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Manufacturing: Working Conditions and Job Quality

Eurofound
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Abstract
This report gives an overview of working conditions, job quality, workers’ health and job sustainability in the manufacturing sector. It is based mostly on the fifth European Working Conditions Survey (EWCS), which gathers data on working conditions and the quality of work across 34 European countries. Additional information on the structural characteristics of the sector is derived from Eurostat data. The fifth EWCS contains responses from almost 44,000 workers in manufacturing. The report compares aspects of work in the manufacturing sector with the EU28 as a whole and examines differences across the 11 subsectors within the sector:

- food (NACE 10): 11,838 cases;
- textiles (NACE 13): 14,468 cases;
- leather (NACE 15): 106 cases;
- wood (NACE 16): 251 cases;
- paper (NACE 17): 107 cases;
- printing (NACE 18): 328 cases;
- chemicals (NACE 20, 21): 22,599 cases;
- steel (NACE 24): 200 cases;
- metal (NACE 25 to 30): 1,382 cases;
- furniture (NACE 31): 351 cases;
- other manufacturing sectors (NACE 12, 19, 23, 32): 33,357 cases.

Keywords
European Union, working conditions, job sustainability, manufacturing

Comments
Suggested Citation

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Manufacturing:
Working conditions and job quality

Work plays a significant role in people’s lives, in the functioning of companies and in society at large. But what is work? How can we describe it? Is it changing, and if so, is it for better or for worse? Is it fulfilling the numerous and at times conflicting expectations we have of it? How can we take steps to improve work for the well-being of all?


This report gives an overview of working conditions, job quality, workers’ health and job sustainability in the manufacturing sector. It is based mostly on the fifth European Working Conditions Survey (EWCS), which gathers data on working conditions and the quality of work across 34 European countries. Additional information on the structural characteristics of the sector is derived from Eurostat data. The fifth EWCS contains responses from almost 44,000 workers in manufacturing. The report compares aspects of work in the manufacturing sector with the EU28 as a whole and examines differences across the 11 subsectors within the sector:

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Structural characteristics

In 2010, 34,236,300 European workers, or 15.7% of the EU28 workforce, worked in manufacturing (Eurostat, 2013). By subsector, the employment breakdown is as follows: Food: 4,831,800; Textiles: 2,139,800; Leather: 451,000; Wood: 1,161,000; Paper: 633,000; Printing: 1,031,500; Chemicals: 3,808,200; Steel: 1,288,700; Metal: 13,498,800; Furniture: 1,264,100; Other: 4,078,000.

The impact of the crisis between 2008 and 2010 was particularly adverse in manufacturing, which experienced a decrease in employment of 10.3% in the sector as a whole. Employment declined in all subsectors, with textiles, leather and furniture being the most affected (21%, 20% and 18% respectively). The decline in employment continued for all subsectors between 2010 and 2012.

A relatively large proportion of workers in manufacturing (21%) work in large workplaces (250 or more employees), compared with the EU28

Manufacturing sector in a nutshell

- The sector is male-dominated, with the exception of the leather and textiles subsectors
- Working hours tend to be typical and regular
- There are low levels of employer-paid training for women
- Job strain is an issue in all subsectors except in printing
- There are very high levels of exposure to physical risks while the awareness of health and safety risks at work is similar to the EU28 average
- The incidence of negative health outcomes due to work activity is above average in most subsectors – largely explained by low educational attainment in the workforce

1 Nomenclature statistique des activités économiques dans la Communauté européenne (statistical classification of economic activities in the European Community).
average of 12%. The difference is most pronounced in steel (32%), metal (31%) and chemicals (26%). Nevertheless, a majority of workers in the sector (54%) work in small and medium-sized workplaces (10–249 employees), compared with the EU28 average of 46%. Manufacturing is a heavily male-dominated sector, 70% of workers being men. Men are particularly over-represented in the steel and metal subsector (in which, respectively, 87% and 76% of workers are men). Two sectors do not mirror this trend: in textiles and leather the majority of workers are women (67% and 56% respectively).

The age profile of the workforce in manufacturing is similar to the EU28 as a whole, although workers aged 50 and over are slightly overrepresented (forming 29% of workforce in manufacturing compared to 27% in the EU28), particularly so in sectors such as steel (35%), wood (33%) and metal (31%). Younger workers are particularly underrepresented in steel, textiles and leather, where they make up respectively 14%, 26% and 26% of the workforce compared to the EU28 average of 32%.

