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LES STRATÉGIES DE RESSOURCES HUMAINES FACE AU PREMIER CONFINEMENT : UNE TYPOLOGIE DES ÉTABLISSEMENTS FRANÇAIS

Philippe Askenazy, Clément Brébion, Pierre Courtioux, Christine Erhel, Malo Mofakhami

RÉSUMÉ

Ce document de travail propose d'articuler la littérature sur la gestion des crises avec celle sur la flexibilité dans les entreprises pour analyser les changements dans les conditions de travail et dans la gestion des ressources humaines, face à des crises imprévues comme la pandémie de Covid. Sur la base d'une enquête menée par le ministère français du Travail en avril 2020 au niveau établissement, appariée à d'autres bases de données sur la situation économique, l'emploi et les conditions de travail, le document de travail identifie une typologie des stratégies d'établissement en termes d'organisation du travail et de ressources humaines, dans le contexte du premier confinement en France. Cinq grands types de stratégies émergent : la stratégie de télétravail, utilisée massivement pour maintenir l'activité ; une stratégie de sortie temporaire, mobilisant les programmes de chômage partiel soutenus par les politiques publiques ; une stratégie d'innovation, concernant les établissements qui ont dû ou choisi de maintenir leur activité sur site ; une stratégie de repli conduisant à une diminution du niveau d'emploi ; une stratégie mixte combinant une flexibilité interne ou spatiale et un repli partiel en ayant recours au chômage partiel et aux aides publiques. Ces cinq stratégies peuvent être liées à diverses ressources susceptibles d'être utilisées en réponse à une crise : certaines d'entre elles préexistaient au niveau des établissements et concernaient principalement les relations de travail (accord sur le télétravail, niveau de salaire, exposition aux risques et existence d'un comité de santé et de sécurité) ; d'autres apparaissaient liées aux institutions du marché du travail (législation sur les contrats temporaires et l'intérim, etc.) ou aux politiques de l'emploi (chômage partiel en particulier).

Mots-clefs : crise sanitaire ; gestion des ressources humaines ; conditions de travail ; politiques de l'emploi ; stratégies d'entreprise.

HRM Strategies in Response to the First Covid Lockdown: a Typology of French Workplaces

Abstract

The working paper shows the interest of crossing the literature on crisis management and on firm flexibility to analyse changes in working conditions and human resource management, facing unexpected crises such as the Covid pandemic. Based on a survey conducted by the French Ministry of Labour in April 2020 at the workplace level, which was matched with other datasets on pre-existing economic and employment situation, it proposes a typology of workplace strategies in terms of work organisation and human resources in response to the first lockdown in France. It shows that it is possible to identify five main types of workplace strategy: the teleworking strategy, used massively to persevere in keeping up activity; a temporary exit strategy, using the short-time work programmes supported by public policies; an innovation strategy, concerning workplaces which had or have chosen to maintain their activity on site; a retrenchment strategy leading to a decrease in employment level; a mixed strategy that combined internal or spatial flexibility partial retrenchment using short-time work and related public support as resources. These five strategies could be linked to various resources that may be used to respond to a crisis: some of them were pre-existing at the workplace level and depend mainly work relations (teleworking agreement, wage level, risk exposure and health and safety committee); others relate to labour market institutions (legislation on short-time contracts and temps, etc.) and to labour market policy (short-time programmes and their support, etc.).

Key words: health crisis; human resources management; working conditions; labour market policies; firms' strategies.

INTRODUCTION

The first Covid lockdown was announced in France on 12 March 2020 by President Macron. It came into force just a few days later 16 March, and took economic agents and the population by surprise. Just one week before, the President had attended a play in the centre of Paris, declaring that "Life goes on. There is no reason, except for the vulnerable, to change our habits of going out".

As in many countries, the lockdown was an exceptional shock for organisations and workers. Sanitary measures included stay-at-home orders, social distancing, the ban of most leisure activities, the closure of *non-essential* services and buildings, including schools. These resulted in massive unexpected changes in demand and broad disruptions to all types of economic activity. To mitigate the impact on firms and to provide them with opportunities to adapt their organisation and even innovate, the government immediately introduced a series of measures that can be categorised into two main groups. The first one refers to the "Everything will be done to protect our employees and our companies, whatever the cost". Support for short-time work was drastically improved: the subsidy covered the full cost of unworked hours borne by firms (70% of gross wages) up to a limit of 4.5 times the minimum wage; the arrangements could be expanded to apprentices, part-time workers, temps, etc.; the validation of company schemes was carried out by public administrations within 48 hours. Financial smoothing to support companies' cash flow was provided by state-guaranteed loans, tax and social security contributions were deferred. Very small enterprises (less than 10 employees) benefited from a payment of €1,500.

The second group of measures concerned labour law. Telework became the imperative rule for all jobs that allow it. Numerous measures gave more internal flexibility: the suspension of arrangements from collective, firm and branch agreements; the possibility for employers to impose or modify the dates of vacations; the possibility for firms operating in *essential* sectors to have waivers from the rules on working hours, weekly rest periods and Sunday rest. Finally, workers without childcare facilities and unable to telework could benefit from sick leave.

More than four out of five companies, including practically all those in the catering and accommodation sector, made use of one or more subsidies put in place by the public authorities, 70% of which involved partial unemployment (Duc and Souquet, 2020). The evolution of work organisation was much more heterogeneous, according to company sizes and sectors, but also within these classes. About one third of firms stopped their operations, and among still-active companies, 40% continued their activities thanks to a general switch to teleworking.

The aim of this article is to go beyond this observed heterogeneity. With regard to France, it seeks to propose a typology of workplace strategies in terms of human resource management, and to explore whether these strategies were linked to the resources at companies' disposal.

We rely on a survey conducted by the French Ministry of Labour in April 2020 of a representative sample of establishments, and we leverage pre-lockdown administrative data and surveys to characterise their financial situation and their work organisation – including telework.

The rest of the article is organised in three sections followed by the conclusion. Section 2 crosses the classical theoretical literature on firm flexibility and empirical evidence, notably for Germany during and after the Great Recession. It first studies firm strategies in various

countries during Covid, and finally the contribution of the field of crisis management. This cross-referencing suggests elements of a typology of organisational and workforce management strategies in workplaces during the first lockdown. The data and our method for constructing our empirical typology are presented in Section 3. Section 4 details the five groups resulting from our empirical analysis and explores the pre-Covid resources available to workplaces that may have contributed to their strategic choices in a crisis situation.

LABOUR, HUMAN RESOURCES FLEXIBILITY AND CRISIS

Typologies of firm level flexibility before the Covid crisis

Flexibility is usually considered as a requirement for organisations to adapt to changes in their environment (technological change, international competition, fluctuating demand, etc.). An important part of firm-level flexibility is related to "manpower strategies" (Atkinson, 1984): i.e. to the use of labour and human resource management. Since Atkinson's work, the literature has emphasised the existence of several forms of flexible labour utilisation. The main distinction is between numerical flexibility, working-time flexibility, and functional flexibility (Kalleberg, 2001; Håkansson and Isidorsson, 2003). In Atkinson's seminal work, numerical flexibility consists in variations of the quantity of labour input. These variations can be obtained by using the external labour market through dismissals and redundancies, and may also involve a more intensive use of flexible contracts (fixed-term contracts, temporary agency work, part-time work, subcontracting, etc.). Numerical flexibility can also take place within a firm, through a variation in employees' working hours, resulting from overtime, the annualisation of work, and more generally flexible hours. Later scholars have made a distinction between these two dimensions, defining the latter as "working-time flexibility" (Håkansson and Isidorsson, 2003; Johnstone, 2019). In their view, adjustments on the extensive margin (*via* external labour markets) and on the intensive margin (*via* a variation in working time) are used in different contexts and have different results for both individuals and companies. This paper follows this view and therefore distinguishes between numerical flexibility (affecting the number of workers in a firm and referring to external flexibility) and working time flexibility (affecting the number of hours worked and referring to internal flexibility). Functional flexibility refers to a process through which firms adjust to changes by an internal reorganisation of workplaces, which can take several forms. Employees can be redeployed between different tasks and teams involved in job design, innovation, technology, and the organisation of work. Functional flexibility refers to a broad set of human resource practices: teamworking, job rotation, involvement of workers in the organisation of work, etc. Such work organisation practices provide functional flexibility and characterise "flexible work systems" or "high-performance work organisations" (Osterman, 2000).

These broad types of flexibility have been studied separately, but research has also considered their interrelationships. The segmentation theory stresses the relationships between the primary and secondary sectors (Leontaridi, 1998). Primary sector firms, although they favour and organise workforce stability to reduce turnover costs and invest in specific human capital, can

increase their workforce flexibility by subcontracting and using temporary work, thus developing the secondary sector, in which firms mainly use short-term contracts with a high level of turnover (Doeringer and Piore, 1971). At the firm level, Atkinson's core-periphery model suggests that firms combine functional flexibility for their regular permanent workers with specific skills, and numerical flexibility for the so-called peripheral groups, through a high turnover and the use of flexible contracts. Additional approaches consider that firms also combine functional and numerical flexibility by developing relations with other organisations via networks, not only outsourcing/temp agencies but also collaborative relationships with specialised suppliers and producers (Kalleberg, 2001).

An additional dimension of flexibility has emerged from the de-spatialisation of work (Halford, 2005). This involves individual workers and teams that operate on demand in different workplaces, including telework or ICT-based mobile work (Messenger, 2019; Eurofound, 2020). These arrangements aim to give workers and employers the ability to adapt the location of work to their needs. For example, employers can optimise the use of office space. Interestingly, telework was associated with higher "presenteeism": i.e. working while sick with an online rather than on-site presence (e.g. Steidelmüller et al., 2020). This finding suggests that before the Covid crisis, telework was already a flexible tool for employers to avoid the risk of infecting colleagues, for example during seasonal flu outbreaks.

Despite the strong attention paid by social partners and institutions to spatial flexibility,[1] the proportion of workers in telework and ICT-based mobile work was limited before the Covid crisis. According to the European Working Conditions Survey 2015, about 5% of workers were in highly mobile jobs, while only 3% of them were in home-based jobs and an additional 9% were occasionally mobile or teleworking. Notably, these arrangements were much more common for managers, though in numerous firms at least some workers were concerned. In France, on the eve of the Covid crisis, nearly 30% of workplaces were covered by a telework agreement or were negotiating one (2019 French Working Condition Survey). However, the actual worker propensity to telework was comparable to the 2015 EU average.

