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## Mind the task: Evidence on persistent gender gaps at the workplace

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JRC Technical Report

# Mind the Task: Evidence on Persistent Gender Gaps at the Workplace

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Marta Fana, Davide Villani, Martina Bisello

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# Mind the task

## Evidence on Persistent Gender Gaps at the Workplace

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### Abstract

This article investigates gender differences in tasks performed at the workplace over a period of 25 years, from 1991 and 2016 in France. We exploit data from the *Enquête Complémentaire Emploi: Conditions de travail*, the oldest survey at the worker level among European countries on a wide range of work attributes and working conditions measures. In our study, we focus both on the content of work from a material perspective, looking concretely at what job tasks are performed by men and women, and on work organisational practices, to capture gender disparities in authority and power relations at the workplace. Our findings reveal that women tend to perform different tasks compared to their male colleagues within the same job also after controlling for supply-side factors, like education, age and seniority. While in line with previous studies we find that women still tend to perform fewer physical tasks than men, despite significant increase in such activities in female dominated jobs, there is no strong evidence supporting the “brain” hypothesis. On the contrary, women appear to be less involved in intellectual tasks and, especially, social tasks such as managing and coordinating. Furthermore, social interactions with clients or customers do not significantly characterise feminised jobs, challenging the idea according to which gender segregation between jobs is explained by the predominance of this type of tasks. Additionally, and more importantly, our analysis shows that gender matters also in terms of work organisation and distribution of power, highlighting strong asymmetries in the way authority and autonomy are distributed between male and female workers, unbalanced in favor of men. Finally, our study shows that these gender effects often exacerbate within male dominated jobs, although they do not necessarily disappear as the share of female workers increases at the job level. We conclude that power and authority are structurally a prerogative of men, regardless of individual and job characteristics, even within female dominated jobs.

**Keywords:** employment, working conditions, tasks, gender differences.

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## 1. Introduction

Gender differences in the labour market are an historical topic in social sciences, concerned with a multifaceted phenomenon: labour market participation, enduring segregation of women into specific jobs and persisting wage differentials are among the most investigated aspects. Growing inequalities between and within the labour market has regained attention during the last decade, including those related to gender. Women have been key players during the last decades. Three main stylised facts testify this role: first, female labour market participation has dramatically increased in the last decades; second women accounted for most of newly created high-paid jobs in Europe during the recent economic recovery and, third, they outperform men in terms of tertiary educational attainment. Yet, job segregation remains a persisting feature of European labour markets. Despite hiding rather different trends at country level, the overall segregation for the 12 member states of the European Communities hardly changed from the beginning of the 90s until mid-2000s (Bettio and Verashchagina, 2009). Even today, it is still the case that in most of European countries there is a higher concentration of women in low-paid jobs, especially in the service sector (Eurofound, 2016).

In some countries the process of ‘marketisation’ of care activities, often the outcome of welfare state privatisation (Esping-Andersen, 1990), went hand in hand with the increase in low-paid jobs, which in turn contributed significantly and increasingly to the polarisation of labour markets in the last decades (Dwyer, 2013). This also created “occupational ghettos” (Levanon and Grusky, 2016) in which female workers are overrepresented. Female employment increased within the expanding service sector but remains concentrated in low-valued occupations net of public employment dynamics.

Moving from an aggregate to a more granular perspective, recent evidence suggests that gender differences also persist within the same jobs in terms of tasks performed at the workplace. This is true not only in terms of content (Autor, 2013; West, 1990) but also desirability of the assigned task (Babcock et al., 2017), partially explaining the existence of a wage gap (Stinebrickner et al., 2018). In this context, we acknowledge that individual endowments may be insufficient to explain the disparity between men and women at the workplace and that the overrepresentation of women at the workplace, for instance, can lead to forms of discrimination in the allocation of certain tasks and authority/autonomy.

Our research contributes to this strand of literature investigating, first, if gender differences in tasks within the same jobs exist and, second, whether gender concentration plays a significant role in accentuating them. In doing so, we focus both on the content of work from a material perspective, by looking concretely at what job tasks are performed by men and women at the workplace, as well as on work organisational practices in order to capture gender disparities in authority and power at the workplace. Indeed, our view the production process is not of a self-determined mix of labour inputs (tasks) interacting in a black box, but rather of an organization embodying power relations made explicit both through the hierarchical division of labour (Cetrulo et al., 2020) and mechanisms of control over the labour force (Burawoy, 1979; Edwards, 1982; Dosi and Marengo, 2015). Control can be exercised directly by the hierarchy or by technical and bureaucratic means embedded in codified procedures and standards, i.e. routines (Edwards, 1982).

Our empirical analysis focuses on France and covers a period from 1991 to 2016 employing data from the *Enquête Complémentaire Emploi: Conditions de travail* (Complementary Survey of Employment: Working Conditions). Among European countries, this survey represents the oldest database that collects information at the individual level on working conditions, tasks, work organization and socio-demographic characteristics, representative of the French working population.

As in many other European countries, during the period covered in this paper, female employment rate in France increased (from 51.7% to 61.4% according to Eurostat EU-LFS data). Despite such growth, the French labour market still suffers from persistent gender segregation: while the Duncan Dissimilarity Index capturing gender segregation among occupations declined from 56.0 to 51.6 over

the last 25 years (Argouarc'h and Calavrezo, 2013; Minni, 2015), its persisting high values still suggest that half of the national employment should shift from one gender to another to reach full equality.

Our findings show that gender discrimination within the same job exists and it is a persistent characteristic of the French labour market even after controlling for a rich set of supply-side factors. This is not only the case for the work content, for which we do not find evidence that women perform more intellectual tasks nor those involving interactions with people (like customers and clients). Conversely, gender matters in terms of work organisation and distribution of power. Indeed, strong asymmetries in favor of men are revealed in the way authority and autonomy are distributed between male and female workers within the same job, even within female dominated jobs. Overall, our comprehensive approach brings considerable added value to the analysis, as until now most of the related studies have looked at these various aspects separately, neglecting the interconnection among them.

The paper is organised as follows. Section 2 reviews the relevant literature and discusses the task approach. Section 3 covers the methodology: here the dataset is presented together with an overview of the tasks profile adopted in this study and the procedure to operationalise it, using the French working conditions survey. Section 4 provides descriptive statistics about the distribution of tasks across jobs and gender in France. Section 5 describes the econometric model while Section 6 presents the findings from the regression analysis. Finally, Section 7 concludes the paper.

## **2. Literature review and discussion on the task approach**

The causes of the gender differences in work activities and the unbalanced distribution of genders into occupations and sectors have been widely debated over the last half century and nowadays they continue to attract the attention of numerous scholars (for reviews from different disciplines see Anker, 1998; Bettio, 2008; Reskin and Bielby, 2005).

Traditionally, within the economics discipline, a strand of literature argues that gender differences in the labour market are attributable to different preferences and choices made by women compared to men. Rational individual decisions result in a different labour supply between genders which justifies gaps in terms of compensation and working conditions. In this respect, some authors argue that poorer employment career prospects of women compared to men mainly depend on lower investments in human capital by the former group both before and after entering the labour market (Hakim, 2002; Mincer and Polachek, 1974; Polachek, 1981). Other contributions anchored to the supply-side approach advance explanations for the gender division of labour based on biology and related comparative advantage, inherent talent and orientations that women and men have in performing different types of jobs. This is the case of the theory of “brawn” versus “brain” skills according to which men are, on average, better endowed with brawn skills (those that require more physical strength) than women, and therefore are relatively better in performing physical work activities as opposite to intellectual and/or relational work tasks (Magnusson and Tåhlin, 2018; Pitt et al., 2012; Rendall, 2017).

The idea that labour market differences between female and male workers, in terms of compensation and gender segregation into specific jobs, are to be imputed exclusively to supply factors has been questioned both at the theoretical and empirical ground (Burchell and Fagan, 2002; England, 1982; Gallie et al., 2012). For example, the idea that women deliberately decide to work in women-dominated environments and to participate in higher proportions to part-time jobs clashes with some findings according to which female-dominated sectors and part-time jobs do not offer necessarily offer more family-friendly working conditions (Glass, 1990; Glauber, 2011; Jacobs and Steinberg, 1990). The fact that part-time jobs are not always the desired choice of the workers is also supported by the high share of involuntary part-time, especially in Southern European countries (OECD, 2020).



Furthermore, part time jobs do not always entail more flexible working conditions or the possibility of autonomously deciding working time schedules (Smith et al., 2008).

More recently, an important stream of literature aimed at explaining structural changes in employment adopted a new approach shifting the focus of analysis from skills to tasks, which are defined as discrete units of work activity (Autor, 2013a). The task approach is employed as a building block for conceptualising and quantifying patterns in labour demand and explaining recent changes in labour market structure in advanced economies. This approach presupposes a shift in the main focus of the analysis from what workers supply to the labour market to what workers are asked to do at work (i.e. the task they have to perform). Using this angle of investigation, several studies find that tasks performed by female and male workers vary systematically even within similar occupations, once controlling for educational attainment (Autor, 2013; West, 1990). Similarly, Stinebrickner et al. (2018) show that differences in tasks explain part of the wage gap among college graduates in the US also when controlling for other sociodemographic characteristics such as the level of education and experience. According to Babcock et al. (2017) women tend to perform less attractive tasks (defined as tasks that workers prefer to be realised by someone else) compared to men, which can eventually lead to lower promotion possibilities and, therefore, contribute to the gender wage gap.

Evidence from British and German data shows that the rise in the use of interpersonal tasks accelerated between the late 1970s and the early 1990s, and that women are overrepresented in these tasks (Borghans et al., 2014). Black & Spitz-Oener (2010) confirm that women in Germany have witnessed a relative increase in nonroutine analytic tasks (such as researching and analysing) and interactive tasks (such as managing and organizing) and a decline in terms of routine tasks. Using data from the European Working Condition Survey, Smith et al. (2008) show that within both clerical and professional occupations, women tend to perform less problem-solving tasks and activities involving learning than their male peers. The same authors also find that women tend to perform more repetitive tasks than men, even controlling for individual characteristics.

Note that many of the mentioned studies have the merit to highlight that gender differences persist also when controlling for different supply side factors. The fact that individual characteristics alone are not able to explain the differences in the tasks performed by males and females suggests the existence of a more complex relationship between employment, tasks and social relations. In this respect, useful insights proceed from another stream of research, more rooted into classical political economy, which studies the relationship between tasks content, work organisation and gender division of labour accounting for the role played by power relations in shaping gender disparities within the same job.

The seminal paper by Wright et al. (1995) highlights a significant gender gap in authority at the workplace in seven countries (the US, Canada, the United Kingdom, Australia, Sweden, Norway, and Japan). Notably, this gap is not the result of different endowments between female and male workers, but rather it is the result of discrimination at the workplace against women. Along the same lines, other scholars find that women also tend to suffer from a lower degree of autonomy and authority within the same occupation (Jaffee, 1989; Smith et al., 2008; West, 1990). Moreover, according to (Adler, 1993) authority positions explain the gender wage gap in the degree of autonomy in the tasks performed by workers in the US labour market. Another relevant work is that of Chan and Anteby (2016) who study task segregation as a mechanism to reinforce disparity within the American Transportation Security Administration. The authors find that women tend to be allocated in lower quality jobs (proxied by a set of subjective and objective indicators) compared to their men colleagues even when they have the same supply-side characteristics. This study also shows that, within the same job, female workers are more exposed to managerial sanctions, which could negatively affect their career. Other studies focusing on European countries also confirm a gender gap in workers' autonomy within jobs regardless of the individual attributes (Ficapal-Cusí et al., 2018; Mühlau, 2011; Smith et al., 2008).

To sum up, the contributions mentioned so far highlight that the determinants of gender division of labour rest upon social relations shaping simultaneously technical and organisational dimensions of the labour process. The next subsection shows how these dimensions (the technical content of work and the organization of work in terms of autonomy, authority and control) can be integrated into a coherent taxonomy for tasks analysis.

### *Discussion on the task approach.*

The standard task approach recently developed in the economics discipline (Acemoglu and Autor, 2010; Autor et al., 2003; Autor, 2013; Autor and Handel, 2013) was initially elaborated to answer a specific research question: what explains employment polarisation as outcome of structural change. The chosen explanation rests on the process of substitution/complementarity between human labour and machines. The higher the degree of routine and repetitiveness in a job, the higher the probability of automation and therefore substitution of labour for machines. This is because routine tasks are technically easier to codify and automate. Therefore, this approach relies on a determinist idea of the production process in which the division of tasks among workers and machines rests upon comparative advantages.

Other authors, however, argue that within the standard approach the classification of tasks both at the conceptual and empirical level is quite heterogeneous and often vague (see Fernández-Macías et al., 2016; Fernández-Macías and Bisello, 2020). For instance, within manual tasks in manufacturing jobs, a distinction between the various types of physical tasks, such as muscular power versus resilience or dexterity is relevant to better understand differences in job tasks profiles (e.g. in terms of the potential for substitution by new technologies). Therefore, a broad categorization as the one proposed by the standard task approach might not be suitable to capture interesting nuances, which may be relevant to grasp gender differences at the workplace. This is a first set of motivations that pushed Fernández-Macías et al. (2016) and Fernández-Macías and Bisello (2020) to elaborate a richer task framework that offers a more detailed map of the tasks performed at the workplace. From an empirical perspective, this taxonomy allows a more accurate and less data-driven operationalisation of underlying concepts.

