

Organisational changes and the evolution of working life quality:

A comparison between the private sector and the state civil service

Maëlezig Bigi*, Nathalie Greenan**, Sylvie Hamon-Cholet*** and Joseph Lanfranchi ****

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Summary: High Performance paradigm and New Public Management are implemented both in the private and the public sectors in a context of organisational rationalisation and cost containment. Using a French linked employer-employee survey on organisational change and computerisation (COI), we first analyse the effects of organisational changes in the private sector and the state civil service on work intensification, job enrichment, work involvement and recognition at work.

Organisational changes are more intense in the state civil service than in the private sector, which confirms the importance of changes in the working environment of employees within the context of the modernisation of the state. However, these reforms have not resulted into work intensification. Only in the private sector, changes are related to work enrichment.

The contrasts between the private sector and the state civil service are the greatest, in the areas of involvement and recognition at work. In the private sector, organisational changes increase involvement and feeling of recognition as long as the intensity of change is not too great. On the contrary, state officials express a decline in work involvement and their perception of work non-recognition is reinforced due to even moderate changes.

We then test the moderating role of three forms of employee participation: within change contexts: consultation on changes, presence of union representatives and the existence of informal discussion groups. We show that they contribute to explaining the observed differences between the private and the public sectors.

Key Words: Organisational changes, quality of working life, private and public sectors

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* CEE and LISE (UMR, 3320, CNRS and Cnam)

** CEE and TEPP-CNRS

*** CEE and TEPP-CNRS

**** CEE and LEM, Panthéon-Assas University.

1. Introduction

According to various surveys, a French salaried worker in the early 2000s spent between 20 and 22% of his time at work in a typical week (Chenu and Herpin, 2002, Bouvier and Diallo, 2010). However, the work experience of an individual exceeds this simple measurement; the perception of working life is a complex assessment process that depends simultaneously on the values of the individual, the interest in the work, its intensity, the conditions under which it is performed, the level of compensation, and work-life balance issues. All of these dimensions are a source of employee motivation and involvement.

Questions surrounding the work experience of French employees have entered the public debate following a series of serious and dramatic events (series of suicides at work), but have also been made particularly relevant by a set of converging diagnostics on the current difficulty of performing work. The analysis by Davoine and Méda (2009) using international surveys of the values of individuals reveals that the French give work a particularly high importance while simultaneously demonstrating a reluctance about the place that it takes in their lives, revealing a contradiction that generates unease between the growing demands of work on one side and the need to protect their personal lives on the other. In the book by Baudelot et al. (2003), interviews with employees highlight how an investment in meaningful work may indeed be a source of fulfilment and happiness. However, these employees' stories show that such an investment also involves significant pressure that is the source of cumulative discomfort that often passes on the private sphere.

Surveys on working conditions from 1984 to 1998 show that French workers have actually observed their working conditions deteriorate as the work has intensified as a result of constraints on pace, poorly managed work organisation, and the rigidity of designed work procedures (Gollac, 2005). However, this tendency towards the accumulation of constraints on the worker would pause in the latest wave of the survey, which was administered in 2005 (Bué et al., 2007). This intensification of work, according to some authors, may also be the source of adverse physical and mental effects, which illustrates the transmission of unhappiness at work to the private sphere.

As possible sources of this apparent deterioration of the quality of working life, several authors have emphasised the effects of recorded changes in productive organisations since the 1980s. However, the debate on the consequences of organisational innovation is not fully resolved. In fact, the empirical literature shows a clear division between authors who indicate an intensification of work and others who highlight the enrichment of work generated by these changes (Kalmi and Kauhanen, 2008).

This research aims to analyse how the quality of working life of employees is changing in the face of organisational changes in the private sector and the state civil service. Three unique

features characterise this study. First, we extend the analysis of the relationship between organisational changes and the work experience to employees of the state civil service. The management of the civil service has moved towards reconciliation between the practices and values of the civil service and the private sectors (Rouban and Jeannot, 2010). Changes in government would thus be partly implemented by management tools that have also been adopted by companies. In addition, the significant efforts made by the state for the development of an e-administration, on the order of three billion Euros a year, have led to an increased use of computer tools that have already profoundly changed work in the private sector. It is therefore necessary to consider how these tools, which are becoming common, impact working conditions as well as involvement and recognition at work in both institutional sectors.

We then study the relationship between indicators of change in private sector organisations and in the state civil service and indicators of evolution in the quality of working life of employees. To our knowledge, only the works by Østhus (2007) in Norway and Green (2005) and Bryson et al. (2009) in Britain have focused on the dynamic dimension of the relationship between innovative policy organisations and employee outcomes.

In addition, we consider multiple dimensions of both organisational changes and work experience. Organisational changes are summarised in two continuous indicators that describe the evolution of equipment in computer tools and in tools for managing activity. Additionally, the apprehension about work experience as reported by the surveyed employees, does not favour either intensification or enrichment as the two domains are covered as well as the degree of their work involvement. Thereby, we address questions on increasing pace constraints or peaks of activity, on the evolution of knowledge and on skill use.

Finally, the relationship between changes made and the experience of employees at work is likely to be influenced by the nature of social relationships in companies and administrations. Also, we consider three different forms of employee participation: consultation on changes, the presence of union representatives and the existence of informal collective groups. We test empirically the ability of each of these three forms of participation, to influence the relationship between changes employers and the evolution of living to work.

We rely on the linked employer-employee survey on organisational change and computerisation (COI 2006), which includes a survey of private sector organisations as well as a survey of the state civil service. This new feature allows us to measure the organisational changes that occurred between 2003 and 2006/2007 from retrospective questions asked to employers in the public and private sectors. The analysis of their implications for the workforce uses an identical questionnaire for employees of both sectors. Thus, the matching of employer level data with data from their employees allows to draw relationships between the introduction of organisational changes and their subsequent effects on the workplace.

The organisation of this paper is as follows: Section 2 reviews the findings in the empirical literature on the effects of new organisational practices on the work experience of employees. Section 3 shows how the indicators of organisational change are constructed and discusses the differences between the two activity sectors. Section 4 describes the econometric methodology of the analysis of the relationship between organisational changes and the work experiences of employees and the main results of the analysis. Section 5 studies the role of social relations as moderators. Finally, Section 6 concludes.

2. Lessons from the empirical literature

Since the 1980s, companies have increasingly adopted new practices for organising production and work associated with the spread of Information and Communication Technologies (ICTs) (Osterman, 2000). The consequences were first studied in terms of the benefits for companies, which were to restore competitiveness in an increasingly difficult national and international context. In general, the effects of these new practices were considered to be positive for businesses.

Meanwhile, most European countries have sought to reduce public spending by reorganising state civil services (Bezes, 2005, Ferrie et al., 1998, Melnik and Guillemot, 2010). To this end, governments are implementing reforms for a New Public Management (NPM) inspired by the methods of the private sector.¹

Plasticity of organisational and technological changes

There is some uncertainty in the terminology concerning "new organisational practices" or NPM. According to Osterman (2000), the only innovative managerial practice for which there is consensus is teamwork. However, Askenazy and Caroli (2010) did not include this in what they call "innovative practices," which include job rotation, flexibility, participation, quality standards, and computerisation. For other authors, "performance management" is based on four key innovations: work in autonomous teams, the existence of quality circles, incentive compensation, and training (Becker and Gerhart, 1996). Godard (2004) has a more extensive conception of what he calls the "performance paradigm," in which he combines two generic sets, i.e., "alternative work practices" and "employee involvement."

Finally, new management refers to a set of practices that would produce a new work culture when applied. The goal of these innovations is to employ the person and not just the worker. This new paradigm would be beneficial to employees, who would have the opportunity to mobilise their knowledge, express their creativity, and develop their skills, and by extension, it would also be beneficial to businesses. The work environment would be transformed from a taylorist organisation, which is characterised by a strong vertical division of labour in which

¹ The United States has been a pioneer in this area since it began to support programs aimed at reducing public waste in the 1960s.

the tasks are predefined and standardised, to a more horizontal organisation of work. This horizontal coordination would be achieved through the development of teamwork, sharing of information, participation in decision making, and the alleviation of work procedures. It would also give employees reasons to become personally involved in the objectives of the company. Various incentives, such as monetary bonuses, or non-monetary rewards, such as job enrichment, increased individual freedom, or skills development would complement these work organisation practices.

However, many authors have stressed the fundamental ambivalence of these reforms, which are designed and thought to benefit both employers and employees. For example, the greater autonomy granted to the worker does not necessarily coincide with the autonomous choice of the objectives to be achieved. In this context, the radical critique is opposed to the managerial vision and speaks of the dangers of "total involvement" of workers (Combes and Aspe, 1998) or of "exploitation to the second degree" (Moulier-Boutang, 2001).

Conflicting empirical evidence

This theoretical ambivalence corresponds to conflicting empirical evidence; some studies show positive effects for employees, whereas others reveal negative effects. Kalmi and Kauhanen (2008) describe two competing views in the literature: the "mutual gains" strand in which employers and employees are both beneficiaries of the introduction of these new practices, and the "critical perspective" arguing that the profits are made by companies to the detriment of their employees. Others call these two conflicting hypotheses the "hypothesis of motivation" and the "intensification hypothesis;" the former implying that job enrichment increases satisfaction and hence motivation, whereas the latter argues that enrichment is in reality an intensification that decreases job satisfaction (Mohr and Zoghi, 2006). There is thus no empirical consensus on the effects of managerial innovations.

There are three main explanations for these apparently contradictory results. First, the adopted research perspective determines the results: the evidence will change depending on whether one focuses rather on work intensification or on work enrichment on one hand and on whether one chooses to study rather the effect of organizational changes or the consequences of the intensity in the use of a given organizational practice. Then, if the new organisational practices are shown to have ambivalent influence on employee outcomes, these results may differ because they reflect different realities at the national, industrial, or establishment levels. Finally, the diversity of mobilised data sources, at the employer level, the employee level or at both levels, and their unit of observation and their coverage, establishments, firms, sectors of activity, nations can generate some heterogeneity in results. Using these three explanations, we will examine the state of the literature with respect to the consequences of organisational and technological changes for employees.

The influence of the adopted research perspective

The perspective adopted by researchers is the first element in understanding differences in the results reported in the literature. The studies may address work enrichment rather than intensification and the effects of implemented management practices rather than the influence of their changes.

Intensification or enrichment

There are generally two types of approaches in the empirical literature. The first focuses on the benefits that employees can obtain from new management practices in terms of their satisfaction, well-being, earnings, and job security. The second focuses on the effects on various dimensions of working conditions, including the pace of work, work accidents, or sick leaves.

Studies examining the effects of work enrichment on job satisfaction have usually shown positive effects. Bauer (2004) shows a positive and significant correlation between involvement in new managerial practices and satisfaction for employees in all European countries, with the exception of Belgium, Ireland, Italy, and Portugal, for whom the effect was not significant. Working time flexibility has the strongest positive effect, whereas teamwork, job rotation, and human resource support have only a small effect. Mohr and Zoghi (2006) use linked data from the Canadian Workplace and Employee Survey (WES) and observe a positive relationship between job enrichment and employee satisfaction. However, Bryson et al. (2009), using linked data from the Workplace Employment Relations Survey (WERS), find that managerial innovations are associated with lower well-being at work.

Conversely, studies that focus on the effects of managerial and technological innovations on working conditions generally identify an intensification of work. Gollac defines two types of intensity. The "intensity-output" related to the Taylorist philosophy is valid in the presence of a direct relationship between intensity and productivity. However, when one takes the opposite approach, i.e., by placing an emphasis on the objectives without defining the content of the work, the "intensity black-box" is introduced. In the case of the intensity black-box, employees are free to adopt the methods that are the "least costly for them [...] but often, they do not succeed and work intensification is necessary" (Gollac, 2005). Additionally, Green and McIntosh (2001) use data from the European Survey on Working Conditions (ESWC) to show an intensification of work in Europe, especially when employees use computers. By using the WERS survey from 1998, Green (2002) shows that the intensification of work in Britain is linked to organisational and technological changes. Finally, through several successive surveys, this increase is shown to cause a decline in well-being at work in Britain (Green, 2004). The study by Askenazy and Caroli (2010) is part of this research and shows that new managerial practices negatively affect safety and health at work. Using the French

labour force and working conditions surveys, the authors show that quality standards, job rotation, and working time flexibility expose employees to a degraded work environment. Employee participation produces mixed results, and ICT mitigates the negative effects of managerial innovations.

Organisational change and practices

A second important distinction in the adopted perspective contrasts studies that focus on change and those that focus on practices. Studies that address changes are specific and generally stress the negative effects of the implementation of organisational change. Thus, Østhus (2007) examines the effects of work reorganisation and downsizing and finds that the reorganisation of work is related to reduced employee satisfaction and a greater exposure to work-related health problems. Skogstad et al. (2007) evaluate the direct and indirect effects of organisational changes on harassment at work and find that change and interpersonal conflicts are two (independent) precursors of harassment. Baillien and Witte (2009) ask the same question and show that role conflicts and job insecurity are vectors of the link between organisational change and workplace harassment.

The influence of the observed reality

Beyond the differences in perspective and orientation, the results depend on the characteristics of the observed reality.

A national variety in the results

Several authors note that national cultural characteristics are important in determining the effects of change and new management. For example, authors using Finnish data suppose that the positive effects of organizational changes on employee quality of working life are partially linked to four cultural traits that are specific to Finland, i.e., the high degree of interpersonal trust, the culture of negotiation between employers and employees, the collectivist culture, and the high level of decentralisation (Kalmi and Kauhanen, 2008; Böckerman et al., 2009). By contrast, Melnik and Guillemot (2010) show that managerial concepts from the private sector are more easily integrated into the public sector in the U.S. because individual success is an important cultural value (*business-oriented culture*).

The weight of the sectoral dimension of activity

Belonging to the public or private sector also has a significant importance in determining the impact of organisational and technological changes for employees. Green and McIntosh use the ESWC data from 1991 and 1996 to show that the intensification of work in Europe has been stronger in the private sector than in the public sector, with the exception of Great Britain. This exception is related to the "Thatcherisation" of the public sector in Britain (Green and McIntosh, 2001). However, Härenstam uses data collected in Sweden between 1994 and 1997 to show that public sector reforms inspired by private management and

designed to reduce costs had more negative consequences for public sector employees than for private sector employees. The authors explain that the conflicting coexistence within the public sector between traditional features, such as bureaucracy, hierarchy or the weight of procedures, and the various methods derived from the private sector blurs the distinctions between public service missions and increases the proportion of workers experiencing constrained autonomy (Härenstam et al., 2004). From a qualitative point of view, the need to reduce costs while meeting the multiple objectives of public service is often offered as an explanation for the partial inadequacy of public sector reforms (Jeannot, 2008).

Within the private sector, Colvin shows, using the WES survey data, that it may be relevant to distinguish the industrial sector from the service sector, especially because the service sector has not been well studied. By analysing the relationship between the practices of involvement and conflict resolution, Colvin favours the hypothesis of enrichment over that of intensification but insists on the decisiveness of the sector. Thus, he finds that the effectiveness of implemented practices varies by sector; whereas working in autonomous teams would be crucial in industry, problem-solving groups would be better suited to the service sector (Colvin, 2004).