Self-employment is relatively uncommon in manufacturing: only 3% of workers are self-employed with employees of their own and 6% are self-employed without employees, compared to the EU28 averages of, respectively, 4% and 11%. Exceptions to this trend are the printing, furniture, wood and leather sectors, where self-employment with no employees is as common as or more common than the EU28 average. This is also true for the furniture and wood sectors (for the self-employed who have employees).

Figure 1 shows that among employees, compared to the EU28 average, indefinite contracts are more common in the majority of subsectors in manufacturing.
manufacturing. Notable exceptions are the printing, paper and wood subsectors, where fixed-term contracts are more common than the EU28 average. Printing and especially leather stand out as subsectors in which the proportion of workers with no contract (8% and 11% respectively) is higher than the EU28 average of 5%.

Compared to the EU28 average (24%), part-time work is considerably less prevalent in manufacturing (12%), with the sole exception of the printing subsector (26%).

Working conditions

Changes since the crisis

Figure 2 shows that across the various subsectors, with the exception of leather, steel and printing, reported changes to the number of hours worked in the previous year were as common (in metal and other) or less common (in food, textiles, wood, paper, chemicals, furniture) than the EU28 average. A notable exception to this trend is that of workers in the steel sector, 27% of whom reported a decrease in their working hours in the previous year compared to the EU28 average of 11%. Workers in printing and leather were, on the other hand, those most affected by increases in their working hours.

As with the EU28 average, more workers in manufacturing reported changes in salary than in number of hours worked. Workers in some manufacturing subsectors (steel, textiles, printing, furniture, leather and metal) were more likely to have seen a decrease in their salary in the previous year than workers in other manufacturing subsectors and in the EU28 as a whole. Increases in salary were more common for workers in paper, chemicals and leather than the EU28 average.

Workers in manufacturing were more affected than the EU28 average by restructuring and the introduction of new technologies (Figure 3). The manufacturing sector follows the same pattern as the EU28 – the proportion of employees reporting restructuring or reorganisation, or the introduction of new production processes and technologies, increases with workplace size.

Figure 3: Restructuring and introduction of new technologies in past three years, by workplace size (%)
small and medium-sized workplaces (SMEs, 10–249 employees), while workers in micro-workplaces are the most likely to want to work more hours.

*Figure 6: Index of working atypical hours (EU28=100), by subsector and gender*

Figure 6 shows that working atypical hours (weekends, evenings or nights) is considerably less prevalent in manufacturing than in the EU28 as a whole, except for all workers in food and for men in printing and metal, who are more likely than the EU28 average to work atypical hours.

As well as not being atypical, working hours in manufacturing also tend to be more regular (working the same hours every day or the same days every week) than in the EU28 (Figure 7). The sole exception here is printing, where working times for both men and women are slightly less regular than for the EU28.

*Figure 7: Index of regularity of working time (EU28 = 100), by subsector and gender*

Reported levels of work–life balance – the fit between working hours and family or social commitments – in the manufacturing sector as a whole do not differ from the EU28 average. Subsectors in which levels of reported poor work–life balance are above the EU28 average of 19% are steel (21%), food (22%), printing (23%) and other (27%), while furniture stands out for the very low proportion of workers (10%) reporting poor work–life balance. Figure 8 shows that, as in the EU28 as a whole, men in manufacturing are more likely to report poor work–life balance than women. Levels of poor work–life balance are slightly lower than the EU28 average in micro workplaces in manufacturing.

*Figure 8: Reported levels of work–life balance by subsector and gender*

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Work organisation

Teamwork

Teamwork has been proposed as an alternative to work organisation models based on high levels of labour division. As teamwork reflects a variety of practices, it can also assume a variety of forms. Different types of teamwork can be identified using the EWCS by looking at the level of autonomy within the teams.

Figure 8 shows that teamwork is slightly more prevalent in manufacturing (64%) than in the EU28 as a whole (62%). This difference is accounted for largely by teamwork with no autonomy, which is reported by 31% of workers in manufacturing, compared to 25% in the EU28.

Manual workers in manufacturing are considerably more likely than manual workers on average in the EU28 or clerical workers in manufacturing to work in a team with no autonomy; teamwork with some or much autonomy is more common for clerical than for manual workers in the sector.

Task rotation

Task rotation is also an important feature of work organisation. Depending on how it is implemented, task rotation may require different skills from the worker (‘multiskilling’) or it may not (‘fixed task rotation’) and is either controlled by management or by the workers themselves (‘autonomous’). Task rotation has been shown to be beneficial for workers’ well-being, and autonomous multiskilling systems in particular are associated with higher worker motivation as well as better company performance.