More importantly from a theoretical perspective, Fernández-Macías et al. (2016) and Fernández-Macías and Bisello (2020) criticise the standard task approach claiming that focusing exclusively on the technical content of tasks is insufficient to characterize the production process. Every production process is characterised not only by a certain technical content, but also by social aspects that shape the organisation of work, the level of cooperation and authority. From this perspective, human agency is a crucial determinant of the tasks performed at the workplace that cannot be omitted from the analysis. The division of labour and tasks within the same organisation also responds to the social relations prevailing in the workplace and the society. This conceptualisation is in line with the organisational theory of the firm (Dosi et al., 2001; Dosi and Marengo, 2015) and the labour process theory (Braverman, 1978; Edwards, 1982; Knights David and Hugh, 1990) according to which every process of production embodies a certain degree of cooperation between workers and authority, and it is therefore institutionally and historically contingent. More specifically, the social division of labour is characterised by power relations that can be resumed by the ability of those endowed with authority to determine or influence possible actions of the “ruled” and to command over decisions taken by the “ruled” (Dosi and Marengo, 2015). Drawing on these considerations, Fernández-Macías and co-authors propose an extended taxonomy of tasks which covers two dimensions of analysis.

The first dimension includes a number of task indicators aimed at mapping *what people do* (i.e. the content of work), that is the activities required to produce output from a technical perspective. There are a number of task indicators that correspond to this dimension (each one measuring some specific activities realised by the workers) which are grouped into three main groups: physical, intellectual and social tasks.

The second dimension of analysis maps the methods and tools of work. This dimension aims mainly at capturing *how workers do what they do*, that is the organizational practices prevailing in a specific production process and the tools (digital and non-digital) used at work. Such classification is coherent with what already stressed by Frederick Taylor (1911, p.39) for whom “the work of every workman is fully planned by the management [...] describing in detail the task which he is to accomplish, as well as the means to be used in doing the work. This task specifies not only what has to be done, but how it is to be done”.

This second dimension represents the crucial novelty of this analysis, compared to the standard approach. First, it recognises the importance of the social organisation of work, acknowledging that some tasks are not necessary in a purely technical sense (like for instance supervisory, managerial and control activities). Second, it considers the degree of routine involved in a task not as a mere technical feature of work, but the result of organizational practices in a particular work process. The same type of task content may be carried out with a low or a high degree of routine depending on the organisation of the production process, as much as, given a certain technique of production, workers can execute their tasks with more or less autonomy from their supervisors. From a theoretical point of view, methods of work embed forms of authority (autonomy) within a given organisation. Authority can be exerted in direct and personalised form when someone (i.e. the manager or supervisor) establishes tasks, priorities, time schedules and ways of performing the tasks, therefore a worker is endowed with autonomy when not subject to these direct forms of control. In the case of routine, the forms of control assume an impersonal character in that they are imposed by predefined rules which dictate pace of work, standards and goals to be achieved (Edwards, 1982).

Finally, this dimension also includes tasks indicators mapping the tools (digital and non-digital) used at work, that is all technological devices used in the production process and include both *Non-digital machinery* – i.e. analog mechanical devices – and *Digitally-enabled machinery* which encompasses autonomous machines (i.e. advanced robots), computing devices. Different forms of technology can be seen as systems compatible with a particular kind of hierarchical organization at the workplace, that is way of arranging power and authority (Winner, 1980). ICT adoption and organizational changes often go hand in hand (Greenan, 2003) influencing how tasks are distributed.

An application of this classification of tasks was also presented, using real data for European countries, by Fernández-Macías et al. (2016), and a recent version presented in Bisello et al. (2021, *forthcoming*). Drawing on different international databases, the authors mapped various sources to the elements in the task model, creating a comprehensive database of task indicators at the job level, for each combination of occupations and sectors. Following a similar approach, the next subsections describe how, employing French data, we are able to create a set of task indicators that cover as many elements as possible of the taxonomy of tasks presented in Fernández-Macías and Bisello (2020).

### **3. Methodology**

#### *The dataset*

The empirical analysis employs data from the *Enquête Complémentaire Emploi: Conditions de travail* (Complementary Survey of Employment: Working Conditions, EC afterwards) realised since 1978 by the Direction de l'Animation de la Recherche, des Études et des Statistiques (DARES) of the French Ministry of Labour. Among European countries, this survey represents the oldest database that collects information at the individual level on working conditions, tasks, work organization and socio-demographic characteristics, representative of the French working population. Realised every seven years between 1978 and 2013, this survey is now run every three years and covers workers over the entire spectrum of ISCO four or five-digit occupations and NACE two or three-digit economic sectors, depending on the wave.

Original data report classifications for economic sectors and occupations both in French nomenclatures and their correspondent in the international standards (see Tables A1 and A2 in Appendix). For the sake of consistency, our empirical analysis uses information at the ISCO three-digit and NACE two-digit level. This level of granularity prevents any possible bias induced by changes in classifications occurred over time. To further avoid this issue, the econometric analysis will be run separately for each wave. To capture both the vertical and horizontal division of labour, jobs are specified as occupation by sector pairs at the individual level, as in the standard jobs-based approach (Hurley et al., 2013; Wright and Dweyer, 2003). From this definition, the job matrix consists of 1,894 cells (jobs) in 1991, 1,531 in 2005 and 2,185 in 2016, where each cell has a different size in terms of employment given by population weights.

The survey is representative of the entire working population resulting in a database of around 18,400 workers in 1991, 18,510 in 2005 and 17,286 in 2016. The questionnaires are structured according to the following sections: duration of journeys and detours; days worked in the week, working hours; breaks; work organization; work content; constraints and hardship; use of machines and new technologies. Finally, a rich list of socio-demographic characteristics together with other variables on labour relations (i.e. contractual arrangement, experience within the actual job, previous experiences) and some firms characteristics<sup>1</sup>. Over time, the main building blocks and questions have been maintained almost unaltered, with some minor changes across waves, which will be discussed in the next section (for a detailed description of the survey see DARES, 2005).

### *The tasks profile and its operationalisation*

Using data for 1991, 2005 and 2016 from the EC survey, we build individual task profiles following and adapting the conceptual framework developed in Fernández-Macías and Bisello (2020) to the EC database. We therefore distinguish between two main dimensions of tasks: (A) Contents of work; (B) Methods of work.<sup>2</sup> In the original framework, each of these dimensions is composed of numerous tasks indicators. Given the information available in the EC database, it is not possible to map all the task indicators. Therefore, our empirical analysis adapts the original framework, including only those task indicators that are possible to measure empirically. Despite the constraints dictated by data availability, we were able to map the data source to several elements of the framework and cover most of them.

Table 1 presents the taxonomy employed in this study detailing the task indicators within each dimension. The first dimension, corresponding to the task content (or content of work), includes three groups of task indicators: physical, intellectual, and social tasks. Within Physical tasks, three specific task indicators are created: *physical strength* (i.e. the requirement of moving or carrying heavy loads), *physical dexterity* (the requirement to finely use arms, hands or eyes to manipulate things) and *navigation* (the requirement to move in a three dimensional space)<sup>3</sup>. Within intellectual tasks we define *visual and auditory* tasks (capturing the processing of uncodified information) and *conceptualization* which refers to the activities of conceptualization, learning and abstraction. More specifically, the variable used to create the latter indicator mostly refers to the learning process and gathering new ideas. The last group of indicators within the task content refers to social tasks that include *serving and attending* activities which measures whether the worker is in direct contact with

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<sup>1</sup> As for socio-demographic characteristics the survey measures age, sex nationality, educational attainment, marital status, region, sex, parental background. Firm-size declared by the worker is another characteristic besides the economic activity characterizing the employer.

<sup>2</sup> The EC provides detailed information for Tools (digital and non-digital) only for less recent waves, until 2005. In order to cover a longer time span, we decided to discard tools and focus only on indicators available and consistent over time.

<sup>3</sup> The latter two are only available up to 2005.

the public like clients or customers and *managing and coordinating* (i.e. whether the respondent instructs and supervises others' work activities).

The second dimension of the framework (methods of work or organisational methods) captures how the production process is organized at the workplace. Organisational methods are operationalized using three groups indicators (each one composed of one or more specific task indicators). The first one refers to *teamwork*, that is the extent to which workers collaborate with colleagues in the execution of their tasks. The second one involves workers' autonomy which is captured by the degree of workers' *latitude* in carrying out their tasks and the *control (internal and external)*<sup>4</sup> exercised over them. To capture workers' *latitude* we use a set of questions related to workers' ability to interrupt their own work as they prefer; whether instructions by supervisors tell what to do and how to perform the task; freedom not to strictly follow hierarchical instructions on procedures and goals. *Internal control* indicates the degree of direct control that workers experience from their bosses or supervisors within their organization while *external control* refers to the degree of control exerted on the workers by figures external to their workplace, such as a client influencing deadlines. The last set of indicators within methods of work captures the extent of routine at work, which encompasses both the degree of *repetitiveness* and *standardization* of the labour process. *Repetitiveness* draws from a direct question asking whether the execution of one's work implies the continuous repetition of gestures or operations. *Standardisation* captures the extent to which work execution follows pre-codified standards and procedures, that is what the labour process theory defines as bureaucratic control (Braverman, 1978; Edwards, 1982). Using the information provided in the EC, we measure this concept using four questions asking whether the rhythm of one's work is imposed by: a) production standards, or deadlines to be respected; b) the automatic movement of a piece or part; c) the automatic movement of a machine; d) other technical constraints.

The almost identical structure of the questionnaire across waves allows us to build task indicators using the same set of questions over time. The full list of questions used to build each task indicator is presented in Table A 3 the Appendix. Methodologically, the construction of the task indicators described above proceeds as follow:

- For each indicator, we identify the question or set of questions in the EC dataset that could match conceptually the item. When the answer to the question is not binary, we convert it in a 0 to 1 continuous scale, with 0 represents the lowest level and 1 the highest.
- Using the standardised variables capturing single items, we perform a correlation and consistency analysis between them by inspecting pairwise correlation, principal component factor analysis – to evaluate conceptual consistency– as well as the Alpha Cronbach's Test – to inspect overall correlation of all variables used for a given indicator. This exercise allows us to check if variables aimed at measuring the same concept are correlated with each other.
- If the task indicator is composed by more than one variable, the variables are averaged to create the correspondent task indicator at the individual (worker) level.

Following these steps, individual specific values for each task indicator listed in Table 1 are computed and used in the empirical exercise.

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<sup>4</sup> The two variables capturing direct control are inverted to capture workers' autonomy from that form of control (the higher the value of *internal* and *external control* indicator, the higher the autonomy).

Table 1: Dimensions and individual task indicators covered in the analysis.

<u>A. In terms of the content of work</u>	<u>B. In terms of the methods of work</u>
<p><b>1. Physical tasks:</b></p> <ul style="list-style-type: none"> <li>i. <i>Physical strength</i>: lifting people and heavy loads, exercising strength</li> <li>ii. <i>Physical Dexterity</i>: precisely coordinated movements with hands or fingers</li> <li>iii. <i>Navigation</i>: moving objects or oneself in unstructured or changing spaces</li> </ul> <p><b>2. Intellectual tasks:</b></p> <p><b>I. Information processing</b></p> <ul style="list-style-type: none"> <li>i. <i>Visual and auditory processing of uncodified information</i></li> </ul> <p><b>II. Problem Solving</b></p> <ul style="list-style-type: none"> <li>i. <i>Conceptualisation, learning and abstraction</i></li> </ul> <p><b>3. Social tasks:</b></p> <ul style="list-style-type: none"> <li>i. <i>Serving/attending</i>: responding directly to demands from public or customers</li> <li>ii. <i>Managing/coordinating</i>: coordinate or supervise the behavior of colleagues</li> </ul>	<p><b>4. Teamwork</b></p> <ul style="list-style-type: none"> <li>i. <i>Teamwork</i>: performance of tasks with other colleagues</li> </ul> <p><b>5. Autonomy</b></p> <ul style="list-style-type: none"> <li>i. <i>Latitude</i>: autonomy to decide working time, task order, methods and speed</li> <li>ii. <i>Internal Control</i> (in reverse): direct control by boss or supervisors</li> <li>iii. <i>External Control</i> (in reverse): direct control by external demand (clients/customers)</li> </ul> <p><b>6. Routine</b></p> <ul style="list-style-type: none"> <li>i. <i>Repetitiveness</i>: extent to which the worker has to repeat the same procedures</li> <li>ii. <i>Standardisation</i>: extent to which work procedures and outputs are predefined and encoded in a formalised system.</li> </ul>
Source: Adapted from Fernández-Macías and Bisello (2020)	

## 4. Descriptive statistics

This section presents descriptive statistics regarding the evolution of the tasks profile by gender. Figure 1 shows the average score for each task indicator among male and female workers at the beginning (1991) and at the end of the period (2016).<sup>5</sup> According to this figure, the tasks profile across French jobs over time differs systematically between males and females workers, consistently with the findings for the whole European level (Smith et al., 2008). Women tend to perform fewer physical tasks than men. On the contrary, no significant differences on average are recorded in terms of the intellectual tasks, i.e. *visual and auditory* tasks and *conceptualization*.

A closer look at social tasks reveals that the intensity of *serving and attending* activities has increased over time for both groups (from 0.61 to 0.68 for men and from 0.69 to 0.80 for women), a dynamic that still preserves the difference between genders: women tend to be more often in direct contact with the public compared to men. However, female workers have lower scores in *managing and coordinating* tasks, with the indicator remaining almost stable over time.

