 month) + 40% (3 months)	Had already been put on STW in 2008
I3	IT (White-Collar)	Man	29	Married	100% for 4 months	Made an organization change after STW
I4	Recruitment (White-Collar)	Woman	27	Married	100% for 5 months	-
I5	Hotel (Manager)	Woman	33	Single	100% (1 year)	Lost her job after STW
I6	Carpentry (Blue-collar)	Man	28	Legal cohabitant	100 % (3 weeks) + 50% (2 months)	Partially worked "under the table" during STW
I7	Care (Manager)	Woman	56	Married & Mother	100% (4 months)	-
I8	Recruitment (Manager)	Man	33	Married	20% (1.5 months)	-
I9	Manufacturing (Blue-collar)	Man	37	Married & Father	50% (6 months)	-
I10	Sport (Manager)	Man	30	Single	100% (1 year)	-

Based on the interviews, we conducted a thematic analysis. First, the interviews were fully transcribed. Then, we reviewed the transcripts to identify recurring themes—understood as "labels" used to describe specific parts of the content (Paillé and Mucchielli, 2012). To reduce and organize the data, similar themes were grouped, and connections between them were explored.

The aim was to summarize the overall content of the interviews using a limited set of meaningful themes.

3.2.2. Survey-based studies

We conducted three studies based on online questionnaire surveys, which generated three main datasets. The studies are based on statistical (i.e., quantitative) analyses.

Survey content. We included three types of questions.

(1) Socio-demographic information. For example, we collected the respondents' age, gender, educational level, current job situation, household situation, etc. This is important, as STW may impact people differently, depending on their age, for example.

(2) STW characteristics. For example, we asked whether the STW was partial or full, and what caused it (e.g., the pandemic, energy or economic crisis, or something else). In some studies, we also asked about the duration of STW, the time period it covered, and whether it had been used repeatedly over time. This is important, as STW comes in multiple forms and those forms may impact how employees feel about being put on STW. To illustrate, partial STW (rather than full) may have a different effect on employees because it only partially isolates them from the organization and only partially cuts them off from the positive aspects of work.

(3) Mechanisms and outcomes associated with STW. Workers answered questions or statements—called 'items'—about possible outcomes of STW and about mechanisms that might explain these outcomes. These items were generally measured using Likert-type scales, where respondents indicated their level of agreement from 1 to 5. Often, several items address the same idea. Using multiple items increases the reliability of the measurement. These items are then grouped and analyzed together: a set of items reflecting the same concept forms a 'scale'. We used items and scales that have been used successfully in earlier studies. Those items and scales had already been tested to ensure they are reliable and accurately measure what they are intended to measure. For example, four items capture the notion of job insecurity, including: "*I think I might lose my job in the near future*". Respondents answered using the following five-point scale: 1 = "*Strongly disagree*", 2 = "*Somewhat disagree*", 3 = "*Neither agree nor disagree",* 4 = "*Somewhat agree*", 5 = "*Strongly agree*".

Datasets. The data were collected through different sources: a data-sharing agreement, social media, unions, and an online platform. Some were gathered during the pandemic, others afterward. Some datasets have only one measurement, while others have several. We then reorganized these different datasets into samples according to the study objectives. This diversity has two benefits. First, it lets us see whether the role of uncertainty and job insecurity in STW remains consistent across different countries and crises. Second, it helps limit selection bias related to data collection methods.

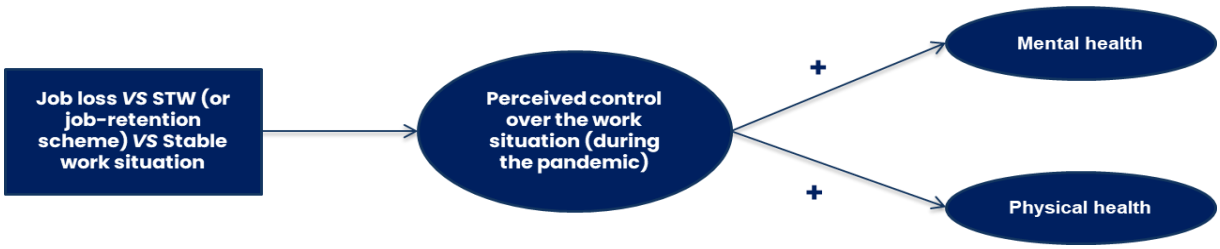
Descriptions of the different samples (including data collection methods), as well as the scales used, are presented in Tables III and IV at the end of the section. The reported sample composition corresponds to the final samples – that is, the samples obtained after removing respondents who did not meet the study requirements or were flagged as inattentive during survey completion based on various criteria established in the literature (see Goldammer et al., 2020).

Analyses. We used Structural Equation Modeling (SEM). Without going into technical detail, this statistical method tests how multiple concepts are related to one another, while also accounting for possible errors in how people responded to the questions.

Study 1 - STW as a lesser-evil option than lay-off in the long term

Study purpose. In study 1, we investigated whether and how well STW protects employees from the negative effects of losing one's job on well-being. To do so, we compared three different groups of workers: job loss, STW (or other job-retention schemes), and stable work situation (as a control group). There are two reasons for this. One reason is to check whether STW is indeed a better alternative than lay-off. A second reason is to check whether there could still be hidden costs in terms of well-being that go unnoticed when the only reference group is job loss. Our general assumption was that STW may still harm mental and physical health in the long run. This could happen because workers perceive that they have less control over their work situation: the uncertainty caused by STW stems from a crisis driven by external forces that individuals cannot control. Such a loss of control is a known source of stress (Vander Elst et al., 2011; 2014). The tested model is shown in Figure 5.

Figure 5. Hypothesized model for study 1



Notes: This figure illustrates how perceived control is expected to mediate — and therefore explain — the effect of the work situation on mental and physical health. The '+' signs indicate a positive relationship between the variables.

In addition, we looked at the context and how it may influence workers' reactions. The extent of the crisis is a particularly relevant factor in a situation like the pandemic, during which an exceptionally large number of workers were placed on STW. Our assumption was that the potential 'hidden costs' of STW depend on how many people are on STW (or experiencing similar employment disruptions) at the same time. This is important because research shows that people judge their own job situation not just based on their experience, but also by seeing how others around them are doing (see e.g., Glavin and Young, 2017). Being one of the few workers placed on STW can feel more severe than when the entire workforce is affected.

Sample and measures. The study focused on the implementation of STW during the pandemic. We tested the same model in two samples from different contexts: Belgium (N = 2655) and the UK/US (N = 418). We did so to check whether results could be replicated, especially since most previous studies were conducted in Anglo-Saxon countries where labor markets tend to be more liberal. This may give an indication of how well previous findings may apply to the Belgian context. Data were collected at a single point in time (i.e., cross-sectional) about one year after the end of the temporary framework that streamlined access to STW (or other job-retention schemes for the UK/US respondents) during the pandemic.

We recruited the UK/US respondents via the Prolific platform, which connects researchers with individuals who are willing to participate in online surveys in exchange for payment. For the Belgian sample, we reached out respondents via social media and collaborated with trade unions who shared our survey through various channels (emails, brochures, website...). To test our model, we asked respondents if they had experienced job loss or STW (or another form of job-retention scheme for the UK/US sample). We included questions in the survey to measure how much control people felt they had over their work during the pandemic, as well as their current levels of mental and physical health. Furthermore, we added a specific question about the proportion of people in the respondent's close circle affected by unwanted job changes or STW during the pandemic.

Statistical analyses. We ran statistical analyses to see if feeling a lack of control could potentially explain a decrease in well-being after changes in employment (i.e., STW or job loss) during the pandemic. We created "Helmert contrasts" (Judd and McClelland, 1989) to be able to compare the effects of STW with those of job loss. In simple terms, we created three different categories of workers (i.e., job loss, STW, stable work situation) and coded two variables accordingly. We made comparisons between:

(1) workers who lost their jobs during the pandemic versus workers who retained their job during the pandemic thanks to STW or stable work situation
(2) workers who experienced STW during the pandemic versus workers who kept a stable job during the pandemic

Finally, we looked at whether having more people in one's close circle affected by STW (or similar employment disruptions) changed how STW was linked to perceived control. Overall, we checked the role of sociodemographic variables to ensure that the statistical effects were truly related to STW or job loss, and not to other characteristics that workers in these groups might have in common.

The study and its methodological approach have several <u>strengths</u>:

- We compared the well-being of workers who experienced STW or job loss more than a year earlier. Most studies focus on the short term and therefore do not show if STW is still associated with lower level of well-being later on.
- We can explain the observed differences through a concrete psychological mechanism (i.e., the level of perceived control over the work situation). This helps identify potential areas for action.

- We replicated our results using two relatively large samples.
- We accounted for the role of sociodemographic characteristics.

However, the study and its methodological approach also have some limitations:

- We collected data at one point in time, knowing that STW or job loss had already happened. This means we cannot say for certain that these events caused a decrease in well-being. That said, the timing still gives useful insight into how workers put on STW feel long after the experience.
- To measure perceived control, we asked respondents to remember how they felt during the pandemic. Although later work experiences might affect these memories, we lowered this risk by asking detailed questions about career paths. This helped us better classify respondents into the three groups (job loss, STW, stable work situation) and interpret the results.
- Not all workers affected by STW had the same experience. Some may have received more financial help, stopped working fully or partially, or had different timelines. Our study gives a general picture, but future research should look more closely at these individual differences.

Study 2 - STW and qualitative job insecurity

Study purpose. In study 2, we investigated the relationship between STW and qualitative job insecurity (i.e., the perceived threat of losing valued aspects of one's job). The general assumption was that being placed on STW (vs. not being placed on STW) may signal upcoming negative changes in the nature of work and working conditions (e.g., loss of specific job-related rewards, limited access to career development opportunities, loss of resources to accomplish one's duties...). This could, in turn, result in a decrease in job satisfaction and an increase in psychological distress (e.g., Callea et al., 2019; Nikolova et al., 2023; Vander Elst et al., 2014). A focus on qualitative job insecurity is particularly relevant in crises like the early stage of the pandemic, where the shock is extraordinary but may also be perceived as temporary in nature (Ren et al., 2023). Temporality may reduce concerns about losing the job itself, but not necessarily about losing valued job features (Vander Elst et al., 2014). The tested model is shown in Figure 6.

Figure 6. Hypothesized model for study 2

Notes: This figure illustrates how qualitative job insecurity (at time 1) is expected to mediate — and therefore explain — the effect of STW on job satisfaction and psychological distress (at time 2). The '+'/'-' signs indicate a positive/negative relationship between the variables.

Furthermore, we looked at whether short-time workers form a single group or if different types of workers react differently. In particular, we focused on their position in the organization (i.e., more or less central) and the sector they work in. This question was particularly relevant during the pandemic: the widespread use of STW made the affected workforce more diverse. Workers who are usually more secure – including those in roles with greater responsibility – were also placed on STW. In addition, the nature of the crisis heavily affected sectors that are normally less exposed to STW, such as retail, hospitality, leisure, and air transport, which were strongly hit by successive lockdowns (Vandekerkhove et al., 2020). As a result, many workers who were unfamiliar with this measure suddenly found themselves on STW. This may have shaped how they perceived the situation.

Sample and measures. We tested the model using a longitudinal dataset obtained via a data-sharing agreement. The data were collected in Belgium at the onset of the COVID-19 pandemic thanks to a media campaign that included newsletters, digital media platforms, social media, and a press release. The sample consisted of 1840 respondents surveyed at two time points: T1 (end March – end April 2020) and T2 (end May – end June 2020), with a two-month interval between measurements. T1 corresponded to a pandemic phase marked by a sharp increase in STW, while T2 coincided with the gradual easing of health restrictions. Among the respondents, 260 were put on STW at T1. In addition to questions on STW, the survey included scales measuring qualitative job insecurity at T1, and job satisfaction and psychological distress at T2. Respondents also provided information on their sociodemographic and employment characteristics, including contract type, managerial status, and industry.

Statistical analyses. After testing the overall model, we conducted "multigroup" analyses to examine whether the relationships between variables differed across specific workers profiles (i.e., part-time vs. full-time employees, employees vs. line managers, and workers in industries usually affected by STW vs. workers in industries usually not affected).

The study and its methodological approach have several <u>strengths</u>:

- Unlike the previous study, data were collected right when STW was introduced and followed participants over two months. This period is relevant because T1 captured the start of the crisis, while T2 reflected a moment when people felt hopeful that things were improving. Consequently, the data were not affected by the later waves of the pandemic or the repeated lockdowns that followed.
- We conducted multigroup analyses to investigate whether STW is associated with different effects across different profiles of workers.

However, the study and its methodological approach also have some <u>limitations</u>:

- Psychological distress and job satisfaction were not measured before the pandemic (no baseline), which would have helped show the exact impact of STW. It is not possible to state with certainty that there is a causal effect between STW and the outcomes.

- The time between the two survey points (2 months) was quite short. As a result, we only captured short-term effects. This is a limitation because we cannot know how long the insecurity lasts, nor whether it fades or worsens over time.
- Once again, we did not consider the different ways STW was applied. However, we did check whether being on partial or full STW affected the significance of the results.

Study 3 - STW and Profiles of Security in Future Employment

Study purpose. In study 3, we investigated how perceptions of job insecurity and employability may combine among STW workers. Job insecurity and employability are often seen as two sides of the same coin: job insecurity is about concerns about the current job, whereas employability is about the ability to secure potential future jobs (Doden et al., 2024). Job insecurity is assumed to be less problematic when workers can easily secure another job (i.e., when they feel employable; Chung and van Oorschot 2011). Yet, job insecurity and feeling employable do not necessarily go together (De Cuyper et al., 2015). In this regard, the signals sent by STW are complex: on one hand, it suggests that a job may be at risk. On the other hand, it shows that the employer wants to retain skilled workers, which may strengthen perceptions of employability. To illustrate, this ambivalence is reflected in the quote below:

"There was no clear outlook on what was next. You do not know whether the economy is about to crash…You wonder whether you will keep your job, whether your house will have to be sold…But on the other hand, your employer keeps you, while many other have lost their jobs. So, in my case, I just thought: "Hang on, they keep you on the boat !"."

To better understand this complexity, it is possible to use a different type of statistical method: profile analyses. In study 3, we therefore built profiles of *security in future employment*. These profiles are a combination of the perceived risk of job loss (i.e., quantitative job insecurity) and the perceived ability to find a new job within or outside the organization (i.e., internal and external perceived employability). As such, they capture not only the perceived threat of job loss, but also the worker's perceived capacity to bounce back if that threat were to materialize. The general assumption was that being placed on STW (vs. not being placed on STW) may predict membership in profiles characterized by lower employment security. These profiles were, in turn, expected to be associated with lower levels of mental health, work engagement and career satisfaction.

Sample and measures. In this study, we examine STW outside the context of the pandemic. The data partly came from the same Belgian database as that used in Study 1. An initial measurement time point (T1) was collected during the winter of 2023–2024, and a second measurement time point (T2) was collected during the summer of 2024, six months later. 748 people answered at both times. Among them, 136 were put on STW in the six months before T1, and 153 were put on STW between the two time points. At both time point, the surveys included scales measuring quantitative job insecurity, internal and external perceived employability, mental health, work

engagement, and career satisfaction. Respondents gave information about their sociodemographic characteristics as well as any previous or ongoing experience with STW.

Statistical analyses. We first conducted Latent Profile Analyses (LPA) to identify profiles of future employment security at T1 and T2. This statistical method grouped respondents into different 'profiles' based on their scores on quantitative job insecurity, internal perceived employability, and external perceived employability. We then conducted a Latent Transition Analysis (LTA) to examine how stable the profiles observed at T1 were over time, or whether they changed at T2. Based on this, we looked at whether having gone through STW in the past 6 months made people more likely to end up in a less secure profile (beyond prior profile membership and background characteristics). Finally, we examined whether insecure profiles were generally associated with lower levels of mental health, work engagement, and career satisfaction.