The role of the organisational characteristics of the employer

Within organisations, the variables that may influence the effects of changes on the work experience of the employees are the nature of the practices involved and their degree of adoption. Godard (2004) reports a complementarity view in which the positive effects of the performance paradigm are achieved if a consistent set of practices is adopted. In an earlier article, Godard shows that a partial adoption of innovative practices improves the working conditions and environment as well as employee satisfaction; as the number of practices that are in place increases, this positive relationship weakens and eventually becomes negative, especially for self-esteem and satisfaction (Godard, 2001). Similarly, a paper on the manufacturing sector in Minnesota shows that wages are significantly higher only when the implementation of decision-making groups is accompanied by financial incentives (Ben-Ner et al., 2001).

Additionally, most studies evaluating the effect of working groups and unions in organisations find a positive relationship between their presence and improved working conditions for employees. Bryson, Dale Olsen, and Barth (2009) show that if organizational change adversely affects employees' well-being, this negative relationship improves when employees are covered by a collective bargaining agreement. The authors argue that the effects of organisational change depend on how the change is implemented and that collective bargaining can be seen as a fair procedure by the workers; furthermore, whether unions have a strong bargaining power, they are well placed to negotiate an implementation that is friendly to employees. Finally, the presence of workers unions may reinforce the employees feeling of

security about their employment. Hence, employees perceive unions as a resource that is available in the event of conflict with management and have less fear of salary losses. Similarly, Colvin (2004) shows that, in unionised establishments, the rate of conflict resolution is greater when employees participate in involvement programs. This idea of collective working and voices a moderating factor is generally found in many studies (Godard, 2004, Green, 2002 and Kalmi and Kauhanen, 2008).

The influence of used data sources

A final set of reasons may explain why the results of the studies reported show so little convergence. In addition to the differences in fieldwork perspective, the nature of the databases used is also important. Three main types of databases are used: employee-based, employer-based, and linked employer/employee-based. Not surprisingly, authors generally consider that employer databases are more likely to provide valuable information about organisational and technological changes, whereas employee-level databases are more promising in measuring working conditions, well being, and employee motivation. Ultimately, the use of linked databases seems most appropriate when assessing the effects of changes for employees at the company or establishment level (Kalmi and Kauhanen, 2008).

Besides arguments on the accuracy of the data, another argument strongly supports the use of linked data. If the nature of the consequences of organisational change is indeed highly dependent on how the changes are applied and on the objectives to be fulfilled, then it is necessary to study the results as a whole. Multi-level analysis allows, for example, the explanation of variations at the individual level, taking into account the differences between organisations (Härenstam et al., 2004).

However, a thorough analysis of the results obtained according to the characteristics of their underlying database does not show that it alone may explain the positive or negative nature of the reported effects of managerial practices on working conditions and on the well being of employees.

The characteristics of our analytical approach

The lessons of the literature led us to favour certain choices of analysis. First, given the ambiguity of the definitions of new organisational practices, we chose to examine the implementation of two families of changes: those that concern the management of productive activity and those that relate to the management of information systems. Thus, by synthesising an extensive set of changes, we hope to avoid the over determination of *a priori* new organisational practices that would determine employees' perceptions about work. In addition, the distinction between these two families allows us to consider a possible complementarity between management and computer changes.

Then, we chose a dynamic approach to the relationship between managerial strategies and experiences in the workplace. In effect, our approach consists of studying the consequences of organisational changes on the evolution of the quality of working life as experienced by employees. Moreover, the work experience studied here does not favour neither the workload dimension nor the skills development dimension because the employees surveyed reported information on these two dimensions and on their level of involvement at work.

Finally, to consider the diversity of possible effects according to the sector of activity, we achieve in this paper a comparative analysis of the influence of organisational changes in the private sector, then in a restriction of the private sector to sectors of activity that are comparable to public sector activities and, finally, in the state civil service.

3. Comparison of organisational changes in the private sector and the state civil service

In order to capture the two families of changes, we rely on the underlying logic of the survey on organisational change and computerisation (COI), in which the implementation of new tools and techniques reflects the leaders' intentions to change productive organisations, whether private or public. The measurement of organisational changes relies on the diffusion dynamics of new equipment and tools (Greenan et al., 2010). With this in mind, we will distinguish between tools for managing activity and computer tools or ICT equipment.

Furthermore, the analysis of organisational changes in the private and public sectors requires two additional methodological issues to be addressed. The first is how to capture the high heterogeneity observed in modern management tools and ICT equipment in productive organisations. Indeed, none of these tools and equipment alone can summarise the diversity of observed management strategies. We have chosen to synthesise each of the two families of organisational change through continuous indicators.²

The second issue is the comparability of changes in private sector organisations and the state civil service, which are surveyed in two specific questionnaires of the COI survey device. This analysis requires the identification of a set of similar tools that can be mobilised in both institutional sectors, the identification of areas of private sector activity that are the most comparable to the state civil service, and the determination of a common metric for synthetic indicators of changes in the two sectors under study.

Before comparing the actual changes in private and public organisations, we describe first the generic methodology for the construction of indicators of change and the choices made to ensure comparability across sectors.

² A detailed description of the survey methodology and questionnaire content is available in a statistical annex available from the authors.

Methodology for constructing indicators of change

Synthesising the intensity of use for ICT and management tools

To synthesise the information in terms of management and computer tools contained in the COI survey, we use Multiple Correspondence Analysis (MCA) to obtain a common measure for comparing the degrees of change in private companies and public administrations for each of the two families of tools we chose to consider. We limit ourselves to the first dimension of the factorial analysis which reflects the intensity of use of the selected tools (see Greenan and Mairesse, 2006, and Kocoglu and Guillemot, 2010).

MCA is a useful technique as it aims at producing a simplified low-dimensional representation of the information in a large frequency table. First, each item response identifying whether the company uses each of the listed tools is coded as a dummy. The MCA generates quantitative scores, called dimensions which maximise the average correlation among the dummy-coded qualitative variables. These dimensions are linear combinations of the dummy variables that play an active role in the analysis. They can be considered as synthetic indicators whose interpretations rely on the variables that take a prominent part in their construction. The survey sampling weights are used in the analysis in order to draw an overall picture of what is going on in the populations under study. The vector of coefficients in the linear combination can be interpreted as a *metric* determined by the set of *situations* taken into account in the analysis and corresponding to a given sector at a given date. After the indicator is determined, the next phase concerns, with some additional assumptions, the construction of an indicator of change.

Indicators of change in a given sector

For comparisons over time, a single measure that is valid at two different points in time, in our case 2003 and 2006, is necessary. We could perform the MCA for both dates; with the disadvantage of obtaining a representation of the data determined in different *situations* in times. The indicator of the intensity of use of a given set of tools would then be specific to a particular date.

The direct comparison of synthetic indicators determined at two dates is difficult because, as stated previously, the situations on which they are contingent are different. We therefore create an additional hypothesis for a temporal comparison. While retaining the same set of productive organisations and tools in a given sector, we choose a particular metric for this comparison, as recommended by Greenan and Mairesse (2006). Here, we apply to the tools used by the productive organisations in 2003, the metric conditioned by the situations at the effective date of the survey (2006 for the private sector and 2007 for the State Civil Service).³

³The structure of the COI survey justifies the choice of 2006 as the reference date. The proposed questionnaire to productive organisations asks about the use of management and ICT tools at the time of the survey with retrospective questions about the situation in 2003. Furthermore, employers in the state civil service have been

This amounts graphically to a projection on the first dimension of the MCA conducted in 2006 of the companies equipped with the tools observed in 2003. In computational terms, this calculation amounts to applying the vector of coefficients defining the position of the productive organisations on the first dimension of the MCA conducted in 2006 to the vector of the tools used in 2003. We obtain a synthetic indicator of the tools observed in 2003, expressed in the metric or the base of 2006. The change indicator is then simply computed as the difference between the indicators of the use of modernisation tools observed in 2006 and in 2003 (expressed in base 2006).

This measurement of organisational changes through an indicator of the development of the tool penetration rates is imperfect because it neglects the technical improvement of certain tools over time. Thus, computer equipment, as well as computer software (although to a lesser extent) benefit from high performance gains. Of course, this represents a problem of serious measurement error in the absolute but it may nevertheless be put in perspective. Indeed, the three years time span which is considered is not likely to entail many substantial changes in the uses of listed tools although their level of efficiency may change. If the change indicators are intended to describe the organisational changes or explain certain developments in the quality of working life, this quantitative inaccuracy is less serious than if we were to analyse the productive performance of companies. The underestimation of technological upgrades would then need to be taken into account in the interpretation of such results.

Comparability of the indicators of change across sectors

The choice of a common metric for measuring changes in the sectors

As with temporal comparisons of indicators describing the use of management and computer tools, it is problematic to directly compare intra-sectoral indicators, which were created according to different metrics. To resolve this issue, we chose to express changes in the public sector using the metric of the private sector. Two facts justify this option.

The first stems from the construction of the 2006 COI survey and its extension to the public sector. As the successor to the 1997 survey, the 2006 COI survey was originally created to carry on the analysis of changes in private sector organisations. The questionnaire designed to apply specifically to state administrations employers was built to align with the measurement of changes developed in the private commercial sector.⁴ The second justification comes from the genesis of strategic shifts of the public sector in France. As noted by Rouban and Jeannot (2010), the reform of the French civil service is part of a movement, common in European nations, of importing management tools used in the private sector.

interviewed a year and a half later compared to private sector employers (in early 2006 for the private sector, summer 2007 for the public sector).

⁴ However, some topics in the questionnaire, such as the Organic Law on Laws of Finance (LOLF) and the pricing of the activity, apply specifically to the public sector and hospitals.

In this manner, it seems logical to compare the two sectors through the perspective of changes in the private sector. Thus, two indicators of changes in the public sector were calculated: one specific to the metric stemming from a MCA conducted on the state civil service and one that adopted the metric issued by the MCA that was conducted on private companies in 2006. The second indicator, which is more useful for sectoral comparisons, is computed as the difference between the indicators describing the use of management and ICT tools observed in 2003 and 2006 in the public sector according to the metric, or the baseline, of 2006 in the private sector.

Choice of organisational tools that are comparable across sectors

From the perspective of a comparison between the private sector and state civil service, the considered changes should be relevant to both of the considered sectors and must have an impact on the employee quality of working life. We focus on the organisation's adoption or abandonment of ICT tools and management tools used in both institutional contexts. Therefore, we conducted a thorough comparison of questions concerning these tools in the two "employer" questionnaires based on two principles. First, the assumption is made that the adoption of similar tools in both sectors corresponds to similar management strategies. We therefore preferred similar items on both questionnaires for the two families of tools.⁵ However, for some tools specifically identified in the respective private sector or state civil service questionnaires service, we questioned the underlying change logic. We were able to assimilate some items specific to the two questionnaires by estimating that they were comparable in terms of the context of internal changes. These two strategies allowed us to identify a list of fifteen ICT tools and thirteen management tools that were comparable in the two questionnaires, as shown in Tables 1A and 1B.

Choice of sectors for analysis and comparisons

For the employer populations considered, we compare the private sector as a whole, the banking and insurance sector and the business services sector clustered into a restricted private sector, and the state civil service.⁶ This restriction of the private sector into the finance and business services excludes all sectors of industry, transport, and trade to study the activities that are as similar as possible to the state administration sampled here. The population surveyed in state administration excludes the ministry of defence and, in the ministries of justice and education, teachers, and magistrates. In addition, the banking and insurance sectors are partially derived from the privatisation of previously nationalised enterprises, and their management practices retain traces of their origins. The business

⁵ However, even if the intentions of the changes advocated by leaders in both sectors are similar, their adoption does not necessarily imply similar consequences in different institutional contexts. The nature of public sector objectives, the tasks allocated to employees, the high degree of relationship with public service users, and the status of the staff are some of the many dimensions that can influence how the adoption of organisational tools, similar to those of the private industry, is likely to specifically affect the work experience of state employees.

⁶ The criterion of the size of the units surveyed, however, limits the scope of the "employers" query: 20 or more employees for private companies and 10 or more employees for the government.

services sector is, in turn, a rather new area that was derived from the outsourcing of functions previously included in the manufacturing sector.

Descriptive overview of the organisational changes

In Tables 1A and 1B, we report the frequency of the use of the ICT and management tools selected for the construction of our synthetic indicators in 2003 and at the date of the survey.

The first observation from Table 1A is that the increase in the use of all ICT tools is higher in the public sector than in the private sector, including the restricted segment composed of financial and business services, with the exception of electronic data interchange systems. Nevertheless, we cannot here speak of a ICT catch-up as the public sector was already better equipped than the private sector in 2003 with respect to the majority of the fifteen selected tools, particularly the networking tools (website, intranet, Local Architecture Network, extranet). Although the period during which the changes are observed is one year longer in the public sector, this first finding is a strong indication of a significant change in the technological work environment within the state civil service.

The ICT tools are not all located homogeneously in business or government. Thus, tools for information and communication, such as the internet, intranet, or local area networks (LANs), have become commonplace and are well developed in many companies and administrations. The more advanced tools (collaborative tools and process modelling, for example) are less familiar but experienced a significant boom between 2003 and 2006-2007. Following the reforms introduced in the public sector, tools developed for the management of human resources became particularly well established in the government. Overall, the administration now seems better equipped with ICT tools than the market sectors, including the restricted private sector.

The implementation or progression of management tools seems more chaotic, either in time or across sectors (Table 1B). It likely follows a different logic and timing. In the private sector, some tools that were already well established in 2003, such as contractual relationships between producers, suppliers, customers or users, or processes of labelling and certification, have continued to grow. In the public sector, their progressive diffusion indicates the development of management techniques that permit a link with public service users, such as a commitment to respond to users in a short time, the ability for the user to monitor a file, contact or call centres, and satisfaction surveys. Finally, some devices (FMEA, CRM) seem more suited to the logic of the market sector or even the manufacturing sector, and their implementation in the public sector does not occur easily. Overall, changes in the tools for managing activity are more important, on average, in the public sector than in the private sector. Thus, regardless of whether ICT or management changes, the working environment of employees of the state civil service seems to be more turbulent than that of the private sector, restricted or not.

The characteristics of synthetic indicators of change

The MCA conducted in the private and public sectors describe a phenomenon of tool accumulation in organisations. In other words, the occurrence of dropouts is low in the ICT field and the management tool field.⁷ Moreover, in both institutional contexts, the size of the organisation, as obtained from the employer, is the supplementary variable presents the strongest correlation with the first dimension of the analysis. For the private sector, the fact that the establishment is a member of a corporate group also affects the use of IT and management tools.

From the sectoral perspective, the private industry is the sector where ICT tools were used the most in 2006 was finance, followed by business services and manufacturing. The transport and trade sectors are the least developed in terms of technological tools. On the other hand, in terms of the use of management tools, manufacturing overcomes the financial sectors, and business services that are lagging in this field of innovation. Within the public sector, in 2007, the Ministry of Economy was at the forefront in both areas, followed by the Ministry of Equipment, whereas the central directorates of the Ministries of the Interior and Justice and the decentralised Departments of Education were behind in terms of the use of management tools.