Finally, the forms and degree of labour flexibility are affected by employment systems; the rules shaping employment relations differ across sectors or countries and are influenced by collective representation and labour market institutions (Marsden, 1999). More specifically, according to this approach, incentives for functional flexibility are generally stronger in internal labour markets (where job content is controlled by employers and skills are not directly transferable) than in occupational labour markets (where skills are transferable and job content is more standardised). Incentives may also depend on employment rules, social dialogue, training and employment policies.

[1] E.g. the 2002 EU regulation Framework Agreement on Telework, Telework Agreement signed by the European social partners (see Prosser, 2015).

Flexibility and public policies in times of crisis: lessons from the Great Recession and its aftermath

The Great Recession of 2008-2009 provides an interesting laboratory for studying the mechanisms favouring internal and external employment flexibility in the context of economic crises, as well as for analysing their impacts. It also reveals the role of institutions and policy response to crises. While most OECD countries reacted to the drop in activity using numerical flexibility strategies with large adjustments on the extensive margin, Germany stands out as an exception with a very stable unemployment rate during the crisis, despite a drop in GDP similar to other OECD countries. This exception has attracted a vast literature. German firms fully absorbed the economic downturn by reducing the number of hours per worker. They used three main tools enabling working-time flexibility: working-time accounts, pacts for employment and competitiveness, and short-time work (*Kurzarbeit* in German, STW hereafter) (Crimann *et al.*, 2012). Of these, the German STW program has received the most attention and interest from an international audience. Briefly, the instrument allows firms to decrease the total number of working hours without laying off workers in different contexts, including economic downturns: they can do this thanks to massive public support for workers' incomes. In comparison with previous economic downturns, the use of such plans dramatically increased in Germany during the Great Recession, with about 3.5% of all dependent workers being affected in 2009. Typically, large firms in the manufacturing sector resorted to STW to protect their core workers, in line with the core-periphery model. Conversely, firms from the service sector or with many temps or part-time workers tended to adjust employment on the extensive margin. Interestingly, business conditions or labour shortages in 2007 were no prediction of STW use in 2009 (Boeri and Bruecker, 2011). Recent literature has assessed whether the benefits of STW plans (preserving human capital or avoiding the scarring effect of unemployment) outweigh their costs (fiscal costs and prevention of the rationalisation effects of recessions). Overall, the literature finds positive effects on workers and firms (see Giupponi *et al.*, 2022), especially those hit by large negative shocks (see, for example, Hijzen and Martin, 2013).

The focus on STW in both the literature and the public debate has however played down the importance of other tools of internal flexibility that were mobilised during the Great Recession, including in Germany. The German administration only accepted STW plans when firms had previously exhausted other measures for internal flexibility, including a reduction in the use of overtime, urging workers to use up their paid leave and to empty their working-time accounts, which had been filled during the period of high activity (Caliendo and Hogenacker, 2012). Firms massively used these instruments: for instance, according to Boeri and Bruecker (2011) the use of working-time accounts contributed to saving about the same number of jobs as STW in 2009. They also made use of opt-out clauses in sectoral collective agreements to reduce working time.

Most important to us here is that the German preference for internal flexibility takes its roots in long-lasting institutional arrangements rather than in the actual design of the STW

instrument itself.[2] Instruments for working-time flexibility are well-entrenched in Germany's institutional culture. These include company-level pacts for employment between employers and works councils which flourished in the 1990s and early 2000s, in order to safeguard employment in a context of rising unemployment. These paved the way for agreements in favour of working-time flexibility during the Great Recession. Likewise, working-time accounts had been filled with unpaid overtime hours during the economic boom preceding the crisis (Herzog-Stein and Zapf, 2014), and provided employers with flexibility margins.

Case studies in other institutional contexts have also highlighted that flexibility practices in periods of crises depend on earlier practices. For example, Johnstone (2019) analyses the implementation of flexibility strategies to adapt to the 2008 recession in a British firm in the automotive sector. He shows that reactions to the downturn were largely driven by pre-existing bundles of labour flexibility forms (mainly numerical flexibility through the reduction of temporary agency work, and some functional, working-time or pay flexibility for permanent workers). Likewise, de Leede *et al.* (2020) studied how Dutch SMEs mixed different types of flexibility in a rather short-term perspective following the Great Recession. They show that labour flexibility strategies were often obtained through basic pre-existing numerical frameworks, like overtime and temping work, rather than annualisation of working time, multiskilling or functional flexibility. This again supports the observation that advanced labour flexibility practices require ex-ante implementation.

While HRM strategies to cope with crises depend on pre-existing institutional settings, recessions can also have durable consequences on future practices. For instance, at a micro level, the Great Recession has increased the degree of flexibility of temporary agency work over the long run. At a macro-level, it has influenced labour market policies.

Facing Covid: the generalisation of working-time and spatial flexibility through the massive use of short-time work and teleworking

Building on the lessons learnt from the Great Recession and the German 'job miracle', the European willingness to foster working-time flexibility in order to preserve firm-worker relationships has translated into firm-level agreements across Europe favouring STW.

In France, for instance, collective agreements signed during the 2010s paved the way to more intensive use of STW in case of an economic downturn. These agreements coupled with the policy measures developed in the context of Covid to ease access to STW boosted their use during the crisis to the extent that the use of numerical flexibility remained limited. According to Fontaine and Roux (2022), STW arrangements benefited persons at the bottom of the economic ladder to a greater extent, as small firms in catering, accommodation and entertainment resorted more often to STW plans. Fixed-term contract workers and temporary workers were also more affected. Of further interest for the present paper, the authors highlight that the use of STW follows a different pattern according to whether a sector is deemed

[2] Consistently, despite large use of STW, some other countries such as Italy or Japan did not avoid large adjustments on the extensive margin. In the same vein, Boeri and Bruecker (2011) show that the centralisation of collective bargaining – which is clearly inherited from the past – affects the demand for STW.

essential or not. In non-essential sectors, the least productive firms and those experiencing a strong turnover *before* the crisis were the most likely to resort to STW; in the essential sectors, the opposite prevailed. Even in Germany, lockdowns pushed firms to increase their use of STW plans in comparison with the 2009 recession and with a lower concentration in the manufacturing sector (Herzog-Stein *et al.*, 2022). New conditions favoured this development, as firms were no longer compelled to exhaust other working-time flexibility tools first.

Simultaneously, the Covid crisis has seen an unprecedented development of spatial flexibility strategies in response to lockdowns and sanitary policies. Teleworking arrangements have skyrocketed. Interestingly, using the same survey as ours (ACEMO-Covid, see Section 3), France's umbrella agency managing unemployment benefits Unédic (2022) has suggested that STW and telework were substitutes during the first lockdown in France. Consistent with these trends, Ben Yahmed *et al.* (2022) have shown that the variation in firms' stock of ICT capital (a proxy for workers' ability to telework) explained a large share in the variance of STW use across local labour markets during the Covid pandemic in Germany, both in the short and medium run.

Lastly, STW plans and teleworking arrangements, which were both developed in the aftermath of the Great Recession, and direct support for businesses have avoided job destructions in most European countries. In other words, the use of working-time and spatial flexibility have limited numerical flexibility strategies: the unemployment rate during lockdowns thus remained – in general – below the 2009 levels, although the drop in GDP in 2020 was much larger than during the Great Recession.

By contrast, in the US, short-lasting lockdowns led firms to resort to temporary layoffs to a much greater extent than ever before. This adjustment on the extensive margin was very heterogeneous across the US economy. Not surprisingly, more than occupations or sectors, a very good predictor of workers' probability to be laid off was the share of tasks they do from home (Adams-Prassl *et al.*, 2020). This ability partly depends on firms' pre-Covid policies: working at the area level in the US, Pierri and Timmer (2020) find that labour market adjustments are correlated with IT budgets per employee. Overall, many employees from non-essential sectors with limited ability to execute their tasks at home became temporarily unemployed, and the American unemployment rate peaked at nearly 15% in April 2020. One might read this evolution as a pure adjustment in terms of numerical flexibility (i.e. on the extensive margin). However, the *temporary* dimension of these dismissals highlights the willingness of the firms to maintain their relationship with their workers. The temporary layoffs following the first lockdowns did not massively translate into permanent separations (Wolcott *et al.*, 2020).

The desire to preserve activities and employment relationships are consistent with the impressive use of telework: up to 60% of full paid working days were done at home in the US, in May 2020, compared to 5% three years earlier (Barrero *et al.*, 2021). This huge movement stems from new employees gaining access to telework arrangements and starting to work 100% from home rather than workers taking advantage more often of pre-existing employer-employee agreements on telework (Bick *et al.*, 2021). As a result, there is a poor correlation between the increase in the intensity of telework during the Covid crisis and the previous spread of such arrangements among demographic groups. However, not surprisingly, as in Europe (Ben Yahmed *et al.*, 2022), the intensity of teleworking was closely linked with

workers' access to ICTs. Thus, in the US, the probability of working from home during the crisis increased with the quality of internet access. It was also positively correlated with age, the level of education and earnings and the use of telework was higher in the service sector – including educational services, wholesale trade, finance and insurance or utilities – and among women (Barrero *et al.*, 2021; Bick *et al.*, 2021).

These findings suggest a partial typology of firm flexibility during the first lockdowns driven by policy responses to the crisis and the teleworkability of firm activity and workers' tasks: telework *versus* numerical flexibility in the US, telework *versus* working-time flexibility in Europe.

Crisis Management and Flexibility

The perspective of crisis management invites us to go beyond such dichotomies. Crisis management emerged from the study of the responses of organisations to industrial and natural disasters (typhoon, earthquake) and it therefore defines crises beyond their economic dimension. In their review, Bundy *et al.* (2017) propose a generic definition of crises: "an event perceived by managers and stakeholders as highly salient, unexpected, and potentially disruptive". Building on Gundel's approach (2007), the Covid period may therefore be viewed as a *fundamental* crisis for firms: it could not be predicted nor influenced, while its destruction or disruptive potential has been massive. That was especially the case of the first lockdowns following the urgent and unprepared decisions of governments, as firms had to adapt simultaneously to strict regulations making the continuation of some business operations impossible, or conversely had to mobilise essential services while the virus spread across the workforce, disrupting supply chains.