The study and its methodological approach have several strengths:

- LPA and LTA use a person-centered approach (Nylund-Gibson et al., 2023). They identify distinct profiles and show how workers differ—not just in single perceptions, but in how these perceptions combine. This is important for understanding STW because it provides a fuller picture of the situation. The signals sent by STW are complex: workers might feel insecure yet still confident about finding another job. In such cases, the insecurity should be seen with nuance. Other more traditional methods often miss this because they look at variables separately, not how they work together.
- We used a research design where the same scales were measured multiple times, with enough time between measurements to observe some changes. We assessed the situation at T1, before the STW period that took place between T1 and T2. This way, we can already better understand if one thing causes another.
- We collected data through complementary channels (i.e., unions and social networks), which helps avoid the selection biases inherent to each method.

However, the study and its methodological approach also have some limitations:

- Although the sample was relatively large, it was not large enough to assess whether STW specifically influenced transitions from certain profiles to others between T1 and T2.
- The design does not allow us to see whether there are cumulative effects over time. In other words, we cannot tell if the effects become stronger with time, if people adjust and the impact fades, or if the timing or repetition of STW changes the outcome.

Table III. Sample compositions for studies 1, 2, and 3

Characteristics	Sample for study 1 (UK/US)	Sample for study 1 (BEL)	Sample for study 2	Sample for study 3
Data collection channel	Prolific (online platform)	Social networks and unions	Data-sharing agreement	Social networks and unions
Data collection period	March 2023	Nov 2023-March 2024	T1: end March-April 2020 T2: end May-June 2020	T1: Nov 2023-March 2024 T2: May 2024 – Sept 2024
N	418 (Job-retention scheme: 135, Job loss: 117, Stable employment: 166)	2655 (STW: 1378, Job loss: 120, stable employment: 1157)	1840 (STW: 260)	748 (STW at T1: 136, STW at T2: 153)
Age (mean)	40.8	47.63	46.05	47.31
Gender				
Women	55.4%	62.3%	76.1%	57%
Men	44.6%	36.9%	23.9%	43%
Education				
Higher education diploma	55.8%	55.6%	78.4%	56.8%
Employment status	78.2% employees, 6 % self-employed, 21.8% searching for work	97.1% employees, 0.9% self-employed, 2.9% searching for work	100% employees	100% employees
Contract				
Temporary	12%	4.9%	10.5%	4.5%
Permanent	88%	95.1%	89.5%	95.5%
Work regime				
Part-time	31.8%	36%	37.3%	33.8%
Full-time	68.2%	64%	66.7%	66.2%
Job occupation				
Blue-collar	23.1%	32.9%	-	34.8%
White-collar	77.9%	67.1%		65.2%
Managerial position				
Employee			77.9%	
Line-manager	-	-	16.7%	-
Other (e.g. unknown, executive…)			5.4%	
Industry	14.9% retail and sales, 10.6% education, 10.1% tourism, 64.4% other	17.1% healthcare and social care, 15.9% manufacturing and engineering, 7.9 %, 59.1% other	11.9% sectors usually impacted by STW (i.e., manufacturing, cleaning, and construction), 88.1% other	

Table IVa. Scales for study 1

Construct	Scale	Responses for the scale
Perceived control during the pandemic (adapted from Vander Elst et al., 2011; 2014)	*To what extent do you agree with the following statements?* 1) During the pandemic, I had enough power to control the circumstances that did affect my job 2) During the pandemic, I could prevent negative things from affecting my work situation 3) During the pandemic, I understood my organization and the job market well enough to be able to control things that might affect my job	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
Mental health (Berwick et al., 1991)	*How often, during the past month, have you…* 1) …been a very nervous person? 2) …felt calm and peaceful? 3) …felt downhearted and blue? 4)…been a happy person? 5)…felt so down in the dumps that nothing could cheer you up?	(1) Never, (2) Rarely (monthly), (3) Sometimes (weekly), (4) Often (several times a week), (5) Always (daily)
Physical health (Ware, 1999)	*To what extent do you agree with the following statements?* 1) I seem to get sick a little easier than other people 2) I am as healthy as anybody I know. 3) I expect my health to get worse in the near future. 4) My health is excellent.	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
Impact of STW in the close circle (created for the study purpose)	*Among your family members, friends, and acquaintances who work has anyone experienced STW during the pandemic or the crisis that followed?*	(1) No one (2) The minority of the people who work (3) Half of the people who work (4) The majority of the people who work (5) Everyone who works
STW and Sociodemographic	Past experience with STW or job loss, Cause explaining STW or job loss (i.e., pandemic, energy crisis or other financial crisis, other), Full or partial STW, length of STW, other job or career transitions since the start of the pandemic, gender, age, employment status, education, family situation, contract type, work regime (i.e., full versus part-time), blue-collar versus white-collar worker, industry	

Table IVb. Scales for study 2

Construct	Scale	Responses for the scale
Qualitative job insecurity (O'Neill and Sevastos, 2013)	*To what extent do you agree with the following statements?* 1) Overall, my physical working conditions are likely to deteriorate. 2) I am expecting unfavorable changes to my job. 3) I expect to have fewer resources to meet the performance requirements of my job. 4) The rewards of my job are likely to diminish. 5) I will probably lose many features of my job that I value the most.	(1) Entirely disagree; (2) Rather disagree; (3) Partly agree, partly disagree; (4) Rather agree; (5) Entirely agree
Psychological distress (Goldberg, 1978)	*We would like to know how your health has been in general in the past 4 weeks. In the past 4 weeks, …* [Social Dysfunction] 1) Have you been able to concentrate on whatever you were doing? 2) Have you felt that you are playing a useful part in things? 3) Have you felt capable of making decisions about things? 4) Have you been able to enjoy your normal day-to-day activities? 5) Have you been able to face up to your problems? 6) Have you been feeling reasonably happy, all things considered? [Anxiety & Depression] 7) Have you lost much sleep over worry? 8) Have you felt constantly under strain? 9) Have you felt you could not overcome your difficulties? 10) Have you been feeling unhappy or depressed? [Loss of confidence] 11) Have you been losing confidence in yourself? 12) Have you been thinking of yourself as a worthless person?	1) More than usual; (2) Same as usual; (3) Less than usual; (4) Much less than usual 1) Not at all; (2) Not more than usual; (3) Rather more than usual;4) Much more than usual 1) Not at all; (2) Not more than usual; (3) Rather more than usual;4) Much more than usual
Job satisfaction (Steijn, 2004)	*How satisfied are you with your work at the moment, all things considered?*	(1) Very unsatisfied; (2) Unsatisfied; (3) Rather unsatisfied; (4) Neither unsatisfied, nor satisfied; (5) Rather satisfied; (6) Satisfied; (7) Very satisfied
STW and Sociodemographic	Full or partial STW, gender, age, education, family situation, current job occupation (i.e., low-skilled technician, high-skilled technician, administrative clerk, senior clerk, executive), managerial position (i.e., employee versus line-manager), work regime (i.e., full versus part-time), industry	

Table IVc. Scales for study 3

Construct	Scale	Responses for the scale
Job insecurity (De Witte, 1999)	*To what extent do you agree with the following statements?* 1) Chances are I will soon lose my job 2) I feel insecure about the future of my job 3) I think I might lose my job in the near future 4) I am sure I can keep my job	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
Internal perceived employability (Nelissen et al., 2017)	*To what extent do you agree or disagree with the following statements?* 1) I am confident that I could quickly get a similar job with my current employer. 2) I could easily switch to another job with my current employer, if I wanted to. 3) I am optimistic that I would find another job with my current employer, if I looked for one. 4) I would easily find another job with my current employer, instead of my present job.	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
External perceived employability (Nelissen et al., 2017)	*To what extent do you agree with the following statements?* 1) I am confident that I could quickly get a similar job with another employer. 2) I could easily switch to another job elsewhere, if I wanted to. 3) I am optimistic that I would find another job elsewhere, if I looked for one. 4) I will easily find another job with another employer, if I lose this job.	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
Mental health (Berwick et al., 1991)	How often, during the past month, have you… 1)…been a very nervous person? 2)…felt calm and peaceful? 3)…felt downhearted and blue? 4)…been a happy person? 5)…felt so down in the dumps that nothing could cheer you up?	(1) Never, (2) Rarely (monthly), (3) Sometimes (weekly), (4) Often (several times a week), (5) Always (daily)
Work Engagement (Schaufeli et al., 2019)	Regarding how you feel at work in particular, to what extent do you agree with the following statements? 1) At work, I feel bursting with energy 2) I am enthusiastic about my job 3) I am immersed in my work	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
Career satisfaction (Shockley et al., 2016)	*Considering your current career, please indicate to what extent you agree with the following statements:* 1) My career is personally satisfying. 2) am enthusiastic about my career. 3) have found my career quite interesting.	(1) Strongly disagree; (2) Somewhat disagree; (3) Neither agree, nor disagree; (4) Somewhat agree; (5) Strongly agree
STW and Sociodemographic	Past or current experience with STW (including when it ended), Full or partial STW, length of STW, gender, age, employment status, education, family situation, contract type, work regime (i.e., full versus part-time), blue-collar versus white-collar worker, industry	

4. SCIENTIFIC RESULTS AND RECOMMENDATIONS

This section presents the scientific results of the project and highlights their policy relevance. The results consist of empirical evidence, that include the application of novel methods, and policy-relevant insights derived from economic and psychological analyses of STW programs in Belgium. They are based on quasi-experimental research designs and detailed survey instruments. The section situates these findings in their scientific and societal context, discusses their main limitations, and highlights the added value of the project in terms of policy. The section concludes by formulating concrete recommendations to support public authorities in refining STW schemes in future economic downturns.

4.1. Economic Analysis

This section summarizes the main results of the project and translates them into policy-relevant recommendations. The objective of the research is to provide causal evidence on the effectiveness of STW schemes in Belgium, with a particular focus on employment preservation during major economic crises and on the role of financial incentives as program design features.

Consistent with existing evidence, the results confirm that STW is an effective employment-stabilization tool when firms face severe but temporary shocks. However, its effectiveness declines sharply under broad or poorly targeted access, generating substantial deadweight costs. Beyond these established findings, the project delivers new insights by showing that (i) institutional design features, such as eligibility rules and administrative costs, critically shape employment effects; (ii) financial incentives embedded in the scheme influence firms' behavior; and (iii) heterogeneous effects across sectors, firm characteristics, and crisis contexts are central to understanding when and how STW can be most effective.

The following subsections present the empirical results in more detail, discuss their scientific and policy relevance, and formulate recommendations to support evidence-based decision-making.

4.1.1. Impact of STW on Firms During the Great Recession

This subsection summarizes the main findings on the effects of STW on employment, working time, the net retention rate of firms and wages during the Great Recession, based on a quasi-experimental evaluation using firm-level administrative data for the period 2004–2012. The analysis exploits institutional differences in access to STW across worker types and sectors to identify causal effects, as described in Section 3.1.2. Overall, the results indicate that STW primarily operated as a working-time adjustment mechanism and generated positive short-term employment effects only in sectors severely affected by the crisis—most notably manufacturing—while its broader employment impact remained limited.

At the aggregate level, the results confirm that STW operated primarily as a working-time adjustment instrument. Firms induced to take up STW reduced hours worked per worker substantially—by around

20 percent—consistent with the intended functioning of the scheme. This reduction in working time was not accompanied by statistically significant changes in wage rates. Instead, the decline in the wage bill per worker closely mirrors the reduction in hours worked (Lucifora and Origo, 2025), reflecting a mechanical effect of STW: wages for non-worked hours were partly covered by public transfers, while hourly wage rates remained largely unchanged. This pattern is consistent with Belgium's centralized wage-setting institutions and contrasts with countries where wages adjust more flexibly (e.g., Germany) (Brinkmann et al., 2024).

For the average treated firm, reductions in working time did not translate into statistically significant headcount employment gains. Estimated effects on headcount employment and total volume of work per firm are positive but small and imprecisely estimated, with wide confidence intervals. This suggests that, on average, STW did not significantly translate into job preservation at the onset of the crisis, despite effectively smoothing labor input at the intensive margin.

A key contribution of the project lies in documenting strong sectoral heterogeneity. When distinguishing between manufacturing and non-manufacturing sectors, the results show that positive headcount employment effects are concentrated in manufacturing—the sector most severely affected by the financial crisis. In manufacturing, STW led to substantial reductions in hours worked per worker and statistically significant short-run increases in headcount employment and total work volume. Quantitatively, an additional full-time equivalent (FTE) in STW is associated with the preservation of roughly half a job in a median manufacturing firm (which employs approximately 10 workers in the sample). These effects are larger than those documented in studies focusing on larger firms in other countries (Biancardi et al., 2025), suggesting that STW was particularly effective for small, liquidity-constrained manufacturing firms. These findings are consistent with existing theoretical and empirical work, which emphasizes that STW is unlikely to generate strong employment effects when firms face moderate or short-lived shocks (Cahuc et al., 2024).

Additional results on the effect of STW on net firm retention point to modest short-term effects. Alternative specifications suggest a positive impact on net firm retention one year after STW take-up, although interpretation requires caution. Part of this effect may reflect within-sector and within-location reallocation dynamics: by supporting distressed firms, STW may have temporarily reduced firm exit but also limited entry and labor reallocation within local markets. While the analysis captures such spillovers within sector–location observations, it cannot observe reallocation across sectors or regions.

The positive headcount employment effects observed for manufacturing firms proved short-lived. Employment gains largely dissipated after the first year of treatment. This contrasts with evidence from France (Cahuc et al., 2024) and Switzerland (Kopp and Siegenthaler, 2021), where employment effects persisted for longer periods. In the Belgian context, manufacturing firms underwent substantial structural adjustment after 2009—through downsizing, automation, and organizational change—which likely limited the persistence of STW's effects. Importantly, existing evidence (Van den Bosch and Vanormelingen, 2023) indicates that labor reallocation in Belgian manufacturing firms remained

productivity-enhancing during this period, suggesting that STW did not substantially hinder medium-term headcount employment adjustment but rather delayed it (Giupponi and Landais, 2023).

In non-manufacturing sectors, no statistically significant employment effects are detected, either in the short or medium term. This likely reflects a combination of less severe and more temporary demand shocks, more dispersed adjustment across firms and workers, and greater measurement noise due to idiosyncratic shocks. The absence of employment effects in these sectors indicates that STW mainly financed reductions in working time that would not have resulted in layoffs anyway, pointing to substantial deadweight costs.

Limitations. The analysis focuses on small and medium-sized firms and on outcomes observed within the period 2009-2012. While it captures reallocation dynamics within sector–location observations, it cannot fully assess longer-run adjustments or reallocation across sectors and locations. Moreover, the estimated effects primarily reflect firms that responded early to the Great Recession shock, which tend, on average, to be structurally less productive, as more productive firms are better able to hoard labour without resorting to STW.

Policy implications. Taken together, the results indicate that STW was an effective short-term buffer for manufacturing firms during the Great Recession, but that its broader employment impact was limited. These findings underscore the importance of targeting STW toward sectors and firms exposed to large but temporary shocks, while avoiding broad access that generates high fiscal costs with limited employment benefits.

4.1.2. Impact of STW on Firms During the COVID-19 Pandemic

This subsection summarizes the main findings on the employment effects of STW during the COVID-19 crisis, based on a quasi-experimental evaluation exploiting a temporary policy change that took place in September 2020. The analysis relies on firm-level administrative data and focuses on firms whose access to the simplified STW procedure changed as a result of this reform. Overall, the results show that simplified access to STW substantially stabilized employment among firms directly exposed to lockdown restrictions, while generating limited employment benefits and sizable deadweight effects in less affected sectors.