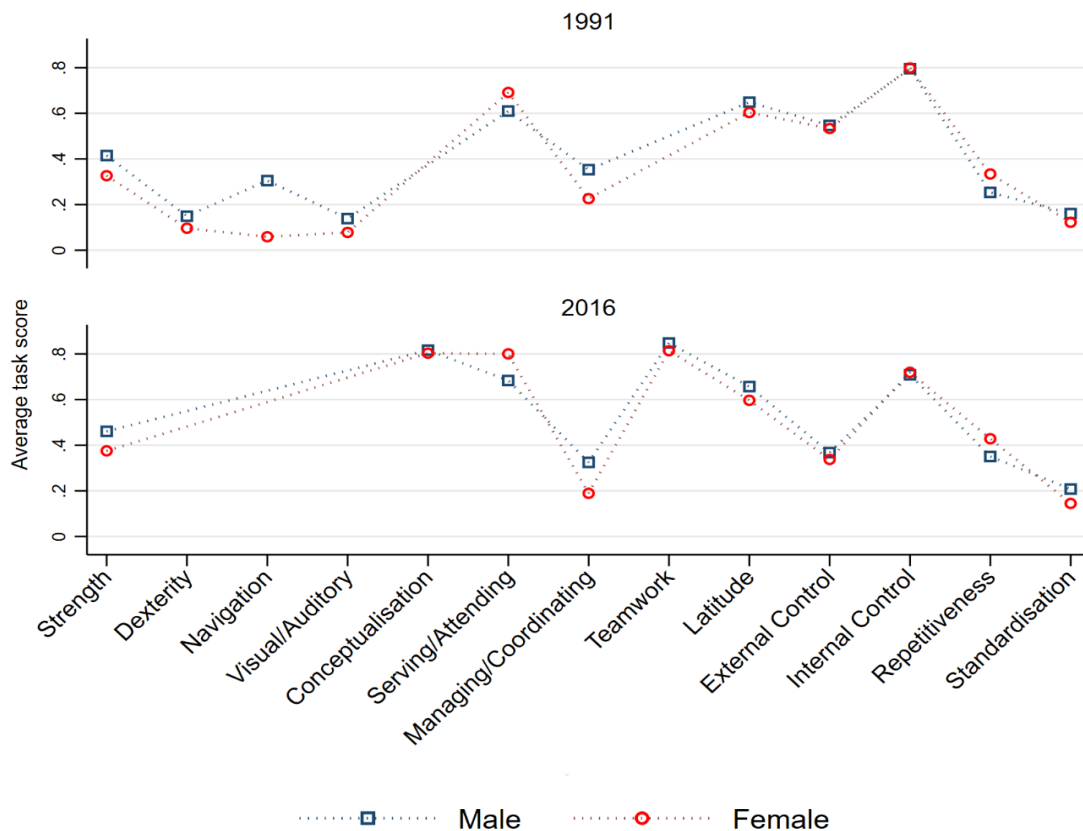
Variables related to the methods of work display no appreciable difference in average scores regarding most of the indicators, with the only exception of *repetitiveness* and *standardization*. In the first case, female workers are involved in more repetitive tasks than men (0.42 against 0.35 for male in 2016). The opposite holds for *standardisation* whose score for women is about 75% of men.

<sup>5</sup> Table A 4 in Appendix reports the average values for all the tasks indicators for all the years covered.

Regardless of gender differences, data show a change in work organisational practices between the beginning and the end of the period of analysis. We witness a decline in the average levels of *internal control* (on average -10% for the internal and -33% for external one) together with an increase in bureaucratic control, which is testified by the higher values of *repetitiveness* (+38% for men and +28% for women) and *standardisation* in 2016 compared to 1991. Overall, it can be asserted that the intensity of routine has increased for all workers although gender differences persist.

Data in Figure 1 do not account for gender concentration at the workplace. It may be that some of the gender differences reported in Figure 1 are related to the different distribution of genders across jobs (e.g. women may have higher average *serving and attending* tasks because they work more frequently in jobs characterised by higher content of *serving and attending* tasks). To tackle this issue we investigate if gender concentration patterns affect the tasks profile within a job (Tomaskovic-Devey, 1993; Tomaskovic-Devey and Skaggs, 2002; West, 1990) and whether, given the degree of job dominance in each period, the task profile between female and male workers systematically differ within jobs in the same level of gender dominance. As shown by Bué (1991), this topic is relevant for France where in some cases lower autonomy is due to the overrepresentation of women in specific jobs. The same author also highlights that female workers are endowed with less *latitude* than men even within the same occupation, suggesting a form of discrimination in authority/autonomy against women.

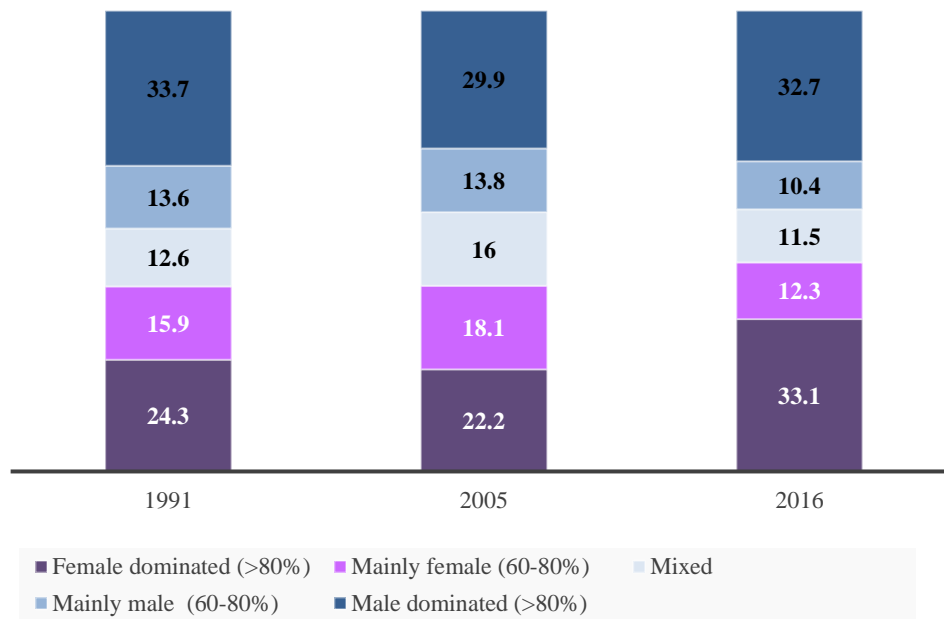
Figure 1: Tasks profile by gender, 1991 and 2016.



Note: The figure shows the average values for the task indicators in 1991 and 2016 by gender. For the sake of simplicity, 2005 is omitted. dexterity, navigation, visual/auditory task indicators are not available in 2016. The indicators for conceptualisation and teamwork are not available in 1991. Source: Authors' elaboration using EC data.

To assess whether gender segregation is relevant, we divide the job structure into five categories according to the share of male/female workers in a certain job: Female (Male) dominated jobs if the share of female (male) workers is greater than 80%, Mainly female (male) if the share of female (male) is between 60 and 80% and Mixed jobs. Figure 2 shows that there is a significant degree of gender segregation in the employment distribution. Between 1991 and 2016, employment has increased in Female jobs against a slight reduction in Male dominated ones. Between 1991 and 2005 we record a reduction in the gender concentration of the employment structure, characterized by the increase in Mixed job. However, this trend reversed between 2005 and 2016. At the end of the period under study, the French job structure is more polarized than it was in 1991 and 2005, with Female and Male dominated jobs that represent nearly two thirds of the total.<sup>6</sup>

Figure 2: Employment distribution (%) across gender job categories at the job level, 1991-2016



Notes: The graph shows the share of workers that are employed in each job category. Jobs are defined as a combination of occupations and sectors at the Isco three digit and Nace two digit level. Source: Authors' elaboration using EC data.

As already stressed, tasks distribution is strongly linked to the division of labour as it results from the job matrix. It is then important to delve into this matrix in order to understand which jobs belong to each concentration category and whether they change over time. Furthermore, it is relevant to analyse how men and women distribute into these jobs, trying to gain a better understanding of what male and female workers do when employed in different job categories. Given the size of the job matrices (one for each year considered), we focus only on the most relevant jobs (in terms of employment size) for men and women within Female and Male dominated jobs in 1991 and 2016 (Table A 5 and Table A 6 in the Appendix). These tables show that Female dominated jobs are characterised almost exclusively by occupations belonging to the service sector. In particular, the most relevant jobs are Personal care and Service workers in the Health, Sanitary and Domestic service sector. Within manufacturing, the only relevant job refers to Textile and machine operators in the Footwear and clothing industry. Notably, this composition barely changes over time. In 2016, the main novelties

<sup>6</sup> It is worth underlying that the gender concentration measure used in this paper (as well as most of the segregation indexes) is based on a headcount measure of employment which may underestimate segregation. This will be the case if female workers are more often employed as part-timers than men. Unfortunately, aggregate statistics on working time across genders agree with our intuition both at the European level as well as for France (Briard, 2019).



reflect the overall expansion of the service sector where women tend to concentrate in Cashiers, Hairdresser and different types of clerical occupations within the Retail and Other personal service activities. On the other hand, the more relevant Male dominated jobs are characterised by higher heterogeneity embracing more economic sectors and types of occupations. From the lower panels of Table A 5 and Table A 6, it emerges that between 1991 and 2016 men tend to absorb most of the expansion in top occupations (Professionals, Technicians) across different activities, i.e. Public Administration, Computer programming and consultancy activities and Scientific research. However, women affirm their presence into these jobs and especially as Programmers and Engineering professionals in Scientific research.

Overall, the inspection of employment distribution across jobs over time reveals that between 1991 and 2016 the increase in female participation to the labour market is concentrated in the low tech service sector. Conversely, males are involved in a more diverse set of jobs. Male dominated jobs range from more traditional construction and manufacturing jobs to more advanced service jobs.

To complete this section, we show the average values of the task indicators by job category in each year (Table 2). There are few aspects that are worth highlighting from this table. With respect to content of work indicators, there are important differences in the average scores across job categories. For example, while *physical strength* typically characterises Male dominated jobs, significant increases in the indicator occurred for Female dominated ones (+20%, between 1991 and 2016, compared to +8% of Male dominated ones). Mainly male and Male dominated jobs record higher values for *visual and auditory* tasks, while there is no appreciable difference in the level of *conceptualisation* across job categories. Social tasks indicators show opposite trends. *Serving and attending* activities increase in all categories but are more important in Female jobs (+18% between 1991 and 2016). On the contrary, *managing and coordinating* reduces across all categories but mostly in Mainly Female dominated jobs, followed by Mixed and Female jobs where this type of activity is less common throughout the whole period.

With respect to the methods of work, Table 2 shows that jobs became more routinised as both *repetitiveness* and *standardisation* increased in all categories, which is in line with recent literature (Bisello et al., 2019). However, some heterogeneity between categories is still present. For instance, *repetitiveness* shows a marked increase during the period in all job categories. However, although the increase is bigger for Male dominated jobs (more than 40%), the average values remain higher for Female dominated jobs (0.45 against 0.363 in 2016). A generalized increase could be also appreciated looking at the dynamics of *standardisation*, with Mixed jobs showing the highest increase (around 50%). These trends depicting an overall increase in bureaucratic control (routine) do not replace direct forms of controls, captured by workers' autonomy (which is composed by three task indicators, i.e. *latitude*, *internal* and *external control*). Although *latitude* does not show uniform patterns over the years, both *external* and *internal control* have decreased (especially the former), indicating a decrease in workers' autonomy with respect to hierarchical power.

Table 2: Task indicators scores by gender dominance category, 1991, 2005, 2016

Task indicator	Year	Job category					
		Female dominated	Mainly Female	Mixed	Mainly Male	Male dominated	
<b>A) Content for work</b>							
<b>1. Physical tasks</b>	Physical strength	1991	0.321	0.357	0.353	0.345	0.444
		2005	0.4	0.34	0.405	0.399	0.5
		2016	0.389	0.396	0.397	0.373	0.48
	Physical dexterity	1991	0.087	0.092	0.103	0.141	0.169
		2005	0.126	0.135	0.116	0.193	0.256
		2016					
	Navigation	1991	0.056	0.084	0.125	0.208	0.363
		2005					
		2016					
<b>2. Intellectual tasks</b>	Visual/auditory	1991	0.101	0.058	0.07	0.108	0.161
		2005	0.148	0.116	0.122	0.183	0.33
		2016					
	conceptualisation	1991					
		2005	0.735	0.79	0.763	0.795	0.751
		2016	0.803	0.795	0.845	0.836	0.803
Serving/attending	1991	0.705	0.715	0.727	0.603	0.565	
	2005	0.782	0.796	0.772	0.585	0.607	
	2016	0.83	0.825	0.76	0.701	0.63	
<b>3. Social tasks</b>	Managing/coordinating	1991	0.189	0.263	0.352	0.362	0.338
		2005	0.149	0.19	0.315	0.335	0.326
		2016	0.162	0.217	0.299	0.324	0.333
<b>B) Methods of work</b>							
<b>4. Teamwork</b>	teamwork	1991					
		2005	0.728	0.792	0.769	0.796	0.767
		2016	0.797	0.85	0.833	0.859	0.844
<b>5. Autonomy</b>	latitude	1991	0.602	0.605	0.643	0.644	0.646
		2005	0.575	0.574	0.601	0.669	0.615
		2016	0.592	0.628	0.59	0.678	0.657
	External control	1991	0.529	0.523	0.55	0.515	0.566
		2005	0.397	0.335	0.388	0.445	0.418
		2016	0.342	0.307	0.363	0.326	0.387
Internal control	1991	0.788	0.808	0.847	0.798	0.78	
	2005	0.738	0.687	0.748	0.71	0.661	
	2016	0.735	0.712	0.707	0.727	0.693	
<b>6. Routine</b>	repetitiveness	1991	0.335	0.304	0.256	0.303	0.256
		2005	0.31	0.265	0.233	0.275	0.289
		2016	0.45	0.402	0.34	0.318	0.363
	standardisation	1991	0.113	0.114	0.116	0.167	0.178
		2005	0.121	0.14	0.138	0.232	0.261
		2016	0.131	0.145	0.175	0.198	0.227

Source: Authors' elaboration using EC data

## 5. The econometric exercise

In this section, we investigate econometrically to what extent tasks profiles between female and male workers differ systematically. Acknowledging that tasks performed by workers vary across jobs, the first and simplest specification tries to understand whether gender differences persist once the variability across jobs is accounted for as well as main individual characteristics. Therefore, we include level of education, age and worker's experience within the same firm as supply-side control variables. The level of education is meant to capture the effect that a specific type of education formally

encoded in French collective agreements may have on the tasks performed (e.g. workers with higher education levels may be allocated to the performance of more intellectual or complex tasks). Workers' experience within the same firm captures the extent to which tasks change with seniority. Finally, the effect of the employment structure is proxied using the job size as further control.