In their review, Wenzel *et al.* (2020) distinguish between four types of strategic responses to a crisis: retrenchment (cost-cutting measures to reduce the scope of business activities), persevering (preserving the status quo of business activities, for instance through debt financing), innovating, and exit. All strategies require some flexibility in labour and human resources to adapt to firms' strategic objectives of the companies. Case studies during the pandemic tend to confirm the deployment of these strategies. For example, Kraus *et al.* (2020) interviewed 27 family firms during the first lockdown in five Alpine countries and found that about half of them only had a persevering strategy (possibly combined with retrenchment), while the other half adopted innovations. Clauss *et al.* (2022) illustrate further the temporary innovations of SMEs especially in adapting or changing their on-site activity: a distillery and beverage producer turned to making disinfectants; a restaurant not only cooked and delivered meals but was also transformed into a retail store selling toilet paper and masks. The diversity of strategic responses was not limited to SMEs. For example, Albers and Rundshagen (2020) point out that the responses of European airlines to the first lockdowns and border closures fell along the spectrum of Wenzel *et al.* (2020): exit (including permanent failures), retrenchment, persevering and innovating (e.g., converting passenger flights into cargo flights of masks and other health equipment).

These studies show that firms in the same sector and of the same size may react differently to a similar Covid shock. In this perspective, since strategic responses require labour and human resource flexibility, the typologies of labour flexibility policies mirrored crisis management strategies. STW in Europe or temporary layoffs in the US were consistent with temporary exit. Retrenchment included numerical flexibility. Persevering in non-essential sectors while respecting lockdowns or distancing rules required spatial flexibility up to full teleworking. Innovation in essential sectors for meeting social and medical needs, or in non-essential sectors to maintain or convert on-site activity generally required functional flexibility. And firms deploying simultaneously several strategic responses would mix labour and HR flexibility tools.

We thus expect that firms used a variety of labour and HR schemes in response to the first lockdowns. Our rich data helps to explore this issue for France.

DATA AND METHODS

Two merged data sets were used to analyse French workplace strategies

Our paper builds on four administrative databases that we merged for the first time using the same unique identifier.[3] They provide information about workplaces during both the early Covid period and before the pandemic started. We use these data to identify firms' strategies in the initial phase of the first lockdown (beginning in the last weeks of March 2020),[4] and we explain them with reference to pre-Covid characteristics.

The first dataset (ACEMO-Covid) is the initial wave of a monthly, high-frequency representative survey conducted from March 2020 onwards to measure workplaces' reactions to the Covid crisis. It includes 12,737 respondents for March 2020. We merged it with the last waves of three databases from the French government. The first one (ACEMO-Quarterly last quarter 2019) covers the same sample of workplaces and provides information on wages, employment and working time.[5] The second one reports firms' tax accounts for French firms (FARE, 2019). The last one is a representative employer-employee survey investigating working conditions and psychosocial risks (CT, 2019) that completed its collection one week before the lockdown. We provide more details on all data in Appendix A1.

Since FARE covers almost all French firms with 10 or more workers, merging it with the two ACEMO databases results in the loss of only a few observations. Samples for ACEMO and CT come from two independent random selections but thanks to their size, almost one thousand workplaces are common. Eventually, the resulting matched ACEMO/FARE/CT sample included 881 workplaces. Descriptive statistics respectively computed on the intersection of ACEMO-Covid/ACEMO-Quarterly /FARE and the intersection of ACEMO-Covid/ACEMO-

[3] This identifier is the SIRET/SIREN.

[4] The first lockdown in France took place at the national level from 17 March to 11 May.

[5] The sample is the same, but the responding establishments may differ.

Quarterly /FARE/CT confirm that the latter is a random selection of the former: except the over-representation of large establishments in the fully-merged dataset, there were no strong differences in the structural characteristics of workplaces or in ACEMO-Covid variables between the fully-merged dataset and the merged data ACEM-Covid/ACEMO- Quarterly /FARE. When CT variables are not necessary, we use the matched data ACEMO-Covid/ACEMO- Quarterly /FARE data to improve the statistical power of our analyses.
The list of variables used in each of the datasets are given in Appendix (table A1).

Methods

The present paper seeks to produce a typology of short-term HRM strategies that workplaces implemented in response to the start of the Covid crisis in March 2020. In this respect, our methodology follows two steps: (i) we identify various types of workplace strategies implemented during the early spread of Covid and the associated lockdown; and (ii) we uncover the main determinants that explain the distribution of these strategies across workplaces.
To identify strategies of French workplaces in the early stage of the Covid crisis, we assume that there exists an unknown but limited number of reaction types. Additionally, we assume these types to be the result of HR strategies at the workplace level. Table 1 describes the nine variables from the ACEMO-Covid dataset we use to identify workplace reaction types.

Table 1 – Variables used in the typology

VARIABLE	MEASUREMENT
The share of workers working on site workers teleworking workers benefiting from a short-time work program sick leave (including sick child leave) workers on holiday workers using their right to leave	Five levels: Most of the workers (80% and more); A majority of workers (50% to 79%); Some workers (between 10% and 49%); Few workers (less than 10%); No worker
Layoffs for open ended contract workers	Dummy variable
Layoffs or non-renewal of short-term contracts	Dummy variable
Contractual termination for open-ended contract	Dummy variable
Cancelling or postponing recruitment	Dummy variable

To compute the typology, we successively ran a Multiple Correspondence Analysis (MCA) and a Hierarchical Agglomerative Clustering (HAC) analysis. MCA is a method used in taxonomy exercises to obtain uncorrelated dimensions (or latent variables) to summarise a set of qualitative variables. Based on that set of latent variables, we ran an HAC analysis that identified clusters of reactions in workplaces. In order to avoid ad-hoc clustering, we retained the so-called *optimal number of clusters*: i.e. the number of clusters that maximises inter-

cluster variance and that minimises intra-cluster variance. This optimal number describes the range of workplace strategies that we intend to explain.[6]

The second step of our analysis aimed at identifying correlations between pre-Covid workplace conditions and observed firms' behavioural strategies in response to the Covid crisis. Our rich data provided us with a large range of pre-existing workplace characteristics: the ACEMO datasets gave us information about the share of white collar workers, the share of short-term contracts, the share of part-timers, firm size and firms' industrial sector. FARE provided information about firm mark-ups, productivity and investment rates. For the reduced sample, these data can be combined with CT variables including: the share of temporary workers, an index of workers' exposure to occupational risks and a dummy variable indicating the use of digital tools before the crisis. This list of variables is used to describe the potential determinants of the reaction types identified in the first step of our analysis.

We proceeded in two stages. First, we described and contrasted the averages. Second, we performed a set of binomial logit regressions to identify conditional correlations.[7] While the second stage allowed us to clear the correlations from observable confounding factors, we do not claim to establish causality. We ran our main regressions on the sample matching of our four databases (ACEMO-Covid/ACEMO- Quarterly /FARE/CT), in order to characterise workplaces in detail. As a robustness check and to gain in statistical power, we ran regressions on the larger sample ACEMO-Covid/CT that includes 558 observations instead of 415 in the core dataset.

RESULTS

The results of our empirical analyses include two steps. First, we present the results of a clustering of firms' strategies in reaction to the early phase of the Covid pandemic and to the first lockdown. In addition to the variables contributing to the taxonomy, we also use the whole set of workplace-level information to characterise the clusters, including some structural or pre-crisis factors (the firms' industry, economic and financial situation, employment structure, wages, and HRM context). Second, we relied on binomial logistic regressions to confirm some hypotheses on the relationships between workplace strategies in times of crisis and some pre-existing features.

A typology of workplace strategies

According to the Hierarchical Agglomerative Clustering (HAC) analysis, the optimal number of clusters is five. Three of them each account for 20% of the workplaces; one is larger and

[6] We ran our cluster analysis using MCA analysis to reduce the number of dimensions. As a robustness check, we also ran a cluster analysis using the T-SNE method -Maaten and Hinton (2008). We obtained quite similar results, supporting the relevance of the typology.

[7] Running multinomial regressions is less intuitive given that no category stands out as an obvious reference case. We still computed such a model using mixed adjustment as a reference category. The results are essentially unchanged (see table A6).

includes 31% of the sample; and the last one is smaller (7%). In the following paragraphs, we identify the strategic responses of workplaces to the crisis for these five clusters, using the variables contributing to the HAC, which measure different forms of labour flexibility (Table 1). Additional variables provide more details on these strategic responses as well as on workplaces' pre-Covid situation (Appendix, Tables A2, A3 and A4).

Workplaces of the **first cluster** massively used telework during the lockdown: 75% of these workplaces declared that most employees were teleworking (Table 2). Working-time flexibility through the use of short-time work was very limited (76% of workplaces did not use the programme). The frequency of all other reasons for workers' absence (holidays, sickness leave, and right to leave) was also very low, and there was no external numerical flexibility. Therefore, these workplaces appeared to be persevering in their usual activity by using spatial flexibility massively.

Such flexibility was already in place before the Covid, as 26% of workplaces declared having between 3% and 20% of employees practicing teleworking, and for 23% of firms, more than 20% of employees did (some) telework. These were the highest proportions among the five clusters (Table A2). Consistent with the literature (see, for example, Barrero *et al.*, 2021; Bick *et al.*, 2021), these workplaces were overrepresented in the knowledge-intensive services and the education sector. In addition to this previous experience of teleworking, these workplaces exhibited ex-ante favourable economic indicators (Table A3): their productivity is higher than the average, as well as the share of turnover exported. Wages are the highest in comparison to all other clusters for all occupational groups,[8] and wage inequalities remain limited. As far as employment structure is concerned, short-time contracts and part-time work are less frequent than the average.

The CT survey variables confirm this general picture. These facilities operate frequently in international markets (46%) and exhibit a high level of digitalisation (their index of digital use is the highest in the five clusters). Teleworking agreements are more frequent than the average (57% of workplaces, again the highest share in all the clusters). This last point highlights a clear difference with the US where telework developed thanks to new employees gaining access to telework arrangements rather than to a more intensive use of pre-existing agreements (Bick *et al.*, 2021). This first cluster suggests that the strategy to persevere through the massive use of teleworking was based on existing practices, in terms of digitalisation and teleworking experience.

In contrast, the **second cluster** was characterised by the use of short-time work as the main measure to respond to the crisis. In almost 70% of these workplaces, most workers were indeed on short-time work, and the use of teleworking was very limited (80% of workplaces declared 10% of teleworkers or less: see Table 2). Flexibility was mainly about working-time and was therefore internal. A small proportion of workplaces also used external numerical flexibility through the non-renewal of short-term contracts, or by postponing or cancelling recruitments. Additional variables on adaptations to the Covid crisis show that employment remained stable for 93% of workplaces in this cluster, and that the main reason to use short-time work were the

[8] With the exception of managers and professionals' wages, which are higher in cluster 5 (table A2).

legal restrictions on activity (45% of workplaces, see Table A2). Therefore, these plants overall implemented a temporary exit strategy, largely supported by labour market policy and by the broad targeting of the short-time work programme, which allowed internal flexibility.

