Does job polarisation imply wage polarisation ?

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Introduction

The labour market is changing, partly as a result of the globalisation of economies and technological progress. Economic crises are accelerating the consequences of these changes. Industry, which traditionally provided a large number of medium-skilled jobs, has been particularly affected and in the advanced economies, which are increasingly becoming service-based, its workforce has shrunk.

If jobs are ranked by occupation, it is evident that the proportions of highly-skilled and low-skilled occupations (the best paid and the lowest paid respectively) have increased over the years, while the share of medium-skilled jobs has declined. The labour market is thus becoming polarised between low-skilled ("lousy jobs") and highly-skilled ("lovely jobs"), at the expense of medium-skilled jobs. "Middle-class" jobs are tending to disappear.

Are wages becoming polarised too ? In other words, is there a widening pay gap in favour of the most highly skilled, and wage decline or stagnation in the case of intermediate jobs ? Has the pay gap between low-skilled and medium-skilled employees narrowed over the past decade ? The article describes the situation in Belgium in the European context.

The article is in three sections. Section 1 explains the concept of job polarisation and the possible causes of this empirical finding. Section 2 describes wage dispersion in the various countries over the past ten years. Section 3 analyses the Belgian data from the Structure of Earnings Survey from 2004 to 2014. We start by presenting the data before examining the wage determinants, first for the averages and then for the various deciles within the distribution. Finally, we decompose the variation of the aggregate wage over the observation period into a factor due to changes in the characteristics of the employee population during that period and other factors. The article ends with our conclusions.

1. Job polarisation

In the United States, wage inequality has increased sharply since the late 1970s. The explanation most frequently put forward is that technological progress is biased in favour of the best-educated and/or most highly-trained workers (skill-biased technological change – SBTC), a theory based on the assumption that technological progress in recent decades has primarily raised the productivity of the most highly-educated people, rather than that of the low or medium skilled. The capabilities of highly-educated workers are a better complement for innovations in production processes (primarily progress in information and communication technology – ICT), thus causing a shift in demand for labour to the more highly-skilled.

Autor *et al.* (2003) modified that approach. It is not so much the workers' educational qualifications as their skills, broken down into tasks, that permit to assess the complementarity between work and technological progress. They "translated" the content of jobs into tasks which they classified in two sub-sets : routine tasks and non-routine tasks. Routine tasks are easy to formalise and can therefore be programmed and automated. Conversely, non-routine tasks cannot (yet) be carried out by machines. That distinction is constantly changing as a result of technological progress.

The "task" content was analysed for each occupation. Broadly speaking, highly-skilled occupations – which have become more prevalent – consist mainly of abstract, non-routine tasks requiring in-depth knowledge, creativity and people skills. Low-skilled occupations, which (in some countries) have gained importance on the labour market, are usually service jobs linked to particular people and / or places. They also include non-routine tasks (interaction with people / the context). In contrast, medium-skilled occupations mainly comprise routine tasks. These are the occupations most under threat in the advanced economies.

With this approach, we obtain predictions for the United States compatible with what we find in the data on the skill-based employment structure : routine work is substituted by computers and robots, whereas they complement abstract work. As in the SBTC theory, exposure to technology is not neutral but its effects are different for the medium-skilled and the low-skilled segments.

Apart from the factors relating to technological progress, there are plenty of additional or competing theories on job polarisation. The expansion of trade (industrial relocation, etc.) has also played a part. While workers / consumers in the advanced countries undeniably benefit from globalisation, in contrast low-skilled or medium-skilled jobs – if they can be

CHART 1   **JOB POLARISATION IS ALSO EVIDENT IN EUROPE**
(change in employment structure between 1999 and 2016 by skill level[1], in percentage points)
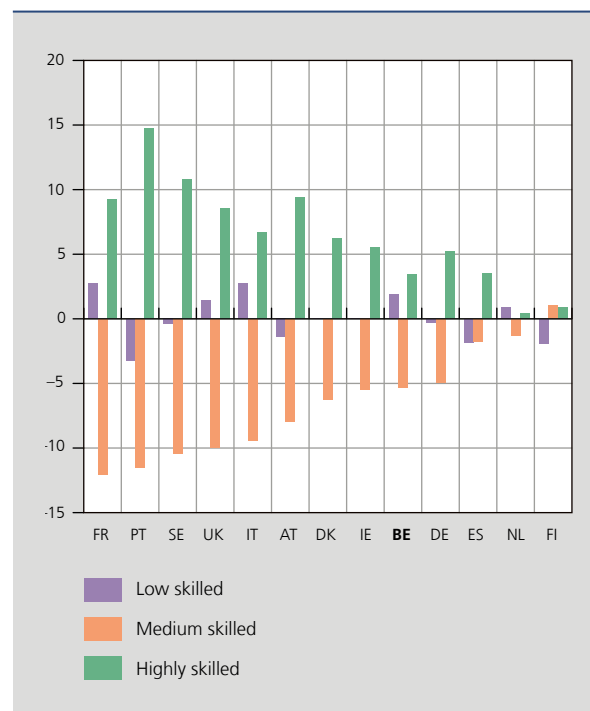
Source : Eurostat.
(1) Highly-skilled jobs correspond to occupations such as directors, managers, intellectual and scientific occupations, technical occupations and the like (categories 1, 2 and 3 in the ISCO-88 classification). Medium-skilled jobs correspond to occupations which include office clerks, service personnel, craft and related trades workers, plant and machine operators and assemblers (categories 4, 5, 7 and 8 in the ISCO-88 classification). Low-skilled jobs correspond to labourers and unskilled cleaners, caretakers and maintenance workers (category 9 in the ISCO-88 classification).