However, as discussed above, jobs may already embody a gendered division of labour, both vertically (across occupations) and horizontally (across economic sectors) so that the different tasks profiles, evidenced in Figure 1, may be attributed to the gender composition of that specific occupation-sector combination. We control for this possibility in the second (M2) and third specification (M3), which include the gender concentration categories described in the previous section interacted with the gender dummy. This interaction captures if, and to what extent, male and female workers tend to perform different task content and if the tasks performed change when working in jobs dominated by their same or different gender. At the same time, the inclusion of this interaction term allows investigating if tasks substantially differ for the gender less represented in a specific category. Specification M2 does not include supply side controls to the model, while M3 controls for individual-specific characteristics that may affect the task performed at the workplace.

An additional specification includes control variables capturing the effect of contractual (permanent vs temporary) and working time (full vs part time) arrangements. From a theoretical point of view, these controls can be thought as outcomes of workers' bargaining power or forms of discrimination already present in the labour market (Wright, 1997). The higher share of female part-time work compared to men can be considered itself a mechanism of discrimination regardless of the job and tasks profile. Following this argument, these controls are not part of the main body of the paper and are employed as robustness test. If the signs and significance of gender differences in tasks do not change, our results are robust since not absorbed by other potential discriminatory processes.

Formally, we estimate the following equations using weighted ordinary least square method<sup>7</sup>:

$$Task_{it} = \beta_0 + \beta_1 Gender_{it} + \theta_1 Exp_{it} + \theta_3 Tertiary_i + \theta_1 Age_{it} + \gamma_1 Job_k + \gamma_2 Job\ size_{kt} + \epsilon_i \quad (M1)$$

$$Task_{it} = \beta_0 + \beta_1 Gender_{it} + \delta_1 Category_{it} + \delta_2 Gender_{it} * Category_{it} + \gamma_1 Job_{kt} + u_i \quad (M2)$$

$$Task_{it} = \beta_0 + \beta_1 Gender_i + \delta_1 Category_{it} + \delta_2 Gender_i * Category_{it} + \theta_1 Exp_{it} + \theta_2 Gender_i * Exp_{it} + \theta_3 Tertiary_i + \theta_4 Gender_i * Tertiary_i + \theta_1 Age_{it} + \gamma_1 Job_k + \gamma_2 Job\ size_{kt} + \epsilon_{it} \quad (M3)$$

Where  $Task_{it}$ , our dependent variable, is the task indicator measured at the individual level ( $i$ ) in each period ( $t$ ) and by construction, as detailed in the methodological section, it is a continuous variable ranging between 0 and 1<sup>8</sup>. For each task indicator, we run separate regressions in each year using the same set of explanatory variables to assess the role played by the gender in different points in time. Given our research questions, we are mainly interested in the coefficient associated to the gender dummy ( $\beta_1$ ) and the coefficient capturing its interaction with the gender category ( $\delta_2$ ) in M2 and M3. These coefficients permit to estimate the difference in the tasks performed by women (compared to men colleagues) and to account for the differences that may exist in more or less gendered dominated jobs.

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<sup>7</sup> Individual weights within the working population apply to all regressions and specification.

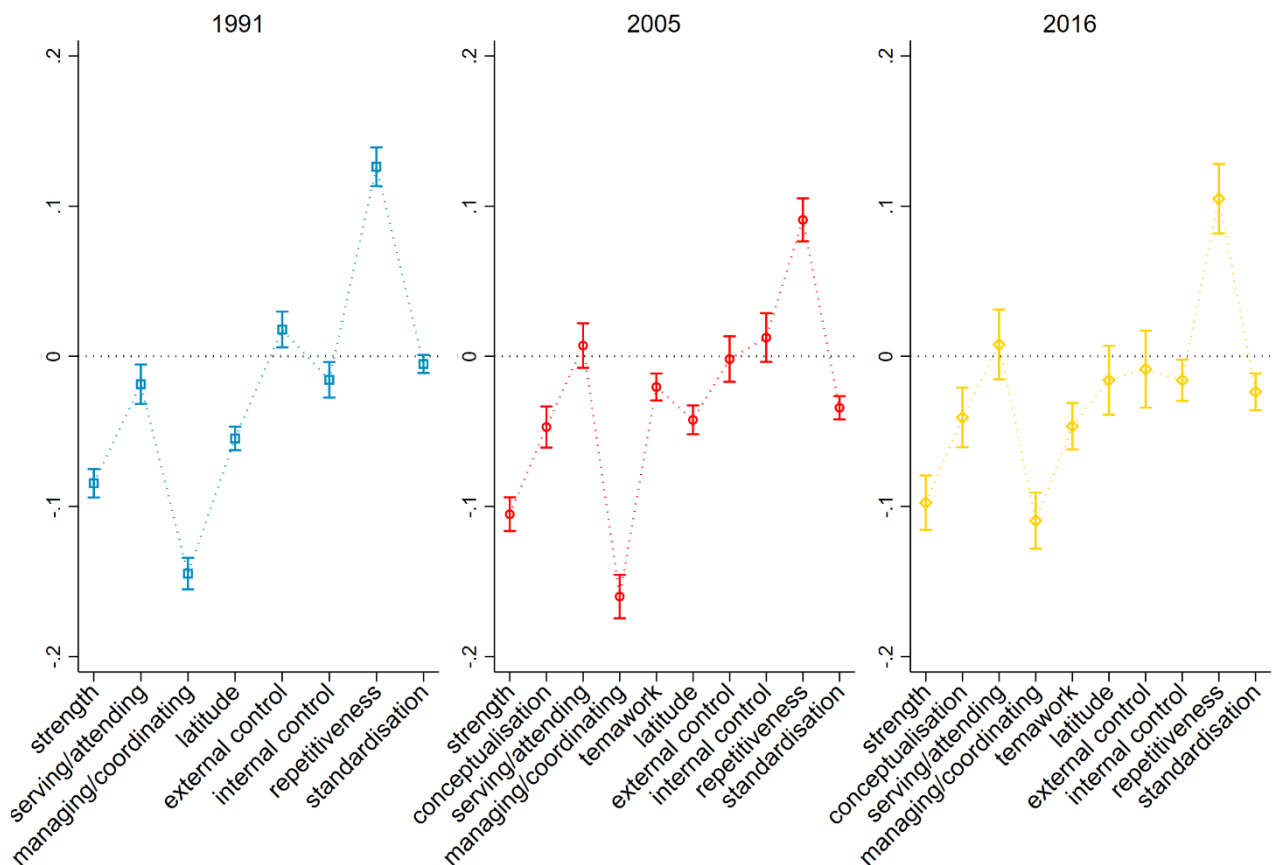
<sup>8</sup> While most of the indicators range between 0 and 1, those built over one single variable are binary by construction. For the latter, weighted logit and OLS models are implemented and result into almost identical estimates.

## 6. Results

For the sake of simplicity, in the following graphical analysis we report marginal effects (female vs male) with their confidence intervals at 95% of significance. For models including the interaction between gender and dominance category, we display marginal effects within each of the five categories. This means that Figure 3-Figure 8 show how much each task indicator for women diverges from the male colleagues. The larger the value (in absolute terms) of the marginal effect with respect to zero, the larger the difference in the tasks performed by females compared to men within the same job.

The first specification simply regresses each task indicator against the gender dummy, individual's characteristics (supply-side controls) and job dummies - the occupation (ISCO three-digits) and industry (NACE two-digits) pair- to evaluate if the employment structure absorbs gender differences. Figure 3 shows the estimated  $\beta_1$  coefficients of M1. It can be appreciated that between female and male workers these coefficients are statistically significant for most of the task indicators across all years, as reported in Figure 3. This outcome suggests that gender is an important factor in shaping individual differences in tasks content and organizational arrangements across individuals even after controlling for the job, education, age and work experience.

Figure 3: Gender difference in task indicators by year.



Note: coefficients are expressed as differences in tasks performed by female compared to male workers.

More specifically, women tend to perform both less physical strength and conceptualization activities. Within social tasks, no appreciable differences can be found in *servicing and attending*, suggesting women are not more often in direct contact with the public. On the contrary, the level of authority is substantially lower among women as shown by the considerably lower levels of *managing and coordinating* (although it slightly reduces over time from -0.14 to -0.11). As to organisational practices, the difference in the level of autonomy (*latitude, internal and external control*) has decreased and became statistically not significant in 2016. Finally, women tend to perform their work in a much more repetitive way than men, while their activities are on average less standardised.

Including type of contract (permanent vs temporary) and working time arrangement (full-time vs part-time) do not offset our main findings (Figure A1 in the Appendix) reinforcing the evidence of gender discrimination at the workplace. These results contribute to the strand of empirical evidence (Glass, 1990; Glauber, 2011; Jacobs and Steinberg, 1990) challenging the “compensating hypothesis” since they prove that flexible time arrangements are not proxy for higher levels of workers’ autonomy but, on the contrary, may represent other mechanisms of discrimination.

### *Tasks content- full specification*

In this subsection by running and comparing specifications M2 and M3, we enquire whether gender differences change depending on the share of women employed in a specific job. Results for these estimations are presented in Figure 4-Figure 8.<sup>9</sup> Overall, the results show that for most of the task indicators under study, gender differences within gendered jobs are significant and persistent over time. Moreover, specification M3 which controls for education, age and experience does not alter (both in significance and magnitude) most of the results emerging from M2. This implies that supply-side controls do not offset gender effects within job categories, leaving unaltered the coefficients of interest ( $\widehat{\delta}_2$ ).<sup>10</sup>

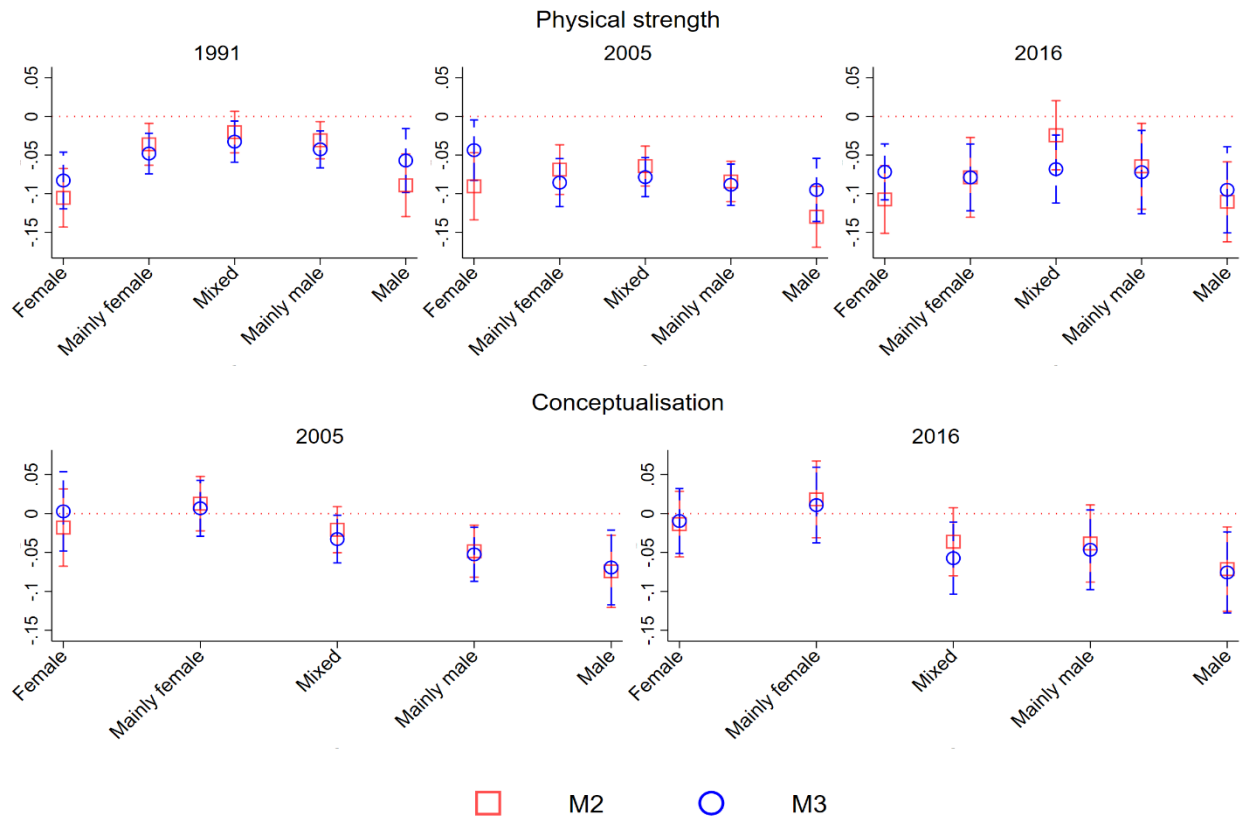
The first set of results concerns the content of work. Looking in detail estimation outcomes for each task indicator, the top panel of Figure 4 shows that, within the same job, women tend to perform less *physical strength* than men regardless of the gender job category. The shape of the marginal effect across dominance categories assumes a reversed U-shaped form in 1991, and it flattens in most recent years, suggesting the difference has increased also in Mixed jobs. The possibility to learn new things in the execution of own’s work – i.e. *conceptualization*– is lower for women than men but statistically significant only in Mixed and Male dominated jobs. Recalling the descriptive evidence presented above, although all categories show on average the same level of *conceptualization*, these findings show that being a woman working in a gendered job matters in shaping the intensity of such task at the individual level. Figure 5 reveals that within each job category, women do not always perform more *servicing and attending* tasks compared to men. In other words, in France, *servicing and attending* is not a prerequisite of female work even after controlling for individual characteristics. At the same time, working in a Male dominated or Mixed job significantly increases the intensity of this type of task compared to a Female dominated one. However, the gender dummy is negative and significant. This multifaceted outcome is a somehow unexpected result considering that, according to most of the traditional economic literature gender segregation can be explained by the higher intensity of social interactions characterising certain jobs. Our finding challenges this hypothesis, also providing evidence that within feminised jobs, women not necessarily perform more *servicing and attending* activities than men. Yet, the simple gender effect is still significant in line with the brain hypothesis at least at the individual level (Azmat and Petrongolo, 2014; Magnusson and Tåhlin, 2018).