Workplaces in this cluster are mainly small (10 to 49 employees), and firms from the construction as well as the accommodation sectors are overrepresented, in line with previous evidence from Fontaine and Roux (2022). In terms of economic and financial performance before the Covid crisis (Table A3), these companies displayed low productivity and low capital intensity, with exports accounting for a low share of their turnover, in comparison to the whole sample. Average wages are consistent with this relatively low productivity and stand below the average for all workplaces (€2,178 per month for workplaces in the cluster, to be compared to €2,375 in the whole sample). At the same time, internal wage inequalities (between managers and clerical/office workers) appear limited. In terms of employment structure, these workplaces employ more short-term contracts and part-timers than the average.

Using our smaller sample – including some variables from the 2019 CT survey – reveals some further specificities of these workplaces (Table A4). Their activity mainly focuses on local or regional markets (47% of workplaces). A very distinctive characteristic from this perspective is the use of digital tools in the workplace before Covid, which appears to be the lowest of the five clusters and should hamper the shift to teleworking, as suggested by the literature (Ben Yahmed *et al.* (2022), see Section 2)

To sum up, these workplaces seem to have limited resources to implement spatial or functional flexibility, so that the massive use of short-time work was the best strategy to adapt to strong economic constraints (limited markets and legal restrictions to activity).

The **third cluster** corresponds to workplaces having the most workers on site during the first lockdown: 81% of workplaces declared that they have the most workers working on site, 37% that they had no teleworker, and 55% less than 10% (Table 2). Short-time work was also very rare: 83% of workplaces had no short-time work. Besides, there were no declared layoffs of permanent or short-time contracts. In this case, flexibility was mainly functional to maintain on site activity. Additional variables from ACEMO-trimestrielle show that this functional flexibility was complemented by some positive numerical and working-time flexibility for workplaces facing increased activity (Table A2). Indeed, the cluster exhibits the highest share of workplaces which experienced an increase in employment (12%), and workplaces in that situation used various schemes to increase the level of employment (overtime, external subcontracting, temporary agency work or hiring mainly on short-term contracts).

Their strategy thus drastically differed from firms in the second cluster while in terms of their initial economic situation and spread of teleworking, these workplaces appear to have been relatively close to the second cluster. These workplaces were overrepresented in the low-tech manufacturing, retail, and health industries, where economic activity was maintained or was even increased during the crisis. The levels of apparent productivity and capital intensity are low, as are the share of exports in their total turnover. Wages are also lower than the average for all occupational groups. CT survey variables (Table A4) confirm a poor internationalisation (only 20% of workplaces have an international market) and show that the tools for spatial flexibility are ex-ante very limited in these workplaces: they had the lowest share of workers using remote work tools, and the lowest share of workplaces having signed a teleworking agreement.

The differences of strategy between the clusters 2 and 3 were partly explained by the nature and dynamics of activity, pushing establishments in cluster 3 to innovate in order to maintain their activity on site. Indeed, these workplaces are overrepresented in the low-tech manufacturing, retail and health industries, where economic activity has been maintained or even increased during the crisis. A second potential explanation lies in having ex-ante more resources to adapt to a health crisis: according to the CT survey, compared to cluster 2, a larger proportion of workplaces in cluster 3 have a health and safety committee and a person specifically responsible for health. Finally, the larger share of workers facing occupational risks suggests that, in these workplaces, employees were already used to (or forced into) a risky work environment. We will provide further evidence in the next session when running logit regressions.

The **fourth cluster** appears much smaller than the previous ones and differs from them by the large use of numerical flexibility. 71% of workplaces did not renew some temporary contracts, 67% cancelled or postponed some recruitments, and a few even made cuts in permanent contracts (Table 2). Short-time work was used with a lower intensity (for some or a majority of workers).

Additional variables from the specific Covid survey show that these workplaces all experienced a decrease in their employment levels (Table A2). They used short-time work for mixed motives, due both to economic reasons and legal restrictions. Transport, low-knowledge intensive services, as well as health and social sectors were overrepresented in the cluster.

The pre-existing economic profile of these workplaces is quite distinctive (Table A3): they exhibit the lowest profit margins among the five clusters, the lowest productivity levels, as well as rather low capital intensities and low tangible investment rates.

In terms of employment, the share of short-term contracts was the highest in the sample (16%), as was the share of part-time workers (25%), suggesting that external numerical flexibility was already used before the crisis. Average wages were lower than the average for all categories.

The CT survey reveals some other features. The size of the market is mainly local and regional (Table A4). The indicators concerning the use of digital tools are a little higher than the average, but teleworking agreements were less frequent. Finally, some indicators point to a difficult social context in some workplaces: the exposure to risk is higher than the average, 18% of workplaces report a tense social climate (the highest value in all clusters), and hiring difficulties stand slightly above the average.

To sum up, although it was not the only form of adaptation, workplaces in this cluster all used external flexibility as a strategy to adapt. This seems to have corresponded to a less favorable situation before the crisis, in terms of firms' economic, employment and social context indicators. This context led them to pursue some retrenchment during the Covid crisis.

Lastly, the workplaces in the **fifth cluster** used a combination of different strategies to respond to the Covid crisis and to the first lockdown. 38% of workplaces had some workers on site, 53% had some workers teleworking, and 36% had some workers on short-time work (Table 2). Sickness leave and holidays were also more frequent than in the whole sample. However, there was no use for external flexibility. Therefore, this cluster corresponded to a mixed strategy, using different measures and internal flexibility tools to adapt.

Additional indicators on the Covid context and workplaces' reactions show there was a stable level of employment (for 96% of workplaces) and some decrease in recourse to external services providers (48%, higher than the overall average of 36%, Table A2). Short-time work use was mainly related to economic reasons, which contrasts with cluster 2, in which the main driver for using STW were legal restrictions. Workplaces declare some experience of teleworking before the crisis, but this remained relatively limited.

The manufacturing sector was over-represented in this cluster, as were medium-sized and large firms. Economic indicators show a favourable situation before the crisis, with high productivity, high capital intensities (the highest values among the five clusters for these two indicators) and a high share of exports in turnover.

In terms of employment, temporary work and part-time work were low compared to the other clusters, and wages were higher than the average. However, they remained lower than in cluster 1, except for managers and professionals, while wage inequalities between this last group and blue-collar workers are the highest among the five clusters.

The CT survey confirms some specificities of these workplaces that relate to the nature of their activity and the importance of the manufacturing sector. 48% of workplaces have an international market, and professional risks are higher compared to other clusters (Table A4). In terms of digitalisation, the use of remote digital tools was frequent, but the overall index of digital use remained lower than for cluster 2. Teleworking agreements were clearly fewer than for cluster 1.

All these characteristics suggest that the workplaces had some resources to adapt to the Covid crisis and organise internal flexibility. But they also faced some specific ex-ante economic difficulties, which led them to use short-time work and related public policy support. The result is a strategy of partial retrenchment, while some activity was also maintained on site and through limited teleworking.

Our clustering of workplace strategies to deal with the first lockdown reveals their variety: in accordance with the literature on crisis management, we find evidence of retrenchment, persevering as well as organisational innovation. Such strategies relied on different types of flexibility, both numerical (internal and external) and functional. Information on workplace characteristics before the Covid crisis suggest there were some links with earlier situations, in terms of economic performances, as well as in terms of employment structure, technology and management. However, even if different strategies are observed to have been used across sectors, they were clearly overrepresented in some. At this stage, we cannot thus discard that the characteristics of the establishments in the five clusters were mainly driven by the sectoral composition, and eventually that legal lockdown constraints were the mechanical determinants of workplace strategies. In the next subsection, we run some regression analyses to test whether the links we have identified are still supported by correlations controlled by the sectors of the workplaces.

Table 2 Characteristics of the clusters according to the variables included in the MCA and HAC

	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
	Teleworking	Short-time programme	Working on site	External flexibility	Mixed adjustement with employment stability	Whole sample
Working on site						
Most of (80% or more)	0.6%	3.6%	81%	24%	2.2%	19%
A majority (50% to 79%)	0.7%	0.7%	15%	15%	22%	11%
Some (10% to 49%)	8.5%	4.9%	1.5%	22%	38%	16%
Few (less than 10%)	46%	21%	0.7%	22%	25%	24%
None	44%	70%	2.4%	17%	13%	30%
Teleworking						
Most of (80% or more)	75%	3.0%	<0.1%	7.9%	0.8%	18%
A majority (50% to 79%)	18%	3.8%	0%	8.0%	11%	8.7%
Some (10% to 49%)	1.7%	12%	8.1%	20%	53%	22%
Few (less than 10%)	4.2%	42%	55%	44%	28%	32%
None	0.9%	40%	37%	20%	7.4%	19%
Benefiting from a short-time work programme						
Most of (80% or more)	0.9%	69%	2.7%	14%	2.5%	17%
A majority (50% to 79%)	0.4%	12%	0.9%	16%	20%	10%
Some (10% to 49%)	6.5%	6.9%	3.4%	20%	36%	16%
Few (less than 10%)	17%	1.2%	9.6%	14%	12%	10%
None	76%	10%	83%	37%	29%	47%
On sick leave						
Most of (80% or more)	0%	0.3%	0%	0.1%	0%	<0.1%
A majority (50% to 79%)	0.2%	0.8%	0.9%	1.6%	1.1%	0.8%
Some (10% to 49%)	9.2%	14%	50%	47%	57%	36%
Few (less than 10%)	70%	47%	43%	45%	40%	49%
None	20%	38%	5.6%	6.7%	2.0%	14%
On holiday						
Most of (80% or more)	0.4%	3.6%	0%	0.8%	0.8%	1.1%
A majority (50% to 79%)	0.6%	2.3%	0.5%	2.4%	4.7%	2.3%
Some (10% to 49%)	7.5%	11%	12%	24%	31%	17%
Few (less than 10%)	58%	31%	62%	57%	49%	51%
None	34%	52%	25%	17%	15%	29%
Using their right to leave						
Most of (80% or more)	0%	0.8%	0%	0.1%	0%	0.2%
A majority (50% to 79%)	0%	0.1%	0%	0%	0%	<0.1%
Some (10% to 49%)	0%	0.2%	<0.1%	0.9%	0.9%	0.4%
Few (less than 10%)	0.5%	2.1%	8.6%	7.6%	4.5%	4.2%
None	100%	97%	91%	91%	95%	95%

HRM tools used						
Layoffs (for open ended contracts)	0%	0%	0%	2.6%	0%	0.2%
Layoffs or non-renewal (for short term contracts)	0%	2.3%	0%	71%	0%	5.4%
Cancelling or postponing recruitment	0%	2.1%	0%	67%	0%	5.1%
Contacatual termination (for open-ended contracts)	0%	0%	0%	4.4%	0%	0.3%
Number of observations	2 769	2 609	2 537	884	3 938	12 737
Share in the sample	22%	20%	20%	7%	31%	100%

Source: ACEMO-Covid, FARE, ACEMO- Quarterly.
All chi-2 tests are significant at $p<0.01$

Pre-existing features and firm strategies

In this section, we report the results of a set of regressions that aim at testing the robustness of our analysis. The main objective is to check whether the effects described in the previous section remain after controlling for sector effects. We test whether key characteristics of workplace strategies correlate significantly with the probability of fitting into the corresponding cluster (versus all the other clusters). Table 3 reports the results of a set of logistic regressions on our sample including the variables of the CT survey. We also ran a regression on the larger sample ACEMO-Covid/CT (see section 3 and Table A5).