The evaluation exploits an eligibility rule, which restricted access to the simplified *"Corona force majeure"* STW procedure for firms operating in lockdown-unaffected sectors.[6] Firms could access the simplified procedure only if they had used STW for more than 20 percent (i.e., the threshold) of contractual working days in the second quarter of 2020. Firms just above and just below this threshold were similar in observable characteristics and pre-pandemic trends but differed sharply in the administrative procedure to access to STW, with an easier access for firms above the threshold (i.e.,

[6] In this specific case, a lockdown-unaffected sector is defined based on a list of joint committees (JCs; commissions paritaires in French) explicitly defined by the government.

the eligible group). This institutional feature provides quasi-experimental variation that allows for the identification of causal effects on employment outcomes for firms close to the threshold.

The analysis focuses on two types of firms: (i) partially lockdown-affected firms—those with at least one worker in a lockdown-concerned sector and others only eligible under the 20% cutoff rule—and (ii) lockdown-unaffected firms—those with only workers eligible under the 20% cutoff rule. The identification strategy allows the study of STW effects on both the extensive (take-up) and intensive (fraction of days) margins of program use.[7]

At the aggregate level, the results indicate that simplified access to STW during the pandemic contributed to stabilizing employment among firms affected by the policy change. Firms eligible under the simplified procedure in September experienced higher short-run employment levels relative to comparable firms that faced more restrictive access, but this effect is only significant for lockdown-affected firms.[8] These effects are accompanied by both an extensive-margin response—higher likelihood of STW take-up (approximately a 10.6–11 percentage point increase)—and an intensive-margin response—greater use of STW days as a fraction of contractual days (approximately a 1.5–2.0 percentage point increase)—among eligible firms.

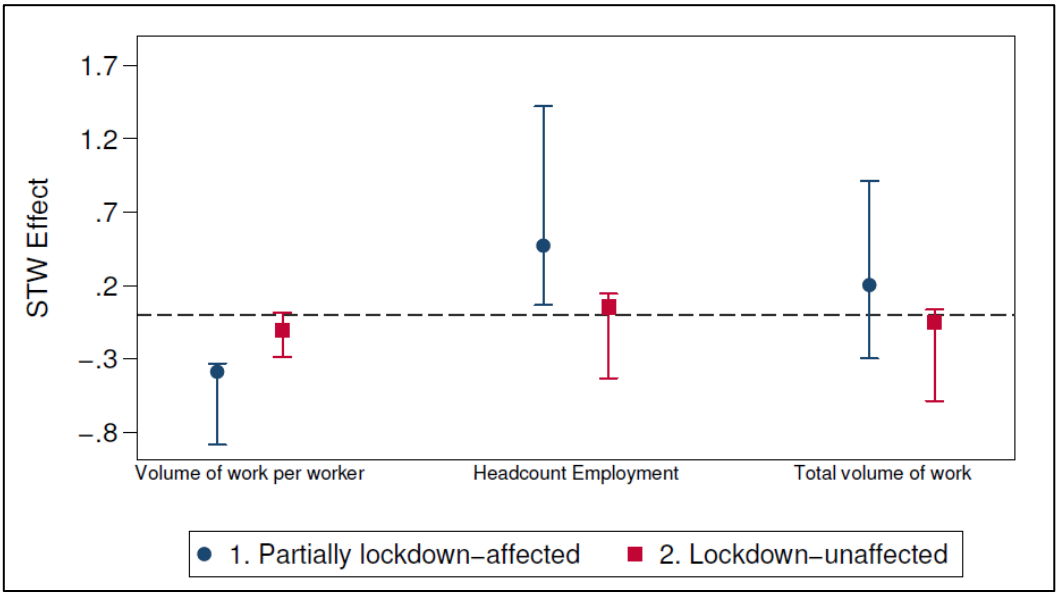
Estimates of the effect of STW on firms eligible to take-up the simplified procedure (Figure 7) confirm that for partially lockdown-affected firms, STW take-up in September led to a substantial reduction in volume of work per worker (−34 to -57%) alongside a significant increase in headcount (+48 to +58%). Notably, STW was particularly effective in protecting high-wage workers in these firms, consistent with the expectation of post-crisis recovery and the desire to retain workers with firm-specific human capital. These effects were not observed among lockdown-unaffected firms (Figure 7), suggesting that STW was on average more effective in sectors with a high risk of job destruction. While lockdown-unaffected firms above the cutoff did increase program take-up, they did not realize employment gains, resulting in short-term deadweight losses.

Dynamic estimates extending to the end of 2022 show that employment gains among partially lockdown-affected firms were persistent. Headcount employment and total work volume remained higher over the medium term (i.e., a cumulative effect), despite fluctuations in work intensity driven by successive waves of the pandemic and the subsequent recovery. For lockdown-unaffected firms, no significant medium-term employment effects are obtained. Mechanical reductions in work volume per worker persist, but without corresponding increases in headcount, confirming the limited average effectiveness of STW in preserving employment in these firms.

[7] Firms fully affected by lockdown restrictions—defined as firms whose entire workforce is employed in lockdown-affected sectors—are not the focus of this study for two reasons. First, their effects cannot be identified, as there is no variation in policy take-up during the COVID-19 period. Second, the effects for these firms are likely to be positive, as they were unable to operate and thus used STW primarily to smooth the pandemic shock (Cahuc, 2024). These firms correspond to 40% of private-sector firms.

[8] Headcount employment was approximately 5 % higher for firms that faced a simplified access compared to firms that faced a more restrictive access.

Figure 7. Short-term effects of STW take-up on employment.



Notes: Outcomes are defined using the transformation log(x+1). Outcomes in logs deliver similar estimates. The bandwidth is 3.5. p.p. and 4.1. p.p., for partially lockdown-affected and lockdown-unaffected firms, respectively. The estimates presented correspond to Local Average Treatment Effects (LATE) at the threshold of evaluation. Estimates are based on 1,880 and 2,141 firms, for each group of firms, respectively. Dots correspond to conventional estimates and vertical lines are 95% robust bias-corrected Confidence Intervals.

STW had no statistically significant effect on firm bankruptcies over the period studied. This likely reflects the fact that firms in the counterfactual group faced limited bankruptcy risk, as moratorium policies temporarily prevented firm exits. Although bankruptcy rates rose after these moratoria expired, there is no evidence that STW reduced bankruptcies during the 2020–2022 period.

Employment effects vary systematically with workforce composition, particularly the share of white-collar workers. Before the pandemic, access to STW for white-collar workers was more restricted, limiting firms' ability to adjust working hours rather than employment. The simplified COVID-19 procedure relaxed this constraint. As a result, white-collar-intensive firms experienced larger employment gains. This pattern is most pronounced among partially lockdown-affected firms, where firms with an above-median share of white-collar workers display a stronger increase in STW take-up at the eligibility threshold and sustained employment gains in the medium term.

By contrast, blue-collar-intensive firms in these sectors show no significant change in the probability of using STW at the threshold, as they were already largely eligible under pre-existing rules. However, they increase their intensity of use, measured by the fraction of days in STW. This more intensive use does not translate into short-run headcount gains, although positive employment effects emerge in the medium term.

Although these firms were partially affected by lockdown measures, they were not belonging to strictly lockdown-closed sectors in September, when the economy was experiencing a temporary recovery before the second wave. Moreover, blue-collar-intensive firms are concentrated in sectors with substantial prior experience using STW—particularly those characterized by seasonal fluctuations, such as construction and manufacturing (OECD, 2026; Bermudez, Cockx, and Bijnens, 2025). This historical reliance on STW helps explain why changes in access conditions primarily affected usage intensity rather than participation, since these firms were already operating under relatively flexible eligibility rules. It also explains why employment effects materialized only over a longer horizon, when the second wave hit and more severely affected these sectors, placing a larger share of jobs in these firms at genuine risk.

Among lockdown-unaffected firms, employment responses are weaker. White-collar-intensive firms exhibit delayed headcount gains without lasting increases in total volume of work. Firms with mixed workforces show short-lived employment gains that disappear once simplified access is withdrawn. Firms composed entirely of blue-collar workers (which represents 25% of the lockdown-unaffected group of firms) display no employment gains, despite intensive STW use. These patterns point to substantial deadweight costs among firms with low exposure to the crisis and prior familiarity with the scheme.

Overall, STW was most effective when targeted at firms facing pre-crisis binding operational constraints and high adjustment costs. Simplified access played a key role in stabilizing employment for highly lockdown-exposed sectors. However, broad access also generated limited employment benefits and sizable deadweight losses, especially coming from less lockdown-affected sectors. These findings highlight the importance of well-targeted eligibility rules to enhance the cost-effectiveness of STW during prolonged crises.

Limitations. The estimated effects are local to firms close to the eligibility threshold and do not reflect average effects for all firms. The analysis focuses on within-firm employment adjustments and medium-term dynamics up to 2022, and does not capture broader reallocation effects across firms or sectors. In addition, concurrent policies—most notably bankruptcy moratoria—limit our ability to assess the impact of STW on firm exits. Finally, the analysis excludes firms that were fully exposed to lockdowns and periods of acute job destruction (i.e., peak of the crisis), where previous studies have shown STW to be highly effective.

Policy implications. From a policy perspective, the results suggest that STW is most effective when rapidly deployed and tightly targeted to firms facing high risks of job destruction. Simplified access was crucial during the acute phase of the COVID-19 crisis, particularly for firms with high adjustment costs. At the same time, prolonged and broad access in less affected sectors led to substantial deadweight costs. Future STW schemes should therefore combine rapid activation in emergencies with timely re-targeting as conditions improve, aligning support more closely with actual employment risks.

4.1.3. Impact of ERP Reforms on STW Use

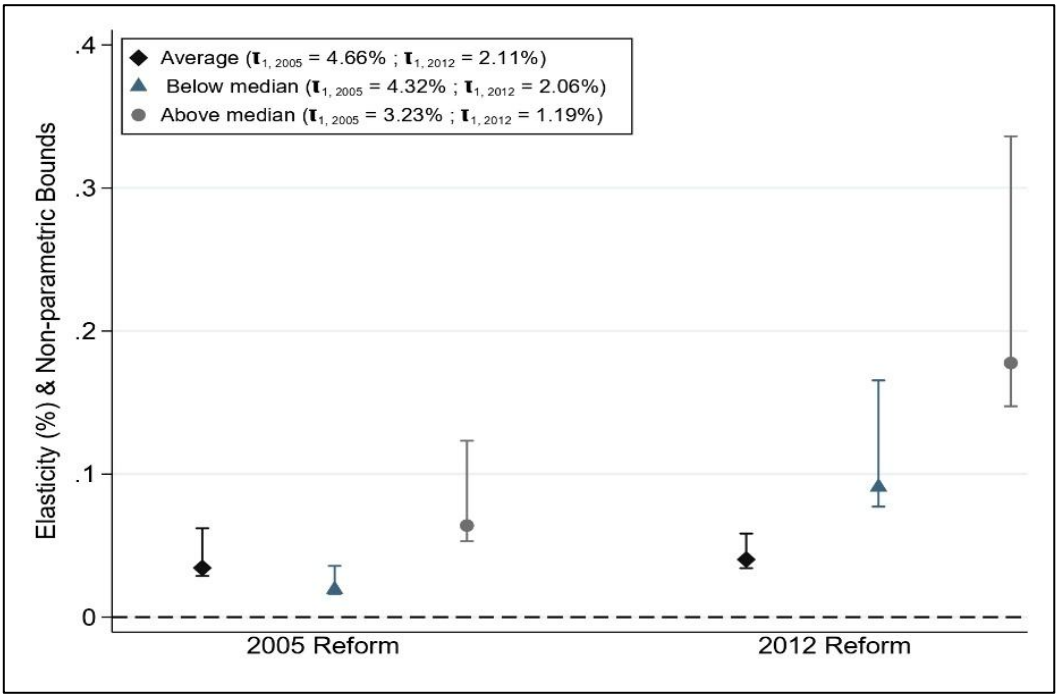
This section presents the empirical findings based on the three identification strategies described in Section 3.1.2. Each approach targets a distinct causal parameter: (i) the elasticity of STW intensity with respect to the ERP, estimated using static bunching; (ii) spillover effects, identified through a dynamic bunching design; and (iii) the average firm-level effects of the ERP mechanism on employment and financial outcomes, assessed via a RKD applied to non-bunching firms. The results are presented in this order and interpreted in light of the institutional context. Overall, the findings indicate that the ERP system reduced the intensity of STW use, measured by the number of STW days, particularly among higher-wage workers. At the same time, it induced affected firms to enroll more workers into STW. Finally, it had no impact on employment and limited negative effects on firm's profitability.

Elasticity of STW Intensity

Benchmark Responses. Financial incentives such as the ERP are designed to curb excessive reliance on STW. Their behavioral impact can be quantified via the elasticity of STW intensity to the net-of-ERP government subsidy from STW that firms receive. The elasticity measures by how much percent firms reduce the intensity of STW in days for the worker given a one-percentage-point decrease in the net-of-ERP government subsidy. Following the bunching approach detailed earlier, Figure 8 presents both point estimates and inference values for this elasticity. The analysis exploits ERP kinks generated by the 2005 and 2012 reforms, which applied to the construction sector and all other sectors, respectively. To isolate variation in ERP rates, estimation is conducted separately for workers grouped by pre-reform wage levels, which determines their applicable ERP rate.

The introduction of the ERP within STW produces a precisely estimated elasticity of STW intensity for the average wage rate worker, equivalent to 0.03, with inferential values between 0.029 and 0.057. This estimate implies that firms reduce their STW intensity per worker by 0.03% for each one-percentage-point decrease in the net-of-ERP government subsidy. These behavioral responses correspond to modest reductions in STW days per worker—up to 3 days in construction and 4 days across all sectors—relative to pre-policy levels. While point estimates are similar across both reforms, we observe marked heterogeneity along the wage distribution. In both cases, firms react more strongly for workers with above-median wage rates. For this group, elasticity estimates are notably higher, equaling 0.064 (inferential values bounded between 0.048 and 0.113) and 0.178 (inferential values between 0.146 and 0.332) for the 2005 and 2012 reforms, respectively. These results align with recent findings, such as Lapeyre (2023), who reports a 33% reduction in STW hours following a 10-percentage point rise in employer contributions for high-wage workers in France during the COVID-19 crisis—an effect close to our upper inferential value for the above-median wage worker following the 2012 reform.

Figure 8. Elasticity of STW Intensity per Worker to the ERP



Notes: This figure plots elasticity estimates from the ERP regulation starting in 2005 (JC *construction*) and in 2012 (*all other sectors*). Dots represent point estimates, whereas vertical bars indicate inference values for the elasticity of STW intensity relative to the net-of-ERP subsidy rate. The elasticity measures by how much percent firms reduce the intensity of STW in days for the worker given a one-percentage-point decrease in the net-of-ERP government subsidy. Estimation samples are distinguished into average, above versus below median wage rate workers, based on corresponding pre-reform daily wage rate values in 2003 for construction and 2010 for all other sectors. *Mean STW days per worker above the kink in pre-reform construction (all other sectors)* = 44 (60).

The introduction of the ERP within STW produces a precisely estimated elasticity of STW intensity for the average wage rate worker, equivalent to 0.03, with inferential values between 0.029 and 0.057. This estimate implies that firms reduce their STW intensity per worker by 0.03% for each one-percentage-point decrease in the net-of-ERP government subsidy. These behavioral responses correspond to modest reductions in STW days per worker—up to 3 days in construction and 4 days across all sectors—relative to pre-policy levels. While point estimates are similar across both reforms, we observe marked heterogeneity along the wage distribution. In both cases, firms react more strongly for workers with above-median wage rates. For this group, elasticity estimates are notably higher, equaling 0.064 (inferential values bounded between 0.048 and 0.113) and 0.178 (inferential values between 0.146 and 0.332) for the 2005 and 2012 reforms, respectively. These results align with recent findings, such as Lapeyre (2023), who reports a 33% reduction in STW hours following a 10-percentage point rise in employer contributions for high-wage workers in France during the COVID-19 crisis—an effect close to our upper inferential value for the above-median wage worker following the 2012 reform.