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<sup>9</sup> An additional specification, including firms’ size, has been estimated. The results obtained from this specification do not differ significantly from M2 and M3. However, they are not reported and available upon request.

<sup>10</sup> Estimation results are presented in Table A5-A7 in the appendix. It is worth noticing that coefficients associated to the gender dummy (1) remain in most of the cases significant reinforcing the hypothesis that gender matters.

Figure 4: Contrasted margins for physical strength (top panel) and conceptualisation (bottom panel), 1991-2016

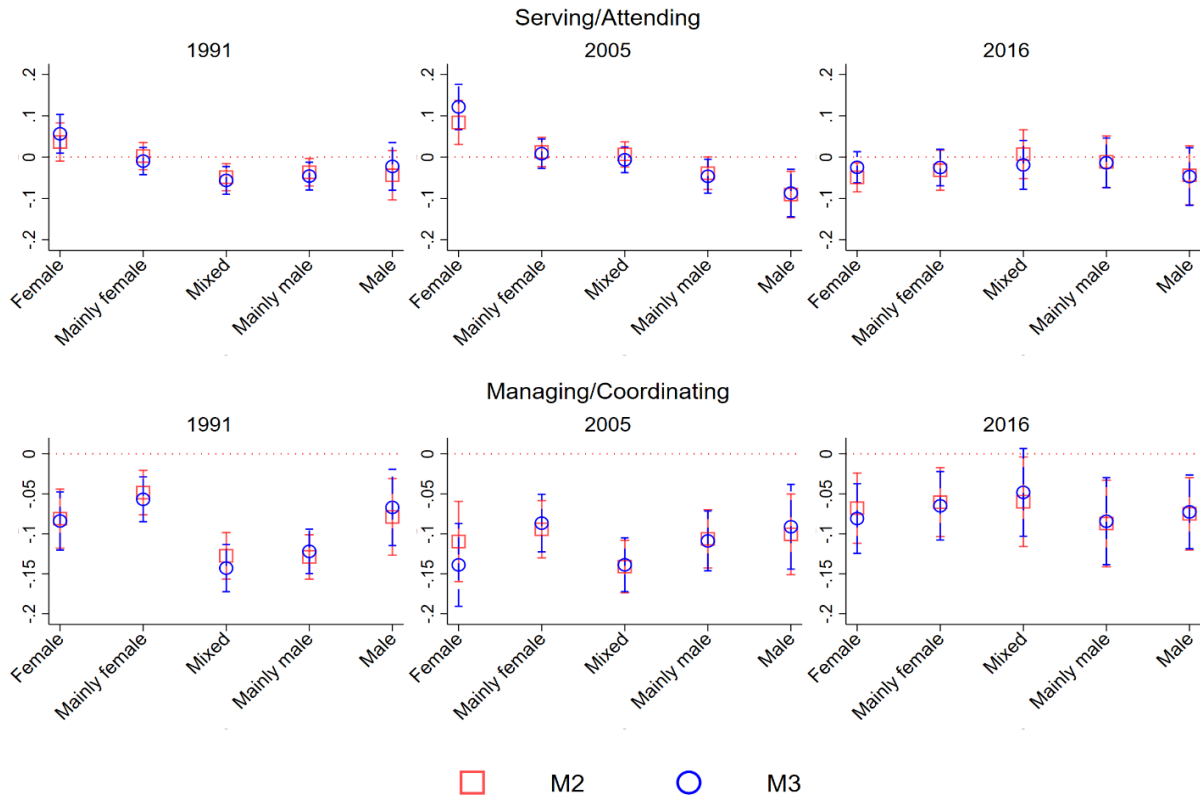


Turning the attention to supervisory and managerial tasks, results of Figure 3 are confirmed also for specification M2 and M3. Men tend to perform more *managing and coordinating* activities even within Female dominated jobs. Yet, there is some heterogeneity over time. In 1991 and 2005, gender differences in *managing and coordinating* tended to be stronger in both Mixed and Mainly male dominated jobs (and Female dominated jobs in 2005). This pattern changes in 2016, when the marginal effect of gender over gender dominance category flattens (although at different levels of magnitude). This finding suggests that men are endowed with higher authority regardless of the share of men within a specific job. In other words, even when women represent most of the workers, they tend to have on average less power within the organisation. At the same time, although important gender differences persist, the degree of gender concentration at the workplace does not play a relevant role as before in the determination of the level of supervisory and managerial tasks. Our result suggests that in most recent years, discrimination in authority (expressed by the possibility to exert supervision on others), although not eradicated, decreases in Mixed and Mainly male dominated jobs both characterized by higher level of managing compared to Female dominated ones. The same does not apply to Female dominated jobs, where the difference between genders remain almost unchanged between 1991 and 2016.

Overall, results emerging from Figure 4 and Figure 5 seem to confirm the “brawn” hypothesis (male perform more physically demanding tasks). However, we do not find unambiguous evidence for the “brain” hypothesis, according to which women should be associated with more intellectual and social tasks. Gender division of labour in terms of supervisory and management activities exists, significantly and systematically rewarding men more than women. More importantly, men tend to

manage and control more than women even within Female dominated jobs, providing support for Olin Wright et al.'s (1995) claim on the existence of gender discrimination in authority within workplaces.

Figure 5: Contrasted margins for social tasks: serving attending (top panel) and managing/coordinating (bottom panel), 1991-2016

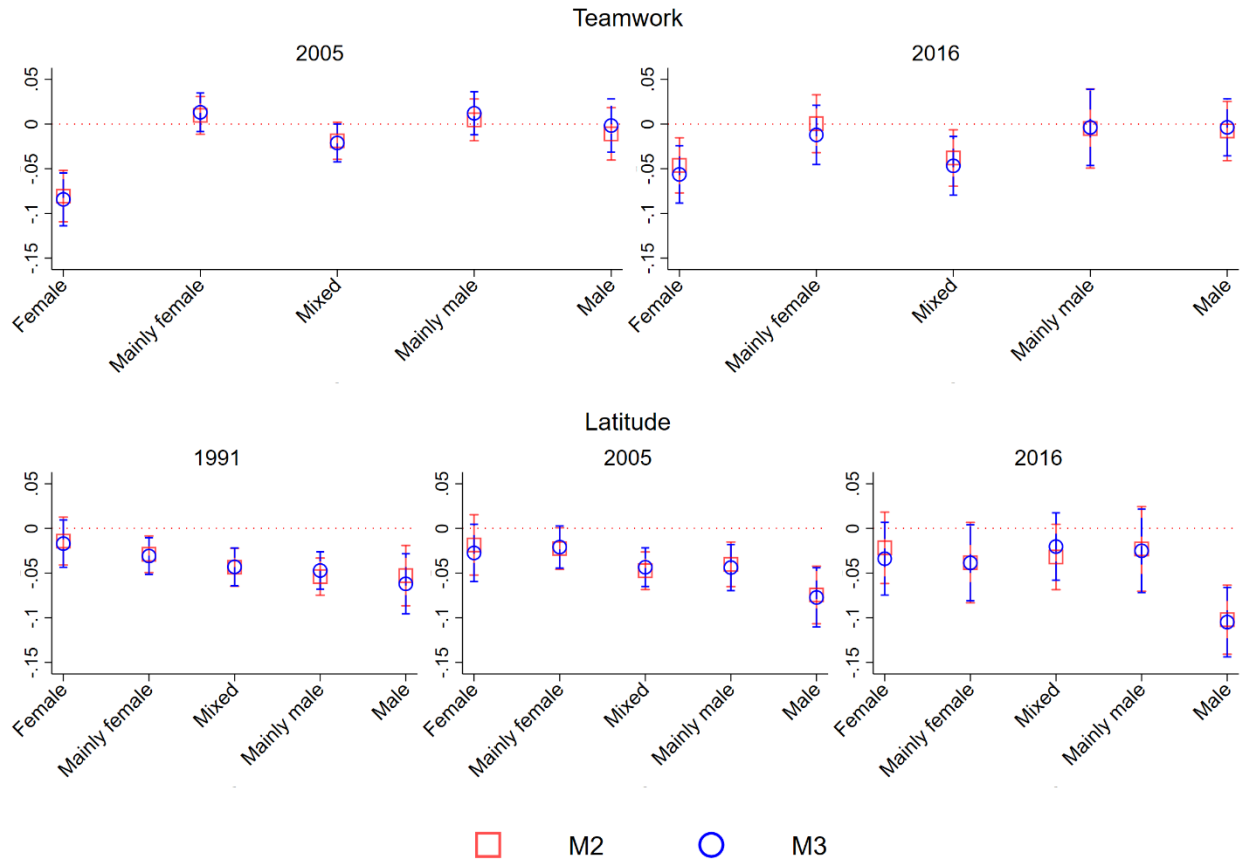


After presenting findings for the first group of task indicators referring to the content of work, we devote the rest of the section discussing gender differences in organizational practices, using the same model and visualization methods for each task indicator within this dimension.

### Methods of work – full specification

According to Figure 6, women tend to work in less cooperative environments (proxied by *teamwork*) than men if employed in jobs where they are overrepresented and Mixed jobs. This finding suggests that female workers suffer from more isolation than their male colleagues. The bottom panel of Figure 6, displaying the marginal effects for *latitude*, also shows that women tend to have less autonomy than men in organizing their work activities and setting priorities. These effects are always significant in the first two periods but not in 2016, when the only statistically significant difference is found in Male dominated jobs.

Figure 6: Contrasted margins for teamwork (top panel) and autonomy, latitude (bottom panel), 1991-2016

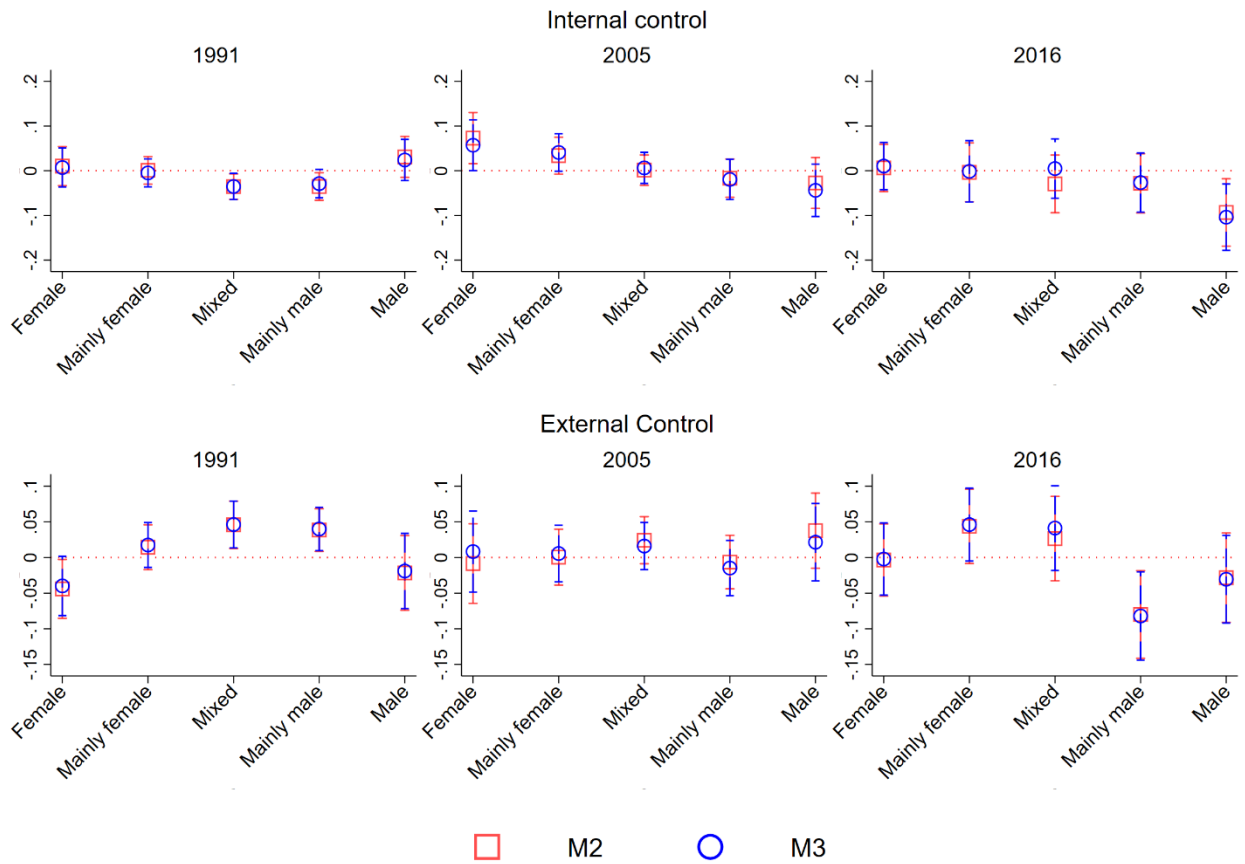


From the findings presented in Figure 6, we would expect that women also have less *internal* and *external control* than men<sup>11</sup> across job categories. However, our results (Figure 7) do not confirm these expectations. No significant gender differences emerge in control exerted from both external demands (proxied by *external control*) and internal supervision. Combining outcomes for *latitude* and the two forms of direct control, one could argue that there exists a net negative effect for women in terms of autonomy at least until 2005 across almost all job categories. However, in most recent years, this effect is significantly persistent only within Male dominated jobs. Again, our results are robust to both structural characteristics (jobs) and individual ones (education, age and experience within the firm). More importantly, the gender differences in the intensity of *internal control* in recent years is more pronounced as the share of men increases at the job level.