The distributions of the change indicators show rather marked differences between the private and public sectors but the former is very close to its restriction to finance and business services (Table 2).

One striking feature of management and ICT changes is the substantial average difference between public and private employers. The average change was twice as large in the state civil service for ICT changes and more than four times greater for management changes. However, the mode is identical in all sectors, which corresponds to inertia.

There are also great sectoral differences in the medians of the distributions. Over 50% of the employers in the private sector have not experienced organisational changes. There is also a relatively high median for the two areas of change in the public sector, as measured with the metric changes in the private sector. 48% of the private sector organisations had a positive measurement of ICT changes, compared with 78% in public organisations. For managerial changes, 32% of private companies increased their use of management tools, compared with 69% of public organisations. Given the influence of size on the occurrence of changes, the percentage of state employees potentially affected by these changes is particularly high: over 80% of the workforce for ICT changes and 90% for management changes. The figures for the workforce in the private sector for these two forms of change are 68% and 51%, respectively.

⁷ The graphs and results of the MCA are available upon request from the authors.

These elements therefore illustrate that work environments are on the move, especially for employees of the state civil service.

4. Organisational changes and the evolution of working life quality: empirical evidence

To evaluate the effects of organisational changes on the evolution of the quality of working life, we use the employee questionnaires of the COI survey conducted in the private sector and in the state civil service. In contrast to the questions addressed to employers, all variables extracted from the "employee" section of the COI survey are strictly comparable over institutional sectors because they rest on the same questioning.^{8,9} The employees were randomly selected in their employer workforce, with a sampling rate proportional to a function of its size. Proportionality is not strictly applied as a minimum of two employees per employer is imposed, and the proportionality is mitigated for organisations with more than 500 employees to avoid giving an excessive weight to very large units. The coverage of the employee population is defined by the coverage of the population of employers and by the coverage of the workforce within a given organisation. This practice is constrained by the survey protocol; sampled employees in sampled organisations were interviewed approximately one year later after being selected, which implies that they had at least one year of seniority at their employer. The work experience that we examine is thus the experience of stable employees of the interviewed companies and administrations.

To enable comparisons of the populations covered in different sectors, we considered that some occupations were not represented in the state civil service and decided to exclude them from the sample of private companies. In this way, we hope to make the groups of employees and their tasks more comparable. The method adopted is described in a statistical and methodological appendix available from the authors. Finally, our sample contains 11,731 employees in the private sector, 3,357 of which are in the restricted private sector grouping financial and business services and 951 were in the state civil service.

Econometric modelling

To evaluate the influences of ICT and management changes on the evolution of the quality of working life, we consider generic relationships of the following form:

$$\Delta VT_{i,j} = \alpha X_i + \beta Y_j + \gamma \Delta MAN_j + \theta \Delta MAN_j^2 + \theta \Delta TIC_j + \mu \Delta TIC_j^2 + \tau \Delta MAN * \Delta TIC_j + \varepsilon_i \quad (1)$$

where $\Delta VT_{i,j}$ identifies a set of indicators of changes in working life quality for the worker i in the productive organisation j and ΔMAN_j and ΔTIC_j are the respectively indicators of changes in management and ICT tools for the employer j . The X and Y vectors represent control

⁸ In addition, the employees were questioned during the same period.
⁹ The employee questionnaire is available at the survey site:
http://www.enquetecoi.net/index.php?option=com_content&view=article&id=87&Itemid=139

variables defining the characteristics of the worker i and his employer j , respectively. Finally, ε_i is a random error term specific to the worker i . We chose a specification in which the effects of organisational changes were not forced to be linear, which allows for a mitigation or aggravation of quality of working life indicators according to the increasing or decreasing returns in the intensity of the changes in management and ICT tools. In addition, the last term of the specification allows for the possibility of interactions between these changes into their influence on the quality of working life. This choice allows us to assess the existence of complementarities between management tools and ICT tools in their influence on the quality of working life.

We preferred a first differences specification in order to mitigate omitted variable biases. This form allows us to control imperfectly, the fixed effects associated, for example, with the subjective perception of employee work experience. Thus, the unobservable heterogeneity that we cannot control here would rather play through omitted variables influencing simultaneously organisational changes and the evolution of the quality of working life.

For each considered indicator of quality of working life, we repeat the same estimation basic specification for all three sectors of activity: the private sector as a whole, its restriction to financial and business services, and the state civil service. The estimates for the state civil service will be obtained using two set of measures, one defined in the public sector metric, the other defined in the metric of the private sector.

Furthermore, we considered the possibility of a voluntary selection of workers in the sectors considered by running a two stage regression; the first stage consists in estimating the choice of sector by the worker, and the second stage takes into account this possible voluntary selection in the quality of working life regressions. We need a set of instrumental variables that explain the choice of the sector without affecting the subjective assessment of the work experience to identify our model.

Definitions of variables

Measures of the evolution of the working life quality

The dimensions of the employee quality of working life that we consider are those that lead to a retrospective question in the "employees" questionnaire as they allow the measurement of a trend over the last three years. They relate to the intensity of work, skills use, and the commitment to work.

We distinguish two indicators of changes in work intensity. The first measures whether the constraints on the pace of work eased, increased, or remained stable over the last three years. The questionnaire identifies five types of constraints according to their source: internal demand of the company, external demand of the company, deadlines or production standards to meet, automatic movement of a product or part or the rate of a machine, and the work of

one or more colleagues. The second indicator measures whether activity peaks became more frequent or less frequent over the past three years or whether their frequency remained unchanged. The measurement of the intensity of the work through constraints weighing on the pace of work is a classical approach where the activity is represented as being regulated by the technical and organisational environment. This classic measure was extended to include the reference to an external demand requiring an immediate response. This second indicator, on the frequency of activity peaks, complements the first one by further evaluating the intensity of the work in the service activities, the fluctuation in the service activities being more difficult to regulate because of inseparability of the service produced from the service work activity.

Skills development is approached by two complementary indicators. The first measures the evolution of skill use over the past three years. This indicator tells us whether the employee needs to activate his knowledge while working more or less intensively than before. To some extent, this indicator measures the enrichment of the employee's work. The second indicator defines whether the employee feels that he has the opportunity of learning new things at work. The fact of increasing his knowledge and skills is likely to make work richer and more interesting. However, a positive answer to this question may also reflect that the work has become more complex than before.

Finally, the evolution of work involvement is measured by a direct answer to the question: "Do you get involved more, less, or as much as you did three years ago or when you arrived at the company (if recently hired)?" This question is supplemented by a subjective assessment of the recognition of the employee's work by the employer. This question, asked at the very end of the questionnaire, determines whether the employee believes that his work is recognised at a fair value upon consideration of what he brings to his company and the corresponding benefits he gets. It measures the employee's perception of the fairness of the treatment that he receives at the workplace.

The frequency counts for these indicators are reported for the three sectors in Table 3. It is notable that these indicators of the evolution in the quality of working life reported by employees are similar in the private and restricted private sectors as what was previously observed from the employers' statements on organisational change. In contrast, public sector employees reported a slightly more frequent increase in work intensification as well as more frequent opportunities of learning new things at work, but without higher increase in skill use. In addition, employees of the state civil service declare less often that they feel recognised at their fair value.

The control variables

Control variables describe characteristics of the employer and of the employee. From the employer's side a first set of dummies indicate, in the private sector the main sector where the

company operates and in the state civil service the relevant ministry, a second set of dummies indicate the size of the interviewed employer unit. From the employees' side, the control variables taken into account are as follows: sex, seniority, age, qualification, marital status, spouse's employment status (employed or non-employed), weekly working hours, part-time work, employment status, and pay, net of all social security contributions.¹⁰

Main results

Choice of institutional sector

Before interpreting Tables 4-9, which show the effects of organisational changes measured at the employer level on the evolution of the quality of working life, measured at the employee level, the possibility that the studied employees voluntarily chose to work in a specific sector must be considered. Table 10 reports the results of a logistic model that explains the fact of belonging to the public sector rather than the private sector.

To identify the corresponding simultaneous equation models, two sets of instrumental variables were used. The first contains indicators describing the occupation held by the father of the interviewed employee, and the second identifies whether the employee's mother was of French nationality. Indeed, the assumption of social reproduction predicts an influence of parental choice on the career paths for the children. In addition, the preference for employment in the public sector can be part of a public sector motivation which foundations can be transmitted through the parental education. Finally, foreign origin is usually an obstacle for entry into the French civil service.

The results of our estimation show that having a father who is a teacher has a significant effect on the probability of choosing the public sector. Similarly, the French nationality of the mother significantly increases the probability of belonging to the state civil service. The results presented here concern the choice between the private and public sectors, but they are qualitatively identical when the private sector is restricted to finance and business services.

Evolution of the quality of working life and organisational change

The results summarised in Tables 4-9 below were obtained using a linear estimation of the indicators of evolution in the quality of working life at the sample mean. The measures of these indicators were centered to the mean prior to estimation, which implies a particular interpretation of the reported effects. Thus, with reference to the specification (1), the estimated coefficient $\hat{\beta}$ is the marginal effect of a change in ICT tools on increasing the pace of work, for example, for a change that correspond to a unit deviation from their mean value.

¹⁰ This is a net salary per fortnight (half-month) based on the annual salary and length of pay. For the private sector, this variable is derived from the administrative file that was used to sample the employees (the DADS file). The wage corresponds to 2006 or 2005 when the information about 2006 is missing. We imputed values for remaining missing data using a prediction equation that takes into account the age of the employees and their employment area as well as the size and sector of the company. For the public sector, the payroll files that were used to sample employees also inform about their wages.

In general, the marginal effects of organisational changes are more complex to evaluate in this specification because they depend on the values of the changes in both of the considered fields. To illustrate the specificity of the interpretation, consider the example of the marginal effect of a change in the management tools of the activity:

$$\frac{\partial VT}{\partial \Delta MAN} = \gamma + 2\delta \Delta MAN + \tau \Delta TIC$$

This effect varies with the intensity of changes both in management and in ICT tools. This formula shows that the quadratic terms introduced in the specification can lead to increasing or decreasing returns in the influence of organisational changes on the evolution of the quality of working life whereas the interaction term may capture a complementarity effect between the two families of tools. To characterise the effects of these changes at different points in the distributions of our indicators of change, we present the marginal effects calculated at the following different percentiles: the median, the 75th percentile, and the 90th percentile. Indeed, the effects are less interesting for lower values in the distribution, which correspond to rarer cases of companies that have abandoned or only slightly changed their use of ICTs and management tools. The determination of the effects at particular points in the distributions of changes is independent from the metric used, which allows a comparative interpretation in the various institutional sectors. As mentioned previously, the estimates are corrected for the selection bias of employees in both sectors. Moreover, they are weighted and they take into account the complex nature of the sampling frame for the employee survey.

Moderate effects on the intensification of work

Tables 4 and 5 display the estimated results for the indicators of work intensification: the evolution of constraints weighing on the pace of work and the evolution of activity peaks. As an illustration, the tables should be read as follows: in Table 4, the coefficient reported in the first row and the first column identifies the marginal effect of the indicator of change in ICT tools on the evolution of constraints on the pace of work in the private sector, measured at the sample mean for the changes in the two families of tools.

This first table shows that the evolution of constraints on the pace of work seems to be relatively unaffected by organisational changes in the private sector and the restriction of the private sector to financial and business services. Thus, none of the coefficients reported in the table are significant at conventional statistical thresholds. This first observation is complemented by an examination of Tables 4.1 and 4.2, which illustrate how the effects vary along the distribution of changes. These tables can be read as follows: in Table 4.1, the coefficient reported in the first row and the first column measures the effect of changes in ICT tools on the evolution of pace constraints when measured for the median values of the distribution of changes in ICT and management tools. Horizontally, the table shows the evolution of this effect for higher percentiles of the distribution of managerial changes, and

the source of this evolution is the interaction term between the two domains of change. Vertically, the table shows the evolution of the effects of changes in ICTs for higher percentiles of their distribution; the source of the change being here the quadratic term in the estimated specification.

These tables measure the effects in the private sector and are not reported when the private sector is restricted to financial and business services because the results are qualitatively similar. The results confirm that, with the exception of a weakly significant positive effect of ICT changes on the evolution of constraints on the pace of work recorded for median values in the two indicators of change, the influence of managerial changes on the variation of pace constraints is limited.

In the public sector, the effects of organisational changes are equally limited except at the second-order, as the relationship between the changes and the evolution of pace constraints is U-shaped. Thus, overall, Tables 4.3 and 4.4 show that the changes in ICTs, as well as changes in management tools, result in an increase in pace constraints, experienced by workers belonging to administrations situated at the highest decile of the distributions of organisational change. If state officials feel an intensification of work by means of a reinforcement of the obligations to adjust to an imposed work pace, this effect would only be perceived for a high intensity of changes.

Similarly, the examination of Table 5 does not suggest an increase in the incidence of activity peaks in response to organisational changes in the different institutional sectors. Although not reported here, the tables measuring the effects of changes along their distribution show no significant influence in the private sector or in the restricted private sector. Even though we note an increase in the incidence of activity peaks when both families of change are at their median level in response to changes in management tools, this effect disappears almost completely when it is replicated in the upper part of the distribution of managerial changes. Similarly, in the public sector, increased occurrence of activity peaks appears to be only marginally related to organisational changes; we note, at best, a positive effect of changes of management tools on activity peaks, increasing in value and significance with the intensity of the changes (Tables 5.1 and 5.2).

Work enrichment

In contrast to the results discussed thus far, the evolution of the use of skills reported in Table 6 shows a clear difference between the public and private sectors. In the state civil service, ICT and/or management changes do not seem to be perceived by employees as inducing changes in the use of their skills. In the two private sectors, however, the changes in management tools lead to an increase in the perceived use of skills, although at a rate that decreases with an increasing magnitude of change. This influence is more pronounced in the restricted private sector. The specifications adopted here do not permit us to further explain

this result, but one should consider the hypothesis in which radical changes in the managerial domain would lead to fundamental changes in the production process and work activity, thus involving a job redesign rather than job enrichment.

Changes related to the adoption of ICTs also generate the perception of a higher use of skills in the private sector. However, this effect does not show up in financial and business services and therefore may be more confined to particular industries in manufacturing. Furthermore, this influence diminishes until it disappears as the intensity of technical innovations reaches high levels (Tables 6.1 and 6.3). Finally, in the private sector, we find a complementary effect between the two domains of change, with more skills used when managerial changes are combined with computer changes (Tables 6.2 and 6.4).

When we consider the effects of organisational changes on the opportunities of learning new things at work (Table 7), it is striking that the development of new knowledge for employees does not seem to be stimulated in the private sector. Similarly, state officials do not seem to be lead to develop their human capital in relation to the recorded changes. At best, one can find in Table 7.1 a trace of a positive but weakly significant effect of ICT equipment changes on learning, which is reinforced by a complementary effect of management changes. Thus, in the state civil service, the combination of changes only affects skills development for high magnitudes of the changes in the two families of tools (Tables 7.1 and 7.2).

Employee involvement and fair work recognition

The largest difference between the private and public sectors appears in the field of employee involvement. In addition, the feeling of fair treatment in the workplace, which is evaluated subjectively, also evolves in an opposing manner across the sectors.