In a nutshell, correlations between some pre-existing features and the strategies deployed to face the Covid crisis are statistically significant. These results support the observation that the typology cannot be only driven by sectoral effects.

More specifically, the smaller the firm, the less resources it has to face the lockdown independently of public programmes. In other words, Firm size correlates negatively with the probability of developing a short-time work programme strategy (cluster 2).

A good ex-ante economic situation (see the tangible investment rate variable, Table 3) correlates with the probability of choosing a spatial flexibility strategy (cluster 1); it is also verified (see productivity variable, Table 3) for the probability of choosing a mixed strategy (cluster 5). While an unfavourable economic situation (see the productivity and the tangible investment rate variables, Table 3) is associated with a strategy of external flexibility (cluster 4), or for a strategy of short-time programmes (cluster 2, see the tangible investment rate variable).

The wage level of the workforce differentiates the teleworking strategy (cluster 1) and the mixed strategy (cluster 5), even when controlling for the share of professionals and managers. Thus, a high wage level is associated with a higher probability of choosing a teleworking strategy and a lower probability of choosing a mixed strategy.

The results also indicate that the employment structure correlates with the strategy developed.

The share of short-term employment distinguishes on the one hand the external flexibility strategy (cluster 4) and on the other hand the mixed-adjustment with employment stability

strategy (cluster 5) and the short-time programme strategy (cluster 2), from the others. The variable positively correlates with the probability of deploying these two strategies. By contrast, the cluster 5 (where employment was stable during the lockdown) was associated with much lower ex-ante short-term employment.

The share of part-time employees opposes the strategy of working on-site strategy (cluster 3) and mixed strategy (cluster 5); it positively correlates with the strategy of working on-site (cluster 3) and negatively correlates with mixed strategy, although these relations are weakly statistically significant. Consistently, the on-site strategy seems to have been chosen more by workplaces facing ex-ante economic fluctuations (Table A5).

The share of professionals and managers distinguishes the teleworking (cluster 1) from the working on-site strategy (cluster 3). It confirms that the lower the skills level of the workforce, the higher the probability was of choosing a working on-site strategy (cluster 3). It also confirms that the teleworking strategy (cluster 1) was a choice correlated with a higher skill level.

Interestingly this correlation remains robust even when controlling for working conditions and ex-ante digital use. When looking at variables of working conditions, it may be noted that it mainly distinguishes the teleworking strategy (cluster 1) from the working on-site strategy (cluster 3). The share of employees exposed to work-related risks correlates strongly and negatively with cluster 1, but positively with cluster 3. In addition, the index of digital use correlates positively with the teleworking strategy (cluster 1) and negatively with the working on-site strategy (cluster 3). As risk exposure could be considered as a proxy variable for a Taylorist work organisation, the results obtained tend to contrast a Taylorist work organisation (cluster 3) with the work organisation based on mixed (cluster 5) or advanced (cluster 1) digitalisation. Additional characteristics from CT surveys confirm that workplaces choosing teleworking are very specific (Table A5): in addition to high digital use, they seem to benefit from teleworking agreements negotiated before the pandemic, and also operated more frequently in international markets.

Table 3. Logit regressions on the probability of a given strategy deployment at the workplace level (versus all the other strategies)

	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
	Teleworking	Short-time programme	Working on site	External flexibility	Mixed adjustement with employment stability
Percentage of employees exposed to work-related risks in 2019 (reference: less than 10%)					
Between 10 and 50% employees exposed	-1.373*	-0.254	0.601	0.558	0.408
	(0.565)	(0.636)	(0.461)	(0.584)	(0.373)
More than 50% employees exposed	-1.477*	-0.190	1.022*	0.288	-0.283
	(0.702)	(0.694)	(0.489)	(0.663)	(0.417)
Index of digital use at the workplace (2019)	2.623*	0.632	-2.628**	0.799	1.149
	(1.263)	(1.597)	(1.003)	(1.157)	(0.821)
Share of professionals and managers	3.314**	0.252	-4.456*	-1.057	-1.552
	(1.088)	(1.393)	(2.010)	(1.418)	(0.800)
Share of agency workers (in full-time equivalent)	0.912	0.255	0.081	-0.084	-0.379
	(0.713)	(0.778)	(0.779)	(1.008)	(0.597)
Share of short-term employment	-0.255	-16.211*	3.084	9.038**	-8.954***
	(4.227)	(6.632)	(2.204)	(2.861)	(2.618)
Share of part-time contracts	1.363	-0.765	3.486*	-2.915	-4.448*
	(2.420)	(2.407)	(1.375)	(1.827)	(1.963)
Average monthly wage	0.001*	-0.001	0.000	0.000	-0.000*
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Profit margins (2019)	-0.192	-0.039	0.989	-0.866	0.465
	(1.389)	(1.675)	(1.108)	(1.503)	(0.884)
Productivity (2019)	-0.000	-0.006	-0.005	-0.020*	0.005*
	(0.003)	(0.007)	(0.003)	(0.008)	(0.002)
Tangible investment rate (2019)	1.363**	-5.052*	0.210	-4.595*	0.265
	(0.522)	(2.418)	(0.498)	(2.242)	(0.459)

Size of the workplace (reference: 10 to 49 employees)					
50 to 249 employees	2.959	-1.280	-0.371	-0.559	0.395
	(2.059)	(0.736)	(0.651)	(0.960)	(0.617)
250 or more employees	2.581	-2.276**	-0.412	0.515	0.464
	(2.054)	(0.794)	(0.632)	(0.898)	(0.606)
Constant term	-7.974***	2.206	0.048	-2.579	-0.196
	(2.331)	(1.506)	(1.080)	(1.443)	(0.825)
N	415	415	415	415	415
Deviance	163.908	155.028	334.301	209.021	430.547
AIC	211.908	203.028	382.301	257.021	478.547
Likelihood-ratio	164.499	85.039	163.046	58.594	126.391
Somers D	0.8569224	0.7087261	0.697024	0.6302288	0.5678749

Source: ACEMO-Covid, FARE, ACEMO-Trimestrielle, CT.
Method: Logit regression, coefficients reported (log(OR)). Selected pre-crisis variables are used for the regressions. *** p<0.001, ** p<0.01, * p<0.05. The regression includes sectors.

CONCLUSION

Based on a survey conducted by the French Ministry of Labour in April 2020, this article proposes a typology of workplace strategies in terms of work organisation and human resources in response to the early phase of the Covid pandemic and the first lockdown in France. It shows that it is possible to identify five main types of workplace strategies, which could be linked to the pre-existing resources at their disposal.

The teleworking strategy, used massively during the lockdown, was a strategy to persevere in keeping up activity. It mainly concerned workplaces exhibiting ex-ante favourable conditions (in terms of economic indicators, limited wage inequalities, etc.) and having previous experience in teleworking. In contrast, a set of workplaces with limited resources experienced a temporary exit strategy, using the short-time work programmes supported by public policies during the lockdown. The third strategy concerned mainly workplaces which because of the very nature of their activity (low-tech manufacturing, retail, and health industries) were compelled to innovate in order to maintain their activity on site. It suggests that having a pre-existing health and safety committee was an important resource supporting innovation regarding the large share of workers facing occupational risks in these workplaces. The fourth strategy was very limited in terms of the number of workplaces concerned, which experienced a retrenchment strategy leading to a decrease in their employment levels. These workplaces exhibited limited resources in terms of economic indicators, but external numerical flexibility was already used before the crisis; from this point of view, their main resource was the existence of an external labour market. The last set of workplaces experienced a mixed strategy that led to some partial retrenchment; they had some resources to organizse internal or spatial flexibility but also faced some specific ex-ante economic difficulties before the crisis that led them to use shorttime work and related public support as resources.

The article shows the interest of crossing the literature on crisis management and on firm flexibility to analyse changes in working conditions and human resource management at the workplace level. Empirical evidence analysed here for France indicates that various resources may be used to respond to a crisis and shape human resource management strategies deployed by companies. These resources depend on: work relations (teleworking agreement, wage level, risk exposure and health and safety committee); the institutional framework of national labour markets (legislation on short-time contracts and temps, etc.); and labour market policy (short-time programmes and their support, etc.).

REFERENCES

ADAMS-PRASSL, A., BONEVA, T., GOLIN, M., & RAUH, C. (2020). "Inequality in the impact of the coronavirus shock: Evidence from real time surveys", *Journal of Public economics*, *189*, 104245.

ALBERS, S., & RUNDSHAGEN, V. (2020). "European airlines′ strategic responses to the COVID-19 pandemic", *Journal of air transport management*, 87, 101863.

ATKINSON, JOHN (1984). "Manpower strategies for flexible organisations", *Personnel management* 16.8 (1984): 28-31.

BARRERO, J. M., BLOOM, N., & DAVIS, S. J. (2021). *Why working from home will stick* (No. w28731). National Bureau of Economic Research.

BEN YAHMED, S., BERLINGIERI, F., & BRÜLL, E. (2022). "Adjustments of local labour markets to the COVID-19 crisis: The role of digitalisation and working-from-home", *ZEW-Centre for European Economic Research Discussion Paper*, (22-031).

BICK, A., BLANDIN, A., & MERTENS, K. (2021). "Work from home before and after the Covid-19 outbreak", *Federal Reserve Bank of St. Louis*, Working Paper 2022-008A

BOERI, T., BRUECKER, H. (2011). "Short-Time Work Benefits Revisited: Some Lessons from the Great Recession", *Economic Policy*, 26 (68), 697-765.