<sup>11</sup> Remind that control variables have been created in reverse, therefore high control means higher worker's autonomy.

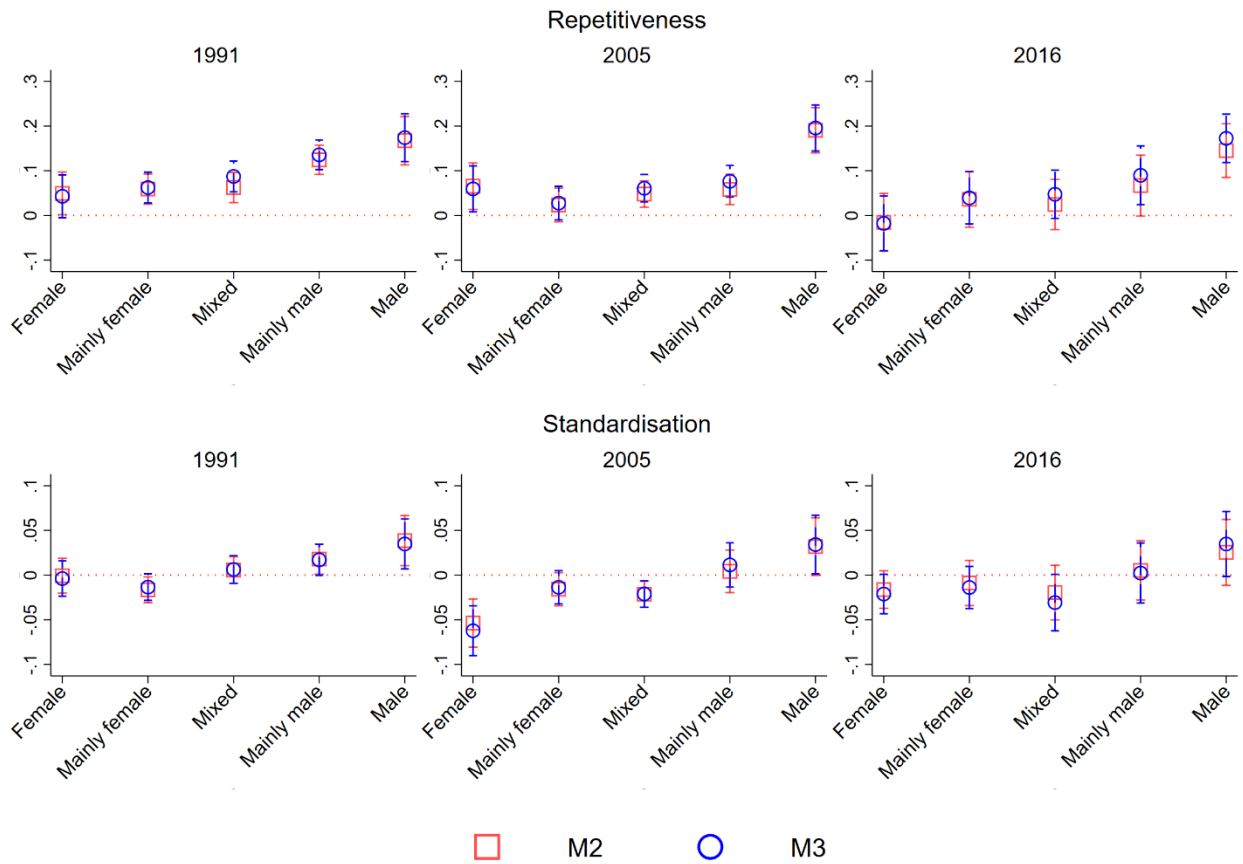


Figure 7: Contrasted margins for autonomy, internal control (top panel) and external control (bottom panel), 1991-2016



Finally, we run the econometric specifications M2-M3 using two indicators of routine (i.e. *repetitiveness* and *standardization*) as dependent variables (Figure 8). The intensity of repetitiveness characterising female workers is systematically and significantly higher than men in all types of gender dominated jobs. However, in the most recent period the marginal effect remains significant only for Male and Mainly male jobs and to a lesser extent (10% significance) for Mixed jobs. Bureaucratic control, captured by *standardisation*, shows a multifaceted gender effect across categories and periods. More specifically, female workers are slightly less standardized than men in Female dominated jobs only in 2005, while the opposite is true in Male dominated ones across time. It is interesting to underline that controlling for supply-side factors contributes to increasing, rather than mitigating, gender differences in the routine indicators. All in all, as a net effect, the gender effect on routine against women exists along the job structure being stronger in magnitude as the share of men dominates.

Figure 8: Contrasted margins for routine, repetitiveness (top panel) and standardisation (bottom panel), 1991-2016



## 7. Conclusion

This paper contributes to the literature on gender differences at the workplace in terms of the tasks content performed by workers and the organisational practices workers are subject to. In doing so, we focus on a single advanced European country, France, exploiting a unique workers' survey providing information on all relevant dimensions of the labour process over a period of 26 years. Our contributions answer two main research questions: first, if and to what extent gender plays a role in the distribution of work activities and power relations within the same job. Second, if and to which extent these differences persist once the gender composition of jobs is accounted for.

From a theoretical point of view, we extended the traditional task approach developed by Autor et al. (2010; 2003; 2013) following the contribution by Fernández-Macías et al. (2016) and Fernández-Macías and Bisello (2020), which allows to incorporate into the analysis elements of organisational practices (i.e. authority, autonomy, routine), alongside detailed indicators of the content of work. First, our findings show that gender discrimination within the same job exists and it is a persistent characteristic of the French labour market even after controlling for a set of supply-side controls. In some cases, these findings are not unexpected (for example, men performing more physical tasks at work compared to women). The most interesting findings, however, concern both the intellectual and social content of work activities. What appears from our results is that women are less involved than men in both intellectual and, especially, managerial/coordination tasks. This evidence suggests that authority over other people's work (*managing/coordinating*) is most of the time a prerogative of men. As expected, not only the work content but also the way in which work is organised differ, highlighting

strong asymmetries in the way authority and autonomy and, therefore, power relations, are distributed between male and female workers within a job. According to our findings, women have fewer possibilities of organizing autonomously their work duties (*latitude*), and, in some job categories, their work is performed in higher isolation (lower *teamwork*) than their male colleagues. Finally, regardless of the job category, routine is higher for women than men, especially once repetitiveness of operations and gestures is concerned. Conversely, standardised procedures dictating workers' pace of work are less uneven distributed between gender. These outcomes could be summarised asserting that when coming to the distribution of organisational practices and therefore power at the workplace, women are often in a more subordinated position compared to men.

Second, our results contribute to the strand of literature challenging the idea according to which gender differences depend on individual attributes and outcomes of their choices (Burchell and Fagan, 2002; England, 1982; Gallie et al., 2012; Stinebrickner et al., 2018). According to our findings, supply-side factors are insufficient to explain the difference in the intensity of tasks performed at the workplace between male and female workers. Moreover, in some cases (e.g. *repetitiveness*, *standardisation*), gender differences even increase once controlling for individual characteristics.

Third, it is important to emphasise that, for most of the task indicators, the pattern does not change significantly over time, highlighting that gender discrimination in terms of tasks performance continues to be an important feature of the French labour market. The econometric analysis also shows that the gender concentration of the job may alter the magnitude but not the direction of discrimination. Future research is needed for the generalisation of these findings across countries characterised by different institutional settings and culture. Yet, such ambitious research is constrained to data availability at the individual level covering all aspects of the labour process like those that we have investigated in this study.

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## 9. Appendix

Table A 1: Economic sector, reported nomenclature by wave

year	Variable	Nomenclature	Digit	Correspondence	Digit	Type of correspondence
1991	nap600	NAP 1973_1993	3	NACE 1970	2	indirect
2005	naf700	NAF Rev.1 2003	4	NACE Rev.1.1 3d	3	direct
2016	activfin	NAF Rev.2 2008	2	NACE Rev.2 2d	2	direct

Table A 2: Occupation, reported nomenclature by wave

year	Variable	Nomenclature	Digit
1991	p	PCS1982	4
	cse	PCS1982	2
2005	p	PCS2003	4
	cse	PCS2003	2
	peu	ISCO88	3
2016	fap225	FAP2009	5
	pe	PCS2003	4
	cse	PCS2003	2
	peun	ISCO08	4

Table A 3: Variables used to create tasks indicators by wave.

Task indicator	Variable	Question	1991	2005	2016
Strength		<i>Does the execution of your work require:</i>			
	cwdebou	to stand for longtime	x	x	x
	cwdepla	to walk frequently or for long distances	x	x	x
	cwlourd	to carry or move heavy loads	x	x	x
Dexterity		<i>Does the execution of your work require not to take your eyes off your work</i>			
	cwminus	Examine small and/or very detailed objects	x	x	
Navigation	conduite	Do you use a vehicle for your work or for your professional needs, apart from commuting		x	x
	travpub	Do you drive a public transport vehicle, an agricultural or technical machine	x		
	trans	During your work are you driving a transport vehicle (automobile, truck, etc.) a part for commuting?	x		
Visual and auditory processing of uncoded information	cwvisu	Does your work expose you to visual signals that are unpredictable, short and difficult to detect?	x	x(a)	
	cwsono	Does your work expose you to acoustic signals that are unpredictable, short and difficult to detect?	x		
Conceptualization, learning and abstraction	nouvelle	Does the execution of your work allow to learn new things?		x	x
Serving / attending	public	Are you in direct contact with the public?	x	x	x
Managing coordinating	orga	The main duty at your job is to organise or supervise?	x		
	encad	Dans votre emploi principal, vous arrive-t-il de superviser d'autres salariés			x
	chef	Do you give orders to other employees?	x	x	
Teamwork	aidcoll	If you have trouble doing delicate, complicated work, is it that you are helped by your colleagues		x	x
	collect	Do you have the opportunity to approach collectively, with others people from your workshop or department, questions organization or operation of your work unit?		x	x
	horangt	In case of unforeseen circumstances, can you modify your schedules by arranging with your colleagues?		x	x
	corr cop	To do your job properly, do you usually have the possibility of cooperation (exchange of information, mutual assistance, etc.)		x	x



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Latitude	interup	Do you have the possibility to interrupt your own work as you prefer?	x	x	x
	delais	Do you have the possibility to change already fixed deadlines?	x	x	x
	comment	Instructions by your hierarchical superiors tell you what to do. Do they tell you how to do as well?	x	x	x
	stark	You receive orders, goals and instructions?	x	x	x
External control	rwdemand	Is the pace of your work imposed by external demand (clients, public) without imposing an immediate answer?	x	x	x
	rwdem	Is the pace of your work imposed by external demand (clients, public) imposing an immediate answer?	x	x	x
Internal control	rwsurv	Is the pace of your work imposed by a hierarchical supervisor?	x	x	x
Repetitiveness	repete	Does the execution of your work implies the continuous repetition of gestures or operations?	x	x	x
Standardisation(d)		<i>Is the rythm of your work imposed by:</i>			
	rwnormh	production standards, o deadlines, to be respected in at most an hour?	x		x
	rwnormj	production standards, o deadlines, to be respected in at most a working day?	x		x
	rwdep	the automatic movement of a piece or part?	x	x	x
	rwcad	the automatic movement of a machine?	x	x	x
	norme	production standards, o deadlines?		x(b)	

(a) From 2005 variable cwviso capture both cwvisu and cwsono (therefore fully comparable with previous waves)

(b) Var Norme in 2005 is the combination of NormeJ and NormeH in other waves

(d) we remove rwtech since unavailable in 1991, other definitions od standardisation have been created to split types of bureaucratic control.

Table A 4: Task profile by gender over time, 1991-2016.