In detail, the results reported in Table 8 show us first that the pursuit of organisational changes in the private sector does not go with a deterioration of the involvement of employees. However, it is nonetheless necessary to distinguish between changes in ICT use and management changes. The effects of the former on the evolution of involvement in the workplace are generally limited, except at the top of the distribution of ICT changes where it becomes negative. In other words, employee involvement tends to decrease only in companies that have made very important modernisations in the computer domain over 2003-2006 (Table 8.1). Furthermore, this influence is compensated by the presence of changes in management tools that prove, according to our results, complementary to computer changes in maintaining employee involvement in work (Table 8.2).

Overall, the changes in production management and work organisation that occurred during 2003-2006 do not appear to have been the cause of a withdrawal from work by employees. The effects of these changes are very positive as long as their magnitude is not too large. It seems that the adjustments made during this period were effectively justified in the eyes of the employees.

In the public sector, by contrast, changes in both areas correspond to a decline employee involvement. With respect to ICT changes, this discouragement does not occur except at a fairly high level of innovation (Table 8.3). However, management changes, especially when combined with new ICT equipment, seem to reduce the level of employee commitment in the public sector (Table 8.4). The accumulation of changes in the work environment seems to be at odds with the procedures for the usual exercise of duties. However, it is difficult to distinguish here between the response to major changes and the incompatibility between some managerial methods and the professionalism as well as the public service motivation of civil servants.

The analysis of how employees feel about the fair recognition of their work (Table 9) confirms this diversity of effects across sectors. Thus, in the private sector, we find evidence of a negative effect of ICT changes on the feeling of fair work recognition, in particular for high values of these changes (Table 9.1). This negative effect is, as in the case of employee involvement, offset by changes in management tools that complement changes in ICT equipment (Table 9.2). The sensitivity of the feeling of fair work recognition appears to mirror that of the evolution of employee involvement in that the change of management tools exerts a positive influence except when it is situated in the top of the distribution. When new management tools lead to a change which intensity is felt as too high, employees perceive an imbalance between their effort at work and the rewards that they get.

In the public sector, however, the representation of the relationship between management changes and effort-reward imbalance proposes an opposite shape. Indeed, the relationship in the state civil service between changes in management tools and the feeling of fair work recognition has a U shape. In other words, the negative effect of management changes weakens when the magnitude of the changes is high (Table 9.4). In addition, this improved sense of being treated fairly is realised only if the employee does not simultaneously experience significant ICT changes (Table 9.3). The combination of the two areas of change thus leads to a perception of an unfair balance of investment and profit in the public sector.

5. Study of social relations as moderators

The results described above are focused on the impact of the nature and the intensity of organisational changes on the evolution of working life quality. We should also question the role that could have the way these changes are being implemented at the workplace. Thus, as we said in the introduction, we consider here the hypothesis that social relations within productive units can influence the experience of employees at work in a dynamic of changes. We will test the potentially moderating effect of three forms of employee participation within change contexts: consultation on changes, presence of union representatives and the existence of informal discussion groups. These three forms of participation cover different channels of interaction between employers and employees. While the first two are formal, consultation is

at the sole initiative of employers, whereas the presence of union representatives results from the initiative of employees as well as legal constraints imposed on employers. The third is informal; it is based on the employees' initiative and reflects both the existence of work collectives and work environments where employees' working time is not completely occupied by direct production. A form of participation will be considered as a moderator if it is likely to reduce or, on the contrary, to amplify the effect of change on the work dimensions considered in this study.

Possible effects of social relations

We will review the reasons that may explain why the social relationships on the workplace, measured by three forms employee participation, can play an important role in weakening or exacerbating the unwanted effects of organisational changes on the evolution of working life quality.

First they can have a regulating influence both on the nature of changes and on the way they are implemented. Without any formal consultation of the workforce or institutional representation, like the existence of a union representative, it is more difficult to carry out a common claim from the workforce requests. In case of a strong power of consultation, employees can expect to block changes or suggest some adjustments to make them more advantageous.

The employer who engages a consultation or a discussion with the union representatives promotes implicitly the renewal of the *social pact* with his employees. If the change involves increased efforts, higher skills obsolescence, more job insecurity, then the balance at the root of the feeling equity and security felt by the members of the organisation may be broken. Activation of formal exchanges between employers and employees may lead to consider compensations. Thus, the potential disadvantages coming with change would be balanced by a new commitment made by people in charge concerning salary, training, work protection or career improvement.

Formal participation can also enhance the feeling of recognition of the additional efforts the workers consent to give. The concept of equity in the context of employment relationship consists of a balance between employee investments and derived benefits. Some of these benefits, of course, are material such as salary compensation or benefits in kind. They also are psychological since employees evaluate the procedures by which employers organise justice in work relationships. The use of consultation or negotiations through union representatives can be seen as a signalling a fairness and equity pursuit in a time of professional benchmarks perturbation.

Social relationships within the organisation also provide psychological help when working conditions become challenging. It happens that workers representatives intervene to help employees facing difficulties.

Moreover, having spaces for informal exchanges between colleagues allow sharing the difficulties experienced at work. It is therefore possible that this effect of social support comes to mitigate the adverse effects of some of the organisational changes. By enabling exchanges on work methods and cooperation between employees, this third form of participation is a factor of collective learning in the context of new challenges and contributes to the identification of better ways of working.

However, informal contacts as well as union presence may also contribute to the development of a cognitive context that encourages the expression of criticism (Amossé and Coutrot, 2008). Exchanges reflect then the difficulties and defects associated with organisational innovations and negative perception is likely to be increased.

All these arguments show that, in various forms and sometimes with opposite effects, the exercise of social link in companies or administrations is able to affect workers' evaluation of workplace changes. When participation mitigates the negative effects of changes for employees, we say that it plays as a *regulator*. Participation works as a coordination mechanism, to mitigate the adverse effects of changes. When on the contrary it reinforces these negative effects, we call it a *developer*.

Variables and descriptive statistics

The three forms of participation considered are respectively measured through questions related to the organisation of a collective consultation on the initiative of the employer at a time of change implementation, to the presence of a union representative and to the possibility to discuss frequently and informally with colleagues about what is going on in the company, apart from specific meetings organised for this purpose.

From a descriptive point of view (Table 11), about a quarter of employees declare that they have been consulted during the implementation of a change within the company or the administration (nearly 30% in the private sector and 25% in the state civil service¹¹): The public sector is strongly specific regarding the presence of unions: almost 90% of employees declare that there is a union representative in their direction against 77% in the private sector (82% in the restricted private sector). Finally a little more than three out of five employees say they can talk frequently with their colleagues about what is happening in their company or administration in an informal way.

¹¹ these figures are calculated on all employees, including those who said they had seen no change in their work or their colleagues' work. When only taking into account employees who reported at least one change in the organization, 36.4% said they had been consulted during this change in the private sector, 34.8% in financial and business services and 31.3% in the state civil service.

Econometric modelling

We add to the equation presented in section 3, testing the impact of changes on the evolution of the quality of working life a dummy variable that reflects the specific effect of a form of participation (consultation, union presence and informal discussions) in companies or administration, and secondly, we interact this dummy variable with indicators of change in management and ICT tools. The significance of the interaction terms reflects the moderating influence of the form of participation on the relationship between change and the evolution of working life quality.

In tables 12 to 29, the specific effect of the form of employee representation can be read on the first line (section) of the table. For instance we can see that there is no specific effect of employee consultation on increased constraints on pace of work regardless of the observed sector (Table 12), while there is a very significant one in the private sector on the skill use (table 14).

The second section of tables measures the effect of change for employees who do not have identified one or the other forms of participation in their organisation. We will not review these results here.

Finally, the third section of tables presents the interaction effect of changes with the considered form of participation on the different dimensions of work that we study. Thus, in Table 12 for the private sector, we observe that changes in ICT tools contribute to a perception of increased constraints weighing on the pace of work in organisations where employers have consulted their employees, while it is the opposite effect for management tools. Therefore, consultation moderates the effect of changes on the evolution of constraints on the pace of work as perceived by employees. It tends to *develop* the intensification of work associated to new ICT tools and to *regulate* intensification that comes from an increased use of management tools.

Results

Employee consultation

The fact of being consulted has no direct effect on increased work pace constraints and activity peaks, regardless of the sector observed (Tables 12 and 13).

However, there is a positive effect on skill use and learning new things at work in the private sector (restricted or not) (Tables 14 and 15). People who have been consulted say they are more involved in their work when they have been consulted in all sectors (Table 16). Finally, fair work recognition is more strongly felt in the private sector in the presence of consultation (Table 17). Employee consultation, more frequent in the private sector than in the state civil service, is also a channel that affects it more strongly regarding the quality of working life.

Consultation moderates the relationship between changes and the intensification of work in the private sector only, and in different ways depending on the kind of changes considered. As we indicated in the example developed in the previous section, it *develops* the intensification associated with changes in ICT tools and *regulates* the intensification related to changes in management tools.

However, the moderating role of consultation on other dimensions of work appears in both sectors, mainly associated with ICT changes in the private sector and management changes in the state civil service. Thus, in the private sector, being consulted when management changes are conducted reinforces the perception of increased use of skills, except beyond a certain threshold. In the private sector restricted to financial and business services, it reduces employee involvement as well as the feeling of fair work recognition, except when management changes are associated with an IT project. Consultation during management changes has a *regulatory* function on skills development. This is also found for work involvement and fair work recognition but only when management and ICT changes are intertwined. In the public sector we find another configuration, where consultation has mostly a *regulatory* function in the context of ICT changes. It moderates positively the evolutions of skills use and work involvement and the perception of fair work recognition.

Presence of an union representative

If we examine the specific effect of union presence, it is significant for one dimension of work only in each sector: the higher frequency of activity peaks in the state civil service and the feeling of fair work recognition in the private sector (tables 18 to 23). Union presence induces a decrease in the intensity of work in the public sector and reduces the feeling of fair work recognition in the private sector.

Union presence has stronger moderating effect on changes in the public sector than in the private sector. However we should recall that nearly 90% of employees mention the presence of union in the public sector. Thus, the moderating effect identified may come from some specific administrations with low union presence. Union presence appears to *regulate* the effects of ICT and management changes on work intensification. It mitigates the reinforcement of work pace constraints in the presence of ICT changes and the higher frequency of activity peaks in the presence of both management changes and combined ICT and management changes (Tables 18 and 19). The other dimension of work sensitive to the presence of unions in contexts of change is the sense of fair work recognition (Table 23). In this area, the qualification of the moderating effect depends on the characteristics of change. In the presence of intense ICT changes, union presence will have a *developing* role, whereas in the presence of both ICT and management changes, it will have a *regulatory* role.

Existence of informal discussion groups

The existence of collective spaces for informal discussions among colleagues has a particularly sensitive direct impact on employees working life quality. It contributes to the *development* of the intensification of work in both sectors, while it encourages the perception of job enrichment in the private sector (Tables 24 to 29).

In the private sector, we identify a strong interaction between informal discussions and work intensity (Table 24). Discussions appear to act as a *regulator* of the intensity of work in contexts of strong ICT changes, moderate management changes and combined ICT and management changes. In other situations of change, discussion with colleagues would rather play a *developing* role. Discussions would therefore contribute both to acuter awareness of increased work pace constraints and to collective management of certain forms of intensification. We also observe in the private sector a *regulatory* influence of management changes on the feeling of fair recognition. In the public sector, discussions with colleagues moderate appreciation on job enrichment, related to ICT changes (Tables 26 and 27). It has a *developer* or *regulator* effect depending on the intensity level of ICT changes. Finally, informal discussions are accompanied, in the public sector, by a reduction of work involvement in contexts of management changes.

Discussion

Given these results, we first retain that the three forms of participation considered differently moderate relationships between changes and the evolution of quality of working life in the private and public sectors. Employee consultation marginally interacts with the intensification of work. However, it affects the way skills development is perceived and moderates work involvement and the feeling of fair work recognition. The presence of unions, meanwhile, mainly affects work intensification and fair work recognition. Finally, the existence of collective spaces for informal discussion impacts all dimensions of work. Then consultation and union presence appear to be stronger moderators in the sector where they are more diffused: in the private sector for the first and in the public sector for the second. Informal discussions on the other hand, show a pattern of moderation specific to the sector considered: intensity and fair work recognition in the private sector, job enrichment and work involvement in the public sector. From this perspective, informal discussions interact mainly in the private sector with the same dimensions as the union presence do in the public sector: on intensity, these two forms of participation will sometimes play a *developer* or *regulator* role depending on the characteristics and the intensity of changes, while they reinforce the sense of fair work recognition in the presence of management changes in the private sector and ICT changes in the public sector. Finally, the moderating role of each form of participation varies with the strength and composition of change sometimes involving a shift from a developer role to a regulator role or the reverse.

6. Conclusions

Using a linked employer employee survey on organisational change and computerisation (COI), we analysed the effects of organisational changes that occurred between 2003 and 2006-2007 in the private sector and the state civil service, examining indicators of work intensification, skill development, and evolution of employee involvement and feeling of fair work recognition based on the employee section of the survey. Organisational changes, measured from retrospective questions from the employer section of the survey, are summarised in two continuous indicators describing on one hand the evolution of ICT tools, on the other the evolution of management tools. These measures were constructed to be comparable between the private and public sectors. We contrasted the results obtained by considering the private sector as a whole, as well as its restriction to finance and business services, and the state civil service as covered in the COI survey.

We first show that organisational changes are more intense in the state civil service than in the private sector, which confirms how important are the changes in the work environment of civil service officials in the context of the modernisation of the state. However, these reforms have not translated into a systematic intensification of work. It is therefore necessary to achieve very high levels of change to record an increase in pace constraints or more frequent activity peaks. Thus, only employees for whom their administration has introduced radical changes, i.e., the cumulative adoption of new ICT or management tools have to cope with work intensification.

In the private sector, the changes were on average less intense and not significantly associated with variations in the intensity of work. They appear to be related to an enrichment of work that does not lead to the accumulation of new skills. Indeed, employees report that their skills are used more than before but do not report more opportunities of learning new things at work.

It is in the more subjective areas of employee involvement and fair work recognition that the differences between the private sector and state civil service are the highest. Employees of the state express discouragement when faced with changes. An average intensity of change in management tools and a high intensity of ICT changes lead to a decline in employee involvement. In addition, a combination of the changes in both domains has an additional negative effect on the evolution of involvement. This result is even more noticeable that in the private sector, on the contrary, organisational changes create an increase in employee involvement as long as their magnitude is not very high.

Employees' assessment of the fairness of treatment at work is equally influenced by change in both sectors. Private sector employees reported a feeling of fair work recognition that decreased with an increasing use of ICT tools. Similarly, the balance between the investment in work and the benefits obtained appears to deteriorate if the changes in management are high. However, in the private sector, this effect is weakened by the combined presence of

changes in both domains, in contrast to the public sector, in which this effect reinforces the perception of an effort-reward imbalance.