Firm-level Heterogeneity. Liquidity constraints are a characteristic likely to mediate the behavioral response in in STW use to ERP incentives. Liquidity shortages reduce firms' ability to buffer shocks, increasing reliance on STW subsidies to hoard labor during downturns (Giroud and Mueller, 2017; Giupponi and Landais, 2023).

Although the STW literature has emphasized these mechanisms, few studies have directly tested how they interact with financial incentives like the ERP. Drawing on matched administrative data, we investigate this question by merging firm level balance sheets with STW and employment records. The analysis focuses on the average wage worker-(4.66% in 2005; 2.11% in 2012). This restriction ensures comparability across firm types while abstracting from wage-driven ERP variation.

Liquidity is measured as the ratio of cash and cash equivalents to total assets. Cash and cash equivalent are considered as financial resources with immediate liquidity value, whereas total assets refer to the ensemble of financial resources. Descriptive statistics indicate tight liquidity conditions in both samples, with median liquidity ratios of 0.08 (construction) and 0.09 (other sectors). Firms with below-median liquidity are more likely to allocate STW days above the kink prior to the reform—consistent with theory.

Our results show that ERP-induced reductions in STW use are stronger among firms with above-median liquidity, especially under the 2012 reform. The estimated elasticity equals 0.056 [0.047, 0.101] for the below-median group and 0.181 [0.156, 0.302] for the above-median group. This supports the hypothesis that more liquid firms are more responsive to ERP incentives, as they can more easily substitute away from subsidized hours. In contrast, less liquid firms may lack the flexibility to adjust their STW allocations, despite the added tax burden. To assess the economic significance of these elasticity differences, we translate estimates into implied reductions in STW days per worker. Under the 2012 reform, more liquid firms reduce STW usage by up to 16 days at the kink, compared to much smaller adjustments among less liquid firms.

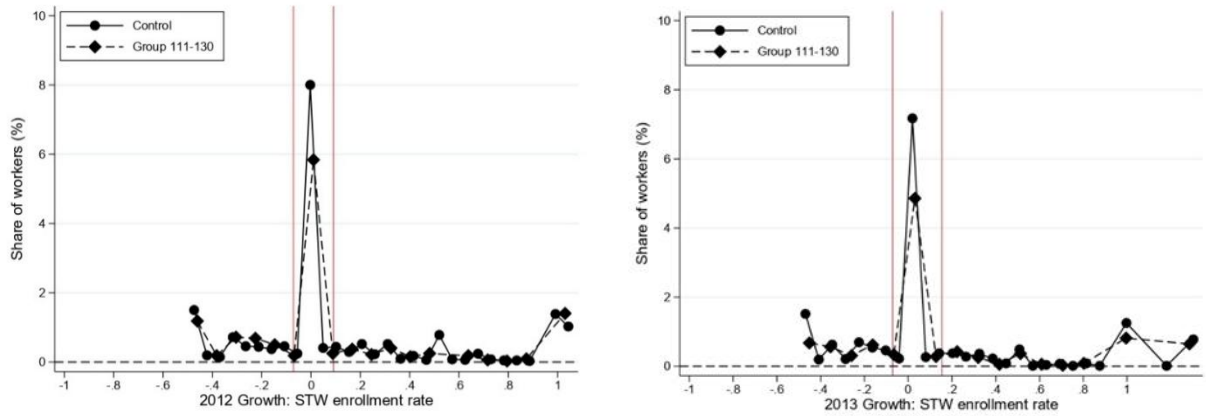
Spillovers in STW Allocation

Benchmark Responses. The ERP is designed to discourage excessive reductions in working time for individual employees. It may therefore encourage firms using STW to distribute working time reductions more equitably among co-workers. Building on the methodology detailed in Section 3.1.2, we analyze the dynamic impact of ERP on the annual growth rate of the number of co-workers enrolled in STW. This analysis focuses on firms that exceeded ERP kinks prior to the reform—those most directly affected by its introduction. Figure 9 reports the distribution of the growth rates of headcount workers in STW among firms in the treated and control group in 2012 (Panel A) and 2013 (Panel B). These panels show, in both years, that the treated group distribution peaks to the right of the zero-growth threshold, instead of exactly at the zero-growth threshold as for the control group distribution. The empirical estimates show that, in 2013, 33% of treated firms increased STW enrollment, with a statistically significant rise of 19.2 percentage points in the growth rate of headcount workers enrolled in STW.

These estimates are benchmarked against the mean growth rate of STW enrollment in the control group, which—consistent with the identification strategy—is normalized to zero.

Figure 9. Dynamic Impact on Growth Rate of Headcount Workers in STW in 2012 and 2013

Panel A – 2012 Panel B – 2013



Notes: These panels show the comparison of the distribution of growth rates of headcount workers in STW between the treated and the control group in post-reform years 2012 (Panel A) and 2013 (Panel B). Based on this measure, the treated group – dotted black line – belongs to the ERP kink (110, 130], whereas the control group – solid black line – to the group (70, 90] in the pre-reform year 2011. The vertical solid red lines indicate bounds of the bunching area, where behavioral responses are observed.

This impact is well aligned with both the institutional design of the Belgian STW and ERP systems and fundamental characteristics of STW programs more broadly. First, the Belgian STW framework imposes no direct financial cost on firms for enrolling additional workers, aside from a minimal administrative application process. Moreover, the ERP scheme exclusively targets STW use at the intensive margin, leaving firms' incentives for extensive-margin adjustments unaffected.

An open question emerging from this study is whether the observed spillover effects—whereby firms extend STW enrollment to a broader pool of co-workers—represent a desirable outcome. On the one hand, a feature of STW programs—often referred to as their *fairness* property—is their ability to distribute reduction in working time across a broader pool of employees, mitigating the burden on any single worker (Abraham and Houseman, 2014; Giupponi, Landais, and Lapeyre, 2022). On the other hand, literature has raised concerns about potential *deadweight* effects associated with STW, particularly in the context of France during the Great Recession (Cahuc et al., 2021; Cahuc et al., 2024) and the COVID-19 crisis (Albertini et al., 2022). During the Great Recession in France, Cahuc et al. (2024) provide evidence that such effects primarily stemmed from firms experiencing only minor revenue shocks, yet still making use of the program. Similarly, the impact evaluation of the Belgian STW program during the COVID-19 crisis shows that blue-collar-intensive firms—particularly in sectors such as construction and manufacturing, which were less affected by lockdowns—made extensive use of STW

but with limited employment gains. In light of these findings, the broader STW enrollment induced by ERP regulation in my study may risk exacerbating such inefficiencies.

Heterogeneous Responses. We explore which groups of co-workers experienced an expansion in STW take-up following the implementation of the ERP. This descriptive analysis depicts changes in the number of co-workers enrolled in STW between the pre- and post-reform period, disaggregated by socio-demographic characteristics such as sex, age, and contract type available in the dataset. The findings reveal that co-worker spillovers reinforced pre-existing patterns of worker selection into STW. Specifically, firms tended to extend STW enrollment primarily to prime-age workers and those aged 55 and above, as well as to employees with full-time contracts. Notably, these selection tendencies were already evident in the pre-reform period. This descriptive post-reform impact might be consistent with the sectoral composition of workers employed in firms most exposed to the ERP, namely the manufacturing and the transport sectors, as well as with STW's objective of preserving workers with firm-specific human capital and generally stricter firing regulations.

Firm Level Employment and Financial Outcomes

The final empirical analysis builds on a donut-style RKD to isolate the causal effects of the ERP on firm behavior, while addressing potential manipulation around the kink. By dropping firms precisely at the bunching point, we focus on the population of non-bunching firms above the kink (i.e., firms that after the implementation of the reform still allocated STW usage above the 110-day threshold and paid the ERP) that are plausibly less likely to engage in strategic behavior and whose outcomes therefore offer a cleaner counterfactual. The analysis evaluates firm level responses across a range of outcomes, including the extensive margin of STW use (measured by the number of headcount workers in STW), total firm headcount employment, and financial indicators such as liquidity, leverage, and profitability (measured by Return on Assets). We distinguish between the two ERP reforms—the 2005 reform targeting the JC construction and the 2012 reform extending to all other firms—which differ in the ERP rate and, hence, in the steepness of the financial incentives schedules.

Average Effects for Non-Bunching Firm. Within this study, we tested the following hypotheses. First, does the ERP affect additional margins of STW use? Given that the tax applies at the intensive margin, it may incentivize firms to distribute working time reductions more evenly across the workforce, thereby expanding the pool of workers enrolled in STW and reinforcing its distributional role, an adjustment margin discussed above. Second, what is the effect on firm level employment? The hypothesis is that ERP may impose financial strain on liquidity-constrained firms, reducing employment. Third, how are firm financial outcomes—particularly liquidity and profitability—affected? For instance, paying the STW tax could deplete firms' liquid resources.

To explore these questions, the analysis proceeds in two steps. First, we estimate the average effect of STW taxation on labor market and financial outcomes. Second, we assess heterogeneity in these effects across firms, focusing on financial constraints, particularly cash flow since the responses to the ERP may differ across firms depending on factors such as liquidity constraints, as mentioned above. In

effect, liquidity is critical for labor hoarding via STW—especially during downturns when revenues fall and financial constraints tighten—plus the 2012 ERP reform was introduced during Belgium's double-dip recession, a period marked by both liquidity shortages and rising indebtedness.

On average, the results show that the 2012 ERP reform generated modest but statistically significant positive effect on STW enrollment and a negative impact on profitability among non-bunching firms. Specifically, the proportional effect of increasing the ERP tax by 1% of the average wage leads to a statistically significant 9.5% increase in the extensive margin of STW use, as reflected in a higher number of enrolled workers, of about 0.14 headcount workers. Additionally, the proportional impact on overall firm-level employment for increasing the ERP tax by 1% of the average wage rate at the kink is 10.9%, yet the estimated effect is not statistically significant. At the same time, there is a measurable decline in profitability, as captured by a drop in Return on Assets, amounting to -15.4% for a 1% increase in the ERP tax at the average wage rate at the kink. Importantly, there is no detectable impact on workers' wages or on key financial indicators such as liquidity and leverage, which indicates a limited effect on firm balance sheets.

Following the introduction of the ERP in construction in 2005, we find no significant effects on STW enrollment, headcount employment, wage components, firm indebtedness, or profitability. The only notable effect is a modest deterioration in firm level liquidity, measured as the ratio of cash and cash equivalents to total assets, corresponding to a proportional decline of 9% in response to a 1% premium increase relative to the average wage rate, statistically significant at the 5%. This deterioration in firm level liquidity is consistent with the lack of STW and employment adjustments. In effect, if firms were to adjust STW enrollment and employment, cash flow would not shrink as it currently does given the absence of responses through these margins.

Heterogeneous Responses. On the firm side, no meaningful differences emerge when firms are stratified by baseline liquidity, indicating that financial constraints alone do not drive responsiveness to ERP incentives.

A deeper look into heterogeneous treatment effects based on worker's socio-demographic characteristics reveals important patterns. At the worker level, the increase in STW enrollment is concentrated among specific job relationships, particularly full-time workers and those aged 55 or older. These findings echo those of the dynamic bunching design, suggesting continuity in how STW usage is distributed across worker demographics even under different identification strategies and firm populations.

Policy Implications. We derive policy implications based on the three main findings about the impact of the ERP among bunching and non-bunching firms. First, as expected, the implementation of the ERP led to a reduction in STW intensity per worker, as exemplified by the behavioral responses of bunching firms. These responses were, on average, pretty small for both reforms and their small magnitude can be explained by the low amount of the ERP. Yet, behavioral responses magnify when exploring dimensions of heterogeneity at the worker- and firm-level. Heterogeneous responses along the worker

wage rate show that firms were most responsive for high-wage rate workers. Responses along the liquidity dimension emphasize higher responses for above-median liquidity firms. These firms may be better positioned to phase out STW use above the kink when they have to pay the premium, since, ultimately, they do not need to hoard labor hoarding via extensive STW use. Similarly, the extensive use of STW may be less of a need for workers with higher wage rate and, therefore productivity.

Second, both the responses of bunching and non-bunching firms show an increase in the number of workers enrolled in STW. This behavioral response is consistent with the objective of the ERP to downscale STW intensity for the single worker and increase the pool of workers enrolled. This impact aligns with STW being intended as a "fairer" instrument than UI, to the extent that the operated working time reduction could be shared among a broader pool of employees and not concentrated on a few. Additionally, the observed increase concerned mostly workers of specific socio-demographic groups: men, full-time, and prime-age workers for bunching firms and the same profile but rather workers aged above 55 for non-bunching firms. Therefore, these adjustments left some workers' categories, namely women and part-time workers, still underrepresented in STW. The adjustments toward specific workers' categories, already well represented in STW, may reflect the sectoral composition of workers employed in firms most exposed to the ERP, namely the manufacturing and the transport sectors, as well as with STW's objective of preserving workers with firm-specific human capital and generally stricter firing regulations.

Finally, the payment of the ERP had no negative impact on firm-level employment and balance sheets; it only minorly affected the profitability of firms. Similarly, no effects on worker's wages, which would have pointed out to potential pass-through of the economic incidence of the ERP to workers, are detected.

Taken together, these three sets of findings suggest that the introduction of the ERP reduced the highly intensive STW without important negative effects on employment and firm performance and that reinforcing the scheme in the directions highlighted in the policy recommendations can further reduce the deadweight associated with STW.

4.2. Psychological Analysis

In the interviews, employees and managers highlighted that they saw value in STW as a policy measure in times of crisis. They talked about STW in a nuanced way, including both positive and negative aspects, depending on how it was implemented and managed by the employer. These bright and dark sides are fleshed out in the studies below. When relevant, we refer to specific comments (in italic) from the interviews to illustrate our findings and help their interpretation.

4.2.1 STW as a lesser-evil option than lay-off in the long term

- The bright side: Does STW provide a protection against the long-term effects of job loss?