	1991		2005		2016	
	Male	Female	Male	Female	Male	Female
Physical strength	0.415	0.327	0.468	0.365	0.461	0.375
Physical dexterity	0.149	0.097	0.221	0.121		
Navigation	0.305	0.059				
Visual/auditory	0.139	0.078	0.264	0.120		
Conceptualisation			0.772	0.752	0.817	0.803
Serving/attending	0.610	0.691	0.652	0.755	0.683	0.800
Managing coordinating	0.353	0.226	0.339	0.181	0.325	0.189
Teamwork			0.778	0.756	0.848	0.814
Latitude	0.649	0.604	0.630	0.578	0.657	0.597
Internal control	0.795	0.799	0.685	0.726	0.709	0.720
External control	0.547	0.534	0.408	0.390	0.368	0.338
Repetitiveness	0.254	0.334	0.259	0.300	0.351	0.428
Standardisation	0.161	0.123	0.224	0.142	0.208	0.145

Table A 5: Most relevant gendered jobs, 1991

Occupation (isco3d)	Industry (nace1970_2d_label)	sex	%
<b>Female dominated</b>			
Personal care and related workers	Medical and other health services: market services	Female	7.3
Nursing and midwifery associate professionals	Medical and other health services: market services	Female	4.8
Domestic and related helpers, cleaners and launderers	Domestic services	Female	3.7
Personal care and related workers	Other services provided to the general public: market services	Female	3.7
Secretaries and keyboard-operating clerks	Activities auxiliary to banking and finance/insurance; real estate	Female	3.4
...	...		
Other personal services workers	Sanitary services and administration of cemeteries: market services	Female	2.4
Personal care and related workers	Domestic services	Female	2.3
Textile-, fur- and leather-products machine operators	Footwear and clothing industry	Female	2.2
...	...		
Personal care and related workers	Medical and other health services: market services	Male	1.6
...	...		
Domestic and related helpers, cleaners and launderers	Education: non-market services of private non-profit institutions	Male	0.7
Nursing and midwifery associate professionals	Medical and other health services: market services	Male	0.6
Other personal services workers	Sanitary services and administration of cemeteries: market services	Male	0.6
Textile-, fur- and leather-products machine operators	Footwear and clothing industry	Male	0.5
...	...		
Personal care and related workers	Other services provided to the general public: market services	Male	0.2
<b>Male dominated</b>			
Building frame	Building and civil engineering	Male	8.8
Motor vehicle drivers	Other land transport (urban transport, road transport, etc.)	Male	4.0
Building finishers	Building and civil engineering	Male	3.6
Food processing	Food, drink and tobacco industry	Male	1.6
...	...		
Motor vehicle drivers	Wholesale distribution (except dealing in scrap and waste materials)	Male	1.1
Metal moulders, welders, sheet and structural-metal preparers	Manufacture of metal articles (except for engineering and vehicles)	Male	1.0
Physical and engineering science technicians	Electrical engineering	Male	0.9
...	...		
Motor vehicle drivers	Other land transport (urban transport, road transport, etc.)	Female	0.2
...	...		
Food processing	Retail distribution	Female	0.2
Assemblers	Manufacture of metal articles (except for engineering and vehicles)	Female	0.2
Architects, engineers and related professionals	Activities auxiliary to banking and finance and insurance; real estate	Female	0.2
Production and operations managers	Wholesale distribution (except dealing in scrap and waste materials)	Female	0.1
...	...		
Printing-, binding- and paper-products machine operators	Manufacture of paper and paper products; printing and publishing	Female	0.1
Assemblers	Mechanical engineering	Female	0.1
Wood-processing- and papermaking-plant operators	Timber and wooden furniture industries	Female	0.1
Architects, engineers and related professionals	Chemical industry	Female	0.0

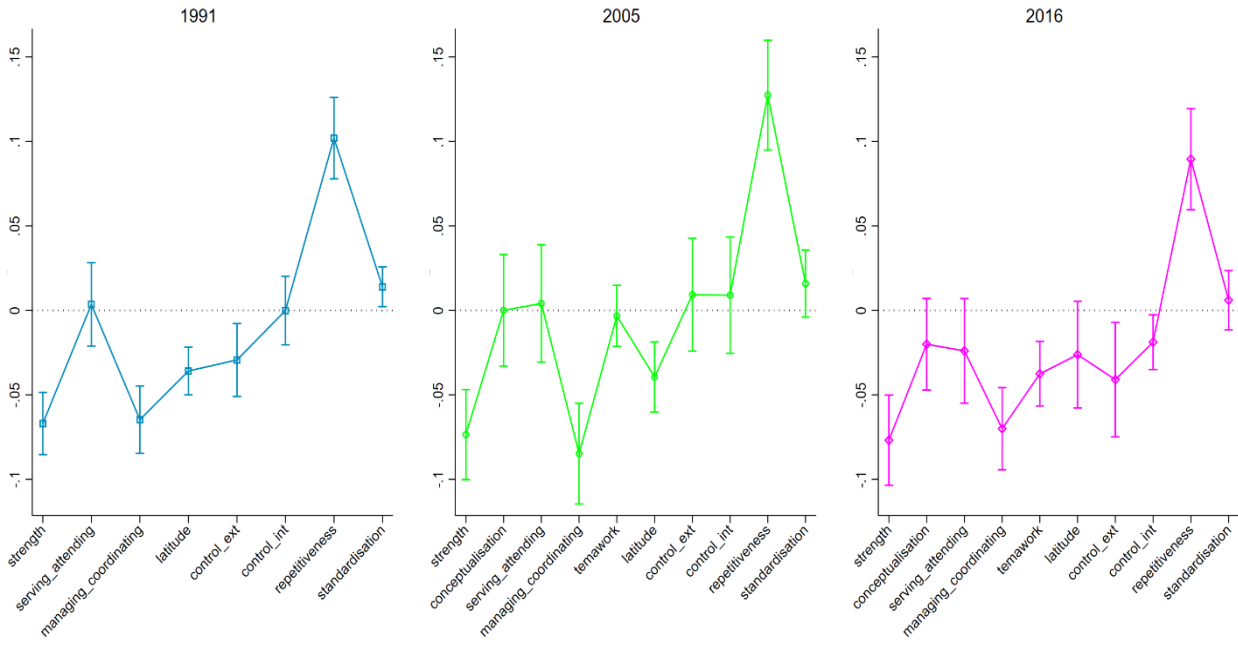
Note: the table lists most relevant job in terms of employment size (over total annual employment). The last two columns capture workers gender in the specific job and the share of employment in the category. Jobs are ordered by their share within the job category with holes in the ranking (empty rows).

Table A 6: Most gendered jobs, 2016

Occupation (isco 3 digits)	Industry (Nace rev.2 2 digits )	sex	%
<b>Female dominated</b>			
Nursing and midwifery associate professionals	Human health activities	Female	11.9
Personal care workers in health services	Human health activities	Female	4.9
Child care workers and teachers' aides	Activities of households as employers of domestic personnel	Female	4.9
Domestic, hotel and office cleaners and helpers	Activities of households as employers of domestic personnel	Female	4.7
Primary school and early childhood teachers	Education	Female	3.9
...	...		
Tellers, money collectors and related clerks	Financial service activities, except insurance and pension funding	Female	2.4
Nursing and midwifery associate professionals	Human health activities	Male	1.9
...	...		
Personal care workers in health services	Human health activities	Male	1.3
Hairdressers, beauticians and related workers	Other personal service activities	Female	1.2
Cashiers and ticket clerks	Retail trade, except of motor vehicles and motorcycles	Female	1.2
Secretaries (general)	Specialised construction activities	Female	1.2
...	...		
Administrative and specialised secretaries	Public administration and defence; compulsory social security	Male	0.5
Primary school and early childhood teachers	Education	Male	0.5
Hairdressers, beauticians and related workers	Other personal service activities	Male	0.2
Tellers, money collectors and related clerks	Financial service activities, except insurance and pension funding	Male	0.2
...	...		
Domestic, hotel and office cleaners and helpers	Human health activities	Male	0.1
Personal care workers in health services	Residential care activities	Male	0.1
Domestic, hotel and office cleaners and helpers	Education	Male	0.1
Social and religious professionals	Human health activities	Male	0.1
<b>Male dominated</b>			
Mining, manufacturing and construction supervisors	Specialised construction activities	Male	5.4
Engineering professionals (excluding electrotechnology)	Scientific research and development	Male	3.9
Building finishers and related trades workers	Specialised construction activities	Male	3.2
Heavy truck and bus drivers	Land transport and transport via pipelines	Male	3.1
Physical and engineering science technicians	Manufacture of other transport equipment	Male	1.5
...	...		
Food processing and related trades workers	Retail trade, except of motor vehicles and motorcycles	Male	1.5
Assemblers	Manufacture of other transport equipment	Male	1.4
...	Wholesale and retail trade and repair of motor vehicles and motorcycles	Male	1.4
Machinery mechanics and repairers	...		
...	Public administration and defence; compulsory social security	Male	0.7
Software and applications developers and analysts	...		
...	Computer programming, consultancy and related activities	Female	0.7
Software and applications developers and analysts	Food and beverage service activities	Female	0.4
Cooks	...		
...	Public administration and defence; compulsory social security	Female	0.2
Protective services workers	Land transport and transport via pipelines	Female	0.2
Heavy truck and bus drivers	...		
Engineering professionals (excluding electrotechnology)	Scientific research and development	Female	0.2
...	...		
Other personal services workers	Education	Female	0.1
Architects, planners, surveyors and designers	Creative, arts and entertainment activities	Female	0.1

Note: the table lists most relevant job in terms of employment size (over total annual employment). The last two columns capture workers gender in the specific job and the share of employment in the category. Jobs are ordered by their share within the job category with holes in the ranking (empty rows).

Figure A 1: Marginal effects of female compared to men on task indicators by year, including contractual arrangements.



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Table A 5: Estimated coefficients from full model (M3), 1991.

	Physical strength	Physical dexterity	Navigation	Visual auditory	Serving attending	Managing coordinating	Latitude	External Control	Internal Control	Repetitiveness	Standardisation
Female	-0.090*** [0.022]	-0.039* [0.020]	-0.073*** [0.017]	-0.030* [0.018]	0.085*** [0.029]	-0.024 [0.021]	-0.024 [0.017]	-0.041 [0.025]	0.027 [0.027]	0.081*** [0.029]	-0.001 [0.012]
Mainly female	0.003 [0.022]	-0.029 [0.019]	0.045*** [0.017]	-0.034* [0.018]	0.083*** [0.027]	0.025 [0.022]	0.014 [0.016]	-0.075*** [0.025]	0.027 [0.025]	-0.031 [0.028]	0.004 [0.012]
Mixed	0.049** [0.021]	-0.022 [0.019]	0.063*** [0.016]	-0.035** [0.017]	0.071*** [0.026]	0.092*** [0.021]	0.010 [0.015]	-0.006 [0.024]	0.046* [0.024]	-0.015 [0.026]	0.016 [0.011]
Mainly male	0.048** [0.020]	-0.003 [0.018]	0.126*** [0.016]	0.007 [0.017]	0.006 [0.025]	0.090*** [0.020]	0.010 [0.014]	-0.040* [0.022]	0.006 [0.023]	-0.008 [0.026]	0.042*** [0.011]
Male dominated	0.042** [0.019]	0.014 [0.017]	0.222*** [0.015]	0.031* [0.016]	0.085*** [0.024]	0.111*** [0.019]	0.056*** [0.014]	-0.062*** [0.021]	0.030 [0.022]	-0.127*** [0.024]	0.003 [0.010]
Female * Mainly female	0.035 [0.023]	0.038* [0.021]	-0.048*** [0.018]	-0.007 [0.018]	-0.066** [0.029]	0.027 [0.023]	-0.014 [0.017]	0.057** [0.027]	-0.012 [0.028]	0.020 [0.030]	-0.010 [0.013]
Female * Mixed	0.050** [0.023]	0.039* [0.021]	-0.042** [0.017]	0.018 [0.019]	-0.113*** [0.029]	-0.059** [0.024]	-0.026 [0.017]	0.086*** [0.027]	-0.042 [0.027]	0.044 [0.030]	0.010 [0.013]
Female * Mainly male	0.040* [0.023]	0.046** [0.022]	-0.059*** [0.018]	-0.015 [0.019]	-0.102*** [0.030]	-0.038 [0.023]	-0.030* [0.017]	0.080*** [0.026]	-0.036 [0.028]	0.093*** [0.030]	0.021 [0.014]
Female * Male dominated	0.026 [0.028]	0.026 [0.029]	-0.132*** [0.021]	-0.017 [0.023]	-0.079** [0.038]	0.017 [0.031]	-0.045** [0.022]	0.021 [0.034]	0.017 [0.032]	0.131*** [0.037]	0.039** [0.018]
Experience between 1-5 y	0.005 [0.010]	0.007 [0.011]	0.048*** [0.010]	0.024** [0.010]	0.039*** [0.015]	0.061*** [0.011]	0.050*** [0.009]	-0.071*** [0.013]	0.026** [0.013]	0.002 [0.014]	0.011* [0.007]
Experience 5-10 years	0.017 [0.011]	0.018 [0.012]	0.055*** [0.011]	0.036*** [0.011]	0.056*** [0.016]	0.111*** [0.013]	0.063*** [0.009]	-0.060*** [0.014]	0.029** [0.014]	0.029* [0.015]	0.024*** [0.007]
Experience >10 years	0.015 [0.010]	0.028*** [0.011]	0.037*** [0.010]	0.052*** [0.009]	-0.013 [0.015]	0.115*** [0.011]	0.021** [0.008]	-0.021* [0.012]	-0.041*** [0.013]	0.048*** [0.014]	0.035*** [0.006]
préparation d'un DUT	-0.136*** [0.013]	0.038** [0.018]	-0.064*** [0.013]	-0.004 [0.013]	-0.072*** [0.021]	0.102*** [0.018]	0.049*** [0.010]	-0.013 [0.019]	0.044*** [0.015]	-0.103*** [0.013]	-0.018** [0.008]
premier cycle en université	-0.114*** [0.021]	-0.025 [0.022]	-0.049** [0.019]	-0.001 [0.021]	-0.037 [0.032]	0.011 [0.029]	0.032* [0.018]	-0.021 [0.028]	0.026 [0.026]	-0.054** [0.026]	-0.027** [0.013]
Dipl. des prof. de la santé	0.067* [0.039]	0.064* [0.039]	0.013 [0.030]	0.046 [0.036]	0.123*** [0.023]	-0.001 [0.044]	0.053** [0.025]	-0.030 [0.045]	0.015 [0.037]	-0.003 [0.041]	0.006 [0.020]
2e cycle en université	-0.149*** [0.017]	-0.001 [0.019]	-0.098*** [0.016]	-0.018 [0.016]	-0.034 [0.026]	0.048** [0.023]	0.004 [0.014]	0.074*** [0.026]	0.038** [0.019]	-0.069*** [0.018]	-0.003 [0.011]
3e cycle en université	-0.155*** [0.015]	0.109*** [0.022]	-0.126*** [0.013]	-0.002 [0.015]	-0.044** [0.021]	0.001 [0.020]	0.025* [0.014]	0.062*** [0.023]	0.066*** [0.015]	-0.012 [0.018]	-0.011 [0.008]
Grande école	-0.191*** [0.011]	-0.061*** [0.015]	-0.103*** [0.015]	-0.048*** [0.012]	-0.115*** [0.024]	0.179*** [0.020]	0.043*** [0.011]	0.065*** [0.022]	0.043*** [0.015]	-0.090*** [0.011]	-0.045*** [0.015]
age	-0.001*** [0.000]	-0.001*** [0.000]	0.000 [0.000]	-0.002*** [0.000]	0.001* [0.000]	0.004*** [0.000]	0.003*** [0.000]	0.001*** [0.000]	0.004*** [0.000]	-0.003*** [0.000]	-0.002*** [0.000]
Constant	0.151*** [0.024]	0.239*** [0.023]	0.104*** [0.020]	0.122*** [0.020]	0.594*** [0.032]	0.284*** [0.025]	0.619*** [0.018]	0.281*** [0.028]	0.709*** [0.029]	0.276*** [0.032]	0.173*** [0.014]
N	19375	19375	19359	19375	19369	19372	19374	19375	19375	19333	19375
r2	0.197	0.031	0.231	0.038	0.161	0.179	0.117	0.101	0.041	0.112	0.120

Note: the model also includes job size in terms of employment at the aggregate level, interaction between gender and education, and gender and work experience whose coefficients are not reported for the sake of space.