The analysis conducted here does not allow us to determine the causes of the differential nature of the observed effects according to the sector under consideration. Nevertheless, we can rule out an effect of the self-selection of employees in different sectors because our estimation method corrects a possible preference of employees for one sector or the other. The dynamic specification of our estimation also allows us rule out explanations related to time invariant unobserved heterogeneity between employees. Finally, the measures of organisational changes on one hand and the measures of the evolution in the quality of working life on the other are derived from two different metric spaces as the employers' and the employees' sections of the survey from which they are respectively issued were administered independently from one another. This practice helps to discard any explanation involving spurious correlations produced by the survey environment itself.

We explored an explanation of the change management in both sectors. We explored the influence of the latter in both sectors by examining the moderating role of three forms of employee participation in changes: employee consultation, presence of union representatives and the existence of informal discussion group. These three channels of exchange between employers and employees are unevenly distributed in the two sectors: consultation and informal discussions are relatively more common in the private sector while union presence is much stronger in the public sector. Moreover, the sensitivity of working life quality to the forms of participation depends on the sector.

Work intensification in relation to organisational change appears to be contained over the period for average intensities of change. The analysis of the forms of participation in change points to a possible explanation: informal discussions in the private sector and union presence in the public sector seem to have played a regulatory role of intensification.

In the private sector, the most common forms of participation that are consultation and informal discussions encourage the perception of job enrichment and the first channel plays a regulatory role on the perception of skills development. In the public sector no form of participation interacts directly with enrichment variables and union presence has no moderating role in this area. If consultation and informal discussions moderate changes IT, they play a role either regulator or developer depending on the intensity of IT changes. Finally, the forms of participation considered more strongly regulate the areas of job involvement and feeling of recognition in the private sector than in the public sector.

In the private sector, employee consultation promotes a greater involvement and a more frequent feeling of fair recognition. In addition, it regulates coupled IT and management changes in the restricted private sector. In the public sector, consultation regulates involvement and feeling of recognition in presence of IT changes. In the private and public sectors, union presence plays a role rather developing. In the private sector, it interacts

negatively with job involvement and sense of recognition. In the public sector, it does not interact with involvement, but it reduces the frequency of the feeling of recognition in presence of significant IT changes and management changes of medium intensity. Finally, informal discussions moderate differently low-intensity management changes in the two sectors: they regulate involvement in the private sector and develop the problems of recognition in the public sector.

Altogether, the process of change appears to be more virtuous in the private sector than in the public sector. Is this related to a different position of the two sectors in the dynamics of changes in long term or to a latent conflict in the public sector between the concrete content of the reforms and professionalism of civil servants? In the first case, the private sector would have already learned of the ongoing wave of changes. In the second, we should question about the possible destabilization of the implicit social pact between state and its servants and on the possible conditions of its renewal within the framework of the reform.

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Table 1A: Presence of ICT tools in productive units

% of productive units with the IT tool	Private sector		Difference 2006 /2003	Restricted private sector		Difference 2006 /2003	Public sector		Difference 2007 /2003	Weighting in the private indicator of change	Weighting in the public indicator of change
	2003	2006		2003	2006		2003	2007			
Website	61.2	73.3	12.1	69.0	78.3	9.3	68.0	88.6	20.6	0.065	0.015
Local Area Network (LAN)	61.3	66.7	5.5	71.3	74.9	3.6	91.3	96.7	5.4	0.071	0.029
Use of software or firmware for the management of Human Resources	63.4	65.3	1.9	71.2	71.8	0.6	90.2	95.3	5.1	0.064	0.048
Intranet	47.9	57.8	9.9	54.3	65.2	10.9	84.1	97.5	13.4	0.084	0.043
Use of software or firmware for research (R&D)	47.4	49.8	2.4	43.9	45.8	1.9	41.1	45.5	4.4	0.041	0.113
Tools for data analysis	39.5	47.1	7.6	37.9	45.7	7.9	37.8	51.5	13.7	0.065	0.093
Electronic data interchange system (EDI)	36.2	45.8	9.6	40.0	49.6	9.6	38.3	47.5	9.2	0.060	0.072
Database(s) on the management of human resources	34.5	38.5	4.0	41.5	46.1	4.6	74.9	89.3	14.4	0.082	0.095
Extranet	25.0	30.2	5.2	34.7	40.7	6.0	51.8	66.6	14.8	0.081	0.032
Using an ERP	26.6	29.6	3.0	26.3	29.8	3.5	40.3	51.1	10.7	0.059	0.049
Databases for research	26.1	28.8	2.7	28.4	31.1	2.7	30.7	37.9	7.3	0.075	0.123
Tools for interfacing databases (EAI, SOA)	21.1	28.6	7.5	29.4	40.3	10.8	24.2	47.9	23.7	0.087	0.079
Tools for automated data archiving or research	21.4	27.4	6.0	28.0	37.2	9.2	18.4	32.7	14.3	0.067	0.057
Collaborative tools (groupware)	15.1	21.0	5.8	23.2	34.3	11.2	28.1	59.8	31.8	0.099	0.067
Tools for process modelling (workflow)	8.8	12.7	3.9	14.8	22.5	7.7	12.0	26.3	14.3	0.111	0.080

Sources:

COI

2006/INSEE-DARES-CEE,

COIFP

2006/DGAFP-DARES-CEE

Coverage: Productive units of 20 or more employees in the private sector and of 10 or more employees in the public sector. Weighted statistics.

Table 1B: The presence of management tools in the productive unit

% of productive units with the management tool	Private sector			Restricted private sector			Public sector			Weighting in the private indicator of change	Weighting in the public indicator of change
	2003	2006	Difference 2006 /2003	2003	2006	Difference 2006 /2003	2003	2007	Difference 2007 /2003		
Contractual commitment to provide a product or a service or customer service within a limited time	66.1	68.5	2.4	61.9	64.2	2.3	18.0	42.4	24.4	0.087	0.082
Long-term relationships with suppliers	51.7	54.7	3.0	53.6	56.9	3.2	58.6	72.8	14.2	0.076	0.050
Requirement for suppliers to meet tight deadline	51.5	53.5	2.0	54.0	56.1	2.1	61.0	69.9	8.9	0.090	0.026
Quality certification (ISO 9001)	36.3	41.4	5.0	24.3	29.4	5.1	5.5	21.5	16.0	0.092	0.129
Satisfaction surveys of customers	32.9	38.7	5.8	32.9	39.0	6.1	27.0	47.5	20.5	0.079	0.088
Teams or autonomous work groups	30.7	33.8	3.1	37.9	40.0	2.0	30.2	40.8	10.6	0.089	0.061
Tools for tracing the product or service	28.3	32.9	4.6	16.6	20.4	3.7	9.5	31.5	22.0	0.093	0.087
Tools for labelling goods and services (NF)	28.3	30.8	2.5	17.4	21.7	4.3	7.5	25.4	17.8	0.075	0.131
Call and contact centres	25.5	28.0	2.5	29.2	32.1	3.0	24.6	30.4	5.9	0.080	0.068
Management of production in good time	22.9	24.3	1.4	9.7	10.5	0.8	17.7	20.8	3.2	0.071	0.107
Methods of problem solving (FMEA)	17.3	20.9	3.6	17.4	22.0	4.6	6.1	7.2	1.1	0.114	0.151
IT management integrated to the customer relationship (CRM)	9.7	14.3	4.6	14.5	22.2	7.7	2.0	7,1	5.1	0.072	0.084
Environmental (ISO 14001) or ethical certification	9.7	12.9	3.2	4.2	6.0	1.8	19.5	64.6	45.1	0.107	0.077

Sources:

COI

2006/INSEE-DARES-CEE,

COIFP

2006/DGAFP-DARES-CEE

Field: Productive units of 20 or more employees in the private sector and of 10 or more employees in the public sector. Weighted statistics.

Table 2: Characteristics of the distributions of organisational changes

% of productive units	ICT Changes				Management changes			
	Private sector	Restricted private sector	Public sector	Public sector BP	Private sector	Restricted private sector	Public sector	Public sector BP
distribution								
mean	0.12	0.15	0.26	0.33	0.07	0.07	0.31	0.33
Mode	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
variance	0.50	0.48	0.70	0.86	0.35	0.25	1.06	0.94
99%	0.97	1.02	1.63	1.88	0.88	0.72	1.33	1.21
95%	0.59	0.70	0.79	0.82	0.49	0.49	1.03	0.90
90%	0.42	0.50	0.61	0.68	0.30	0.32	0.85	0.86
75%	0.17	0.20	0.35	0.50	0.00	0.00	0.50	0.55
50% (median)	0.00	0.00	0.18	0.30	0.00	0.00	0.22	0.31
25%	0.00	0.00	0.03	0.12	0.00	0.00	0.00	0.00
10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1%	-0.14	-0.16	-0.08	0.00	-0.18	-0.18	-0.01	0.00

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
 Field: Productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted statistics.

Note: Restricted public sector includes financial and business sectors, Public sector distribution corresponds to the composite index computed with the public sector metric, Public sector BP distribution corresponds to the composite index computed with the private sector metric (PB for “private base”).

Table 3: Evolution of quality of working life across sectors, frequency counts

% Employees	Private sector	Restricted private sector	State civil service sector
Work intensification			
Increasing constraints on pace of work	39.8	38.40	41.32
Decreasing constraints on pace of work	5.21	5.27	3.68
Stable constraints on pace of work	40.91	39.41	34.49
No constraints	14.08	16.92	20.50
More activity peaks	38.53	38.28	42.17
Similar activity peaks	41.39	42.24	41.22
Fewer activity peaks	12.20	11.23	8.94
No points of activity	7.89	8.25	7.68
Skills development			
Increased use of skills	41.80	42.48	40.06
Similar use of skills	46.61	45.01	46.37
Reduced use of skills	11.59	12.51	13.56
Learning new things at work	73.82	76.68	81.60
Evolution of involvement			
More involved	32.96	32.11	30.60
Similarly involved	52.45	52.87	56.78
Less involved	14.59	15.01	12.62
Fair recognition			
Work recognised at fair value	44.89	44.71	38.80
Number of observations	11,731	3,357	951

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted statistics.

Table 4: Effects of organisational changes on the evolution of constraints on pace of work

Evolution of constraints on pace of work						
	Private sector	Restricted private sector	Public sector	Public (private base)	(private base)	
Ch. ICT	0.0861 (0.106)	0.120 (0.153)	-0.0699 (0.476)	-0.0556 (0.521)		
Ch. ICT ²	-0.122 (0.290)	-0.100 (0.648)	0.325* (0.0789)	0.262* (0.0633)		
Ch. Management	0.0150 (0.830)	0.0245 (0.848)	-0.0363 (0.655)	-0.000574 (0.994)		
Ch. Management ²	-0.0618 (0.644)	-0.332 (0.294)	0.251** (0.0310)	0.157 (0.248)		
Interaction ch.	-0.192 (0.274)	0.0236 (0.943)	0.193 (0.439)	0.0743 (0.764)		
Lambda	-0.172 (0.115)	-0.271* (0.0981)	-0.403 (0.149)	-0.431 (0.123)		
Observations	10079	2789	756	756		

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.1: Marginal effects of change in ICT on evolution of pace constraints (private sector)

	Ch. Management median	Ch. Management 75 percent	Ch. Management 90 percent
Ch. ICT Median	0.115* (0.069)	0.0877 (0.17)	0.0573 (0.455)
Ch. ICT 75 perc	0.0720 (0.166)	0.0448 (0.29)	0.0144 (0.773)
Ch. ICT 90 perc	0.0104 (0.895)	-0.0168 (0.787)	-0.0047 (0.387)

Table 4.2: Marginal effects of management changes on evolution of pace constraints (private sector)

	Ch. ICT median	Ch. ICT 75 percent	Ch. ICT 90 percent
Ch. Management Median	0.0433 (0.595)	0.0141 (0.872)	-0.0286 (0.802)
Ch. Management 75 perc	0.0200 (0.741)	-0.0090 (0.88)	-0.0509 (0.526)
Ch. Management 90 perc	-0.0058 (0.931)	-0.0349 (0.529)	-0.0768 (0.224)

Table 4.3: Marginal effects of change in ICT on evolution of pace constraints (public sector)

	Ch. Management	Ch. Management 75 percent	Ch. Management 90 percent
Ch. ICT Median	-0.1407 (0.226)	-0.0728 (0.605)	-0.0286 (0.873)
Ch. ICT 75 perc	0.0310 (0.759)	0.0989 (0.265)	0.1431 (0.236)
Ch. ICT 90 perc	0.2181 (0.199)	0.2860** (0.028)	0.3302** (0.013)

Table 4.4: Marginal effects of management changes evolution of pace constraints (public sector)

	Ch. ICT median	Ch. ICT 75 percent	Ch. ICT 90 percent
Ch. Management	-0.0740 (0.47)	-0.0870 (0.475)	0.0101 (0.567)
Ch. Management 75 perc	0.1352* (0.062)	0.1482* (0.097)	0.1862 (0.279)
Ch. Management 90 perc	0.1751* (0.07)	0.1881* (0.073)	0.2022 (0.195)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
 Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted statistics

Table 5: Effects of organisational changes on the evolution of activity peaks

Evolution of activity peaks				
	Private sector	Restricted private sector	Public sector	Public sector (private base)
Ch. ICT	0.0724 (0.216)	0.0775 (0.422)	-0.151 (0.148)	-0.101 (0.270)
Ch. ICT ²	-0.196* (0.0748)	-0.369 (0.153)	0.315 (0.108)	0.250* (0.0535)
Ch. Management	-0.00175 (0.978)	0.207** (0.0367)	0.0934 (0.298)	0.122 (0.157)
Ch. Management ²	-0.0231 (0.849)	-0.370 (0.167)	0.0873 (0.464)	0.113 (0.367)
Interaction ch.	0.131 (0.397)	0.159 (0.571)	0.0488 (0.855)	0.0412 (0.858)
Lambda	-0.0174 (0.918)	0.173 (0.234)	-0.0883 (0.458)	-0.0900 (0.451)
Observations	10,806	3,080	873	873

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 5.1: Marginal effects of ICT changes on evolution of activity peaks (public sector)

	Ch. Management median	Ch. Management75 percent	Ch. Management90 percent
Ch. ICT Median	-0.2092* (0.085)	-0.1920 (0.18)	-0.1809 (0.325)
Ch. ICT 75 perc	-0.0415 (0.72)	-0.0244 (0.795)	-0.0132 (0.915)
Ch. ICT 90 perc	0.1411 (0.461)	0.1583 (0.272)	0.1694 (0.229)

Table 5.2: Marginal effects of management changes on evolution of activity peaks (public sector)

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 percent
Ch. Management	0.0740 (0.47)	0.0869 (0.475)	0.1011 (0.567)
Ch. Management75 perc	0.1352* (0.062)	0.1482* (0.097)	0.1623 (0.279)
Ch. Management 90 perc	0.1751* (0.07)	0.1881* (0.073)	0.2022 (0.195)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
 Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data.