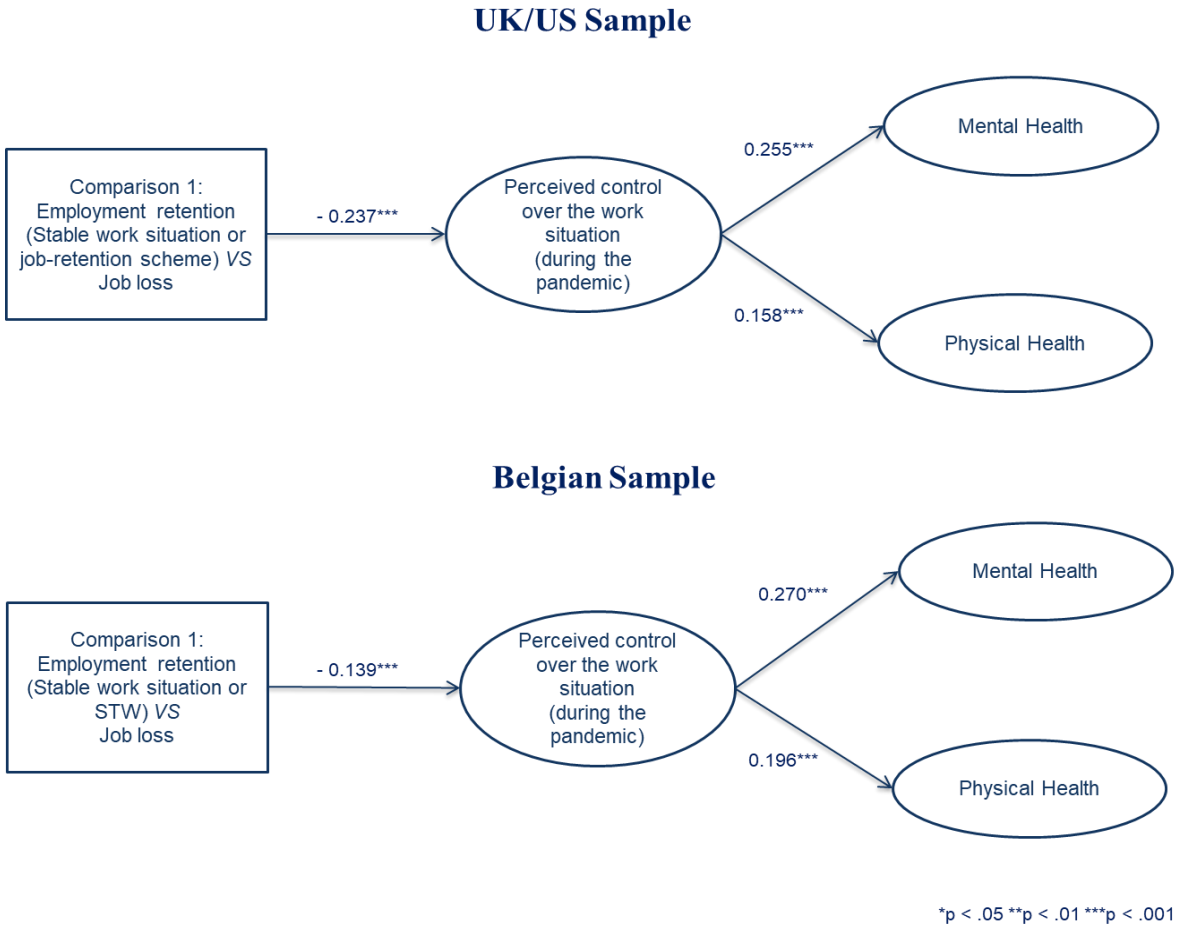
On the bright side, our findings suggest that workers put on STW and other job retention schemes report higher well-being – both mental and physical – one year after the crisis than workers who faced job loss. This is because workers put on STW feel more in control over the work situation than employees who lost their job. The same pattern of findings was found in the UK/US and the Belgian sample: This suggests that the findings are quite robust.

To provide more statistical detail, we refer to Figure 10. In both the UK/US and Belgian samples, the results show that workers who lost their job felt less control than those who kept their job through stable work or schemes like STW. However, we see that having control is positively associated with physical and mental health.

- The dark side: Does STW provide full protection?

On the dark side, STW does seem to have some negative impact: Compared to workers with stable jobs, workers put on STW in the UK/US report lower levels of control and hence lower levels of well-being. Yet, this darker side was not replicated in the Belgian sample. Figure 11 below shows that using job-retention schemes (versus being in stable work situation) is negatively associated with perceived control in the UK/US sample. However, the difference in perceived control between those who used STW and the control group is not statistically significant at the 0.05 level in the Belgian sample, meaning that it is not strong enough to be sure it is not random**.**

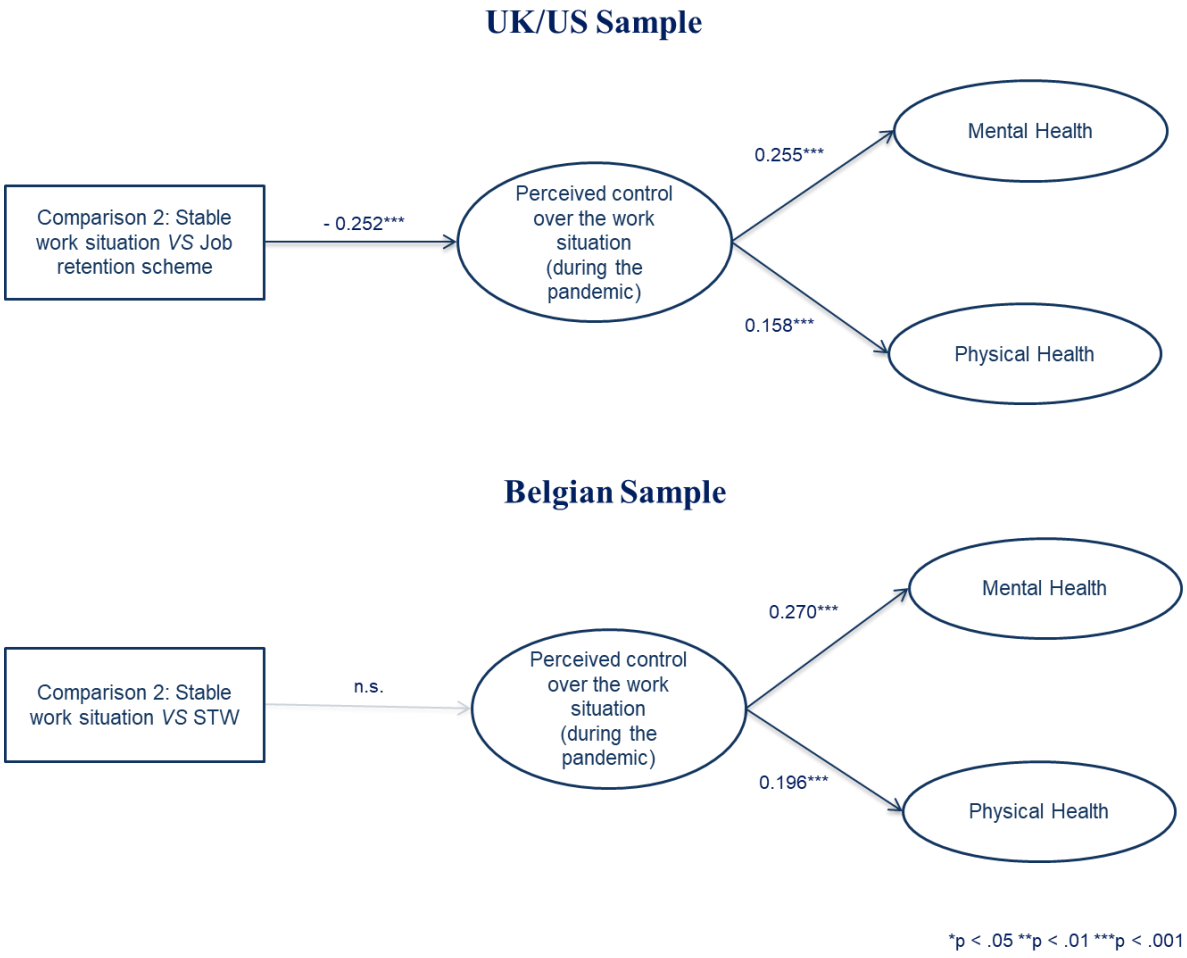
Figure 10. Comparison between situations of employment retention and job loss with standardized coefficients[9]



Notes: These figures show that workers who lost their job during the pandemic reported significantly lower perceived control than those who remained employed (β = −.237 and β = −.139, p < .001, for the UK/US and Belgian samples). Perceived control is itself positively related to psychological and physical health. Bootstrap analyses confirm that the indirect effects are significant (p < .05), supporting the hypothesis that reduced perceived control translates into lower levels of well-being.

[9] Please note that this model, as well as those that follow, are simplified versions designed to make interpretation easier for the reader).

Figure 11. Comparison between stable work situation and STW (or other job-retention schemes) with standardized coefficients



Notes: These figures show that workers who benefited from job-retention schemes reported significantly lower perceived control than those who remained in a stable work situation (β = −.252, p < .001) in the UK/US sample. Bootstrap analyses confirm that the indirect effects are significant (p < .05), supporting the idea that reduced perceived control among workers on job-retention schemes contributes to lower levels of well-being. In contrast, no significant difference (p > .05) was found between STW workers and those in a stable work situation in the Belgian sample.

Our results suggest that the negative effects of STW and other job retention schemes could be stronger in the UK and US. This aligns with other studies from the pandemic period and may be due to national differences in job retention schemes (see Blomqvist et al., 2023). Support was relatively generous in Belgium compared to the UK/US sample. In short, the more positive picture observed in Belgium may be because the scheme is especially generous and protective.

- Heterogeneity: Is the protection the same for everyone?

During the interviews, we quickly understood that STW is not a homogeneous experience, but that at least part of the impact relates to how it implemented. In particular, the interviewees highlighted that they compared their situation to others. Our understanding was that the impact was considerably stronger when they felt isolated and alone with their experience.

"I had no contact with no one in the company and I had no idea of the situation. In general, for my friends who work in the same industry as me, it was just "life goes on". They were still working. And that made me think even more strongly "Why me and not them?"

"I'm lucky because they kept me for almost 6 months. I have other friends, working in the same industry, who were in the same situation as me and for whom the contract ended"

This idea can be understood based on insights from social psychology: People who share an experience – also a negative experience – feel part of a group, while those not sharing an experience feel alone and isolated. In line with this idea, we observed that workers who perceived themselves as part of a small minority affected by STW ("I am alone with this experience") perceived to have lower control over their situation, and this negatively related to well-being. In contrast, workers who saw STW as a widespread response to the crisis did not seem to experience the same negative effects. This was especially true in the Belgian sample, where the difference in perceived control was no longer significant when the prevalence of STW was high.

Overall, this may suggest that the effects of STW vary depending on the context in which the scheme is implemented. These effects may be stronger in situations where only a specific industry or organization is affected by the crisis.

Conclusion: The safest conclusion is that STW remains a lesser evil compared to layoffs. It may have some or no "evil" effects, depending on the context and the extent of the crisis (i.e., number of people impacted by STW or other employment disruptions).

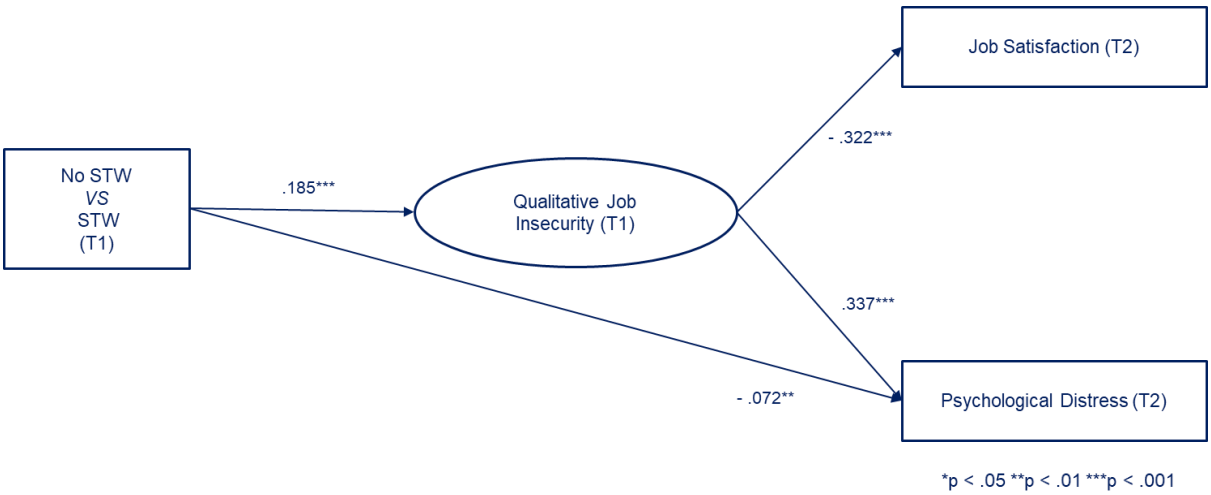
4.2.2. STW and Qualitative Job Insecurity

- The dark side: Is STW associated with greater insecurity about job content and working conditions?

A recent study in Germany (Klug et al., 2024), apart from the pandemic context, found that STW made workers feel uncertain about the existence of their job in the future, coined "quantitative job insecurity". This affected their well-being for up to three years later. We replicated and extended those findings. We established that workers put on STW worried about their job, and those worries related to lower job satisfaction and increased psychological distress two months later (see Figure 12). This insecurity goes beyond quantitative job insecurity (i.e., worries about potential future job loss): employees may also worry about changes in their job tasks and working conditions, coined "qualitative job insecurity".

Qualitative job insecurity has particular resonance in a context like the pandemic. The pandemic was a major, unexpected disruption that came from outside the company. Initially, workers may perceive this as temporary, with many expecting things to return to normal afterward. Consequently, workers may not feel that their jobs are at risk (cfr. quantitative job insecurity). Still, the pandemic and the disruption may trigger reflection: Workers may appraise STW as a signal that the company is focusing on core business activities and cutting costs (e.g., Bahmani et al., 2023), and they may worry about how this may affect their job (i.e., qualitative job insecurity). For instance, jobs may become narrower, there may be fewer development opportunities, or workers may get fewer resources to do the same work. Said differently, STW may guarantee jobs but not job conditions.

Figure 12. Results for the hypotheses tested in study 2 (with standardized coefficients)



Notes: This figure shows that the relationships between the variables measured at both time points (T1 and T2) are significant ($p < .001$). Bootstrap analyses also confirm significant indirect effects ($p < .05$), indicating that part of the impact of STW on job satisfaction and psychological distress operates through qualitative job insecurity. A small direct effect in the opposite direction ($\beta = -.072$, $p < .01$) between STW and psychological distress partially offsets the indirect effect through perceived insecurity.

The interviews complementarily aligned with the idea that qualitative job insecurity was a stressor. In fact, they even show that in some cases, the threat materialized and the nature of the work changed:

"Back in the days of STW, my job was to assemble components in order to make industrial fans. Since then, the company has changed its strategy a bit and my job became a job of pure logistic handling. […] My job, as it is now, no longer corresponds to me and no longer satisfies me."

"I went backwards in my career path and at the same time it's what saved my job. In short, my previous job position of administrative employee had been taken over by someone who was fired due to the Covid crisis. They said we had to make choices and to reduce the payroll. So, the corresponding administrative tasks were added to my new tasks in the transport department […] I had to make effort and my feeling is a bit mixed because I feel like I'm going backwards."

However, the situation we observe should be viewed with nuance for two reasons: first, STW also seems to have a "bright side". Second, the impact of STW may differ depending on the type of worker.

- The bright side: Could STW also provide an episode of recovery?

Our results showed that STW could was not only negative. We established a negative relationship between STW and psychological distress two months later. This suggests that workers also felt less stressed. This is in line with previous research. Workers may have benefited from the break that STW offered, giving them time to rest and mentally disconnect from work (Halbesleben et al., 2013; Rauvola et al., 2022). In contrast, those who kept working during the pandemic may have faced other stressors, like the risk of getting infected at work (Gibson et al., 2021).These different aspects also emerged from the interviews we conducted:

"I was a bit on vacation. I was quite tired. There was a lot of work by that time and I was happy to do less, to be able to enjoy other things in life than working 40 hours a week."

"STW is a good opportunity to reflect a bit more upon your future choices and to feel confident about them."

The use of STW at the start of the pandemic presents a mixed picture. On one hand, STW is a source of insecurity. On the other hand, STW may provide a period of rest and recovery .

- Heterogeneity: Is the impact the same for everyone?

Our findings suggest that STW may be more stressful for groups of workers who typically experience greater job security. In particular, workers holding core positions in organizations (i.e., managers or full-time employees, as opposed to employees or part-time employees) might be more negatively affected by STW. This may seem paradoxical, but can be explained by the fact that uncertainty may be a stronger event for them: It is novel and unexpected, and therefore more disruptive. Along the same lines, we observed that the effects of STW during the pandemic seem to have been stronger in industries where STW is not a common practice (as opposed to the manufacturing, cleaning, and construction sectors). This can be explained by the less disruptive nature of STW in some specific industries like the manufacturing sector. As one manager summed it up during the interview:

"It has always been known, in certain industries, that there may be quieter periods leading to the implementation of STW. The candidates who work there know this […] That's what they signed up for!"