BUNDY, J., PFARRER, M. D., SHORT, C. E., & COOMBS, W. T. (2017). "Crises and crisis management: Integration, interpretation, and research development", *Journal of Management*, 43(6), 1661- 1692.

CALIENDO, M., HOGENACKER, J. (2012). "The German Labour Market After the Great Recession: Successful Reforms and Future Challenges", *IZA Journal of European Labour Studies*, 1 (1), 1-24.

CLAUSS, T., BREIER, M., KRAUS, S., DURST, S., & MAHTO, R. V. (2022). "Temporary business model innovation–SMEs' innovation response to the Covid-19 crisis", *R&D Management*, 52(2), 294-312.

CRIMMANN, A., WIEßNER, F. AND BELLMANN, L. (2012). "Resisting the crisis: short-time work in Germany", *International Journal of Manpower*, Vol. 33 No. 8, pp. 877-900.

DOERINGER, P. B. AND PIORE, M. (1971). *Internal Labor Markets and Manpower Analysis*, Lexington, Mass.: D. C. Heath.

DUC C., SOUQUET C. (2020). « L'impact de la crise sanitaire sur l'organisation et l'activité des sociétés », *Insee Première*, n° 1830

Eurofound (2020). *Telework and ICT-based mobile work: Flexible working in the digital age*, Office of the European Union, Luxembourg.

FONTAINE, F., & ROUX, B. (2022). « Activité partielle et situation pré-crise des entreprises », *Focus du CAE*, N° 082-2022.

GIUPPONI, G., LANDAIS, C., & LAPEYRE, A. (2022). "Should We Insure Workers or Jobs During Recessions?", *Journal of Economic Perspectives*, *36*(2), 29-54.

GUNDEL, S. (2005). "Towards a New Typology of Crises", *Journal of contingencies and crisis management*, 13, 106-115.

HÅKANSSON, K., AND T. ISIDORSSON. 2003. "Flexible times: Dynamics and consequences of company strategies for flexibility". In *Nordic management-labour relations and internationalization — Converging and diverging tendencies*. Ed. D. Flemming and C. Thörnqvist. Copenhagen: Nordic Council of Ministers, 131–52.

HALFORD, S. (2005). "Hybrid workspace: re-spatialisations of work, organisation and management", *New Technology, Work and Employment*, 20 (1), 19-33.

HERZOG-STEIN, A., & ZAPF, I. (2014). "Navigating the Great Recession: The Impact of Working-Time Accounts in Germany", *ILR Review*, *67*(3), 891–925.

JOHNSTONE, S. (2019). "Employment practices, labour flexibility and the Great Recession: An automotive case study", *Economic and Industrial Democracy*, *40*(3), 537–559.

KALLEBERG, A.L. (2001). "Organizing Flexibility: The Flexible Firm in a New Century", *British Journal of Industrial Relations*, 39: 479-504.

KRAUS, S., CLAUSS, T., BREIER, M., GAST, J., ZARDINI, A., AND TIBERIUS, V. (2020). "The economics of COVID-19: initial empirical evidence on how family firms in five European countries cope with the corona crisis", *International Journal of Entrepreneurial Behavior & Research*, 26, 1067–1092.

DE LEEDE J., DRUPSTEEN L., SCHRIJVER E., GOUDSWAARD A., DAG N., VAN DER WEIDE J., VERBIEST S. (2020). "Labour flexibility practices in Dutch SMEs", *Personnel Review* Vol. 49 No. 3, 2020 pp. 791-807

LEONTARIDI M. (1998). "Segmented Labour Markets: Theory and Evidence", *Journal of Economic Surveys*, Vol. 12, N°1, pp 103-109.

MARSDEN, DAVID (1999). *A Theory of Employment Systems: Micro-Foundations of Societal Diversity*. Oxford University Press: Oxford.

MAATEN, L. VAN DER AND HINTON, G. (2008). "Visualizing Data Using T-SNE", *Journal of Machine Learning Research*, 9, 2579–2605

MESSENGER, JON C. (Ed.). (2019). *Telework in the 21st Century, An Evolutionary Perspective*, ILO Future of Work series. Cheltenham, UK and Geneva: Edward Elgar and ILO.

OSTERMAN P. (2000). "Work reorganization in an era of restructuring: trends in diffusion and effects on employee welfare", *Industrial and Labor Relations Review*, 53: 179-96.

PIERRI, N., & TIMMER, Y. (2020). It shields: technology adoption and economic resilience during the covid-19 pandemic. Unpublished manuscript

PROSSER, THOMAS (2015). "Accounting for National and Sectoral Variance in the Implementation of European Social Partner 'Soft' Law: The Cases of the Implementation of the Telework and Work-Related Stress Agreements", *British Journal of Industrial Relations*, Vol. 53, Issue 2, pp. 254-277.

STEIDELMÜLLER, C., MEYER S.-C., MÜLLER, G.(2020). „Home-Based Telework and Presenteeism Across Europe", *Journal of Occupational and Environmental Medicine*: Volume 62 - Issue 12 - p 998-1005.

WENZEL, M., STANSKE, S., AND LIEBERMAN, M.B. (2020), "Strategic responses to crisis", *Strategic Management Journal*, 41, 7/18.

WOLCOTT E., OCHSE M. G., KUDLYAK M., AND KOUCHEKINIA N. A. (2020). "Temporary layoffs and unemployment in the pandemic", *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, November 16.

APPENDIX

Appendix A1 : data sources

- ACEMO-Quarterly

Created by the French national statistical office (INSEE) in 1946, ACEMO-**Quarterly** is a quarterly survey of establishments employing at least 10 workers in the non-agricultural sector. Plants with more than 250 workers are represented exhaustively. Those with less than 250 are selected through a stratified draw and a quarter of the pool is renewed every year. The dataset is typically used to gather information on employment, wages, and working time, in order to compute figures to characterise the economic climate. We took advantage of this survey to compute pre-crisis information at the workplace level.

-ACEMO-Covid

In the context of the Covid crisis, the French Ministry of Labour built on ACEMO-**Quarterly** to gather high-frequency data to inform public services on the short-run evolutions of the economy. The principles guiding ACEMO-Covid are therefore the same as those relevant for ACEMO-**Quarterly**, but the questions are specific to the Covid situation with monthly waves instead of quarterly surveys. We use the first wave of this survey, which took place in April 2020 and asked firms about their situation on 31 March, as well as about the labour adjustments they had implemented.

- FARE

The INSEE puts together the administrative database FARE using the yearly corporate tax returns and the social security declarations of private sector commercial firms present on French territory.[9] As such, the data include information that enables us to characterise the economic health and to compute structural business statistics of nearly all French firms. The latest data available dates back to 2019. We use them to measure pre-crisis indexes including firms' productivity, investment rate or mark ups.

- CT: The 2019 Labour condition survey - Employers section

Every three years, the French Ministry of Labour conducts an employer-employee linked survey, alternating questionnaires dedicated to psychosocial risks and working conditions. We only use the workplace component of the data. Workplaces are randomly selected from French private sector firms with 10 or more employees. The collection of data for workplaces started in 2019 and ended 8 March 2020: i.e. just one week before the first lockdown was announced. We extract a variety of relevant characteristics and practices just before the lockdown, on the position of the establishment (within a group, independent or sub-contractor), its market (local

[9] A (very) limited number of exceptions can be emphasised. The financial sector only includes firms operating in auxiliary to financial services and in insurance activities, or the services of the holding-company sector. The agricultural sector only includes firms operating in logging.

up to international, digital), the "normal" fluctuations of the activity, the number of on-site temps and independent contractors, the spread of remote work (teleworking agreements with unions, part of the workforce working remotely with equipment provided), social climate, presence of actors devoted to health and safety at work (HRM, Health and safety committee, professionals), recruitment difficulties and the social climate.

Table A1-Variables and sources

Variable Names	**Data source**	**Variable type**	**Missings**	**Sample Size**	Missings in % of sample size
Working on site	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Teleworking	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Benefiting from a short-time work programme	ACEMO-Covid (March-2020)	Categorical	0	12737	0
On sick leaves	ACEMO-Covid (March-2020)	Categorical	0	12737	0
On holiday	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Using their right to leave	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Layoffs (for open ended contracts)	ACEMO-Covid (March-2020)	Dummy	0	12737	0
Layoffs or non-renewal (for short term contracts)	ACEMO-Covid (March-2020)	Dummy	0	12737	0
Cancelling or postponing recruitment	ACEMO-Covid (March-2020)	Dummy	0	12737	0
Contracatual termination (for open-ended contracts)	ACEMO-Covid (March-2020)	Dummy	0	12737	0
Employment trend	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Use of short-time work programmes	ACEMO-Covid (March-2020)	Dummy	29	12737	0,23
Employees in training during short-time work	ACEMO-Covid (March-2020)	Dummy	708	12737	5,56
Increase in overtime (in case of increased activity)	ACEMO-Covid (March-2020)	Dummy	42	12737	0,33
Increase external subcontracting (in case of increased activity)	ACEMO-Covid (March-2020)	Dummy	42	12737	0,33
Increase in agency employment (in case of increased activity)	ACEMO-Covid (March-2020)	Dummy	42	12737	0,33
Increase in short-term employment (in case of increased activity)	ACEMO-Covid (March-2020)	Dummy	42	12737	0,33
Increase in permanent employment (in case of increased activity)	ACEMO-Covid (March-2020)	Dummy	42	12737	0,33
Use of external service providers	ACEMO-Covid (March-2020)	Categorical	42	12737	0,33
Teleworking before the pandemic crisis	ACEMO-Covid (March-2020)	Categorical	40	12737	0,31
Sector of the workplace	ACEMO-Covid (March-2020)	Categorical	0	12737	0
Size of the workplace	ACEMO-Covid (March-2020)	Categorical	62	12737	0,49
Share of professionals and managers	ACEMO-Quarterly (Q4-2019)	Continuous	1619	12737	12,7