Table 6: Effects of organisational changes on the evolution of skill use

Evolution of skill use				
	Private sector	Restricted private sector	Public sector	Public sector(private base)
Ch. ICT	0.0983** (0.0470)	0.122 (0.206)	0.106 (0.326)	0.0656 (0.505)
Ch. ICT ²	-0.241** (0.0199)	-0.293 (0.192)	-0.242 (0.340)	-0.169 (0.398)
Ch. Management	0.194** (0.0258)	0.553*** (0.00109)	-0.138 (0.109)	-0.104 (0.235)
Ch. Management ²	-0.201 (0.171)	-0.427 (0.155)	0.194 (0.126)	0.183 (0.175)
Interaction ch.	0.300* (0.0576)	0.0587 (0.821)	0.0919 (0.725)	0.198 (0.437)
Lambda	0.225 (0.290)	0.372 (0.269)	0.0792 (0.507)	0.0750 (0.531)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 6.1: Marginal effects of ICT changes on evolution of skill use (private sector)

	Ch. Management median	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	0.1077* (0.072)	0.1553** (0.011)	0.2084*** (0.005)
Ch. ICT 75 perc	0.0259 (0.579)	0.0735* (0.06)	0.1266*** (0.008)
Ch. ICT 90 perc	-0.0917 (0.171)	-0.0441 (0.391)	0.0090 (0.843)

Table 6.2: Marginal effects of management changes on evolution of skill use (private sector)

	Ch. ICT median	Ch. ICST 75 perc	Ch. ICT 90 perc
Ch. Management	0.2056*** (0.0055)	0.2565** (0.015)	0.3296*** (0.004)
Ch. Management 75 perc	0.1417* (0.062)	0.1926*** (0.006)	0.2658*** (0.001)
Ch. Management 90 perc	0.0705 (0.292)	0.1214** (0.027)	0.1946*** (0.001)

Table 6.3: Marginal effects of ICT changes on evolution of skill use (restricted private sector)

	Ch. Management median	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	0.1530 (0.167)	0.1621 (0.188)	0.1728 (0.252)
Ch. ICT 75 perc	0.0557 (0.493)	0.0647 (0.389)	0.0755 (0.416)
Ch. ICT 90 perc	-0.1019 (0.483)	-0.0929 (0.429)	-0.0822 (0.393)

Table 6.4: Marginal effects of management changes on evolution of skill use (restricted private sector)

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	0.6192*** (0.003)	0.6289*** (0.003)	0.6447*** (0.005)
Ch. Management 75 perc	0.4883*** (0.001)	0.4980*** (0)	0.5138*** (0.001)
Ch. Management 90 perc	0.3323*** (0.004)	0.3421*** (0.001)	0.3579*** (0.001)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE

Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data.

Table 7: Effects of organisational changes on learning new things at work

Learning new things at work					
	Private sector	Restricted private sector	Public sector	Public sector (private base)	
Ch. ICT	0.0323 (0.303)	0.0322 (0.583)	0.0804 (0.121)	0.0757* (0.0717)	
Ch. ICT ²	-0.111** (0.0372)	-0.126 (0.267)	-0.167* (0.0849)	-0.0757 (0.239)	
Ch. Management	0.0369 (0.345)	0.133* (0.0719)	-0.0590 (0.178)	-0.0643 (0.151)	
Ch. Management ²	-0.0365 (0.561)	-0.0738 (0.556)	0.0615 (0.447)	0.0891 (0.204)	
Interaction ch.	0.0341 (0.674)	-0.0392 (0.804)	0.271* (0.0506)	0.159 (0.158)	
Lambda	-0.0108 (0.885)	0.0534 (0.366)	-0.119** (0.0241)	-0.122** (0.0197)	
Observations	11,731	3,357	946	946	

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 7.1: Marginal effects of ICT changes on learning new things at work (public sector)

	Ch. Management median	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT median	0.0852 (0.167)	0.1803** (0.016)	0.2423** (0.017)
Ch. ICT 75 perc	-0.0036 (0.946)	0.0915** (0.037)	0.1535** (0.014)
Ch. ICT 90 perc	-0.1003 (0.255)	-0.005 (0.835)	0.0568 (0.373)

Table 7.2: Marginal effects of management changes on learning new things at work (public sector)

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	-0.0927* (0.067)	-0.0208 (0.721)	0.0058 (0.5)
Ch. Management 75 perc	-0.0497 (0.378)	0.0223 (0.618)	0.1009 (0.102)
Ch. Management 90 perc	-0.0217 (0.797)	0.0504 (0.456)	0.1290* (0.067)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
 Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data

Table 8: Effects of organisational changes on the evolution in involvement

Evolution in involvement				
	Private sector	Restricted private sector	Public sector	Public sector (private base)
Ch. ICT	-0.0603 (0.204)	-0.0795 (0.338)	0.0496 (0.553)	-0.000994 (0.989)
Ch. ICT ²	-0.0302 (0.723)	-0.169 (0.379)	-0.343* (0.0840)	-0.308** (0.0124)
Ch. Management	0.176*** (0.00399)	0.356*** (0.00212)	-0.132** (0.0352)	-0.151** (0.0213)
Ch. Management ²	-0.237* (0.0930)	-0.410 (0.151)	0.0223 (0.862)	0.0337 (0.798)
Interaction ch.	0.444*** (0.00278)	0.657** (0.0101)	-0.420* (0.0587)	-0.485*** (0.00603)
Lambda	-0.296** (0.0268)	0.0496 (0.804)	0.352*** (0.00117)	0.353*** (0.000776)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 8.1: Marginal effects of ICT changes on the evolution in involvement (private sector)

	Ch. Management	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	-0.927 (0.106)	-0.0223 (0.695)	0.0563 (0.4)
Ch. ICT 75 perc	-0.1030** (0.02)	-0.0325 (0.387)	0.0460 (0.317)
Ch. ICT 90 perc	-0.1177** (0.03)	-0.0472 (0.252)	0.0313 (0.437)

Table 8.2: Marginal effects of management changes on the evolution in involvement (private sector)

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	0.1835** (0.014)	0.2589*** (0.004)	0.3671*** (0.002)
Ch. Management 75 perc	0.1082 ** (0.018)	0.1836*** (0.001)	0.2918*** (0.000)
Ch. Management 90 perc	0.0243 (0.65)	0.0997** (0.021)	0.2079*** (0.000)

Table 8.3: Marginal effects of ICT changes on the evolution in involvement (public sector (private base))

	Ch. Management	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	0.0454 (0.563)	-0.1165 (0.237)	-0.2093* (0.086)
Ch. ICT 75 perc	-0.1008 (0.117)	-0.2628*** (0.000)	-0.3555*** (0.000)
Ch. ICT 90 perc	-0.2830** (0.007)	-0.4449*** (0.000)	-0.5377*** (0.000)

Table 8.4: Marginal effects of management changes on the evolution in involvement (public sector (private base))

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	-0.1313* (0.06)	-0.2464*** (0.001)	-0.3899*** (0.000)
Ch. Management 75 perc	-0.1088 (0.229)	-0.2239** (0.012)	-0.3674*** (0.001)
Ch. Management 90 perc	-0.0959 (0.462)	-0.2110* (0.097)	-0.3545** (0.012)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE

Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data.

Table 9: Effects of organisational changes on work recognition

Fair work recognition				
	Private sector	Restricted private sector	Public sector	Public sector (private base)
Ch. ICT	-0.107* (0.0621)	-0.0500 (0.512)	-0.0825 (0.275)	-0.0642 (0.306)
Ch. ICT ²	-0.00717 (0.921)	-0.0656 (0.613)	0.0886 (0.568)	0.0243 (0.819)
Ch. Management	0.122*** (0.00699)	0.191** (0.0174)	-0.122* (0.0770)	-0.139** (0.0318)
Ch. Management ²	-0.248*** (0.00175)	-0.368** (0.0387)	0.274** (0.0166)	0.355*** (0.00249)
Interaction ch.	0.201* (0.0778)	0.278 (0.139)	-0.258 (0.180)	-0.300* (0.0760)
Lambda	0.183 (0.156)	0.196 (0.118)	0.0218 (0.783)	0.0225 (0.777)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 9.1: Marginal effects of ICT changes on work recognition (private sector)

	Ch. Management median	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	-0.1227* (0.075)	-0.0908 (0.149)	-0.0553 (0.373)
Ch. ICT 75 perc	-0.1251** (0.019)	-0.0932** (0.036)	-0.0577 (0.17)
Ch. ICT 90 perc	-0.1286*** (0.007)	-0.0967*** (0.006)	-0.0612** (0.041)

Table 9.2: Marginal effects of management changes on work recognition (private sector)

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	0.1483*** (0.004)	0.1823*** (0.002)	0.2313*** (0.004)
Ch. Management 75 perc	0.0696* (0.062)	0.1037** (0.014)	0.1526*** (0.011)
Ch. Management 90 perc	-0.0182 (0.634)	0.0159 (0.646)	0.0648 (0.161)

Table 9.3: Marginal effects of ICT changes on work recognition (public sector (private base))

	Ch. Management median	Ch. Management 75 perc	Ch. Management 90 perc
Ch. ICT Median	-0.0554 (0.409)	-0.1555* (0.083)	-0.2129* (0.061)
Ch. ICT 75 perc	-0.0439 (0.462)	-0.1441** (0.028)	-0.2014** (0.021)
Ch. ICT 90 perc	-0.0030 (0.761)	-0.1297 (0.114)	-0.1870** (0.037)

Table 9.4: Marginal effects of management changes on work recognition (public sector (private base))

	Ch. ICT median	Ch. ICT 75 perc	Ch. ICT 90 perc
Ch. Management	-0.1516** (0.023)	-0.2228*** (0.005)	-0.3114*** (0.007)
Ch. Management 75 perc	0.0856 (0.306)	-0.0144 (0.867)	-0.074 (0.503)
Ch. Management 90 perc	0.2214* (0.061)	0.1502 (0.195)	0.062 (0.639)

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
 Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data.

Table 10: Logistic modelling of belonging to the state civil service

VARIABLES	Probability of working in the state civil service
Weekly hours of work	0.00246 (0.580)
Age	0.0277*** (0)
Seniority 1	0.301** (0.0323)
Seniority 3	0.183 (0.181)
Seniority 4	0.316* (0.0530)
Female	0.121** (0.0382)
Technical diploma	-0.0241 (0.809)
High school diploma	0.271*** (0.00609)
Some university education	0.327*** (0.00292)
University diploma	0.506*** (6.19e-06)
Fixed-term contract	0.150 (0.633)
Part-time	-0.0707 (0.589)
In a relationship	-0.167* (0.0655)
Working spouse	0.0769 (0.310)
Executive	0.0450 (0.729)
Intermediate Occupation	0.458*** (8.85e-06)
Clerk	1.328*** (0)
Father (farmer)	-0.194 (0.235)
Father (craftsman)	-0.0837 (0.562)
Father (executive)	-0.0731 (0.635)
Father (clerk)	0.0453 (0.755)
Father (blue collar worker)	-0.0573 (0.686)
Father (teacher)	0.533*** (0.00961)
Mother (French)	0.241*** (0.00108)
Constant	-3.616*** (0)
Observations	12,679

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 11 : Social relations and working life quality by sectors

% of employees	Private sector				Limited Private Sector				Public Sector			
	if consultati on on changes	if presence of union	if informal work collective	Total	if consultati on on changes	if presence of union	if informal work collective	Total	if consultati on on changes	if presence of union	if informal work collective	Total
Work intensification												
Increasing constraints on pace of work	41,8	41,1	43,2	40,3	43,0	41,7	44,2	40,1	44,5	41,6	46,4	39,7
Decreasing constraints on pace of work	40,3	40,1	39,3	40,2	40,6	39,1	38,3	39,0	33,2	34,0	31,9	37,3
Stable constraints on pace of work	5,7	5,0	5,3	5,0	5,4	4,9	5,1	4,4	5,9	4,1	2,8	3,2
No constraints	12,2	13,8	12,2	14,5	11,0	14,3	12,3	16,5	16,4	20,4	18,8	19,8
More activity peaks	42,9	39,7	42,3	39,2	44,6	40,4	42,7	40,4	45,8	41,9	46,7	40,8
Similar activity peaks	38,8	39,9	39,8	40,4	38,5	39,1	38,2	38,1	37,8	41,7	38,7	43,4
Fewer activity peaks	12,9	12,7	12,3	12,0	11,1	12,3	12,9	11,6	11,3	9,1	8,1	7,6
No points of activity	5,4	7,7	5,6	8,4	5,8	8,2	6,2	9,9	5,1	7,3	6,5	8,3
Skills development												
Increased use of skills	49,7	41,9	45,2	40,9	46,1	40,9	44,4	41,2	43,7	40,5	42,2	43,9
Similar use of skills	39,6	46,0	42,8	46,6	42,2	45,9	43,4	44,2	37,8	45,9	43,6	44,2
Reduced use of skills	10,7	12,1	12,0	12,5	11,7	13,2	12,2	14,7	18,5	13,6	14,2	11,9
Learning new things at work	79,9	74,4	76,0	75,5	80,9	76,2	78,7	76,4	83,6	83,3	86,8	81,9
Evolution of involvement												
More involved	40,5	33,3	35,2	32,9	41,6	33,5	34,8	32,7	35,3	30,4	33,8	31,0
Similarly involved	12,0	52,0	16,0	52,8	47,2	52,1	50,1	52,9	53,4	56,9	53,2	57,3
Less involved	47,5	14,7	48,8	14,3	11,1	14,4	15,1	14,4	11,3	12,7	13,1	11,7
Fair recognition												
Work recognized at fair value	52,0	44,6	44,6	45,0	52,9	44,8	45,8	38,9	43,7	38,2	38,6	38,7
Part (total) in %	29,6	77,4	64,8		28,5	81,9	61,9		24,6	89,0	61,6	
N	11 731				3 357				951			

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE

Field: Stable employees (one year of service) from productive units of 20 or more employees in the private sector and 10 or more employees in the public sector. Weighted data.

Table 12 : Effects of organisational changes moderated by employee consultation on the evolution of constraints on pace of work

Evolution of constraints on pace of work				
	Private sector	Limited private sector	Public sector	Public sector (private base)
Consultation	-0.00807 (0.735)	0.0179 (0.696)	-0.000594 (0.994)	0.0101 (0.885)
Ch. ICT	0.0825 (0.113)	0.106 (0.204)	-0.0697 (0.483)	-0.0626 (0.471)
Ch. ICT ²	-0.132 (0.265)	-0.148 (0.506)	0.317 (0.136)	0.259 (0.127)
Ch. Management	0.0291 (0.667)	0.0848 (0.510)	-0.0353 (0.656)	0.000597 (0.994)
Ch. Management ²	-0.0918 (0.487)	-0.431 (0.161)	0.252** (0.0255)	0.159 (0.226)
Interaction ch.	-0.169 (0.312)	0.116 (0.711)	0.186 (0.468)	0.0631 (0.803)
#Ch. ICT ¹²	0.243** (0.0337)	0.377** (0.0243)	0.268 (0.276)	0.284 (0.172)
#Ch. ICT ²	-0.277 (0.220)	-0.438 (0.343)	-0.159 (0.786)	-0.168 (0.753)
#Ch. Management ¹³	-0.273** (0.0141)	-0.435** (0.0259)	-0.113 (0.514)	-0.108 (0.503)
#Ch. Management ²	0.192 (0.384)	0.189 (0.570)	0.0420 (0.876)	-0.0328 (0.914)
#Interaction ch. ¹⁴	0.294 (0.319)	0.0791 (0.881)	-0.0524 (0.923)	0.0735 (0.888)
Lambda	0.106 (0.604)	0.0900 (0.682)	-0.231* (0.0539)	-0.201* (0.0917)
Observations	10,079	2,789	752	752

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

¹² #Ch. ICT : interaction term between ICT changes and forms of employee participation.