Conclusion: STW can be a source of insecurity about the future. This insecurity is not just about keeping their job but also about the quality of their work. Insecurity is a known and well documented stressor: people typically do not react well to not knowing what will happen. However, this observation should be nuanced for two reasons. First, STW provides an opportunity to rest and reflect on one's career. Second, some workers – particularly those in core positions, such as

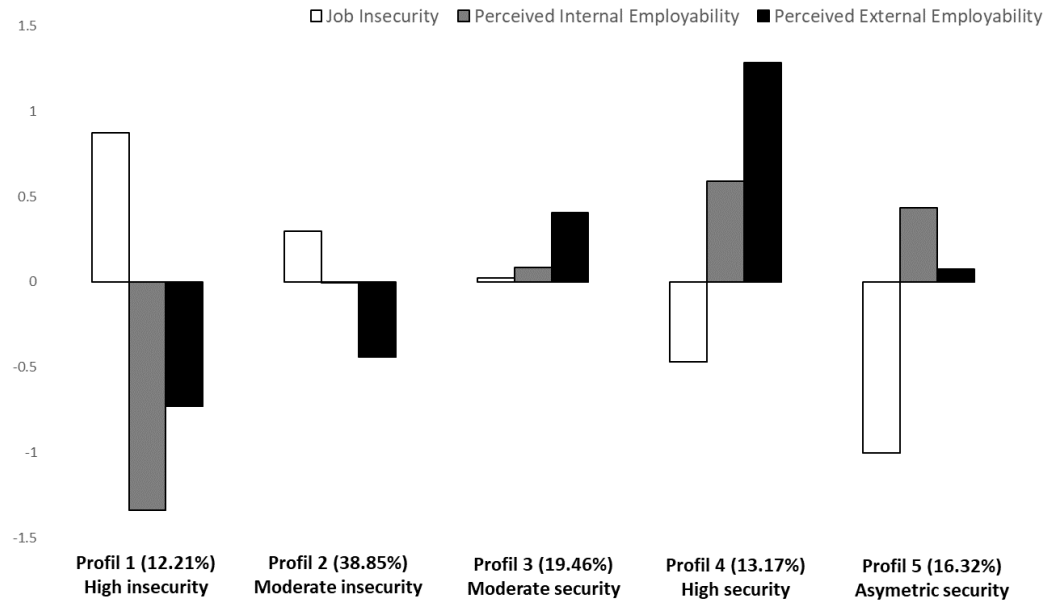
managers and full-time employees, and in sectors that are not typically affected- may feel more insecure than others when STW is implemented: They are not used to this insecurity and find it more stressful.

4.2.3. STW and Profiles of Security in Future Employment

- Heterogeneity: Do job insecurity and perceived employability necessarily go hand in hand?

Since past research shows that STW is related to job insecurity, the question is whether this always comes with a perception of lower employability. To find out, we first need to determine if it is possible for employees to feel insecure but still believe they are employable. In this regard, our results suggest that job insecurity and lower levels of perceived employability do tend to go hand in hand. Contrary to what one might expect, we did not observe any profile showing moderate to high levels of both job insecurity and perceived employability. Put simply, if a situation like STW generates fear of losing one's job, it is unlikely that the employee will feel confident in their ability to secure new employment. This can be seen in Figure 13.

Figure 13. Profiles of security in future employment and percentage representation (standardized scores)



Notes: This figure presents the five profiles identified in the data and the proportion each represents within the sample. Within each profile, workers show different levels of job insecurity and perceived employability (both internal and external). A score of 0 represents the average; scores above or below 0 indicate values higher or lower than the average. The first two profiles reflect employees experiencing moderate to high insecurity regarding their future employment. We observe that higher levels of job insecurity are associated with lower perceived employability. Conversely, Profiles 3 and 4 illustrate situations where job insecurity is low or average and employability is perceived as moderate to high.

Finally, Profile 5 represents an asymmetric case: workers report very low job insecurity without a correspondingly high level of perceived employability—at least not outside their current organization. This pattern typically reflects workers who feel secure in their jobs but perceive few external opportunities, for example because they are approaching the end of their careers.

- The dark side: Does STW predict membership to profiles characterized by greater insecurity in future employment and does it affect well-being?

Overall, when individuals feel insecure about their jobs, their perceived employability tends to be lower. This finding contradicts the idea that STW could send mixed signals. If that were the case, we would expect to see more asymmetric profiles, combining high job insecurity with high perceived employability. However, our data do not show such a configuration. The most plausible explanation is that job insecurity and high perceived employability are difficult to sustain simultaneously. On the contrary, results support that recent STW (up to 6 months before) is more frequently associated with employee profiles expressing lower confidence in their future employment security (Profiles 1 and 2). Moreover, our findings confirm that the most insecure profiles are generally linked to lower levels of mental health, work engagement, and perceptions of career satisfaction.

The least likely profile is Profile 5. In contrast, our analyses show that Profile 4 is the most stable over time and includes a few cases of workers who experienced STW in the past six months. Feeling employable could therefore provide some protection. This is illustrated, in particular, by the following quote:

"I didn't feel my job threatened at all. I do a very specific job and I'm kind of indispensable, so you can't really do without me. And even if my boss had to dismiss me, I would find another job because I have a niche expertise".

Conclusion: STW is more frequently associated with worker profiles expressing lower confidence in their future employment security. Once workers start to feel insecure, this seems to lead to a decrease in their perceived ability to secure new employment, both within and outside the company. However, the sample does include a few cases of STW workers who managed to maintain relatively low levels of insecurity—possibly thanks to a stronger initial sense of perceived employability.

4.3. Recommendations

The Belgian STW system has demonstrated a remarkable capacity to preserve employment during major crises. Evidence from the Great Recession and the COVID-19 pandemic shows that STW averted substantial job losses, particularly in firms facing the largest economic shocks, such as manufacturing during the Great Recession, and in sectors most exposed to lockdown measures.

Our evaluation confirms that STW was especially valuable for firms genuinely affected by temporary shocks. However, the large-scale use of the scheme also generated non-negligible deadweight costs,

particularly in sectors or firms not truly at risk of layoffs. The evidence further shows that overly lax access conditions increase deadweight effects, while excessively strict criteria may exclude firms that would have genuinely benefited from temporary support.

These findings suggest that the Belgian STW system remains an essential instrument for federal labour market stabilization. However, refinements are needed to ensure that the scheme remains temporary, well-targeted, fiscally responsible, and supportive of long-term productivity and worker well-being. The recommendations below build directly on our empirical and psychological findings and are structured around four pillars: flexibility, temporary use, targeting through financial incentives, and worker support.

Recommendation 1: Maintain *flexibility* and responsiveness of the system

The greatest strength of the Belgian STW system for blue-collar workers, as well as the flexible scheme introduced during the COVID-19 crisis, lies in its ability to provide rapid and flexible support in times of crisis. The possibility of granting access to STW almost immediately and of quickly compensating workers for time not worked through unemployment benefits proved crucial during economic downturns.

However, the system's responsiveness must address a fundamental tension: how can firms be prevented from resorting to STW when it is not genuinely necessary, thereby generating deadweight effects?

During the COVID-19 pandemic, access to the scheme was granted to workers and firms without thorough verification. Relatively loose eligibility criteria already existed for blue-collar workers (though without simplified access procedures) before the pandemic, unlike for white-collar workers, whose access was subject to stricter conditions. Our analyses show that the eligibility criteria for blue-collar workers—and during the pandemic more broadly—were probably too lenient, mobilizing substantial public resources to finance STW without a demonstrated effect on job retention. Conversely, access for white-collar workers was too restrictive, which may have led to avoidable bankruptcies or layoffs.

Should the system therefore evolve toward a model in which access is conditioned on objective indicators of necessity—less strict than those applied to white-collar workers, but more rigorous than the quasi-automatic access granted to blue-collar workers? In our view, this would not be ideal. Identifying reliable indicators is extremely difficult; their collection and verification are costly and prone to manipulation; and any overly burdensome procedure would slow the system's response, even though speed is essential to cushion temporary shocks. Simpler and more effective alternatives exist to limit excessive use without compromising responsiveness.

Our recommendation is therefore to move toward a unified system that relaxes access conditions for white-collar workers while tightening incentives for blue-collar workers through a strengthened ERP mechanism. In other words, eligibility criteria should remain flexible, but use should be modulated through financial incentives, as described below.

Recommendation 2: Focus the scheme on protection against *temporary* shocks

By design, STW is intended to absorb temporary shocks. Prolonged or structural use of the scheme risks hindering the necessary reallocation of workers and, consequently, jeopardizing sustainable economic growth.

Belgium exhibits high take-up rates not only during aggregate downturns but also outside periods of economic contraction. This suggests that STW is recurrently used as a structural adjustment tool rather than strictly as a response to unexpected temporary shocks.

Our findings indicate that firms with prior STW experience were significantly more likely to increase take-up (measured as the fraction of days in STW) when access conditions were relaxed. Moreover, recurrent use is concentrated in sectors characterized by predictable or seasonal fluctuations, such as construction and manufacturing. This signals patterns of structural reliance.

The recent requirement for workers to register as jobseekers after three consecutive months of STW is not fully consistent with the scheme's primary objective, which is to maintain the employment relationship as strongly as possible. For similar reasons, offering workers general training that is transferable to other firms is not fully aligned with the logic of STW, as such training may encourage mobility toward alternative employers. Only firm-specific training is consistent with the scheme's objective. General training becomes appropriate only when a negative shock persists and takes on a structural character.

To reinforce the temporary nature of STW:

- Maximum durations of STW use should be made more binding, particularly in cases of repeated use over multiple years. The current system, which allows renewed access after only one week of full activity, permits quasi-continuous use, particularly for blue-collar workers. Stricter duration limits—similar to those already applied to white-collar workers—would reduce excessive use.
- Recurrent users should face stronger financial incentives reflecting past use (see Recommendation 3).

The scheme should remain focused on managing temporary shocks and should not be used to shield firms and workers from structural or persistent disruptions.

Recommendation 3: Strengthen *financial incentives* to improve targeting

Belgium's "cotisation de responsabilisation" is an innovative feature of STW and constitutes a form of ERP system, whereby firms that make intensive use of STW for blue-collar workers pay a delayed contribution proportional to past usage. Our evaluation confirms that this system produces behavioural responses: firms adjust their use to remain below the 110-day threshold, and STW days are

redistributed more evenly across workers. However, its overall impact on reducing excessive use remains modest because the threshold is high and applies to only a minority of firms.

Importantly, strict ex-ante eligibility verification based on financial indicators is administratively costly, difficult to implement, and prone to manipulation. A well-calibrated system of financial self-targeting through ERP is therefore preferable to heavy administrative screening.

To enhance the effectiveness of the ERP system:

- *Lower the threshold above which employers pay the levy*. Our analysis suggests that the current threshold is too high. Lowering this threshold would increase the share of financially accountable firms.
- *Extend the mechanism beyond blue-collar workers*. The systems for blue- and white-collar workers should converge, both by relaxing eligibility for white-collar workers and by strengthening the ERP mechanism to discourage overuse. If eligibility criteria for white-collar workers are relaxed, the same responsibility rules should apply to them, thereby unifying the system and removing the distinction between blue- and white-collar workers.
- *Maintain deferred payment to avoid exacerbating short-term liquidity constraints.* Our findings suggest that, following the 2012 reform introducing the ERP system to sectors beyond construction, more liquid firms reduced their reliance on STW to a greater extent than liquidity-constrained firms. This indicates that the system effectively narrows support toward firms facing liquidity constraints, which are more likely to have jobs at risk of destruction. To avoid weakening firms' liquidity precisely when they are most in need of support, payment should remain deferred. Possible adjustments include adopting a three-year moving average—similar to the U.S. system (Guo and Johnston, 2021)—to better smooth costs over time and reduce pressure on firms' cash flow.
- *Preserve the worker-level design, which promotes equitable distribution of STW days*. The Belgian ERP is structured at the individual worker level, meaning that the financial levy is determined by the intensity of STW use at the individual level. This design encourages intra-firm equity by discouraging the concentration of STW on a small group of employees and instead distributing the burden more evenly across the workforce. For this reason, a worker-level system is preferable to a firm-level system in which the levy is based solely on the firm's aggregate STW use within a given period. Such an approach is desirable both from a distributive fairness perspective and for the efficient management of human resources.

A strengthened system would improve self-targeting, reduce deadweight effects, and better align incentives with the temporary nature of the scheme.

Recommendation 4: Strengthen *worker-centered support*

STW performs better than layoffs in preserving employment and income stability. Psychological evidence from this project indicates that workers generally perceive STW as preferable to job loss.

However, STW may make workers feel they have lost control over their work situation and triggers job insecurity. Research shows that this feeling can be reduced by enhancing both the amount and the quality of communication (Vander Elst et al., 2010) or by involving workers in decision-making (Probst, 2005). Workers in our interviews generally supported STW and saw it as necessary during a crisis. However, some felt there was not enough communication about how decisions were made. Such communication is needed to understand why some employees were affected and others were not. In this regard, economic and psychological findings converge: better targeting and clearer rules improve both efficiency and worker well-being.

(a) Transparent communication within firms

Employers should be encouraged—potentially through guidelines agreed with social partners—to clearly communicate:

- The reasons for STW use,
- The expected duration,
- The criteria for worker selection.

Transparent communication reduces uncertainty, strengthens perceptions of fairness, and improves organizational trust.

(*b) Firm-specific training*

STW aims to preserve jobs. This suggests that employees' skills are valuable and needed in the organization in the future. Yet, employees may arrive at a very different conclusion: They may feel their skills are not needed or not crucial and this may affect their feeling of being employable. As a result, it may be beneficial to focus on enhancing STW workers' employability. International experience during the COVID-19 period (Austria, Germany, France) incorporated training on its STW programs (OECD, 2026). Research in psychology suggests that firm-specific training could strengthen motivation and attachment (Moreira et al., 2020), while purely general training may signal imminent separation and encourage external mobility (see e.g., Nelissen et al., 2017).

Belgium should therefore:

- Encourage firm- or sector-specific upskilling during and after STW use.
- Focus training on skills directly relevant to the current job match.
- Avoid general training within the STW design, reserving it for cases where the shock becomes structural and the employment relationship is unlikely to be maintained.
- Coordinate with regional training providers and sectoral funds to avoid over-reliance on firm-level financing.

Training conditionality should apply primarily in cases of extended support, preserving flexibility for short-lived shocks.

4.4. Conclusion

Belgium's STW scheme has proven its value as a crisis management tool during the two major economic shocks of the past two decades. The flexible force majeure procedure introduced during the COVID-19 pandemic in particular demonstrated the system's capacity to deploy support rapidly — reducing working time while preserving workers' income and maintaining employment relationships. From both an economic and a psychological standpoint, the evidence consistently points in the same direction: when well targeted, STW is preferable to layoffs, and it successfully shields workers from the most damaging consequences of prolonged unemployment.

That said, the overall picture calls for nuance. On the economic side, employment gains were concentrated in firms genuinely exposed to adverse shocks, where the scheme effectively prevented layoffs that would otherwise have occurred. In firms less affected by the crisis — particularly those with blue-collar-intensive workforces — the scheme generated deadweight effects, mobilizing public resources without producing additional employment benefits. The psychological evidence reinforces this concern from a different angle: when STW is used beyond what is strictly necessary, it does not merely represent a fiscal inefficiency. It also imposes real costs on workers, generating feelings of job insecurity that extend beyond the fear of job loss itself, encompassing uncertainty about working conditions, job content, and future career prospects. This sense of insecurity and loss of control can, in turn, undermine the very objective the scheme is designed to serve — namely, enabling employers to retain a skilled and productive workforce.