relocated – suffer the adverse consequences (Feenstra and Hanson, 1996 ; Goos *et al.*, 2014). Other theories suggest that labour market institutions (such as the existence of a minimum wage, job protection, etc.) vary in their effects according to the skill group, and could therefore likewise contribute to polarisation.

In this section, we use the data from the labour force surveys. In line with most empirical studies on this subject, we examine a job's skills by considering occupations rather than educational levels. Occupations are generally classified according to wages. Here, we simply divide occupations into three skill groups. Jobs in agriculture and the armed forces are excluded.

Highly-skilled jobs correspond to occupations such as directors, managers, intellectual and scientific occupations, technical occupations and the like (categories 1, 2 and 3 in the ISCO-88 classification). Low-skilled jobs correspond to elementary occupations (category 9 in the ISCO-88 classification, which includes labourers and unskilled cleaners, caretakers and maintenance workers). Medium-skilled jobs cover the other occupations (categories 4, 5, 7 and 8 in the ISCO-88 classification, which includes office clerks, craft and related trades workers, plant and machine operators and assemblers). The data here concern all workers.

The results obtained are compatible with the hypothesis of job polarisation in all EU15 countries. Between 1999 and 2016, the prevalence of medium-skilled jobs declined (down by an average of 6.6 percentage points) in favour of an increase in the share of highly-skilled jobs (+6.5 points) and, to a lesser degree, low-skilled jobs (+0.1 point). The scale of the phenomenon varies from one country to another. In some countries, low-skilled jobs are also declining, as in Portugal, Austria and Spain. In others, such as Finland and the Netherlands, the expansion of highly-skilled jobs is less pronounced.

According to this definition of jobs and occupational categories, Belgium recorded a 5.4 percentage point decline in medium-skilled jobs over this period, while highly-skilled jobs increased by 3.4 points and low-skilled jobs by 1.9 points.

These findings on job polarisation are robust in that they are borne out by other data banks (the Structure of Earnings Survey (SES) in Europe, the Current Population Survey (CPS) and the administrative social security data in the United States, etc.), but are also confirmed by more detailed occupational categories.

Polarisation reflects higher demand for skilled labour

Polarisation is the outcome of the changes in demand for labour. During the period considered, the supply of skilled labour has also increased enormously, but the relative earnings of the most highly-skilled have not fallen, showing that the shift in demand for skilled labour has more than offset this expansion of supply.

While analysis of occupations according to the task content implies that technological progress varies in its impact on the three skill groups (favourable for the highest-skilled, adverse for the medium-skilled and neutral for services activities concentrated mainly in the least-skilled segment), in their model, Cozzi and Impullitti (2016) conclude that a general equilibrium mechanism explains an increase in demand (and wages) for service workers compared to other low-skilled activities. The technological catching-up process between advanced economies is said to imply stronger competition for attracting the most highly-skilled workers. The rise in relative pay for highly-skilled work and the increased dispersion in the upper part of the wage distribution lead these workers to make more use of services activities so that they can devote more time to their own occupation.

In Belgium, this was one of the arguments for creating the service voucher system. The growth of low-skilled employment is evident mainly in the expansion of personal services in the broad sense (domestic help, care assistants, etc.). Since the system was set up in 2004, it has created no fewer than 130 000 jobs, most of which are filled by women.

2. Limited wage dispersion in Belgium

In order to calculate the distribution deciles, all employees are ranked according to their wage level. The first decile (D1) separates the 10 % of employees on the lowest wages from the other 90 % of employees. This is a measure of low wages. The ninth decile (D9) separates the 90 % of employees paid lower wages from the 10 % of the population with

the highest earnings. That is therefore a measure of high wages. Consequently, the ratio between D9 and D1 (called D9D1) measures the dispersion across the whole distribution. In general, dispersion is also apparent within each decile, and that dispersion increases at higher levels in the distribution. The first deciles are more uniform, as they comprise more generic jobs, particularly as regards pay. Conversely, the last deciles encompass employees in jobs where both the content and the responsibilities are diverse, and that is reflected in a wide range of pay.