¹³ #Ch. Management : interaction term between management changes and forms of employee participation.

¹⁴ #Interaction ch. : interaction term between ICT changes, management changes and forms of employee participation.

Table 13 : Effects of organisational changes moderated by employee consultation on the evolution of activity peaks

Evolution of activity peaks				
	Private sector	Limited private sector	Public	Public sector (private base)
Consultation	0.0542 (0.110)	0.0572 (0.310)	-0.0180 (0.839)	-0.0215 (0.812)
Ch. ICT	0.0682 (0.265)	0.0569 (0.555)	-0.148 (0.169)	-0.0952 (0.313)
Ch. ICT ²	-0.199* (0.0733)	-0.423 (0.104)	0.296 (0.201)	0.250 (0.131)
Ch. Management	0.0193 (0.772)	0.306*** (0.00743)	0.0857 (0.348)	0.122 (0.157)
Ch. Management ²	-0.0538 (0.674)	-0.529* (0.0673)	0.121 (0.363)	0.146 (0.262)
Interaction ch.	0.140 (0.382)	0.283 (0.324)	0.0948 (0.732)	0.116 (0.619)
# Ch. ICT	0.235 (0.299)	0.0609 (0.839)	-0.319 (0.247)	-0.211 (0.314)
# Ch. ICT ²	-0.242 (0.379)	0.209 (0.696)	0.449 (0.499)	0.407 (0.426)
# Ch. Management	-0.407 (0.106)	-0.965** (0.0113)	0.0192 (0.911)	-0.0667 (0.678)
# Ch. Management ²	0.641 (0.127)	1.066 (0.139)	-0.101 (0.690)	-0.116 (0.673)
#Interaction ch.	-0.440 (0.387)	-0.987 (0.252)	-0.516 (0.450)	-0.575 (0.258)
Lambda	-0.0174 (0.920)	0.147 (0.337)	-0.0895 (0.458)	-0.0894 (0.457)
Observations	10,806	3,080	873	873

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEEField: stable employees (one year of service) production units of 20 or more employees

Table 14 : Effects of organisational changes moderated by employee consultation on the evolution of skill use

Evolution of skill use				
	Private sector	Limited private sector	Public	Public sector (private base)
Consultation	0.108*** (0.000995)	0.0942** (0.0437)	0.0710 (0.388)	0.108 (0.151)
Ch. ICT	0.0976* (0.0535)	0.111 (0.268)	0.146 (0.177)	0.0942 (0.325)
Ch. ICT ²	-0.242** (0.0195)	-0.292 (0.212)	-0.471** (0.0482)	-0.433** (0.0126)
Ch. Management	0.198** (0.0224)	0.558*** (0.000956)	-0.140 (0.102)	-0.108 (0.202)
Ch. Management ²	-0.204 (0.166)	-0.426 (0.158)	0.172* (0.0971)	0.172 (0.151)
Interaction ch.	0.310** (0.0455)	0.0992 (0.712)	0.0741 (0.782)	0.189 (0.443)
# Ch. ICT	-0.148 (0.265)	-0.0702 (0.741)	0.504* (0.0577)	0.283 (0.219)
# Ch. ICT ²	0.156 (0.468)	0.241 (0.568)	-1.913*** (0.00582)	-1.918*** (0.000368)
# Ch. Management	0.327*** (0.00191)	0.308** (0.0417)	0.0189 (0.920)	0.0868 (0.652)
# Ch. Management ²	-0.650*** (0.000239)	-0.640** (0.0281)	0.200 (0.451)	0.128 (0.687)
#Interaction ch.	0.614** (0.0336)	0.651 (0.151)	-0.0195 (0.975)	0.336 (0.580)
Lambda	0.212 (0.316)	0.356 (0.294)	0.124 (0.292)	0.113 (0.330)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 15 : Effects of organisational changes moderated by employee consultation on learning new things at work

Learning new things at work				
	Private sector	Limited private sector	Public	Public sector (private base)
Consultation	0.0700*** (2.04e-07)	0.0609** (0.0198)	0.0414 (0.372)	0.0284 (0.554)
Ch. ICT	0.0311 (0.323)	0.0295 (0.615)	0.0883* (0.0946)	0.0769* (0.0709)
Ch. ICT ²	-0.114** (0.0339)	-0.177 (0.122)	-0.223** (0.0286)	-0.0975 (0.211)
Ch. Management	0.0397 (0.300)	0.133* (0.0519)	-0.0623 (0.152)	-0.0669 (0.130)
Ch. Management ²	-0.0354 (0.560)	-0.0666 (0.600)	0.0593 (0.499)	0.0880 (0.238)
Interaction ch.	0.0401 (0.616)	0.0102 (0.948)	0.282** (0.0358)	0.157 (0.169)
# Ch. ICT	-0.0315 (0.654)	0.167 (0.220)	0.175 (0.210)	0.0806 (0.464)
# Ch. ICT ²	0.0868 (0.417)	0.0733 (0.741)	-0.527* (0.0663)	-0.229 (0.366)
# Ch. Management	0.147 (0.103)	0.188 (0.254)	0.0236 (0.795)	0.0352 (0.702)
# Ch. Management ²	-0.254* (0.0596)	-0.246 (0.333)	-0.0808 (0.558)	-0.109 (0.429)
#Interaction ch.	0.0134 (0.940)	-0.515 (0.160)	0.235 (0.444)	0.216 (0.403)
Lambda	-0.0183 (0.802)	0.0544 (0.380)	-0.113** (0.0364)	-0.122** (0.0226)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 16 : Effects of organisational changes moderated by employee consultation on the evolution of involvement

Evolution in involvement				
	Private sector	Limited private sector	Public	Public sector (private base)
Consultation	0.163*** (2.35e-06)	0.0842* (0.0614)	0.125* (0.0955)	0.134* (0.0641)
Ch. ICT	-0.0622 (0.182)	-0.102 (0.232)	0.0577 (0.493)	0.0120 (0.865)
Ch. ICT ²	-0.0304 (0.711)	-0.142 (0.459)	-0.366* (0.0820)	-0.367*** (0.00913)
Ch. Management	0.195*** (0.00187)	0.424*** (0.000315)	-0.141** (0.0302)	-0.160** (0.0163)
Ch. Management ²	-0.256* (0.0831)	-0.512* (0.0839)	0.00961 (0.942)	0.0206 (0.874)
Interaction ch.	0.443*** (0.00281)	0.712*** (0.00419)	-0.443** (0.0406)	-0.536*** (0.00203)
# Ch. ICT	-0.113 (0.319)	-0.265 (0.173)	0.419 (0.103)	0.435** (0.0410)
# Ch. ICT ²	0.129 (0.565)	0.489 (0.234)	-0.828 (0.194)	-0.807 (0.122)
# Ch. Management	-0.0593 (0.646)	-0.469** (0.0289)	0.154 (0.333)	0.145 (0.337)
# Ch. Management ²	-0.190 (0.375)	0.127 (0.706)	-0.115 (0.618)	-0.0180 (0.942)
#Interaction ch.	0.294 (0.339)	0.967* (0.0646)	0.573 (0.344)	0.284 (0.607)
Lambda	-0.305** (0.0223)	0.0145 (0.944)	0.358*** (0.00115)	0.367*** (0.000516)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 17 : Effects of organisational changes moderated by employee consultation on work recognition

Fair work recognition				
	Private sector	Limited private sector	Public	Public sector (private base)e
Consultation	0.116*** (2.17e-08)	0.149*** (5.75e-05)	0.0886 (0.131)	0.0779 (0.171)
Ch. ICT	-0.107* (0.0633)	-0.0671 (0.376)	-0.0616 (0.427)	-0.0515 (0.418)
Ch. ICT ²	-0.00881 (0.905)	-0.0736 (0.583)	0.0988 (0.551)	0.0316 (0.788)
Ch. Management	0.134*** (0.00286)	0.228*** (0.00109)	-0.136* (0.0534)	-0.146** (0.0239)
Ch. Management ²	-0.266*** (0.000880)	-0.406** (0.0145)	0.293** (0.0169)	0.358*** (0.00264)
Interaction ch.	0.202* (0.0851)	0.332* (0.0850)	-0.314* (0.0998)	-0.340** (0.0413)
# Ch. ICT	-0.0571 (0.604)	0.00721 (0.962)	0.467*** (0.00814)	0.359** (0.0125)
# Ch. ICT ²	0.00108 (0.995)	0.155 (0.633)	-0.251 (0.564)	-0.186 (0.603)
# Ch. Management	0.0282 (0.789)	0.0115 (0.963)	0.0625 (0.635)	0.109 (0.418)
# Ch. Management ²	-0.182 (0.301)	-0.609* (0.0697)	0.117 (0.589)	0.0724 (0.758)
#Interaction ch.	0.380 (0.119)	0.808* (0.0508)	-0.720* (0.0554)	-0.281 (0.432)
Lambda	0.176 (0.151)	0.172 (0.106)	0.0332 (0.678)	0.0319 (0.691)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEEField: stable employees (one year of service) production units of 20 or more employees

Table 18 : Effects of organisational changes moderated by union presence on the evolution of constraints on pace of work

Evolution of constraints on pace of work				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	0.0246 (0.326)	-0.0330 (0.477)	-0.00327 (0.978)	-0.0121 (0.907)
Ch. ICT	0.0735 (0.135)	0.0933 (0.249)	-0.0660 (0.509)	-0.0566 (0.522)
Ch. ICT ²	-0.124 (0.269)	-0.105 (0.634)	0.302 (0.119)	0.245* (0.0883)
Ch. Management	0.0389 (0.537)	0.145 (0.180)	-0.0258 (0.756)	0.0106 (0.893)
Ch. Management ²	-0.0978 (0.421)	-0.491* (0.0610)	0.243** (0.0415)	0.156 (0.251)
Interaction ch.	-0.167 (0.297)	0.0553 (0.855)	0.180 (0.472)	0.0682 (0.784)
# Ch. ICT	0.0624 (0.538)	0.190 (0.324)	-0.543* (0.0858)	-0.458* (0.0639)
# Ch. ICT ²	-0.0118 (0.958)	0.0877 (0.856)	0.721 (0.463)	0.819 (0.203)
# Ch. Management	-0.155 (0.238)	-0.594** (0.0298)	0.0590 (0.825)	0.0448 (0.848)
# Ch. Management ²	0.0141 (0.956)	0.480 (0.401)	-0.102 (0.819)	-0.137 (0.709)
#Interaction ch.	0.183 (0.582)	0.609 (0.332)	0.275 (0.762)	-0.148 (0.832)
Lambda	0.0983 (0.631)	0.0908 (0.674)	-0.225* (0.0661)	-0.192 (0.109)
Observations	10,079	2,789	752	752

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE Field: stable employees (one year of service) production units of 20 or more employees

Table 19 : Effects of organisational changes moderated by union presence on the evolution of activity peaks

Evolution of activity peaks				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	-0.00401 (0.890)	0.00494 (0.921)	-0.208* (0.0644)	-0.233** (0.0158)
Ch. ICT	0.0752 (0.185)	0.102 (0.280)	-0.149 (0.150)	-0.0999 (0.273)
Ch. ICT ²	-0.195* (0.0722)	-0.394 (0.123)	0.285 (0.155)	0.217* (0.0858)
Ch. Management	0.0200 (0.744)	0.210** (0.0496)	0.0943 (0.293)	0.120 (0.164)
Ch. Management ²	-0.0535 (0.675)	-0.331 (0.191)	0.100 (0.398)	0.133 (0.290)
Interaction ch.	0.120 (0.447)	0.0735 (0.784)	0.106 (0.700)	0.0869 (0.708)
# Ch. ICT	-0.0686 (0.563)	-0.163 (0.444)	-0.198 (0.440)	-0.262 (0.191)
# Ch. ICT ²	-0.0415 (0.863)	-0.129 (0.804)	0.896 (0.218)	1.054*** (0.00884)
# Ch. Management	-0.170 (0.226)	-0.0136 (0.963)	-0.540** (0.0302)	-0.541** (0.0110)
# Ch. Management ²	0.247 (0.457)	-0.587 (0.240)	0.0624 (0.865)	0.130 (0.689)
#Interaction ch.	0.296 (0.423)	1.216** (0.0336)	-1.376** (0.0425)	-2.002*** (0.000172)
Lambda	-0.0114 (0.946)	0.179 (0.223)	-0.0942 (0.414)	-0.0944 (0.412)
Observations	10,806	3,080	873	873

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 20 : Effects of organisational changes moderated by union presence on the evolution of skill use

Evolution of skill use				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	0.0136 (0.589)	0.0185 (0.742)	-0.0955 (0.526)	-0.0988 (0.461)
Ch. ICT	0.105** (0.0297)	0.130 (0.184)	0.0988 (0.361)	0.0571 (0.563)
Ch. ICT ²	-0.220** (0.0239)	-0.281 (0.221)	-0.296 (0.230)	-0.182 (0.323)
Ch. Management	0.165** (0.0367)	0.482*** (0.00222)	-0.133 (0.120)	-0.0982 (0.257)
Ch. Management ²	-0.149 (0.268)	-0.307 (0.279)	0.186 (0.134)	0.184 (0.170)
Interaction ch.	0.249* (0.0871)	-0.00972 (0.968)	0.115 (0.652)	0.202 (0.416)
# Ch. ICT	-0.0655 (0.514)	0.0578 (0.778)	0.00344 (0.991)	-0.154 (0.552)
# Ch. ICT ²	-0.237 (0.240)	-0.657 (0.102)	0.961 (0.379)	0.757 (0.249)
# Ch. Management	0.198 (0.142)	0.370 (0.224)	0.130 (0.646)	0.150 (0.577)
# Ch. Management ²	-0.426* (0.0658)	-0.665 (0.206)	0.0759 (0.876)	0.0206 (0.967)
#Interaction ch.	0.421 (0.174)	0.470 (0.322)	-0.149 (0.902)	-0.630 (0.472)
Lambda	0.223 (0.291)	0.368 (0.270)	0.0850 (0.482)	0.0762 (0.529)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 21 : Effects of organisational changes moderated by union presence on learning new things at work