The percentage of workers in manufacturing working in a task rotation system does not differ much from

Figure 10: Prevalence of task rotation, by workplace size
the EU28 average (Figure 10), and the incidence of task rotation increases with workplace size. However, in large workplaces in the sector, task rotation is less common than in the average large workplace in the EU28. In small and medium-sized workplaces (SMEs), management-controlled multitasking is equally as prevalent as the EU28 average for workplaces of that size.

**Female bosses**
Manufacturing is a male-dominated sector, and the proportion of workers reporting that they have a female boss (15%) is lower than the EU28 average (29%). The proportion of women in the sector reporting having a female boss reflects the proportion of women working in the sector (34% and 30%, respectively). However, the proportion of men reporting that they have a female boss is particularly low (6%). Textiles and leather, as the two subsectors with a female majority in the workforce, are also unsurprisingly the ones with the highest proportion of workers reporting having a female boss (47% and 34% respectively, compared to the EU28 average of 29%). Conversely, steel stands out as the subsector with the lowest level of female representation in management: only 2% of workers report having a woman as a boss.

**Skills and training**
Manufacturing does not differ from the EU28 workforce as a whole in relation to the incidence of skills mismatch (Figure 11).

The proportion of workers in the 35–49 years age group who describe themselves as under-skilled is slightly lower in manufacturing (9%) than in the EU28 as a whole (12%). The opposite is true for older workers in manufacturing, 13% of whom say they are under-skilled, compared to the corresponding EU28 average of 11% (Figure 11). By subsector, the proportion of workers describing themselves as under-skilled is above average in other (15%) and particularly so in steel (26%). Paper, printing, wood and textiles stand out as sectors with above-average proportions of workers describing themselves as over-skilled (45%, 40%, 35% and 35% respectively).

**Employee representation**
The EWCS contains fairly limited information on formal employee representation. It asks whether an employee representative is present at the workplace and whether workers have raised an issue with an employee representative in the past year. Figure 13 shows the combined results of these questions (an employee representative has been considered to be

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**Figure 11: Match between skills and tasks, by age**

<table>
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<th></th>
<th>&lt;35 years</th>
<th>35–49 years</th>
<th>50+ years</th>
<th>Total</th>
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<td>EU28</td>
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**Figure 12: Employer-paid training, by gender and age**

Overall, the percentage of workers in manufacturing reporting that they have received training (28%) is lower than the EU28 average (34%). There are, however, sizeable differences between men and women (Figure 12). Women of all ages in the sector are much less likely to have received training, compared to men in the sector and female workers on average in the EU28.
‘available’ if they were present at the workplace or when an issue was raised).

Figure 13: Availability of an employee representative at the workplace, by subsector

At 60%, the prevalence of employee representation is above the EU average of 52% in the manufacturing sector as a whole; this is particularly the case in steel (65%), paper (67%), metal (71%) and chemicals (74%), probably due to the high proportion of large companies in these sectors. Conversely, levels of employee representation are considerably below average in leather (30%), where micro-workplaces are more widespread.

Psychosocial and physical environment

Job autonomy and work intensity

The psychosocial and physical environment impacts heavily on workers’ well-being. According to the job demand and control model of the American sociologist Karasek (1979), workers are more likely to suffer from work-related stress when they are faced with a high level of demand while being limited in the control they have over the way in which they carry out their job.

Figure 14 shows the likelihood of workers in manufacturing suffering from work-related stress. Groups of workers are plotted along two axes: job autonomy and work intensity.

The results are quite striking as all groups of workers, with the exception of workers in micro-workplaces and in the printing subsector, are found in the bottom-right quadrant, which indicates ‘job strain’. This means that the jobs of the vast majority of workers in manufacturing are characterised by high levels of intensity and low levels of autonomy, posing the risk of unhealthy stress levels and consequently exposing workers to a range of stress-related illnesses such as cardiovascular disease and mental-health problems. In particular, workers in textiles appear to have the highest levels of reported work intensity with some of the lowest scores in relation to reported job autonomy.

Workers in micro-workplaces and in the printing sector are instead found in the top-right quadrant, which contains the averages for so-called ‘active’ jobs. Although their jobs can be very demanding, workers in this category have adequate control over the way they do their job and can develop coping strategies through active learning. As levels of work intensity are
very high in manufacturing, few workers are likely to be in the bottom-left quadrant, which indicates so-called ‘passive’ jobs. These are characterised by low levels of intensity and of autonomy with a low risk of stress, but carrying a high risk of frustration and low motivation. Workers in manufacturing are also unlikely to be in the top-left quadrant, which indicates ‘low strain’ jobs characterised by low levels of work intensity and high levels of job autonomy. These jobs pose a low risk of stress, but workers are less likely to suffer from frustration and loss of motivation than those in passive jobs.