Chart 2 shows the variation in dispersion in various countries between 2006 and 2016. In one group of countries, particularly the United States but also the Netherlands, Denmark and France, the D9D1 ratio has gone up. That is not the case in Belgium, which belongs to the group of countries where wage differentiation has tended to decline over the recent period. That is all the more remarkable as the level of wage differentiation is already low in Belgium, with a D9D1 ratio of 2.36 in 2015. Among the EU15 countries, only Italy had a lower dispersion, namely 2.25. For comparison, in the United States these deciles have a ratio of 5.05, which is equivalent to a dispersion almost twice as great as in Belgium.

To ascertain whether inequality has worsened uniformly or whether it tends to be concentrated in the upper or lower part of the distribution, the ratio of high wages to median wages (D9D5) and the ratio of median to low wages (D5D1) are considered separately. Comparison between countries reveals that the widening wage inequality in the United States and the Netherlands over the past decade is due to greater differentiation in the upper part of the distribution : it is mainly high incomes that have risen, compared to medium and low incomes. There is also increasing dispersion in the upper part of the distribution in Germany, Austria and Finland, whereas wage inequality in general has diminished in those three countries. The increase in dispersion in France and Denmark seems to be more evenly distributed.

In Belgium, the decline in dispersion is due to reduction in both the upper and lower parts of the distribution. That is also the case in Portugal and the United Kingdom, but in absolute terms, those two countries have much greater wage inequality than Belgium.

CHART 2   WAGE DISPERSION IS DECLINING IN BOTH THE UPPER AND LOWER PARTS OF THE DISTRIBUTION IN BELGIUM

(in percentage points, difference in dispersion indicators between 2006 and 2016[1])
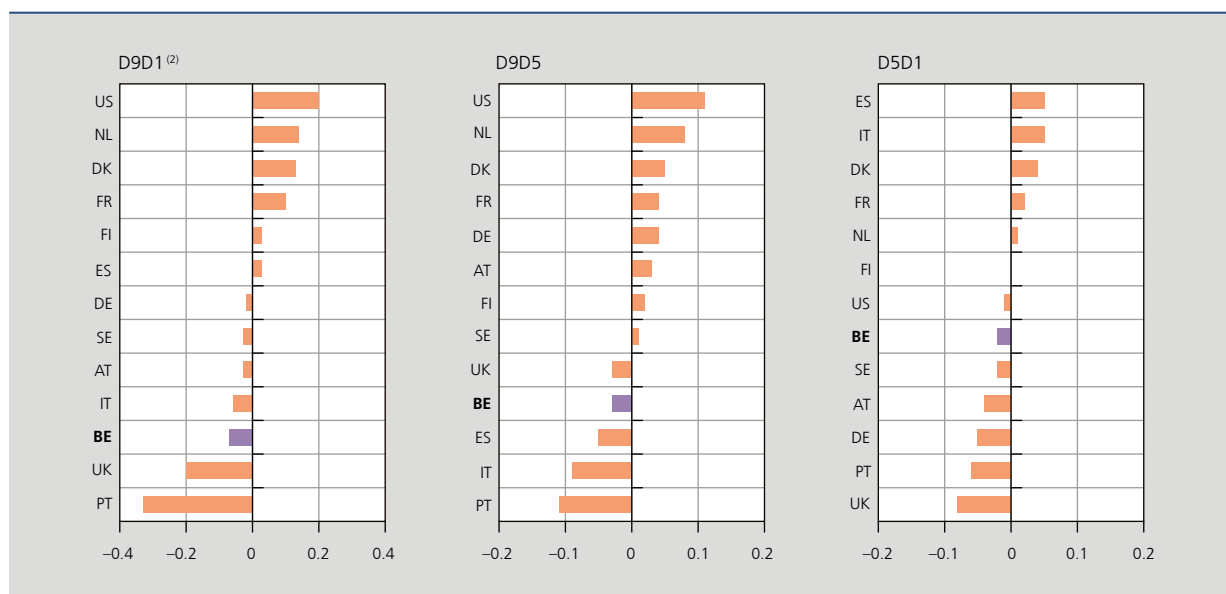
Source : OECD.
(1) 2016 or the latest available year (2015 for Belgium).
(2) D9D1 : ratio between the 9th and 1st deciles of the wage distribution. The ratios D9D5 and D5D1 are defined in the same way.

3. Trend in wages in Belgium: use of the SES

3.1 Data

We use data from the annual Structure of Earnings Survey (SES) in Belgium for the years 2004 to 2014[1]. That survey provides detailed information on the level of hourly, monthly and annual pay in relation to employees' individual characteristics (sex, age, occupation, tenure, highest educational level attained, etc.) and their employer (industry, region, size and economic control of the undertaking). In order to control for the effect of working time, we focus on hourly pay. Mean gross hourly wages are defined as gross pay in the reference month (namely October) divided by the number of hours paid during that period. We deflated the gross hourly pay by the harmonised index of consumer prices (HICP)[2] in order to control for price effects. We only study wages from the point of view of paid employees, and take no account of an individual's decision on whether or not to participate in the labour market.