Learning new things at work				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	0.00293 (0.846)	-0.0382 (0.218)	0.133 (0.172)	0.121 (0.161)
Ch. ICT	0.0306 (0.326)	0.0301 (0.618)	0.0769 (0.143)	0.0674 (0.122)
Ch. ICT ²	-0.107** (0.0420)	-0.111 (0.331)	-0.154 (0.153)	-0.0681 (0.339)
Ch. Management	0.0343 (0.357)	0.110 (0.106)	-0.0595 (0.170)	-0.0651 (0.147)
Ch. Management ²	-0.0321 (0.597)	-0.0696 (0.580)	0.0572 (0.468)	0.0828 (0.234)
Interaction ch.	0.0276 (0.728)	-0.0416 (0.791)	0.252* (0.0804)	0.161 (0.166)
# Ch. ICT	0.0275 (0.669)	0.104 (0.454)	-0.0814 (0.669)	-0.0685 (0.664)
# Ch. ICT ²	-0.0519 (0.635)	-0.143 (0.572)	-0.226 (0.741)	-0.0522 (0.897)
# Ch. Management	0.0256 (0.726)	0.0840 (0.529)	0.165 (0.368)	0.144 (0.366)
# Ch. Management ²	0.0251 (0.838)	0.298 (0.285)	-0.0716 (0.805)	-0.0643 (0.813)
#Interaction ch.	0.0806 (0.648)	-0.219 (0.482)	0.795 (0.248)	0.918** (0.0437)
Lambda	-0.0108 (0.884)	0.0485 (0.408)	-0.113** (0.0310)	-0.119** (0.0227)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 22 : Effects of organisational changes moderated by union presence on the evolution of involvement

Evolution in involvement				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	-0.0205 (0.402)	-0.0630 (0.139)	0.00343 (0.976)	0.0140 (0.893)
Ch. ICT	-0.0465 (0.311)	-0.0525 (0.522)	0.0565 (0.510)	0.00581 (0.937)
Ch. ICT ²	-0.0493 (0.561)	-0.190 (0.319)	-0.334* (0.0996)	-0.313** (0.0104)
Ch. Management	0.170*** (0.00245)	0.356*** (0.00159)	-0.140** (0.0292)	-0.157** (0.0196)
Ch. Management ²	-0.221* (0.0947)	-0.348 (0.184)	0.0191 (0.880)	0.0349 (0.790)
Interaction ch.	0.419*** (0.00352)	0.596** (0.0163)	-0.437* (0.0589)	-0.483*** (0.00640)
# Ch. ICT	-0.237** (0.0180)	-0.199 (0.284)	0.267 (0.261)	0.197 (0.349)
# Ch. ICT ²	0.420** (0.0359)	0.400 (0.320)	-0.855 (0.323)	-0.314 (0.612)
# Ch. Management	0.0257 (0.840)	-0.0729 (0.778)	-0.0548 (0.797)	-0.111 (0.620)
# Ch. Management ²	-0.250 (0.363)	-0.497 (0.315)	0.200 (0.644)	0.0412 (0.928)
#Interaction ch.	0.473 (0.160)	0.615 (0.273)	1.770* (0.0653)	0.397 (0.592)
Lambda	-0.298** (0.0256)	0.0500 (0.800)	0.352*** (0.00130)	0.355*** (0.000945)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 23 : Effects of organisational changes moderated by union presence on work recognition

Fair work recognition				
	Private sector	Limited private sector	Public	Public sector (private base)
Union presence	-0.0464* (0.0549)	-0.148*** (0.000136)	-0.0571 (0.538)	-0.0285 (0.770)
Ch. ICT	-0.0931* (0.0640)	-0.0125 (0.861)	-0.0809 (0.261)	-0.0672 (0.268)
Ch. ICT ²	-0.00900 (0.898)	-0.0800 (0.530)	0.182 (0.245)	0.0629 (0.510)
Ch. Management	0.106*** (0.00629)	0.163** (0.0193)	-0.126* (0.0547)	-0.141** (0.0233)
Ch. Management ²	-0.224*** (0.00135)	-0.319** (0.0373)	0.259** (0.0171)	0.335*** (0.00281)
Interaction ch.	0.162 (0.113)	0.218 (0.213)	-0.298 (0.126)	-0.286* (0.0782)
# Ch. ICT	-0.129 (0.137)	-0.222 (0.208)	-0.314 (0.114)	-0.0883 (0.618)
# Ch. ICT ²	0.0906 (0.527)	0.454 (0.154)	-1.454** (0.0195)	-0.935** (0.0322)
# Ch. Management	0.106 (0.258)	0.0141 (0.945)	-0.176 (0.306)	-0.289* (0.0968)
# Ch. Management ²	0.0896 (0.582)	0.194 (0.592)	0.347 (0.294)	0.338 (0.295)
#Interaction ch.	0.337 (0.154)	0.288 (0.516)	2.366*** (7.81e-06)	1.480*** (0.00142)
Lambda	0.183 (0.159)	0.192 (0.140)	0.0130 (0.869)	0.00897 (0.910)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 24 : Effects of organisational changes moderated by informal work collectives on the evolution of constraints on pace of work

Evolution of constraints on pace of work				
	Private sector	Limited private sector	Public	Public sector (private base)
Informal work collectives	0.0539** (0.0389)	0.0586 (0.212)	0.248*** (0.000155)	0.200*** (0.00118)
Ch. ICT	0.0708 (0.160)	0.114 (0.174)	-0.0398 (0.686)	-0.0339 (0.691)
Ch. ICT ²	-0.138 (0.211)	-0.237 (0.283)	0.258 (0.207)	0.198 (0.325)
Ch. Management	0.0451 (0.473)	0.0682 (0.536)	-0.0168 (0.830)	0.0231 (0.757)
Ch. Management ²	-0.146 (0.209)	-0.423* (0.0961)	0.264** (0.0144)	0.166 (0.207)
Interaction ch.	-0.106 (0.498)	0.213 (0.419)	0.194 (0.443)	0.0690 (0.774)
# Ch. ICT	0.366*** (0.00819)	0.518** (0.0143)	0.0676 (0.728)	0.106 (0.526)
# Ch. ICT ²	-0.330* (0.0810)	-0.495 (0.234)	-0.312 (0.390)	-0.229 (0.499)
# Ch. Management	-0.231* (0.0600)	-0.412 (0.102)	0.291 (0.114)	0.167 (0.340)
# Ch. Management ²	0.654*** (0.00471)	0.836* (0.0733)	-0.356* (0.0987)	-0.0876 (0.750)
#Interaction ch.	-0.544* (0.0685)	-0.851 (0.118)	-0.221 (0.696)	-0.167 (0.763)
Lambda	0.0696 (0.721)	0.0475 (0.793)	-0.247** (0.0332)	-0.201* (0.0846)
Observations	10,079	2,789	752	752

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE Field: stable employees (one year of service) production units of 20 or more employees

Table 25 : Effects of organisational changes moderated by les discussions entre collègues on the evolution of activity peaks

Evolution of activity peaks				
	Private sector	Limited private sector	Public	Public sector (private base)
Informal work collectives	0.0287 (0.261)	0.0266 (0.552)	0.189*** (0.00782)	0.128** (0.0423)
Ch. ICT	0.0721 (0.213)	0.0708 (0.429)	-0.127 (0.224)	-0.0888 (0.331)
Ch. ICT ²	-0.207* (0.0599)	-0.387 (0.111)	0.261 (0.150)	0.210 (0.114)
Ch. Management	0.00259 (0.967)	0.206** (0.0365)	0.108 (0.227)	0.144 (0.106)
Ch. Management ²	-0.0311 (0.802)	-0.350 (0.173)	0.0876 (0.477)	0.102 (0.415)
Interaction ch.	0.144 (0.350)	0.137 (0.622)	0.0587 (0.829)	0.0361 (0.876)
# Ch. ICT	-0.0364 (0.733)	-0.0670 (0.657)	0.232 (0.260)	0.208 (0.230)
# Ch. ICT ²	0.139 (0.509)	0.428 (0.323)	-0.747* (0.0860)	-0.306 (0.234)
# Ch. Management	-0.0203 (0.888)	0.0375 (0.834)	0.0620 (0.700)	-0.0712 (0.654)
# Ch. Management ²	0.0840 (0.761)	-0.452 (0.377)	-0.0826 (0.800)	0.229 (0.470)
#Interaction ch.	0.185 (0.538)	0.583 (0.258)	-0.133 (0.828)	-0.469 (0.363)
Lambda	-0.0250 (0.879)	0.184 (0.202)	-0.0680 (0.544)	-0.0716 (0.526)
Observations	10,806	3,080	873	873

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE
Field: stable employees (one year of service) production units of 20 or more employees

Table 26 : Effects of organisational changes moderated by informal work collectives on the evolution of skill use

Evolution of skill use				
	Private sector	Limited private sector	Public	Public sector (private base)
Informal work collectives	0.0682*** (0.00596)	0.148*** (0.00288)	0.0396 (0.627)	0.0326 (0.684)
Ch. ICT	0.0994** (0.0469)	0.128 (0.185)	0.127 (0.251)	0.0765 (0.439)
Ch. ICT ²	-0.269** (0.0105)	-0.388 (0.118)	-0.301 (0.206)	-0.243 (0.177)
Ch. Management	0.201** (0.0300)	0.557*** (0.00106)	-0.138 (0.110)	-0.105 (0.226)
Ch. Management ²	-0.228 (0.199)	-0.448 (0.157)	0.198 (0.122)	0.182 (0.174)
Interaction ch.	0.340* (0.0559)	0.118 (0.695)	0.142 (0.595)	0.223 (0.374)
# Ch. ICT	-0.0215 (0.810)	0.0254 (0.875)	0.460** (0.0229)	0.271 (0.112)
# Ch. ICT ²	0.184 (0.359)	0.188 (0.673)	-0.814** (0.0423)	-0.705*** (0.00341)
# Ch. Management	-0.0622 (0.766)	0.0954 (0.830)	-0.179 (0.277)	-0.164 (0.315)
# Ch. Management ²	0.167 (0.719)	0.102 (0.918)	0.252 (0.314)	0.324 (0.269)
#Interaction ch.	-0.432 (0.314)	-0.758 (0.364)	-0.402 (0.522)	-0.461 (0.302)
Lambda	0.201 (0.343)	0.364 (0.273)	0.112 (0.348)	0.115 (0.340)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 27 : Effects of organisational changes moderated by informal work collectives on learning new things at work

Learning new things at work				
	Private sector	Limited private sector	Public	Public sector (private base)
Informal work collectives	0.0455*** (0.00652)	0.0952*** (0.00897)	0.0604 (0.129)	0.0627 (0.103)
Ch. ICT	0.0298 (0.337)	0.0386 (0.488)	0.0806 (0.110)	0.0726* (0.0753)
Ch. ICT ²	-0.130** (0.0327)	-0.255* (0.0698)	-0.158* (0.0958)	-0.0531 (0.400)
Ch. Management	0.0552 (0.232)	0.137* (0.0888)	-0.0414 (0.350)	-0.0438 (0.318)
Ch. Management ²	-0.0864 (0.342)	-0.112 (0.486)	0.0675 (0.358)	0.0894 (0.203)
Interaction ch.	0.0690 (0.472)	0.0802 (0.670)	0.250* (0.0558)	0.122 (0.258)
# Ch. ICT	0.201 (0.193)	0.305 (0.174)	-0.150 (0.224)	-0.196* (0.0677)
# Ch. ICT ²	-0.164 (0.172)	-0.00436 (0.987)	0.368 (0.100)	0.265* (0.0817)
# Ch. Management	-0.288 (0.222)	-0.494 (0.246)	0.0841 (0.348)	0.139 (0.124)
# Ch. Management ²	0.477 (0.293)	0.736 (0.373)	-0.00401 (0.979)	-0.0290 (0.850)
#Interaction ch.	-0.309 (0.508)	-0.861 (0.289)	-0.394 (0.271)	-0.202 (0.498)
Lambda	-0.0227 (0.755)	0.0473 (0.393)	-0.120** (0.0311)	-0.120** (0.0303)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEEField: stable employees (one year of service) production units of 20 or more employees

Table 28 : Effects of organisational changes moderated by informal work collectives on the evolution of involvement

Evolution in involvement				
	Private sector	Limited private sector	Public	Public sector (private base)
Informal work collectives	-0.0168 (0.560)	0.0107 (0.825)	0.109 (0.102)	0.0986 (0.147)
Ch. ICT	-0.0592 (0.210)	-0.0835 (0.306)	0.0809 (0.330)	0.0219 (0.757)
Ch. ICT ²	-0.0457 (0.594)	-0.163 (0.396)	-0.409** (0.0452)	-0.347*** (0.00693)
Ch. Management	0.188*** (0.00401)	0.349*** (0.00241)	-0.141** (0.0275)	-0.165** (0.0118)
Ch. Management ²	-0.273* (0.0763)	-0.391 (0.156)	-0.00665 (0.957)	0.0265 (0.842)
Interaction ch.	0.497*** (0.00178)	0.687*** (0.00865)	-0.363* (0.0943)	-0.487*** (0.00398)
# Ch. ICT	-0.0932 (0.316)	-0.190 (0.223)	0.339* (0.0903)	0.207 (0.217)
# Ch. ICT ²	0.340* (0.0936)	0.349 (0.387)	-0.373 (0.304)	-0.269 (0.254)
# Ch. Management	-0.216 (0.128)	-0.219 (0.415)	-0.281* (0.0551)	-0.317** (0.0265)
# Ch. Management ²	0.349 (0.281)	0.226 (0.675)	-0.182 (0.434)	-0.169 (0.558)
#Interaction ch.	-0.145 (0.639)	0.132 (0.800)	-0.148 (0.784)	-0.302 (0.462)
Lambda	-0.290** (0.0275)	0.0581 (0.770)	0.343*** (0.00121)	0.345*** (0.000704)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees

Table 29 : Effects of organisational changes moderated by informal work collectives on work recognition

Fair work recognition				
	Private sector	Limited private sector	Public	Public sector (private base)e
Informal work collectives	-0.00175 (0.921)	0.0520 (0.163)	-0.0731 (0.160)	-0.0452 (0.380)
Ch. ICT	-0.104* (0.0743)	-0.0426 (0.567)	-0.0982 (0.201)	-0.0798 (0.208)
Ch. ICT ²	-0.00920 (0.900)	-0.0584 (0.641)	0.106 (0.481)	0.0539 (0.620)
Ch. Management	0.119*** (0.00830)	0.190** (0.0166)	-0.116* (0.0887)	-0.137** (0.0313)
Ch. Management ²	-0.249*** (0.00239)	-0.366** (0.0330)	0.288** (0.0104)	0.360*** (0.00246)
Interaction ch.	0.197* (0.0872)	0.252 (0.182)	-0.240 (0.221)	-0.294* (0.0805)
# Ch. ICT	-0.0896 (0.255)	0.0466 (0.683)	0.0525 (0.754)	0.00601 (0.964)
# Ch. ICT ²	0.00755 (0.960)	-0.310 (0.278)	0.350 (0.217)	0.231 (0.269)
# Ch. Management	0.164* (0.0839)	0.284* (0.0752)	0.0348 (0.777)	0.111 (0.334)
# Ch. Management ²	0.102 (0.521)	-0.415 (0.209)	0.186 (0.389)	-0.0191 (0.937)
#Interaction ch.	-0.251 (0.265)	0.399 (0.256)	-0.632 (0.165)	-0.488 (0.204)
Lambda	0.178 (0.160)	0.191 (0.123)	0.0275 (0.731)	0.0152 (0.851)
Observations	11,731	3,357	946	946

Significance level in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Sources: COI 2006/INSEE-DARES-CEE, COIFP 2006/DGAFP-DARES-CEE. Field: stable employees (one year of service) production units of 20 or more employees