Social environment
A good social environment is characterised by the existence of social support and the absence of abuse at work. Social support can help workers deal with high levels of work intensity. Workers in manufacturing are somewhat above the EU28 average on this indicator, with the sole exception of women working in micro-workplaces (Figure 15).

Figure 15: Index of good social environment (EU28 = 100), by gender and workplace size

Exposure to physical risks is higher in manufacturing than the EU28 average for all three types of physical risks (posture and movement-related, biological and chemical and ambient risk) (Figure 16).

Across most subsectors, with the exception of leather, men are considerably more exposed to physical risks than women, who in turn are in some cases below the EU28 average for risk exposure. Ambient risks are the most widespread type in almost all subsectors, with the exception of printing and chemicals, where biological and chemical risks are most common, and leather, where risks related to posture and movement are most common. Men in the steel sector have by far the highest level of risk exposure in manufacturing.

Given the high level of risk exposure, workers in manufacturing are almost as well informed about workplace risks as workers in the EU28 as a whole: 9% of workers in manufacturing report being ill-informed about health and safety risks, compared to 10% on average the EU28. The percentage of workers reporting insufficient information is above the EU28 average only in printing (11%), leather (13%) and textiles (17%).

Figure 16: Indices of exposure to physical risks (EU28 = 100), by gender and subsector

Figure 17: Not very well or not at all well informed about health and safety risks at work, by subsector
In the Eurofound report *Trends in job quality in Europe*, the authors constructed four indices of job quality: earnings, prospects, intrinsic job quality and working time quality. The indices are built using job characteristics that are unambiguously associated with workers’ well-being.

Figure 18 summarises job quality in the manufacturing sector. It shows the average score for the sector and subsectors on each of the indicators, controlling and not controlling for the structural characteristics of the sector’s workers (age, gender, workplace size, education level and country), and for the EU28. All four indicators range between 0 and 100.

Figure 18 shows that the subsectors differ quite considerably in levels of job quality. Workers in the subsectors of paper, printing, chemicals, steel, metal, furniture and other have earnings scores above the EU28 average. Moreover, this difference, except for printing and steel, persists when structural characteristics of the workforce are controlled for (such as level of education, country distribution of sectors, age and gender) – although the higher levels of earnings in many manufacturing subsectors may be largely explained by the older age profile of the workforce. Exceptions to this trend are food, textiles, leather and wood, where earnings scores remain below the EU28 average, even when controlling for structural background characteristics.

For most subsectors, scores for working time quality are below the EU28 average (with the exceptions of wood, printing, chemicals and furniture); steel and food stand out as sectors with scores well below average for this indicator. These differences, however, largely disappear when structural characteristics are controlled for, suggesting that variations are mainly due to the age profile, gender composition and lower level of average educational attainment of the workforce in manufacturing. Indeed, after controlling for background characteristics, scores for working time quality in some subsectors (wood, printing, chemicals, metal, furniture and other) are actually above the EU28 average. This implies that workers in these subsectors might be better off in this respect than workers with similar background in other sectors.

Intrinsic job quality scores for all subsectors, with the exception of chemicals and printing, are considerably below the EU28 average. These differences are reduced when the structural characteristics of the workforce are controlled for, suggesting that they are at least partly explained by the age profile and average lower levels of educational attainment of workers in manufacturing, and by the high concentration of manufacturing jobs in countries where working conditions tend to be of lower quality.

Subsector scores for prospects are more heterogeneous. While food, textiles, leather and wood score considerably below the EU28 average, scores of the other subsectors are in line with or higher than the EU28, with chemicals standing out as a sector with particularly high scores for prospects. When the background structural characteristics of the workforce are controlled for, the differences between the subsectors and the EU28 are largely reduced for those sectors with lower than average scores; differences are increased for sectors having scores higher than or close to the EU28 average. This
suggests that scores for prospects are mostly influenced by the level of education and age composition of the workforce in each subsector, rather than by specific sectoral structural characteristics.

Health and sustainability of work

Working conditions can impact both positively and negatively on the health of workers and on the sustainability of their jobs.

Figure 19 shows different patterns for the subsectors in manufacturing. As in the previous section, multivariate analyses were carried out to check whether differences between the subsectors and the EU28 average change when controlling for structural background characteristics (age, gender, workplace size, education level and country).

For the determinants of how likely it is that workers will report being absent from work due to a workplace accident, the picture is clear. While steel and furniture are the same as the EU28 average, all other subsectors in manufacturing have a lower-than-average likelihood of absence due to workplace accident. However, the only difference that remains significant after controlling for structural factors is that for the food sector; in all other subsectors, the differences are largely explained by the level of education and the gender composition of the workforce. Workers who are men, and who have lower levels of educational attainment are more likely to report having been absent due to workplace accidents.