As in the other parts of this article, we define skill levels on the basis of the types of occupation[3]. Managers, members of the intellectual and scientific occupations and those in intermediate occupations belong to the highly-skilled jobs category, while people in elementary occupations are classed as low-skilled. Other types of occupation are considered to be medium-skilled.

The proportion of highly-skilled and low-skilled jobs has grown in relation to medium-skilled occupations over the relatively short period of ten years. The rise is most marked in the case of highly-skilled jobs. It is important to study the distribution of jobs according to skills, rather than the distribution of workers according to level of education, although the two may influence one another. Nonetheless, the distribution according to skills gives a clearer picture of demand for labour, while the distribution according to level of education tells us more about the supply of labour. A comparison shows that the proportion of highly educated workers continued to rise between 2004 and 2014, while that of workers with a medium or low level of education declined. The biggest fall occurred in the percentage of workers with a low level of education. The level of education of consecutive cohorts went up sharply over the decades in the 20th century. The oldest cohorts entering retirement in the initial decades of the 21st century will therefore automatically boost the proportions of workers in the labour force with a medium or high level of education, but that tells us little about the skills required to perform the jobs available on the labour market. In the rest of this section, we shall therefore focus on skill levels.

No rise in gross wages in real terms in Belgium between 2004 and 2014

According to the SES data, aggregate real wages have fallen, regardless of the level of skills. The low-skilled recorded the biggest decline (–2.2 % per annum, compared to –0.3 % for the medium-skilled and –0.8 % for the highly-skilled). This suggests that low-skilled workers have suffered more, on average, from the changes in the economy during the period under review. Wages in highly-skilled jobs have also fallen more than those in medium-skilled jobs. However, the economic and financial crisis and wage moderation measures were naturally significant factors here.

3.2 Wage determinants

3.2.1 Determinants of average wages

To gain a better understanding of the factors that play a major role in determining mean wage growth, we carry out a regression of the explanatory variables available to us on the logarithm of real hourly wages using the ordinary least squares method. In particular, we examine the effect of the following factors: sex, educational level, type of employment contract, blue-collar or white-collar status, tenure, experience, level of skills, number of employees in the firm, the region where it is based, and whether it has one or more establishments, whether it is under private or public control, and the branch of activity in which it operates. Since some of these variables are coded as dummy variables, it is important to define the chosen reference individual: it is a moderately educated man working full-time under a permanent contract

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(1) Data from the 2015 survey are also available but the collection method has changed: questions are now put to firms via the internet instead of by interviewers, and that may affect the comparability of the results with those of previous surveys.
(2) For the sake of international comparability, we used the HICP rather than the health index.
(3) The definition of skill levels is based on the International Standard Classification of Occupations (ISCO).

TABLE 1   ESTIMATION OF WAGE EQUATIONS BASED ON SES DATA
FOR BELGIUM

	2004 log (hourly wage in constant euros)	2014 log (hourly wage in constant euros)
Female	−0.1417*** (0.0024)	−0.0579*** (0.0021)
Low educational level	−0.0751*** (0.0025)	−0.1094*** (0.0022)
High educational level	0.1774*** (0.0030)	0.1814*** (0.0033)
Age	0.0241*** (0.0009)	0.0356*** (0.0008)
Age squared	−0.0002*** (0.0000)	−0.0003*** (0.0000)
Blue-collar worker	−0.0846*** (0.0031)	−0.0100*** (0.0025)
Tenure	0.0094*** (0.0004)	0.0078*** (0.0003)
Tenure squared	−0.0002*** (0.0000)	−0.0002*** (0.0000)
Part-time[1]	0.0040 (0.0025)	−0.0452*** (0.0029)
Low-skilled job	−0.0156*** (0.0041)	−0.0401*** (0.0039)
Highly-skilled job	0.2182*** (0.0032)	0.2198*** (0.0033)
Temporary contract	−0.0367*** (0.0066)	0.2496*** (0.0071)
Number of employees in the establishment	0.0001*** (0.0000)	0.0000*** (0.0000)
Undertaking with multiple establishments	0.0230*** (0.0026)	0.0460*** (0.0019)
Brussels	−0.0044 (0.0030)	−0.0065** (0.0026)
Wallonia	−0.0466*** (0.0023)	−0.0536*** (0.0020)
Mixed or public enterprise	−0.1368*** (0.0052)	−0.0673*** (0.0036)
Constant[2]	2.0098*** (0.0159)	1.5753*** (0.0165)
Number of observations	83802	81923
Adjusted R²	46.3%	57.3%

Source: Statbel.
Standard deviations in brackets.
* p-value < 10 % ** p-value < 5 % *** p-value < 1 %.
The dummy variables for the branches of activity are not included in the table.
(1) The sample only includes full-time workers. This variable indicates that the person worked fewer
   hours than specified in the employment contract.
(2) Reference: man, medium educational level, white-collar status, full-time, medium-skilled job,
   permanent contract, firm in manufacturing industry with only one establishment located in Flanders
   and controlled by private shareholders.

in a private company in the manufacturing sector with a single establishment in Flanders, performing a medium-skilled white-collar job. The estimates were produced separately for each year from 2004 to 2014.