Share of short-term employment	ACEMO- Quarterly (Q4-2019)	Continuous	1622	12737	12,7
Share of part-time contracts	ACEMO- Quarterly (Q4-2019)	Continuous	2291	12737	18
Quarterly increase in the number of employees (%)	ACEMO- Quarterly (Q4-2019)	Continuous	4427	12737	34,8
Yearly increase in the number of employees (%)	ACEMO- Quarterly (Q4-2019)	Continuous	4708	12737	37
Yearly increase in the number of short-term employees (%)	ACEMO- Quarterly (Q4-2019)	Continuous	6402	12737	50,3
Average monthly wage	ACEMO- Quarterly (Q4-2019)	Continuous	3022	12737	23,7
Average monthly wage (blue collars workers) (A)	ACEMO- Quarterly (Q4-2019)	Continuous	7299	12737	57,3
Average monthly wage (clerical and office workers) (B)	ACEMO- Quarterly (Q4-2019)	Continuous	4906	12737	38,5
Average monthly wage (intermediate occupations) (C)	ACEMO- Quarterly (Q4-2019)	Continuous	4916	12737	38,6
Average monthly wage (managers and professionals) (D)	ACEMO- Quarterly (Q4-2019)	Continuous	4188	12737	32,9
Average inequality between managers and professionals and blue collars at the workplace level	ACEMO- Quarterly (Q4-2019)	Continuous	8316	12737	65,3
Average inequality between managers and professionals and clerical and office workers at the workplace level	ACEMO- Quarterly (Q4-2019)	Continuous	6529	12737	51,3
Average inequality between managers and professionals and low-skill workers (A and B) at the workplace level	ACEMO- Quarterly (Q4-2019)	Continuous	5803	12737	45,6
Profit margins	FARE (administrative firm 2019 - 2018)	Continuous	4750	12737	37,3
Economic rate of return	FARE (administrative firm 2019 - 2018)	Continuous	2747	12737	21,6
Productivity	FARE (administrative firm 2019 - 2018)	Continuous	2877	12737	22,6
Capital intensity	FARE (administrative firm 2019 - 2018)	Continuous	2647	12737	20,8
Share of turnover exported	FARE (administrative firm 2019 - 2018)	Continuous	2707	12737	21,3
Tangible investment rate	FARE (administrative firm 2019 - 2018)	Continuous	2865	12737	22,5
Workplace belongs to a corporate company	CT (2019)	Dummy	145	881	16,5
Being a subcontractor	CT (2019)	Dummy	0	881	0
Uses digital sales platform	CT (2019)	Dummy	165	881	18,7
Market size	CT (2019)	Categorical	150	881	17
Share of agency workers (in full-time equivalent)	CT (2019)	Continuous	86	881	9,76
Use of self-employed contractors (during the last years)	CT (2019)	Dummy	30	881	3,41
Presence of HRD within the institution	CT (2019)	Dummy	38	881	4,31
Difficulty in recruiting in the last 12 months	CT (2019)	Dummy	9	881	1,02
Workplace facing economic fluctuations	CT (2019)	Categorical	22	881	2,5
Usage of remote digital tools	CT (2019)	Dummy	131	881	14,9
Share of workers using remote digital tools	CT (2019)	Dummy	132	881	15
Agreement on teleworking in the workplace	CT (2019)	Dummy	149	881	16,9
Presence of a health and social council	CT (2019)	Dummy	14	881	1,59
Presence of responsible of health and social risks	CT (2019)	Dummy	18	881	2,04

Employees having exercised a right to leave in the last 12 months	CT (2019)	Dummy	12	881	1,36
Percentage of employees exposed to work-related risks in 2019	CT (2019)	Categorical	8	881	0,91
Social climate	CT (2019)	Categorical	14	881	1,59
Index of digital use at the worplace (2019)	CT (2019)	Continuous	0	881	0

Table A2-Some characteristics of the clusters (ACEMO-Covid variables)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
	Teleworking adjustment	Short-time programme adjustment	Working on site adjustment	External flexibility	Mixed adjustement with employment stability	Whole sample
Employment trend						
Decrease	0.6%	6.7%	5.4%	100%	2.8%	10%
Stable	97%	93%	83%	0%	96%	86%
Increase	2.0%	0.3%	12%	0%	1.3%	3.3%
Use of short-time work programmes	32%	91%	23%	70%	73%	58%
Reasons for short-time work programme use						
Economic activity reduction	16%	26%	9.2%	33%	37%	25%
Legal restriction of activity	7.9%	40%	7.4%	23%	17%	18%
Employees' safety	3.5%	19%	2.7%	8.9%	12%	9.6%
Other reasons	4.9%	4.6%	3.4%	4.4%	6.8%	5.1%
Employees in training during short-time work	2.0%	2.3%	0.5%	1.9%	3.0%	2.0%
Increase in overtime (in case of increased activity)	1.1%	0.3%	12%	0.5%	1.2%	3.2%
Increase external subcontracting (in case of increased activity)	0.6%	0.2%	3.7%	0.1%	0.4%	1.0%
Increase in agency employment (in case of increased activity)	0.4%	0.1%	6.7%	0.2%	1.2%	1.8%
Increase in short-term employment (in case of increased activity)	0.4%	0.1%	9.4%	0.3%	0.5%	2.2%
Increase in permanent employment (in case of increased activity)	<0.1%	0%	0.8%	0%	0.1%	0.2%
Use of external service providers						
Decrease	33%	34%	21%	45%	48%	36%
Constant	27%	4.5%	23%	7.8%	14%	16%
Increase	0.9%	0.4%	15%	1.5%	3.5%	4.5%
No use	39%	61%	41%	46%	34%	43%
Teleworking before the pandemic crisis						
0 to 2% of the workforce	51%	92%	96%	86%	81%	80%
3 to 20 % of the workforce	26%	6.3%	3.5%	11%	16%	13%
More than 20% of the workforce	23%	1.5%	0.2%	2.8%	3.2%	6.6%
Sector of the workplace						
Low tech manufacturing	1.5%	5.6%	13%	6.8%	8.0%	7.1%
Medium low tech manufacturing	1.2%	8.0%	4.1%	3.3%	9.5%	5.9%
Medium high tech manufacturing	4.7%	5.4%	3.6%	2.9%	12%	6.9%
High tech manufacturing	2.1%	0.4%	1.3%	1.6%	3.3%	1.9%
Construction	0.7%	11%	0.9%	2.9%	5.8%	4.5%
Wholesale retail trade	9.7%	15%	22%	16%	12%	14%
Transport	1.5%	4.2%	7.7%	8.4%	6.5%	5.3%
Accomodation and food services	0.3%	11%	0.5%	3.8%	1.4%	3.2%
Knowledge-intense services	54%	18%	4.1%	15%	18%	23%
Low knowledge intense services	8.2%	9.3%	12%	18%	9.8%	10%
Education	7.8%	5.2%	0.8%	1.8%	1.8%	3.6%
Health and social	7.8%	6.9%	30%	20%	11%	14%

Size of the workplace						
10 to 49 employees	40%	63%	32%	23%	30%	39%
50 to 249 employees	43%	31%	48%	49%	47%	43%
250 or more employees	17%	5.5%	19%	27%	23%	18%

Source: ACEMO-Covid, FARE, -ACEMO-Quarterly. All chi-2 tests are significant $p<0.01$

Table A3-Some characteristics of the clusters (FARE variables)

		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
		Teleworking	Short-time programme	Working on site	External flexibility	Mixed adjustement with employment stability	Whole sample
Profit margins							
	in 2019	0.24 (0.21)	0.22 (0.24)	0.20 (0.15)	0.19 (0.15)	0.24 (0.18)	0.23 (0.19)
	in 2018	0.24 (0.20)	0.22 (0.22)	0.20 (0.15)	0.19 (0.16)	0.25 (0.36)	0.23 (0.26)
Productivity							
	in 2019	375 (3,147)	163 (1,992)	138 (1,206)	92 (386)	537 (9,329)	318 (5,641)
	in 2018	361 (2,960)	165 (2,043)	131 (1,173)	76 (105)	470 (7,452)	293 (4,604)
Capital intensity							
	in 2019	273 (1,549)	105 (397)	177 (1,226)	118 (464)	786 (16,831)	377 (9,695)
	in 2018	270 (1,507)	105 (414)	157 (973)	108 (427)	794 (16,671)	375 (9,601)
Share of turnover exported							
	in 2019	0.19 (0.30)	0.07 (0.19)	0.08 (0.20)	0.09 (0.21)	0.18 (0.29)	0.13 (0.26)
	in 2018	0.19 (0.30)	0.07 0.00 (0.19)	0.08 (0.21)	0.09 (0.21)	0.18 (0.29)	0.14 (0.26)
Tangible investment rate							
	in 2019	0.12 (0.96)	0.18 (3.22)	0.14 (0.57)	0.12 (0.44)	0.16 (0.66)	0.15 (1.61)
	in 2018	0.10 (0.33)	0.11 (0.32)	0.15 (0.52)	0.14 (0.70)	0.46 (16.22)	0.23 (9.33)
Share of professionals and managers		0.42 (0.67)	0.13 (0.24)	0.07 (0.11)	0.10 (0.17)	0.15 (0.22)	0.18 (0.38)
Share of short-term contracts		0.08 (0.18)	0.12 (0.22)	0.11 (0.12)	0.16 (0.20)	0.07 (0.11)	0.10 (0.16)
Share of part-time		0.13 (0.20)	0.22 (0.30)	0.24 (0.27)	0.25 (0.31)	0.13 (0.22)	0.18 (0.26)
Quarterly increase in the number of employees (%)		0.00 (0.12)	0.04 (0.91)	0.00 (0.12)	0.02 (0.54)	0.01 (0.37)	0.01 (0.48)
Yearly increase in the number of employees (%)		0.14 (2.84)	0.02 (0.27)	0.04 (0.63)	0.05 (0.47)	0.04 (0.71)	0.06 (1.40)
Average monthly wage		3,001 (1,497)	1,932 (923)	1,806 (631)	1,883 (796)	2,191 (876)	2,207 (1,095)
Average monthly wage (blue collars workers) (A)		1,411 (828)	1,609 (622)	1,590 (509)	1,534 (550)	1,645 (593)	1,595 (605)
Average monthly wage (clerical and office workers) (B)		1,633 (835)	1,573 (797)	1,553 (577)	1,565 (651)	1,648 (729)	1,602 (730)
Average monthly wage (intermediate occupations) (C)		2,271 (896)	2,147 (913)	2,083 (716)	2,042 (770)	2,231 (794)	2,179 (825)
Average monthly wage (managers and professionals) (D)		3,857 (1,719)	3,346 (1,691)	3,326 (1,600)	3,327 (1,441)	3,684 (1,546)	3,565 (1,634)
Average inequality between managers and professionals and blue collars at the workplace level		2.67 (2.85)	2.38 (2.09)	2.34 (3.25)	2.77 (7.85)	2.42 (4.56)	2.44 (4.10)
Average inequality between managers and professionals and clerical and office workers at the workplace level		2.44 (2.86)	2.32 (2.33)	2.17 (1.36)	2.11 (1.07)	2.34 (2.32)	2.30 (2.20)