These converging findings carry a clear message for policy design. Excessive or poorly targeted use of STW is problematic on multiple grounds: it strains public finances, it fails to generate meaningful employment protection, in some cases even harming productivity-enhancing reallocation, and it harms the well-being of the workers it is meant to support. Reforming the scheme should therefore be understood not as a trade-off between fiscal responsibility and worker protection, but as an opportunity to strengthen both at once.

Concretely, reinforcing the temporary nature of the scheme is essential. This means reinforcing the existing limits on consecutive days to prevent the scheme from becoming a structural adjustment tool. Strengthening financial accountability — through a lower activation threshold for the ERP system, extended to white-collar workers, while preserving its deferred and worker-level design — would improve self-targeting without burdening the most vulnerable firms. Eligibility conditions for white-collar workers, currently too restrictive, should simultaneously be relaxed, moving toward a more unified and equitable system.

Alongside these structural adjustments, the worker dimension should not be overlooked. The psychological evidence shows that STW, even when economically justified, remains a potentially stressful experience. Workers facing insecurity and loss of control may find it difficult to draw on any sense of employability to reassure themselves or navigate a potential job change if needed. Transparent employer communication about the reasons, expected duration, and terms of the measure

can help reduce this uncertainty and its associated costs — both for individual well-being and for organizational performance.

Finally, STW does not operate in isolation. It is part of a broader architecture of employment protection that includes dismissal rules, unemployment insurance, and other flexibility instruments. Future research should examine how the reforms proposed here interact with these complementary mechanisms, to ensure that adjustments to the STW scheme strengthen rather than destabilize the overall system of labour market protection.

5. DISSEMINATION AND VALORISATION

Oral presentations:

- EU-Users 8th Conference (University of Mannheim) – 16/17.03.2023.
- Research Day of the Department of Economics and Business Administration (UGent) – 22nd March 2023.
- 21st Congress of the European Association for Work and Organizational Psychology (Katowice) – 24-27th May 2023.
- Spring Doctoral Workshop (UCLouvain) – 26th May 2023.
- European Doctoral Program Jamboree (Paris School of Economics) – 8/9th June 2023 .
- Doctoral Committee intermediary evaluation (UCLouvain & UGent) – 19th June 2023.
- AIEL Conference (University of Genoa) – 8th September 2023.
- 18th Belgian Day for Labour Economist (National Bank of Belgium) –27th October 2023.
- Labor/Public Economics reading group (Sciences Po University) – 9th February and 16th February 2024.
- Academy Of Management Careers Division community conference (Amsterdam) – 18-19th April 2024.
- UGent FEB research Day – May 21, 2024.
- COMPIE 2024 conference – (Counterfactual Methods for Policy Impact Evaluation) – June 24-26, 2024.
- 37th Annual Conference of the European Society for Population Economics (ESPE) – June 27-29, 2024.
- Annual Congress of the International Institute of Public Finance (IIPF) – August 21-23, 2024.
- European Association of Labour Economists (EALE) Conference – September 5-7, 2024.
- Small Group Meeting on job insecurity (Rome) – September 12-13, 2024.
- 2024 Winter Doctoral Workshop UCLouvain Saint-Louis – December 16, 2024.
- Internal Seminar Series at the National Bank of Belgium – March 18, 2025.
- Internal Seminar Series of IRES/LIDAM (UCLouvain) – April 1 and April 8, 2025.
- 19th Belgian Day of Labor Economics (KU Leuven) – May 18, 2025
- 22nd Congress of the European Association for Work and Organizational Psychology (Prague) – 21-24th May 2025.

- 38th Annual Conference of the European Society for Population Economics (ESPE) – June 12-14, 2025.
- CC-ME Joint Research Center (Ispra), External seminar - June 14, 2025.
- ZEW Mannheim, External research seminar - 15 January, 2026.
- IV Laboratorio Ravelli "Industrial Relations in a Changing World" (Collegio Carlo Alberto) - February 19/20, 2026.

Training

- Online Training on Difference-in-Differences with Panel Data. Jeffrey M. Wooldridge (Michigan State University). December 14-15, 2021.
- Online Training on Shift-Share IV. Peter Hull (Brown University). May 21, 2022.
- Online Training on Synthetic DID.
- CEMFI Summer School. New Developments in the Econometrics of Heterogeneous Workers and Firms. Elena Manresa. August 28 – September 1, 2023. Madrid.

Articles under review in peer-reviewed journals

- Bermudez-Barrezueta, N., Cockx, B., & Bijnens, G. (2025). The Impact of Short-Time Work during the Great Recession. *Mimeo*.
- Rodriguez Conde, C., De Cuyper, N., Stinglhamber, F., & De Witte, H. (2025). *Job-retention schemes as a Lesser evil than job loss? Workers' well-being after a crisis: A two-sample study* [Manuscript under review at *Applied Psychology: An International Review*]

Article in preparation:

- Rodriguez Conde, C., De Cuyper, N., Bernhard-Oettel, C., Stinglhamber, F., & De Witte, H. (2026). Is perceived employability just another brick in the wall of employment security? Insights from a Latent Transition Analysis during times of crisis [Manuscript in preparation for Journal of Vocational Behavior].

Organization of the study morning for dissemination results.

- Study Morning December 8, 2025: The Belgian Short-time Work scheme: Economic and Psychological Impacts, Pathways to a More Effective and Human Policy. Brussels.
- *Publications associated:*
    - Bermudez, N., Cockx, B., De Cuyper, N., De Witte, H., Dejemeppe, M., Rodriguez Conde, C., Stinglhamber, F. et Tarullo, G. (2025). Le chômage temporaire en Belgique : un outil efficace et bénéfique, à condition d'en maîtriser l'usage, Regards économiques, Numéro 190.
    - Bermudez-Barrezueta, N., Cockx, B., Dejemeppe, M., & Tarullo, G. (2025). Jobs beschermen in tijden van crisis met tijdelijke werkloosheid: lessen uit onderzoek. Gentse Economische Inzichten, (26).

- *Press Coverage*:
    - Le Vif. (8 décembre 2025). Le chômage temporaire trop utilisé en Belgique : « Ce mécanisme a été détourné de sa fonction première ». Le Vif. https://www.levif.be/belgique/social/emploi/le-chomage-temporaire-trop-utilise-en-belgique-ce-mecanisme-a-ete-detourne-de-sa-fonction-premiere/
    - La Libre. (8 décembre 2025). Les entreprises belges abusent du chômage temporaire : “Un des systèmes les plus généreux d’Europe”, qui génère des effets d’aubaine. La Libre. https://www.lalibre.be/belgique/2025/12/08/les-entreprises-belges-abusent-du-chomage-temporaire-un-des-systemes-les-plus-genereux-deurope-qui-genere-des-effets-daubaine-PLVE3V72AJD7VO5BLHIYNCN3V4/
    - Trends-Tendances. (8 décembre 2025). Les entreprises belges ont trop vite et trop souvent recours au chômage temporaire. Trends-Tendances — Le Vif. https://trends.levif.be/entreprises/ressources-humaines/les-entreprises-belges-ont-trop-vite-et-trop-souvent-recours-au-chomage-temporaire/
    - Trends-Knack. (8 december 2025). Tijdelijke werkloosheid subsidieert ook jobs die niet bedreigd zijn. Trends-Knack. https://trends.knack.be/nieuws/tijdelijke-werkloosheid-subsidieert-ook-jobs-die-niet-bedreigd-zijn/
    - Trends Z FR – News (9 december 2025): "Les entreprises prises belges utilisent le chômage temporaire à mauvais escient"

Other press mentions.

- Le Vif. (31 janvier 2026). Le chômage économique et les vacances des ouvriers menacés : l’Arizona doit bricoler dans les comptes de l’ONEM — c’est une solution temporaire. Le Vif. https://www.levif.be/belgique/politique/le-chomage-economique-et-les-vacances-des-ouvriers-menaces-larizona-doit-bricoler-dans-les-comptes-de-lonem-cest-une-solution-temporaire/

6. PUBLICATIONS

- Bermudez, N., Dejemeppe, M. & Tarullo, G., 2023. "Theory and Empirics of Short-Time Work: A Review" GLO Discussion Paper Series 1348, Global Labor Organization (GLO).
    - Accepted for publication at the *Economie et Statistiques/Economics and Statistics* journal, under the new title "Protecting Jobs, Preserving Efficiency: Insights from European Short-Time Work Schemes"
- Bermudez, N., Cockx, B., De Cuyper, N., De Witte, H., Dejemeppe, M., Rodriguez Conde, C., Stinglhamber, F. et Tarullo, G. (2025). Le chômage temporaire en Belgique : un outil efficace et bénéfique, à condition d'en maîtriser l'usage, *Regards économiques*, Numéro 190.
- Rodriguez Conde, C., De Cuyper, N., Vander Elst, T., Stinglhamber, F., Godderis, L., Vandenbroeck, S., & De Witte, H. (2025). Keeping one's job … but potentially losing job quality?: Qualitative job insecurity as an explanatory mechanism between short-time work schemes and well-being. *European Journal of Work and Organizational Psychology, 34*(6), 721-734.

Doctoral Dissertations:

- Bermudez-Barrezueta, Natalia. *The Effects of Short-Time Work Programs during Economic Shocks*. Université Catholique de Louvain. Faculty of Economic, Social and Political Sciences and Communication ; Ghent University. Faculty of Economics and Business Administration, 2025. https://biblio.ugent.be/publication/01K7441VN1K18GXEPVNM85QT15.
- Rodriguez Conde, C. (2026). *Safe but Insecure : The Hidden Dark Side of Short-Time Work Schemes* [Unpublished doctoral thesis], KU Leuven / UCLouvain.
- Tarullo, G. (2025). *Designing Short-Time Work Insurance: the Impact of Financial Incentives*. Université catholique de Louvain. Faculty of Economic, Social and Political Sciences and Communication ; Ghent University. Faculty of Economics and Business Administration, Ottignies-Louvain-la-Neuve, Belgium ; Ghent, Belgium. https://biblio.ugent.be/publication/01K6MFHNKBBZ23VSSMNGMDSCYZ.

Forthcoming Discussion Papers:

- Bermudez-Barrezueta, N., Cockx, B., & Bijnens, G. (2025). The Impact of Short-Time Work during the Great Recession. *Mimeo*.
- Bermudez-Barrezueta, N. (2025). Protecting Jobs and Firms: The Impact of Short-Time Work during COVID-19. *Mimeo*
- Cockx, B., De Bacquer, J., & Tarullo, G. (2026). Experience Rating in Short-Time Work. *Mimeo.*

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REFERENCES

Abraham, K. G., & Houseman, S. N. (2014). Short-time compensation as a tool to mitigate job loss? Evidence on the US experience during the recent recession. *Industrial Relations: A Journal of Economy and Society*, 53(4), 543–567.

Abrams, L., Finlay, J., & Kobayashi, L. (2022). Job transitions and mental health outcomes among U.S. adults aged 55 and older during the COVID-19 pandemic. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 77*, e106–e116.

Albertini, J., Fairise, X., Poirier, A., & Terriau, A. (2022). Short-time work policies during the Covid-19 pandemic. *Annals of Economics and Statistics*, 146, 123–172.

Audenrode, V., & A, M. (1994). Short-time compensation: Job security, and employment contracts: Evidence from selected OECD countries. *Journal of Political Economy*, 102(1), 76–102.

Bahmani, N., Bhatnagar, A., & Gauri, D. (2023). Firms' responses to a black swan macro-crisis: Should they be socially responsible or fiscally conservative? *Journal of Business Research*, *161*.

Baranik, L. E., Cheung, J. H., Sinclair, R. R., & Lance, C. E. (2018). What happens when employees are furloughed? A resource loss perspective. *Journal of Career Development*, *46*(4), 381–394.

Bennedsen, M., Larsen, B., Schmutte, I. M., & Scur, D. (2023). The effect of preserving job matches during a crisis. *Labour Economics*, 84, Article 102406.

Bermudez, N., Cockx, B., De Cuyper, N., De Witte, H., Dejemeppe, M., Rodriguez Conde, C., Stinglhamber, F. et Tarullo, G. (2025). Le chômage temporaire en Belgique : un outil efficace et bénéfique, à condition d'en maîtriser l'usage, *Regards économiques*, Numéro 190.

Berwick, D.M., Murphy, J.M., Goldman, P.A., Ware, J.E. Jr, Barsky, A.J., & Weinstein, M.C. (1991). Performance of a five-item mental health screening test, *Medical Care, 29*(2): 169-76.

Biancardi, D., Lucifora, C., & Origo, F. (2022). Short-time work and unionization. *Labour Economics*, 78, Article 102188.

Biancardi, D., Lucifora, C., & Origo, F. (2025). Short-time work and unionization (Issue 17657). *Institute of Labor Economics (IZA)*.

Beņkovskis, K., Tkačevs, O., & Vilerts, K. (2025). Did job retention schemes save jobs during the COVID-19 pandemic? Firm-level evidence from Latvia. *The Scandinavian Journal of Economics*, n/a(n/a).

Blomqvist, S., Högnäs, R., Virtanen, M., LaMontagne, A., & Magnusson-Hanson, L. (2023). Job loss and job instability during the COVID-19 pandemic and the risk of depression and anxiety among Swedish employees. *SSM - Population Health, 22,* 101424.

Boeri, T., & Bruecker, H. (2011). Short-time work benefits revisited: Some lessons from the great recession. *Economic Policy*, *26*(68), 697–765.

Boeri, T., & Cahuc, P. (2023). Labor market insurance policies in the twenty-first century. *Annual Review of Economics*, 15, 1-22.

Borland, Jeff and Hunt, Jennifer, Did the Australian JobKeeper Program Save Jobs by Subsidizing Temporary Layoffs? (November 1, 2021). *CEPR Discussion Paper* No. DP16755.

Bossler, M., Osiander, C., Schmidtke, J., & Trappmann, M. (2023). Free riding on short-time work allowances? Results from an experimental survey design. *Kyklos*, 76(4), 882–901.

Brinkmann, C., Jäger, S., Kuhn, M., Saidi, F., & Wolter, S. (2024). Short-time work extensions (Working Paper 33112). *National Bureau of Economic Research.*

Burdett, K., & Wright, R. (1989). Unemployment insurance and short-time compensation: The effects on layoffs, hours per worker, and wages. *Journal of Political Economy*, 97(6), 1479-1496.

Cahuc, P. (2019). Short-time work compensation schemes and employment. *IZA World of Labor*, 11(2).

Cahuc, P. (2024). The micro and macro economics of short-time work. In Handbook of Labor Economics (Vol. 5, pp. 385-433). Elsevier.

Cahuc, P., & Carcillo, S. (2011). Is short-time work a good method to keep unemployment down? *Nordic Economic Policy Review*, 1(1), 133–165.

Cahuc, P., Carcillo, S., & Zylberberg, A. (2014). Labor Economics. (Second Edition. ed.). Cambridge (Mass.): MIT Press.

Cahuc, P., Kramarz, F., & Nevoux, F. (2021). The heterogeneous impact of short-time work: From saved jobs to windfall effects (CEPR Discussion Paper No. DP16168). *Centre for Economic Policy Research.*

Cahuc, P., Kramarz, F., Nevoux, S., & Vieira, N. (2024). The heterogeneous impact of short-time work: From saved jobs to windfall effects [Manuscript under revision]. *Journal of the European Economic Association*.

Cahuc, P., & Nevoux, S. (2018). Inefficient short-time work (Working Papers, 693). *Sciences Po Working Paper.*

Callea, A., Lo Presti, A., Mauno, S., & Urbini, F. (2019). The associations of quantitative/qualitative job insecurity and well-being: The role of self-esteem. *International Journal of Stress Management*, *26*(1), 46–56.