If we control for all the explanatory variables included in the model, the degree to which female workers are disadvantaged declines during the years considered. In 2004, women earned about 14 % less than men, but that gap had fallen to 6 % by 2014. Although we excluded part-time workers, some people worked less than 35 hours a week in practice during the reference period. In general, after adjustment for their other characteristics, they have earned around 5 % less than full-time workers since the crisis.

On average, highly-educated individuals earned about 20 % more than the moderately-educated, while those with a low level of education earned about 8-11 % less. Under Belgian employment law, the hourly wages of workers employed under temporary contracts must be the same as those of permanent employees. According to our database, however, their wages appear to be different. That may also be due to divergences in unobserved characteristics between the two groups of workers not included in the regression. While workers on temporary contracts earned less, on average, at the start of the period considered, they were paid more than permanent workers from 2006 onwards.

In Belgium, wages increase with length of service for the same employer. Every additional year of service pushes up real hourly wages by an average of 0.7 % to 0.9 %. Nonetheless, the quadratic term reveals a concave relationship, with pay rises levelling out at the highest seniority levels. Apart from tenure, potential experience is also rewarded by the market. The marginal effect of an additional year's work (measured here simply according to the employee's age) is estimated at between 2 % and 3.5 %.

Workers in highly-skilled jobs earned 22 % more, on average, than those in medium-skilled jobs. In low-skilled occupations, the estimates are less consistent; on average, low-skilled workers earned between 2 % and 4 % less than the medium-skilled. Wages in Brussels, which did not differ significantly from those in Flanders at the start of the period, were 0.5 % lower at the end of the period. In Wallonia, wages were persistently lower on average than in Flanders. As regards differences between branches of activity, in the hotel and restaurant sector and, to a lesser extent, the trade branch, wages were consistently lower than in manufacturing industry. Conversely, average pay was higher in the "utilities sector" and in the financial sector. In industry, pay differentials seem to have been influenced considerably by the effects of the business cycle, especially in 2008 and 2012. We therefore focus solely on 2004 and 2014, when there were no major crises so that cyclical movements caused less distortion. Table 1 presents the estimates for those two years.

3.2.2 Different effects depending on the position in the wage distribution

The effect of a variable is not necessarily constant regardless of the employee's position in the wage distribution. For example, possession of a driving licence is certainly a positive pay factor, on average, but the effect is greater in the lower part of the distribution than in the higher deciles.

To conduct this type of analysis, we perform a quantile regression which is very similar to the classic regression, except that here we examine the situation within each quantile.

Thus, with our wage equation, we have estimated the following model for each decile in the distribution:

$$\text{decile}_j \, (\log(wage|X)) = X'\beta_j$$

where j varies from 0.1 to 0.9. These regressions can be used to determine how each decile changes according to the available explanatory variables. These estimates were produced for 2004 and 2014. The main results are presented in chart 3.

The main wage determinants are the level of skills, educational level and experience. The SES distinguishes between potential experience (measured by age) and tenure i.e. the number of years that the employee has spent working for the same employer.

Employees with a higher education diploma earn about 17 % more than those with a medium educational level (i.e. those completing secondary education). Possession of a higher education diploma has a positive effect regardless of the decile, but the effect increases the higher the position in the wage distribution. For the low-wage workers group (whose pay is lower than the first decile), the advantage associated with a higher education diploma was 12 % (14 % in 2014).

In contrast, in the best paid group, that advantage was almost twice as high in 2004, at 20 % from the 8th decile onwards (and likewise 20 % in 2014).

The disadvantage for employees with the lowest qualifications (no more than a lower secondary education diploma) compared to people successfully completing secondary education ranged between 4 % in the lowest decile and 9 % in the highest deciles. In 2014, that figure ranged from 9 % for low wage-earners to 12 % in the upper part of the distribution.