Source: ACEMO-Covid, FARE, ACEMO-Quarterly. All chi-2 tests are significant $p<0.01$

Table A4-Some characteristics of the clusters (working conditions survey variables)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	
	Teleworking	Short-time programme	Working on site	External flexibility	Mixed adjustement with employment stability	Whole sample
Workplace belongs to a corporate company	70%	61%	69%	64%	78%	72%
Being a subcontractor	16%	36%	15%	23%	25%	22%
Market size						
Regional or local	18%	47%	43%	49%	20%	30%
National	30%	24%	31%	27%	21%	26%
European	6.7%	5.4%	4.8%	5.1%	11%	7.8%
International	46%	23%	20%	19%	48%	37%
Use of self-employed contractors (during the last years)	18%	19%	7.9%	18%	13%	13%
Presence of HRD within the institution	93%	87%	95%	94%	99%	95%
Difficulty in recruiting in the last 12 months	70%	73%	84%	85%	87%	82%
Workplace facing economic fluctuations						
None	52%	25%	34%	25%	33%	35%
Anually	37%	44%	29%	46%	42%	38%
Seasonally	8.6%	16%	18%	16%	17%	16%
Weekly	2.9%	15%	19%	13%	7.9%	11%
Usage of remote digital tools	83%	71%	69%	83%	88%	81%
Share of workers using remote digital tools	42%	17%	11%	26%	22%	23%
Agreement on teleworking in the workplace	57%	21%	16%	20%	34%	32%
Presence of a health and social council	91%	66%	90%	92%	92%	89%
Presence of responsible of health and social risks	54%	50%	61%	57%	74%	63%
Employees having exercised a right to leave in the last 12 months	4.2%	4.1%	8.7%	14%	6.7%	7.2%
Percentage of employees exposed to work-related risks in 2019						
Less than 10%	75%	32%	15%	28%	19%	29%
Entre 10 et 50% de salariés exposés	18%	36%	49%	38%	54%	44%
Plus de 50% de salariés exposés	6.9%	33%	36%	34%	26%	27%
Social climate						
Very calm	24%	28%	16%	22%	12%	17%
Fairly calm	66%	62%	71%	60%	72%	69%
Tense	9.9%	6.6%	13%	18%	12%	12%
Very tense	0%	3.9%	0.9%	0%	3.8%	2.1%
Index of digital use at the worplace (2019)	0.52 (0.20)	0.31 (0.18)	0.33 (0.20)	0.44 (0.22)	0.40 (0.17)	0.40 (0.20)
Number of observations	144	77	233	79	348	881
Share in the sample	16%	9%	26%	9%	40%	100%

Source: ACEMO COVID - FARE - ACEMO Quarterly - CT. All chi-2 tests are significant $p<0.01$

Table A5. Logit regressions on the probability of a given strategy deployment at the workplace level (versus all the other strategies) for the ACEMO-Covid – CT dataset

	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
	Teleworking	Short-time programme	Working on site	External flexibility	Mixed adjustement with employment stability
Percentage of employees exposed to work-related risks in 2019 (reference: less than 10%)					
Between 10 et 50% employees exposed	-2.002***	-0.006	0.673	-0.376	0.924**
	(0.466)	(0.473)	(0.374)	(0.489)	(0.297)
More than 50% employees exposed	-2.099***	-0.196	1.348***	-0.044	0.388
	(0.587)	(0.521)	(0.395)	(0.509)	(0.326)
Index of digital use at the worplace (2019)	2.240*	-1.384	-3.164***	0.784	0.550
	(0.935)	(1.171)	(0.821)	(0.998)	(0.629)
Workplace belongs to a corporate company	-0.069	0.048	-0.170	-0.630	0.353
	(0.452)	(0.467)	(0.326)	(0.419)	(0.287)
Being a subcontractor	-0.293	-0.329	-0.220	0.047	0.339
	(0.418)	(0.441)	(0.318)	(0.422)	(0.243)
Market size (reference: Regional or local)					
National	1.201*	0.391	-0.193	-0.193	-0.117
	(0.557)	(0.472)	(0.368)	(0.512)	(0.331)
European	0.701	-1.083	-1.047	-0.106	0.745
	(0.970)	(0.932)	(0.630)	(0.830)	(0.466)
International	2.172***	-0.511	-0.432	-1.399*	0.211
	(0.659)	(0.597)	(0.445)	(0.689)	(0.364)
Use of self-employed contractors (during the last years)	0.092	0.573	-0.043	0.180	-0.083
	(0.495)	(0.496)	(0.429)	(0.502)	(0.312)
Presence of HRD within the institution	0.138	-0.859	-0.057	-0.982	0.923
	(0.816)	(0.665)	(0.617)	(0.738)	(0.682)
Difficulty in recruiting in the last 12 months	-0.557	-0.199	-0.118	-0.509	0.337
	(0.427)	(0.472)	(0.350)	(0.461)	(0.285)
Share of agency workers (in full-time equivalent)	0.345	0.679	0.163	-0.618	-0.411
	(0.615)	(0.668)	(0.644)	(1.193)	(0.519)
Workplace facing economic fluctuations	-0.406*	-0.027	0.330*	0.279	-0.202
	(0.204)	(0.201)	(0.138)	(0.197)	(0.118)
Agreement on teleworking in the workplace	0.753*	-0.116	-0.020	-0.804	-0.236
	(0.384)	(0.517)	(0.343)	(0.514)	(0.257)
Presence of a health and social council	0.614	-1.318**	0.683	-0.243	-0.004
	(0.612)	(0.482)	(0.476)	(0.674)	(0.407)
Presence of manager responsible for health and social risks	0.094	0.073	0.214	-0.088	-0.230
	(0.454)	(0.474)	(0.329)	(0.450)	(0.283)
Employees having exercised a right to leave in the last 12 months	0.752	-0.127	-0.179	0.225	-0.168
	(0.678)	(0.765)	(0.542)	(0.631)	(0.428)
Size of the workplace (reference: 10 to 49 employees)					
50 to 249 employees	0.681	-0.711	0.045	1.549	-0.096
	(0.855)	(0.628)	(0.595)	(1.228)	(0.535)

250 or more employees	0.111	-1.203	-0.100	3.024*	-0.192
	(0.888)	(0.684)	(0.609)	(1.251)	(0.551)
Constant term	-3.642**	0.426	-0.821	-1.850	-3.041***
	(1.238)	(1.123)	(0.926)	(1.326)	(0.892)
N	558	558	558	558	558
Deviance	277.847	250.884	432.559	266.336	616.048
AIC	345.847	318.884	500.559	334.336	684.048
Likelihood-ratio	237.651	94.917	166.017	60.914	142.924
Somers D	0.8569224	0.7087261	0.697024	0.6302288	0.5678749

Source: ACEMO-Covid, CT.
Method: Logit regression, coefficients reported (log(OR)). Only the pre-crisis variables are used for the regressions. Sector is included in the regression. *** p<0.001, ** p<0.01, * p<0.05

Table A6. Multinomial Logit regressions on the probability of a given strategy deployment at the workplace level

	Cluster1		Cluster 2		Cluster 3		Cluster 4	
	Teleworking		Short-time programme		Working on site		External flexibility	
	log(OR)	*SE*	log(OR)	*SE*	log(OR)	*SE*	log(OR)	*SE*
Percentage of employees exposed to work-related risks in 2019 (reference: less than 10%)								
Between 10 et 50% employees exposed	-2.1***	*0.324*	0.68**	*0.262*	-0.4	*0.305*	0.31	*0.296*
More than 50% employees exposed	-1.6***	*0.213*	1.2***	*0.242*	0.13	*0.278*	0.52	*0.288*
Index of digital use at the worplace (2019)	2.4***	*0.057*	-4.0***	*0.044*	-0.69***	*0.039*	-1.2***	*0.041*
Share of professionals and managers	4.8***	*0.048*	-4.0***	*0.04*	0.55***	*0.046*	-1.2***	*0.052*
Share of agency workers (in full-time equivalent)	1.0***	*0.123*	0.03	*0.087*	0.47***	*0.066*	0.33***	*0.072*
Share of short-term employment	4.6***	*0.019*	9.8***	*0.031*	-11***	*0.009*	17***	*0.037*
Share of part-time contract	5.8***	*0.048*	6.0***	*0.069*	3.8***	*0.03*	2.2***	*0.066*
Average monthly wage	0.00**	*0*	0.00**	*0*	0	*0*	0.00***	*0*
Profit margins (2019)	0.39***	*0.075*	1.2***	*0.048*	-0.80***	*0.021*	-0.36***	*0.035*
Productivity (2019)	0	*0.002*	-0.01*	*0.003*	0	*0.005*	-0.02**	*0.008*
Tangible investment rate (2019)	0.63*	*0.266*	0.1	*0.243*	-4.3***	*0.039*	-4.0***	*0.031*
Size of the workplace (reference: 10 to 49 employees)								
50 to 249 employees	0.05	*0.246*	-0.44	*0.257*	0	*0.292*	-1.3***	*0.277*
250 or more employees	-0.51*	*0.261*	-0.49*	*0.234*	-0.72**	*0.258*	-0.13	*0.294*
Market size (reference: Regional or local)								
National	-1.9***	*0.24*	0.49*	*0.249*	0.25	*0.286*	0.1	*0.269*
European	-0.69***	*0.116*	-1.3***	*0.185*	-0.63***	*0.04*	-0.65***	*0.11*
International	-0.18	*0.273*	-0.2	*0.26*	-1.1***	*0.201*	-0.86***	*0.248*
Agreement on teleworking in the workplace	0.82**	*0.294*	0.4	*0.35*	-0.05	*0.229*	0.28	*0.272*

Well-predicted in the diagonal = 262/380	Mixed	Telework	Onsite	Short-time	External flexibility
Mixed	**130**	12	27	10	12
Telework	6	**37**	1	2	1
Onsite	15	1	**72**	5	13
Short-time	6	1	0	**15**	0
External flexibility	5	0	1	0	**8**

Source: ACEMO-Covid, FARE, ACEMO-Trimestrielle, CT.

Method: multilogit regression (mixed adjustment strategy as reference), coefficients reported (log(OR)). Only the pre-crisis variables are used for the regressions. *** p<0.001, ** p<0.01, * p<0.05 N=380. The bottom of the table reports the predictions of the model (in rows) and the actual values (in columns); the categories well predicted by the model are the ones in diagonal (in bold).

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