Chung, H., & van Oorschot, W. (2011). Institutions versus market forces: Explaining the employment insecurity of European individuals during (the beginning of) the financial crisis. *Journal of European Social Policy, 21*(4), 287–301.

De Cuyper, N., & De Witte, H. (2007). Job insecurity in temporary versus permanent employees: Associations with attitudes, well-being, and behaviour. *Work & Stress*, *21*(1), 65–84.

De Cuyper, N., Van den Broeck, A., & De Witte, H. (2015). Perceived employability in times of job insecurity: A theoretical perspective. In A.Vos & B. van der Heijden (Eds.), *Handbook of research on sustainable careers* (pp. 161–174). Edward Elgar Publishing.

De Witte, H. (1999). Job insecurity and psychological well-being: Review of the literature and exploration of some unresolved issues. *European Journal of Work and Organizational Psychology, 8*(2), 155–177.

De Witte, H. (2016). On the scarring effects of job insecurity (and how they can be explained). *Scandinavian Journal of Work, Environment & Health, 42*(2): 99–102.

Dengler, T., Gehrke, B., & Zessner-Spitzenberg, L. (2025, forthcoming). Short-time work and precautionary savings. *The Economic Journal*.

Desiere, S., Toniolo, T., & Bijnens, G. (2025). Too much of a good thing? The macro implications of massive firm entry (No. 473). *NBB Working Paper*.

Doden, W., Grosemans, I., De Cuyper, N., Tschopp, C., & Grote, G. (2024). Employability in the post-job security era: testing competing effects of perceived job insecurity on perceived employability change. *European Journal of Work and Organizational Psychology, 33*(1), 11–23.

Ferry, F., Bunting, B., Rosato, M., Curran, E., & Leavey, G. (2021). The impact of reduced working on mental health in the early months of the COVID-19 pandemic: Results from the understanding society COVID-19 study. *Journal of Affective Disorder*, *287*, 308–315.

Forsythe, E., Kahn, L. B., Lange, F., & Wiczer, D. G. (2020). Searching, recalls, and tightness: An interim report on the COVID labor market (No. w28083). *National Bureau of Economic Research*.

Garbinti, B., Goupille-Lebret, J., Munoz, M., Stantcheva, S., & Zucman, G. (2023). Tax design, information, and elasticities: Evidence from the French wealth tax (Working Paper No. w31333). *National Bureau of Economic Research*.

Gibson, B., Schneider, J., Talamonti, D., & Forshaw, M. (2021). The impact of inequality on mental health outcomes during the COVID-19 pandemic: A systematic review. *Canadian Psychology*, *62*(1), 101–126.

Giroud, X., & Mueller, H. M. (2017). Firm leverage, consumer demand, and employment losses during the Great Recession. *The Quarterly Journal of Economics*, 132(1), 271–316.

Giupponi, G., & Landais, C. (2023). Subsidizing labour hoarding in recessions: The employment and welfare effects of short-time work. *The Review of Economic Studies*, 90(4), 1963–2005.

Giupponi, G., Landais, C., & Lapeyre, A. (2022). Should we insure workers or jobs during recessions?. *Journal of Economic Perspectives*, 36(2), 29-54.

Glavin, P. & Young, M. (2017). Insecure people in insecure places: The influence of regional unemployment on employees' reactions to the threat of job loss. *Journal of Health and Social Behaviors, 58*(2), 232-251.

Goldammer, P., Annen, H., Stöckli, P. L., & Jonas, K. (2020). Careless responding in questionnaire measures: Detection, impact, and remedies. *The Leadership Quarterly, 31*(4): 101384.

Goldberg, D. P. (1978). *Manual of the general Health questionnaire*. NFER-NELSON Publishers.

Grace, M.K. (2022). The contributions of social stressors and coping resources to psychological distress among those who experienced furlough or job loss due to COVID-19. *Work and Occupations, 50*(2), 212-254.

Grandey, A. A., Sayre, G. M., & French, K. A. (2021). "A blessing and a curse": Work loss during coronavirus lockdown on short-term health changes via threat and recovery. *Journal of Occupational Health Psychology, 26*(4), 261–275.

Guo, A., & Johnston, A. C. (2021). The finance of unemployment compensation and its consequences. *Public Finance Review*, 49(3), 392–434.

Hahn, J., Todd, P., & Van der Klaauw, W. (2001). Identification and estimation of treatment effects with a regression-discontinuity design. *Econometrica*, 69(1), 201-209.

Halbesleben, J.R.B., Wheeler, A.R., & Paustian-Underdahl, S.C. (2013). The impact of furloughs on emotional exhaustion, self-rated performance, and recovery experiences. *Journal of Applied Psychology, 98*, 492–503.

Hall, R. E., & Lazear E. P. (1984). The Excess Sensitivity of Layoffs and Quits to Demand. *Journal of Labor Economics*, 2(2), 233–257.

Hijzen, A., & Martin, S. (2013). The role of short-time work schemes during the global financial crisis and early recovery: a cross-country analysis. *IZA Journal of Labor Policy*, 2(1), 5.

Hohman, M., Packard, T., Finnegan, D., & Jones, L. (2013). The effect of mandatory furloughs on self-determination, financial strain, and decision to leave the California State University system in social work faculty. *Journal of Social Work Education*, *49*(4), 748–759.

Huffman, A. H., Albritton, M. D., Matthews, R. A., Muse, L. A., & Howes, S. S. (2022). Managing furloughs: how furlough policy and perceptions of fairness impact turnover intentions over time. *The International Journal of Human Resource Management*, *33*(14), 2801–2828.

Jaravel, X. (2022). Whatever It Takes: Subsidizing Short-Time Work During the COVID-19 Pandemic in France. In: Strain, M., & Veuger, S. (Eds.) *Preserving Employer-Employee Links in the COVID-19 Era*, 90-114, American Enterprise Institute Press.

Johnston, A. C. (2021). Unemployment insurance taxes and labor demand: Quasi-experimental evidence from administrative data. *American Economic Journal: Economic Policy*, 13(1), 266–293.

Jones, L., Hohman, M., Mathiesen, S., & Finnegan, D. (2014). Furloughs and faculty management of time: Maintaining quality in an economic crisis. *Journal of Social Work Education, 50*(2), 334–348.

Judd, C., & McClelland, G. (1989). *Data analysis: A model comparison approach*. New York: Harcourt Brace Jovanovich.

Kagerl, C. (2024). The employment and windfall effects of short-time work: Evidence from Germany (IAB-Discussion Paper No. 14/2024). *Institute for Employment Research*.

Kirves, K., Kinnunen, U., De Cuyper, N., & Mäkikangas, A. (2014). Trajectories of perceived employability and their associations with well-being at work: A three-wave study. *Journal of Personnel Psychology, 13*(1), 46–57.

Kleven, H. J. (2016). Bunching. *Annual Review of Economics*, 8:435–464.

Klug, K., Bernhard-Oettel, C. & Sverke, M. (2024). The paradox of job retention schemes: a latent growth curve modeling approach to immediate and prolonged effects of short-time work on job insecurity and employee well-being. *Journal of Happiness Studies, 25*, 72.

Kopp, D., & Siegenthaler, M. (2021). Short-time work and unemployment in and after the Great Recession. *Journal of the European Economic Association*, 19(4), 2283–2321.

Landais, C. (2015). Assessing the welfare effects of unemployment benefits using the regression kink design. *American Economic Journal: Economic Policy*, 7(4), 243-278.

Lapeyre, A. (2023). Firm moral hazard in short-time work *[Unpublished manuscript].*

Lee, S., & Sanders, R. M. (2013). Fridays are furlough days: The impact of furlough policy and strategies for human resource management during a severe economic recession. *Review of Public Personnel Administration, 33*(3), 299-311.

Levi, A., Shapiro, D. L., Fried, Y., Markoczy, L., & Noghani, F. (2019). When everyone works harder for fewer rewards, is it fair? Implications of “organization-wide hardship” for managing and studying organizational fairness. *Group & Organization Management, 44*(2), 396–424.

Mäkikangas, A., De Cuyper, N., Mauno, S., & Kinnunen, U. (2013). A longitudinal person-centered view on perceived employability: The role of job insecurity. *European Journal of Work and Organizational Psychology, 22*(4), 490–503.

Mandeville, A., Whitman, M., & Halbesleben, J. (2019). The meaning of furloughs on family identification. *Personnel Review*, *48*(6), 1596–1610.

McKee-Ryan, F., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: a meta-analytic study. *The Journal of applied psychology*, *90*(1), 53–76.

Melcangi, D. (2024). Firms' precautionary savings and employment during a credit crisis. *American Economic Journal: Macroeconomics*, 16(1), 356–386.

Möhring, K., Naumann, E., Reifenscheid, M., Wenz, A., Rettig, T., Krieger, U. . . . & Blom, A. G. (2021). The COVID-19 pandemic and subjective well-being: Longitudinal evidence on satisfaction with work and family. *European Societies*, *23*(sup1), S601–S617.

Montenegro, M., & Hijzen, A. (2024). Job retention at scale *[Unpublished manuscript].*

Moreira, A., Cesário, F., Chambel, M., & Castanheira, F. (2020). Competences development and turnover intentions: the serial mediation effect of perceived internal employability and affective commitment. *European Journal of Management Studies, 25*(1), 5–22.

Nelissen, J., Forrier, A., & Verbruggen, M. (2017). Employee development and voluntary turnover: Testing the employability paradox. *Human Resource Management Journal, 27*(1), 152–168.

Nikolova, I., Vander Elst, T., De Jong, S. B., Baillien, E., & De Witte, H. (2023). Can task changes affect job satisfaction through qualitative job insecurity and skill development? *European Journal of Work and Organizational Psychology*, *32*(4), 520–537.

Nylund-Gibson, K., Garber, A. C., Carter, D. B., Chan, M., Arch, D. A. N., Simon, O., Whaling, K., Tartt, E., & Lawrie, S. I. (2023). Ten frequently asked questions about latent transition analysis. *Psychological Methods, 28*(2), 284–300.

O'Neill, P., & Sevastos, P. (2013). The development and validation of a new multidimensional job insecurity measure (JIM): An inductive methodology. *Journal of Occupational Health Psychology*, *18*(3), 338–349.

OECD (2010), OECD Employment Outlook 2010: Moving beyond the Jobs Crisis, OECD Publishing, Paris.

OECD (2021), OECD Employment Outlook 2021: Navigating the COVID-19 Crisis and Recovery, OECD Publishing, Paris.

OECD (2023), "Employment dynamics across firms during COVID-19: The role of job retention schemes", *OECD Economics Department Working Papers*, No. 1788, OECD Publishing, Paris

OECD (2026), An Assessment of Job Retention Support During the COVID-19 Pandemic and its Aftermath in Belgium, OECD Publishing, Paris.

Osborne, D., Smith, H. J., & Huo, Y. J. (2012). More than a feeling: Discrete emotions mediate the relationship between relative deprivation and reactions to workplace furloughs. *Personality and Social Psychology Bulletin, 38*(5), 628–641.

Pelletier, K. L., Kottke, J. L., & Reza, E. M. (2015). During Furloughs, Who Is More Attached to a Public University? Staff? Faculty? . . . Managers. *Public Personnel Management*, *44*(1), 120-142.

Probst, T. M. (2005). Countering the negative effects of job insecurity through participative decision making: Lessons from the demand-control model. *Journal of Occupational Health Psychology, 10*(4), 320–329.

Rauvola, R., Rudolph, C., & Zacher, H. (2022). Short-term effects of short-term work: Dynamics in fatigue across two national lockdowns. *Journal of Occupational and Environmental Medicine, 64*(7), 550-556.

Reid, F. (1982). UI-Assisted Worksharing as an Alternative to Layoffs: The Canadian Experience. Industrial and Labor Relations Review, 35(3), 319–329.

Ren, S., Islam, M. T., & Chadee, D. (2023). Careers in disarray? COVID-19 and self-perceived employability. *Journal of Career Assessment*, *32*(2), 207–225.

Saez, E. (2010). Do taxpayers bunch at kink points? *American Economic Journal: Economic Policy*, 2(3):180–212.

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2017). An ultra-short measure for work engagement. *European Journal of Psychological Assessment*, 35(4), 577–591.

Shockley, K., Ureksoy, H., Rodopman, O., Poteat, L., & Dullaghan, T. (2016) Development of a new scale to measure subjective career success: A mixed-methods study. *Journal of Organizational. Behavior, 37*(1), 128–153.

Steijn B. (2004). Human resource management and job satisfaction in the Dutch public sector. *Review of Public Personnel Administration*, *24*(4), 291–303.

Stuart, M., Spencer, D. A., McLachlan, C. J., & Forde, C. (2021). COVID-19 and the uncertain future of HRM: Furlough, job retention and reform. *Human Resource Management Journal, 31*(4), 904–917.

Sucher, S. J., & Winterberg, S. (2014). Furloughs: An alternative to layoffs for economic downturns. *Harvard Business School, 9*(314–097), 1–9.

Szulc, J. M., & Smith, R. (2021). Abilities, motivations, and opportunities of furloughed employees in the context of covid-19: Preliminary evidence from the UK. *Frontiers in Psychology*, *12*, 635144.

Törnroos, K., Bernhard-Oettel, C., & Leineweber, C. (2017). Perceived employability trajectories: A Swedish cohort study. *Journal of Occupational Health, 59*(4), 336–344.

Van den Bosch, J., & Vanormelingen, S. (2023). Productivity growth over the business cycle: cleansing effects of recessions. Small Business Economics, 60(2), 639-657.

Vandekerkhove, T., Struyven, L., Goesaert, T., & Vets, P. (2020). Hotspots van tijdelijke werkloosheid, hotspots van arbeidsmarktdynamiek? Sectorale impact, omvang en profiel van tijdelijke werkloosheid in de eerste maanden van de Coronacrisis. *Dynam report No. 2020/1*. Research Institute for Work and Society (HIVA). https://www.dynamstat.be/files/publications/DynamRelease2020_NL.pdf

Vander Elst, T., Baillien, E., De Cuyper, N., & De Witte, H. (2010). The role of organizational communication and participation in reducing job insecurity and its negative association with work-related well-being. *Economic and Industrial Democracy*, *31*(2), 249-264.

Vander Elst, T.., De Cuyper, N., & De Witte, H. (2011). The role of perceived control in the relationship between job insecurity and psychosocial outcomes: moderator or mediator? *Stress and Health, 27*, 215-227.

Vander Elst, T., Richter, A., Sverke, M., Näswall, K., De Cuyper, N., & De Witte, H. (2014). Threat of losing valued job features: The role of perceived control in mediating the effect of qualitative job insecurity on job strain and psychological withdrawal. *Work & Stress, 28*(2), 143–164.

Wang, S., Kamerāde, D., Bessa, I., Burchell, B., Gifford, J., Green, M., & Rubery, J. (2022). The impact of reduced working hours and furlough policies on workers' mental health at the onset of COVID-19 pandemic: A longitudinal study. *Journal of Social Policy*, 1– 25.

Ware, J. E. (1999). SF-36 Health Survey. In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment*, 1227-1246. Mahwah, NJ: Lawrence Erlbaum Associates.

Wels, J., Booth, C., Wielgoszewska, B., Green, M. J., Di Gessa, G., Huggins, C. F., Griffith, G. J., Kwong, A. S. F., Bowyer, R. C. E., Maddock, J., Patalay, P., Silverwood, R. J., Fitzsimons, E., Shaw, R., Thompson, E. J., Steptoe, A., Hughes, A. Ploubidis, G. B. (2022). Mental and social wellbeing and the UK coronavirus job retention scheme: Evidence from nine longitudinal studies. *Social science & medicine, 308*, 115226.

Zheng, C., Wu, J., & Zhao, X. (2022). How could hospitality employees survive? The individual costs, career decisions and autonomy support of furlough strategies in a crisis. *International Journal of Hospitality Management*, *106*.