CHART 3 THE EFFECTS SOMETIMES DIFFER WIDELY DEPENDING ON THE POSITION IN THE WAGE DISTRIBUTION, IN 2004 AND IN 2014

(in percentage points, by deciles)
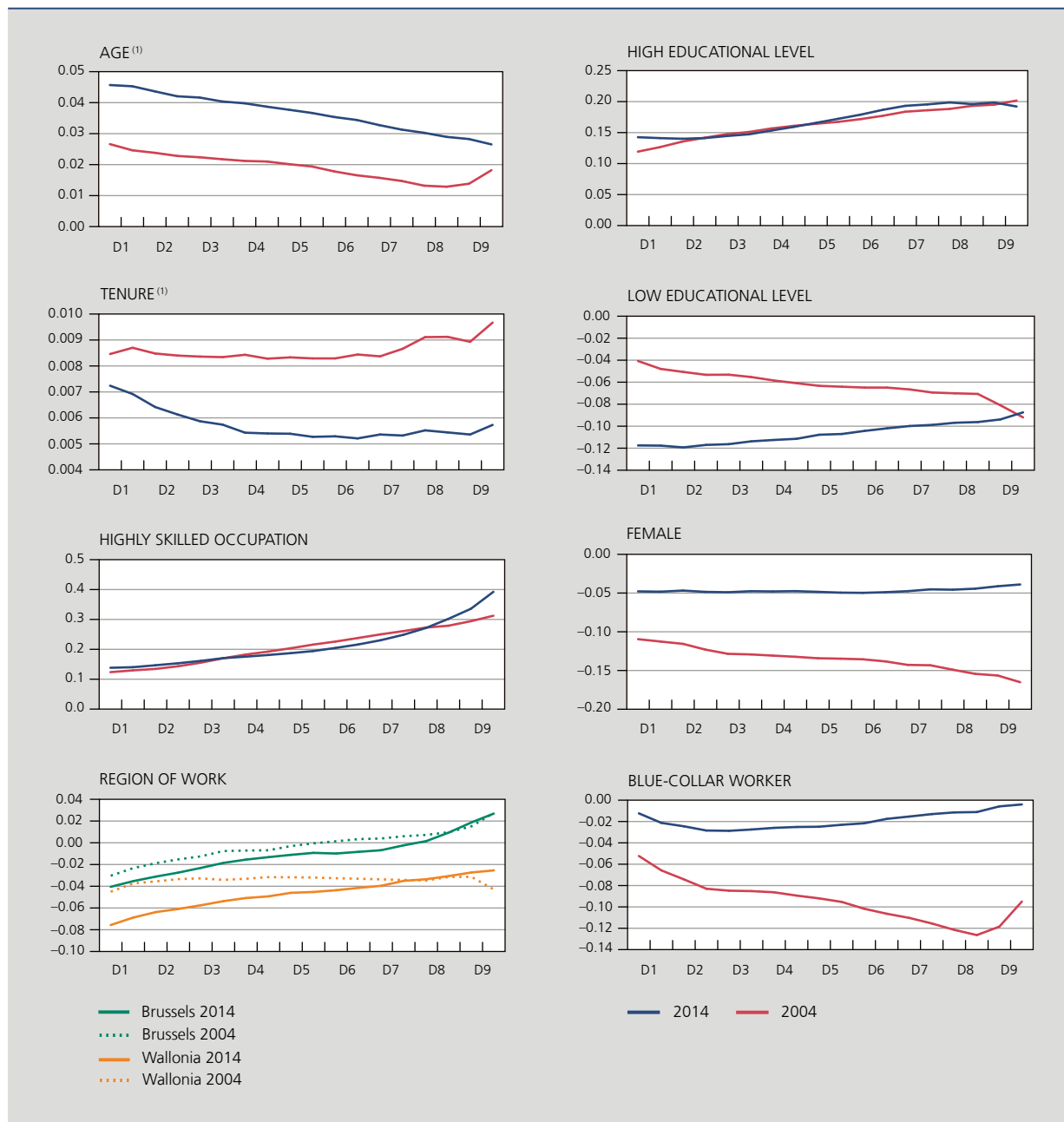
Source : Statbel.
(1) Both age and tenure are continuous variables in the data bank. The chart shows the marginal effect per additional year. That effect takes account of the quadratic term.

Whatever the position in the wage distribution, experience (measured here by age) and tenure are always rewarded in Belgium. In 2004, according to the SES data, that reward ranged between 1 % and 3 % for each additional year's experience, depending on whether the upper or lower part of the distribution was considered. For the 2014 figures, that range widened to between 3 % and 5 % depending on the decile. The return on experience diminishes (the quadratic term has a negative sign), with the maximum pay achieved on average at the age of 61 years in 2004, compared to 64 years in 2014. The reward for tenure, which partly measures the human capital specific to the employer, was 0.9 % for each additional year in 2004. That gain was fairly uniform across the distribution. In 2014, the figure ranged between 0.5 % and 0.7 % per additional year, with a greater advantage for the lower deciles, although it was still significant for all employees. The amount paid for tenure was greatest, *ceteris paribus*, at about 30 years in 2004 and 24 years in 2014.

A highly-skilled occupation has a positive effect regardless of the worker's position in the wage distribution, but that advantage is greater the higher the pay. That finding is fairly consistent over the observation period.

On the basis of the SES data for Belgium, it is possible to determine whether workers have blue-collar or white-collar status. That distinction is not based on the job performed in the firm or branch of activity, but on the type of employment contract. Under Belgian employment law, that distinction was particularly important in regard to pay scale rises, redundancy payments and the rules on absenteeism. Since 1 January 2014, the two types of status have been harmonised. The data on wages reflect that change. Depending on the decile, the disadvantage in terms of pay ranged between 5 % and 13 % in 2004. In 2014, the disadvantage for blue-collar workers declined substantially, remaining slightly negative and ranging between –3 % for the upper deciles and virtually 0 % in the lower part of the distribution. It would be worth conducting a more detailed study of the link between the changing return on tenure and the status harmonisation.