The picture of poor self-reported health is mixed. While in the majority of subsectors (with the exception of chemicals, printing and paper) the proportion of workers reporting poor health is higher than the EU28 average, the only difference which remains significant after controlling for structural characteristics is for workers in textiles. For all other subsectors, the low level of education of the workforce is by far the most important element in accounting for poor health outcomes.

Differences between subsectors are more marked for the proportion of workers reporting that their health is at risk because of work. After controlling for structural characteristics, printing and paper are significantly below the EU28 average on this indicator, while the steel, furniture and other subsectors are significantly above the average, and the difference is not as significant for the rest of the subsectors.

The proportion of workers who say that their work affects their health negatively is above the EU28 average for all subsectors with the exception of food. However, after controlling for structural characteristics, significant differences between the subsectors and the EU28 are observed in the case of the steel, other and furniture sectors. For all the other subsectors, the prevalence of large workplaces and low levels of education appear to be the strongest explanatory variables.

It is interesting to note that for all subsectors, with the exception of the printing and other subsectors, the proportion of workers who report levels of presenteeism are below the EU28 average. The
higher-than-average scores for printing and other subsectors appear significant even after controlling for structural differences, while metal, food, paper and wood are significantly lower. In all other subsectors, the lower incidence of presenteeism is largely explained by the lower levels of education of the workforce.

The proportion of workers who say they think they will be able to perform their job at the age of 60 is similar to or higher than the EU28 average in four sectors: paper, printing, chemicals and furniture; it is lower in all other subsectors. However, these differences are largely explained by the level of education of the workforce in these sectors, and the only differences that remain significant after controlling for structural differences is for workers in printing and steel.

Figure 20 shows a mixed picture of health in the manufacturing sector. While reported scores for absenteeism tend to be higher than the EU28 average in many subsectors, the differences in scores for mental well-being and the number of reported health symptoms are less pronounced: the exceptions are the relatively low mental well-being scores for workers in textiles, the low number of health symptoms reported by workers in paper and the high number of health symptoms for workers in the textiles, wood and other subsectors.

When age, gender, workplace size, education level and country of the workers in the subsectors are controlled for, the significant differences in reporting of health symptoms that remain are the relatively high number of symptoms reported by workers in the other and printing subsectors, the low numbers in food and leather, and the considerably low number of symptoms for workers in paper. Differences between all subsectors and the EU28 in relation to absenteeism are not significant after controlling for background characteristics. Finally, the only difference that remains significant for mental well-being is the lower scores of workers in textiles.

It is important to keep in mind that the impact of work on health is a very gradual process that can take a long time and cannot be fully captured in a cross-sectional survey. The results in this section are likely to underestimate the often negative health effects that physically and psychologically strenuous working conditions can have.

References


European Working Conditions Survey

Eurofound developed its European Working Conditions Survey (EWCS) in 1990 in order to provide high-quality information on living and working conditions in Europe. Five waves of the survey have been carried out to date, enabling long-term trends to be observed and analysed.

The EWCS interviews both employees and self-employed people on key issues related to their work and employment. Fieldwork for the fifth EWCS took place from January to June 2010, with almost 44,000 workers interviewed in their homes in 34 countries – EU28, Norway, the former Yugoslav Republic of Macedonia, Turkey, Albania, Montenegro and Kosovo. The 5th EWCS was implemented by Gallup Europe, who worked within a strong quality assurance framework to ensure the highest possible standards in all data collection and editing processes.

The questionnaire covered issues such as precarious employment, leadership styles and worker participation as well as the general job context, working time, work organisation, pay, work-related health risks, cognitive and psychosocial factors, work-life balance and access to training. A number of questions were included to capture the impact of the economic downturn on working conditions.

For more information on the EWCS, see http://eurofound.europa.eu/european-working-conditions-surveys-ewcs

Sectoral analysis

The report Working conditions and job quality: Comparing sectors in Europe and the series of 33 sectoral information sheets aim to capture the diversity prevalent across sectors in Europe in terms of working conditions and job quality. The report pinpoints trends across sectors in areas such as working time and work–life balance, work organisation, skills and training, employee representation and the psychosocial and physical environment. It identifies sectors that score particularly well or particularly poorly in terms of job quality and sheds light on differences between sectors in terms of health and well-being.

For more information, see http://eurofound.europa.eu/comparing-working-conditions-across-sectors-in-europe

Further information

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