Mind the task: evidence on persistent gender gaps at the workplace

Table A 6: Estimated coefficient full model (M3), 2005.

	Physical strength	Conceptualisation	Serving attending	Managing coordinating	Teamwork	Latitude	External control	Internal control	Repetitiveness	Standardisation
Female	-0.066** [0.026]	-0.059* [0.033]	0.100*** [0.035]	-0.090*** [0.032]	-0.079*** [0.020]	-0.002 [0.022]	-0.006 [0.036]	0.058 [0.038]	0.095*** [0.034]	-0.058*** [0.018]
Mainly female	0.084*** [0.024]	-0.020 [0.030]	0.131*** [0.032]	-0.071** [0.031]	-0.064*** [0.017]	-0.051*** [0.019]	-0.002 [0.033]	-0.039 [0.034]	0.044 [0.030]	-0.027* [0.016]
Mixed	0.148*** [0.022]	-0.022 [0.027]	0.122*** [0.029]	0.060** [0.029]	-0.062*** [0.016]	-0.022 [0.018]	0.037 [0.031]	0.029 [0.031]	0.014 [0.027]	-0.024 [0.015]
Mainly male	0.106*** [0.022]	0.042 [0.028]	0.050 [0.031]	0.025 [0.029]	-0.057*** [0.017]	0.021 [0.018]	0.107*** [0.031]	0.036 [0.032]	-0.007 [0.028]	-0.004 [0.016]
Male dominated	0.102*** [0.021]	0.072*** [0.027]	0.107*** [0.029]	0.072*** [0.028]	-0.041*** [0.015]	0.003 [0.017]	0.009 [0.030]	0.025 [0.030]	-0.059** [0.027]	0.009 [0.015]
Female * Mainly female	-0.042 [0.026]	0.004 [0.032]	-0.113*** [0.033]	0.052 [0.032]	0.097*** [0.019]	0.007 [0.020]	-0.003 [0.036]	-0.016 [0.036]	-0.032 [0.033]	0.049*** [0.017]
Female * Mixed	-0.035 [0.024]	-0.036 [0.030]	-0.128*** [0.032]	0.000 [0.032]	0.063*** [0.019]	-0.016 [0.020]	0.008 [0.034]	-0.051 [0.034]	0.001 [0.031]	0.041** [0.016]
Female * Mainly male	-0.045* [0.024]	-0.055* [0.032]	-0.168*** [0.035]	0.030 [0.033]	0.096*** [0.020]	-0.016 [0.021]	-0.023 [0.035]	-0.076** [0.037]	0.017 [0.032]	0.074*** [0.019]
Female * Male dominated	-0.052* [0.029]	-0.072** [0.036]	-0.208*** [0.041]	0.048 [0.038]	0.083*** [0.022]	-0.050** [0.024]	0.013 [0.040]	-0.101** [0.042]	0.136*** [0.037]	0.096*** [0.022]
Experience between 1-5 years	0.020 [0.015]	-0.040** [0.017]	0.010 [0.020]	0.056*** [0.019]	0.036*** [0.012]	0.058*** [0.013]	-0.033* [0.020]	-0.003 [0.022]	0.040** [0.019]	0.011 [0.011]
Experience 5-10 years	0.018 [0.016]	-0.039** [0.019]	0.013 [0.021]	0.111*** [0.020]	0.051*** [0.012]	0.069*** [0.013]	-0.026 [0.021]	-0.010 [0.023]	0.013 [0.019]	0.033*** [0.011]
Experience >10 years	0.013 [0.015]	-0.014 [0.017]	-0.042** [0.020]	0.143*** [0.019]	0.109*** [0.011]	0.051*** [0.012]	-0.004 [0.019]	-0.022 [0.021]	0.036** [0.018]	0.038*** [0.010]
Prep. BTS DUT, DEUST, DNTS	-0.146*** [0.013]	0.025* [0.013]	-0.013 [0.018]	0.036** [0.018]	0.034*** [0.009]	0.064*** [0.010]	-0.032** [0.016]	0.063*** [0.018]	-0.122*** [0.013]	-0.014* [0.009]
CPGE	-0.121*** [0.022]	0.005 [0.026]	0.025 [0.027]	-0.006 [0.030]	0.021 [0.016]	0.036** [0.016]	-0.038 [0.028]	0.033 [0.031]	-0.047* [0.026]	-0.022 [0.014]
Dipl. paramédicaux-sociaux bac+2	0.056 [0.048]	0.125*** [0.036]	0.124*** [0.034]	0.020 [0.061]	0.079*** [0.030]	-0.032 [0.038]	-0.084* [0.048]	0.045 [0.061]	-0.106*** [0.035]	-0.056*** [0.020]
Prep. de licence	-0.190*** [0.018]	0.042** [0.018]	0.013 [0.024]	0.007 [0.027]	-0.002 [0.016]	0.003 [0.015]	0.064** [0.027]	0.124*** [0.024]	-0.095*** [0.018]	-0.024** [0.011]
Prep. de maîtrise	-0.227*** [0.021]	0.034 [0.022]	-0.104*** [0.032]	-0.019 [0.032]	-0.006 [0.017]	0.015 [0.017]	0.127*** [0.032]	0.092*** [0.029]	-0.121*** [0.018]	-0.025** [0.012]
Grandes Ecoles	-0.288*** [0.014]	0.018 [0.016]	-0.124*** [0.030]	0.120*** [0.030]	0.024* [0.014]	0.114*** [0.013]	0.075*** [0.025]	0.159*** [0.023]	-0.137*** [0.012]	-0.049*** [0.011]
Prep. doctorats	-0.103*** [0.023]	0.056*** [0.021]	-0.059* [0.032]	0.187*** [0.037]	0.004 [0.021]	0.006 [0.026]	-0.010 [0.034]	0.124*** [0.031]	-0.055** [0.022]	-0.021 [0.014]
age	-0.004*** [0.000]	-0.004*** [0.000]	-0.001* [0.000]	0.001*** [0.000]	-0.004*** [0.000]	0.003*** [0.000]	0.002*** [0.000]	0.005*** [0.000]	-0.003*** [0.000]	-0.002*** [0.000]
Constant	0.404*** [0.029]	1.176*** [0.036]	0.615*** [0.040]	0.340*** [0.037]	1.084*** [0.023]	0.584*** [0.024]	0.045 [0.040]	0.448*** [0.041]	0.268*** [0.037]	0.307*** [0.020]
N	17846	17846	17846	17846	17846	17846.000	17846	16090	17846	17846
r2	0.273	0.118	0.108	0.113	0.090	0.076	0.064	0.038	0.119	0.139

Note: the model also includes job size in terms of employment at the aggregate level, interaction between gender and education, and gender and work experience whose coefficients are not reported for the sake of space.

Table A 7: Estimated coefficient full model (M3), 2016.

Mind the task: evidence on persistent gender gaps at the workplace

	Physical strength	Conceptualisation	Serving attending	Managing coordinating	Teamwork	Latitude	External Control	Internal control	Repetitiveness	Standardisation
Female	-0.073 [0.047]	-0.149** [0.061]	-0.026 [0.061]	0.123*** [0.044]	-0.116*** [0.038]	0.050 [0.045]	0.061 [0.064]	0.086 [0.068]	-0.048 [0.068]	0.009 [0.031]
Mainly female	-0.018 [0.025]	-0.039 [0.028]	0.010 [0.024]	-0.015 [0.028]	-0.009 [0.021]	0.018 [0.027]	-0.049 [0.031]	-0.012 [0.039]	-0.073* [0.038]	-0.005 [0.014]
Mixed	0.064*** [0.023]	0.008 [0.024]	-0.036 [0.025]	0.016 [0.028]	-0.034* [0.018]	-0.046* [0.024]	0.042 [0.032]	-0.025 [0.033]	-0.057 [0.035]	0.046*** [0.015]
Mainly male	0.045* [0.024]	0.023 [0.025]	-0.033 [0.027]	0.019 [0.029]	-0.041* [0.022]	0.012 [0.026]	0.032 [0.032]	0.012 [0.033]	-0.125*** [0.035]	0.031** [0.016]
Male dominated	0.037* [0.021]	0.037* [0.023]	-0.056** [0.023]	0.064*** [0.025]	-0.042** [0.017]	0.024 [0.021]	0.025 [0.028]	0.013 [0.029]	-0.165*** [0.032]	0.009 [0.014]
Female * Mainly female	-0.007 [0.028]	0.020 [0.032]	-0.000 [0.029]	0.016 [0.031]	0.044* [0.023]	-0.005 [0.030]	0.048 [0.036]	-0.012 [0.044]	0.057 [0.043]	0.007 [0.016]
Female * Mixed	0.004 [0.029]	-0.048 [0.031]	0.006 [0.035]	0.033 [0.036]	0.010 [0.023]	0.014 [0.028]	0.043 [0.040]	-0.006 [0.043]	0.065 [0.041]	-0.010 [0.020]
Female * Mainly male	-0.000 [0.033]	-0.037 [0.034]	0.011 [0.036]	-0.003 [0.036]	0.053* [0.027]	0.009 [0.032]	-0.080* [0.041]	-0.037 [0.043]	0.108** [0.046]	0.024 [0.021]
Female * Male dominated	-0.023 [0.034]	-0.066* [0.034]	-0.022 [0.041]	0.008 [0.033]	0.053** [0.023]	-0.071** [0.029]	-0.028 [0.041]	-0.114** [0.047]	0.190*** [0.042]	0.056** [0.022]
Experience between 1-5 years	0.025 [0.025]	0.008 [0.032]	0.053 [0.041]	0.089*** [0.027]	-0.000 [0.018]	0.044* [0.024]	-0.097*** [0.037]	-0.041 [0.040]	-0.056 [0.036]	0.079*** [0.022]
Experience 5-10 years	0.057** [0.024]	-0.028 [0.032]	0.057 [0.038]	0.132*** [0.025]	0.018 [0.017]	0.070*** [0.022]	-0.076** [0.035]	-0.052 [0.037]	-0.024 [0.036]	0.058*** [0.019]
Experience >10 years	0.047** [0.022]	-0.016 [0.030]	-0.029 [0.036]	0.157*** [0.022]	0.031** [0.016]	0.021 [0.021]	-0.044 [0.033]	-0.080** [0.035]	-0.016 [0.034]	0.077*** [0.016]
CEP	0.040* [0.024]	0.029 [0.031]	0.041 [0.029]	0.054*** [0.021]	0.021 [0.018]	0.037** [0.019]	-0.031 [0.031]	0.044 [0.035]	-0.004 [0.034]	-0.001 [0.017]
Bac tech ou prof	-0.006 [0.029]	0.071* [0.037]	0.076** [0.034]	0.042 [0.028]	0.045** [0.020]	0.080*** [0.022]	-0.073** [0.035]	0.071* [0.042]	-0.175*** [0.039]	-0.028 [0.020]
Bac+2	-0.161*** [0.031]	0.097*** [0.033]	0.013 [0.036]	0.051* [0.028]	0.034* [0.020]	0.062** [0.028]	-0.062 [0.039]	0.118*** [0.044]	-0.242*** [0.038]	-0.042* [0.026]
bac +3 ou bac +4 prof	-0.213*** [0.031]	0.071** [0.034]	-0.016 [0.042]	-0.016 [0.033]	0.043* [0.022]	0.069*** [0.024]	0.004 [0.042]	0.169*** [0.042]	-0.257*** [0.039]	-0.062*** [0.024]
bac+4	-0.309*** [0.028]	0.085** [0.035]	-0.074* [0.038]	0.046 [0.030]	0.042** [0.021]	0.085*** [0.025]	-0.011 [0.037]	0.190*** [0.044]	-0.291*** [0.036]	-0.094*** [0.020]
age	-0.005*** [0.000]	-0.002*** [0.001]	0.001 [0.001]	-0.001** [0.000]	-0.003*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.004*** [0.001]	-0.004*** [0.001]	-0.003*** [0.000]
Constant	0.460*** [0.047]	0.973*** [0.057]	0.487*** [0.060]	0.520*** [0.047]	1.122*** [0.035]	0.567*** [0.044]	0.161*** [0.062]	0.516*** [0.071]	0.648*** [0.067]	0.299*** [0.035]
N	17202	17184	17201	17210	17189	17200	17196	15728	17189	17201
r2	0.284	0.109	0.150	0.190	0.101	0.066	0.072	0.033	0.197	0.138

Note: the model also includes job size in terms of employment at the aggregate level, interaction between gender and education, and gender and work experience whose coefficients are not reported for the sake of space.

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