In 2004, even controlling for the branch of activity, occupation, tenure and educational level, women were still at a considerable disadvantage in terms of wages. Moreover, these differences between men and women were even greater at higher levels in the distribution. Depending on the other observable characteristics, the 9th decile of the female wage distribution was 17 % lower than the 9th decile of the wage distribution of their male counterparts, whereas that gap was only 11 % for the 1st decile. These divergences could be due, for example, to a "glass ceiling" blocking the promotion path at higher levels in the wage hierarchy. That situation has changed considerably. According to the 2014 data, the average disadvantage has declined to around 5 %. Furthermore, that effect is much more uniform across the deciles than in 2004.

The regional location of the establishment where the employee works is another significant variable according to the Belgian data. Regardless of the decile, pay is lower in Wallonia than in Flanders. For Brussels, the sign changes across the distribution. The lower deciles are better paid in Flanders, whereas that is no longer the case for the upper deciles. It is the quantile regression that reveals these variations, since wages in Brussels did not differ significantly from those in Flanders in 2004, and were slightly lower in 2014.

The findings presented here do not make it possible to distinguish the effect of a significant factor : the composition of paid employment has also changed greatly over time, even though the period of our study is limited to ten years. For instance, in 2014, the proportion of employees with a higher education diploma had risen by 7 percentage points, and the proportion of highly-skilled jobs was up by 8 percentage points, employees were two years older, on average, than in 2004, the proportion of women in work had continued to rise slowly, and the proportion of blue-collar status had diminished. In the next section, we examine the effect of these changes.

3.3 Composition effects and change in aggregate wages

Having examined the results of the Mincer equations [1], we shall break down the variation in wages between 2004 and 2014 into a part attributable to changes in the composition of employment and a part due to changes in the returns on the characteristics or to unobserved factors. For that purpose, we use the Blinder-Oaxaca decomposition.
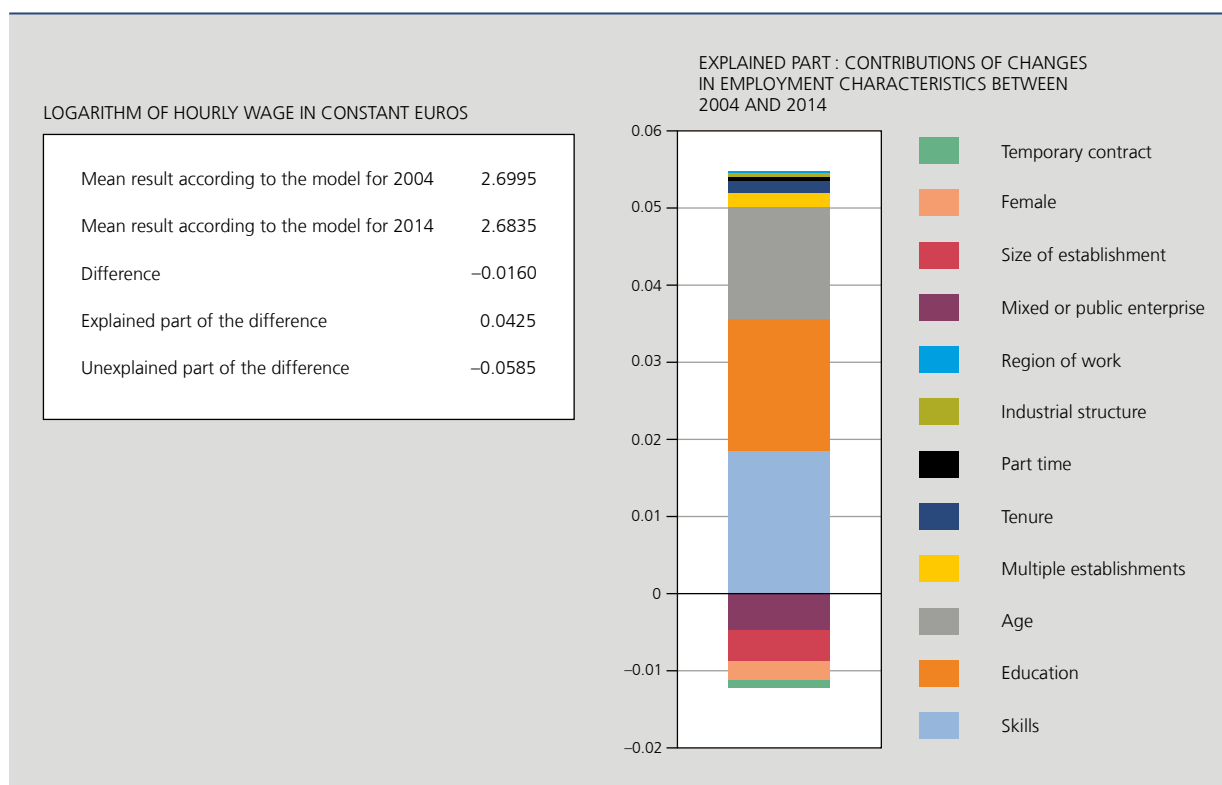
The Blinder-Oaxaca technique explains the gap in the means of an outcome variable between two groups ; in our case, we examine the difference in the level of average wages between 2004 and 2014. We begin by checking whether

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(1) Jacob Mincer pioneered the empirical studies of wage determinants.

average real hourly wages vary significantly between 2004 and 2014. It is clear that this difference is significantly greater than zero. The real gross average hourly wage declined between 2004 and 2014, largely on account of the wage moderation measures introduced during that period.

The difference between aggregate wages in 2014 and the 2004 figure is broken down into two components. The "explained" part is the share of the difference due to the change in the composition of paid employment over the period. The "residual" part can be attributed to changes in the remuneration of the characteristics during the period, but also to factors not observed in the model.

LOGARITHM OF HOURLY WAGE IN CONSTANT EUROS

Mean result according to the model for 2004	2.6995
Mean result according to the model for 2014	2.6835
Difference	−0.0160
Explained part of the difference	0.0425
Unexplained part of the difference	−0.0585

EXPLAINED PART : CONTRIBUTIONS OF CHANGES IN EMPLOYMENT CHARACTERISTICS BETWEEN 2004 AND 2014

- Temporary contract
- Female
- Size of establishment
- Mixed or public enterprise
- Region of work
- Industrial structure
- Part time
- Tenure
- Multiple establishments
- Age
- Education
- Skills

Source : Statbel.

Although we can see a slight fall in real gross wages at aggregate level, the Blinder-Oaxaca decomposition shows that changes in the composition of employment operate in the opposite direction. If the returns on the various wage determinants had remained the same (as those in 2004) over time, real aggregate wages would have increased simply as a result of the change in the composition of paid employment. That positive composition effect is due mainly to the rising level of skills and education and to the fact that employees are older, on average. The contributions of the other factors are marginal. Elements which have had a negative impact on the composition include the fact that the 2014 representative sample contains more small firms and mixed enterprises than the 2004 sample, and that the expansion of female employment also exerts downward pressure since there is still a pay gap between male and female employees.

Overall, it is the unexplained part that accounts for the developments seen, owing to both changes in the return on the characteristics between 2004 and 2014 and the change in unobserved factors.

The breakdown of the wage gap between 2004 and 2014 can also be analysed for the various deciles within the distribution, rather than just for the averages. Such an extension was proposed by Melly (2005). The results of that

breakdown by quantile are similar to those obtained from the Blinder-Oaxaca decomposition. The composition effects operate in the opposite direction from that seen for almost all deciles.

Conclusions

The past fifteen years have seen job polarisation in Belgium, but on a relatively modest scale compared to that in other advanced economies. Medium-skilled employment has declined, primarily in favour of highly-skilled jobs and, to a lesser extent, low-skilled jobs. Skills are defined here on the basis of occupations [1], rather than educational levels.

Wage differentiation is low in Belgium. According to the OECD data, the ratio between the 9th decile and the 1st decile was 2.4 in 2015. Only Italy and Sweden exhibited an even lower wage dispersion. Moreover, wage inequality has tended to diminish in Belgium over the past decade, whereas it has grown in the United States, the Netherlands, Denmark and France.

According to data from the Structure of Earnings Survey, real wages declined slightly in Belgium between 2004 and 2014. The fall was most marked in the case of the least-skilled jobs, but was also evident for the highly-skilled and, to a lesser extent, the medium-skilled.

The difference in mean wages for 2004 and 2014 was broken down according to the Blinder-Oaxaca technique in order to identify the effect of changes in employee characteristics over the period. The decomposition shows that these composition effects had a positive impact on the movement in wages. Since we find that real wages have fallen slightly, this means that other factors ("residual effect") counteracted those composition effects. If we perform a similar breakdown for the quantiles, we obtain a similar result.

As regards economic policy recommendations, the polarisation (observed at least in employment) raises the question of worker mobility and reallocation. Labour market policies must make it as smooth as possible for employees in medium-skilled occupations to retrain in other sectors of activity or other segments of the labour market. The matching of vacancies to workers is benefiting from the digital revolution and should also be more efficient than in the past. Vocational training certainly has a role to play in fostering this transformation of the labour market. In all countries, but particularly in Belgium, there are substantial differences in participation in continuing training depending on the educational level. Redistribution measures also need to be adjusted to ensure that the gains of automation and digitalisation are shared as fairly as possible in order to support employees displaced to the least-skilled segment, including workers other than those with employee status (i.e. the low-skilled self-employed and similar groups).

(1) However, the content of occupations also changes over time. That is why the standard classification of occupations is regularly revised. Nonetheless, occupations offer an imperfect way of measuring skills.

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