

THE WAGE PENALTY INDUCED BY PART-TIME WORK: THE CASE OF BELGIUM

MARIA JEPSSEN*

SILE O'DORCHAI**

ROBERT PLASMAN**

FRANÇOIS RYCX***

Abstract

Substantial research has been devoted to the estimation and explanation of the gender wage gap. The effects of work status on wages have been studied somewhat less. This article aims at drawing on existing work to generate new estimates of the wage penalty associated with part-time employment in Belgium. Given the fact that women remain the primary caregivers, almost uniquely in charge of housework, part-time employment has often been presented as an ideal solution for those wanting to combine family and professional responsibilities. However, part-time employment has many flaws, not the least of which is the wage penalty it induces. On the basis of the 1995 Structure of Earnings Survey (SES), we estimate the wage gap between part-time and full-time work for a sample of women only. Based on our results, we advance explanations related to human capital and productivity differences, types of jobs and industry branches, personal characteristics of part-timers, etc. We also compare the results with earlier results for Belgium based on the European Community Household Panel (ECHP). The unexplained part of the part-time wage gap allows us to assess the degree to which labour markets discriminate against part-timers. The existence of such discrimination suggests that equal opportunities policies should not only focus on labour market conditions but also on a more equal sharing of domestic work between men and women.

KEYWORDS: female labour supply, work status, part-time employment, wage gap, decomposition

JEL CLASSIFICATION: J21, J22, J24, J31, J71, C31

* Université Libre de Bruxelles (ULB), Department of Applied Economics (DULBEA), and European Trade Union Institute (ETUI). ** Université Libre de Bruxelles (ULB), Department of Applied Economics (DULBEA). *** Université Libre de Bruxelles (ULB), Department of Applied Economics (DULBEA), and Institute for the Study of Labor (IZA, Bonn). The authors are most grateful to *Statistics Belgium* for giving access to the Belgian *Structure of Earnings Survey*.

INTRODUCTION

Over the past 20 years, Belgium has witnessed a boom in part-time relative to full-time employment, especially for women, from whom its share has risen from a mere 20% in 1983 to a full 41% in 2004 (Eurostat, 2005). This progression in part-time employment is the result of a combination of public policies to promote part-time work as an immediate response to spiralling unemployment rates, as well as the response of the female labour force to institutions and demands from the service sector (Buddelmeyer *et al.*, 2004; Jepsen, 2001a).

It is widely recognised in the literature that part-time workers suffer a wage penalty as compared to full-time workers (Hirsch, 2004; Jepsen, 2001b; Manning and Petrongolo, 2004). The main findings are that while most of the wage gap can be accounted for by the difference in worker and job attributes, there still seems to persist a sizeable gap that cannot be accounted for by the standard observables. These persistent inequalities harm women's labour market situation and career development as well as their social and personal promotion. Furthermore, although, numerically speaking, women nowadays practically level with men on the labour market, recent research has shown that domestic and childcare activities remain a haven largely avoided by the latter (Meulders and O'Dorchai, 2004). As a result, women are still far from reaching a work status equal to that of men in qualitative terms (Del Boca and Repetto-Alaia, 2003). Hence their concentration in part-time employment does not do their position relative to men on the labour market nor in the domestic sphere any good as the wage penalty that can be ascribed to part-time work becomes confounded with the gender wage gap due to massive overrepresentation of women in part-time employment. While substantial research has been devoted to the estimation and explanation of the gender wage gap, far less has been done regarding the significance of the number of working hours as a cause of these wage inequalities. Consequently, the latter is the main point of interest in this paper. In this paper we examine the role of human capital factors and of job attributes on the part-time/full-time wage differential in Belgium. Given the sex-specific nature of part-time work, our sample will contain women only. For this purpose, we use the 1995 Structure of Earnings Survey (SES). Based on our results, we advance explanations related to human capital and productivity differences, types of jobs and industry branches, personal characteristics of part-timers (for example, level of education, potential labour market experience), etc. The unexplained part of the part-time wage gap allows us to assess the degree to which labour markets discriminate against part-timers. The existence of such discrimination suggests that

equal opportunities policies should not only focus on labour market conditions but also on a more equal sharing of domestic work between men and women (Meulders and O’Dorchai, 2004; Jepsen, 2001a,b).

The paper proceeds as follows. Section 1 provides the theoretical explanations for the existence of a wage penalty associated with working reduced hours and reviews the existing evidence. Sections 2 and 3 are devoted to the description of the data set used and the presentation of the theoretical model that we test. Section 4 comments on the results obtained both from the full-time and part-time wage regressions and from the Oaxaca-Blinder (1973) decompositions of the observed wage gaps. The last section concludes.

1. THE PART-TIME WAGE PENALTY : ECONOMIC THEORY AND PREVIOUS EVIDENCE

Economic theory advances several possible explanations for the difference in hourly pay of part-time and full-time workers. These reasons for a wage differential can be grouped into four main clusters which are not mutually exclusive but rather tend to overlap and reinforce each other.

The first cluster of reasons pertains to labour supply, arguing that some persons prefer to work part-time rather than full-time (and vice-versa). This is particularly stated with regard to young workers (students), women with heavy home responsibilities and older workers who can be seen to have a preference for part-time employment and thereby accept lower wages than for full-time employment. However, differences in preferences for part-time employment are not enough to generate a part-time wage penalty. In order for this to occur workers must be heterogeneous and it cannot be that employers are indifferent to the way they schedule work hours among workers. Hence a mix of workers’ preferences, skill differences and employer preferences can generate a part-time wage penalty. However, these same forces may also work in the opposite direction. Flexible working hours and other alternatives to the traditional full-time work schedule have been shown to increase productivity and consequently also wages (Hagemann, 1994; McGuire and Liro, 1996; Rose, 1998; Shepard *et al.*, 1996). A part-time wage premium is typically observed in industries that face seasonal or fluctuating demand for or supply of their output that cannot be managed through the carrying of inventories, employers then consent to pay high wages during peak periods when productivity is high to part-time workers willing to work short intensive shifts. Hence, if a

firm has relatively short intervals of time where the labour demand is high, and workers prefer continuous rather than long working intervals, then part-time wages could exceed full-time wages, as there is not enough labour supply to fulfil labour demand. Geographic mobility may also contribute to the part-time/full-time wage gap. Ermisch and Wright (1991) state that part-timers are more strongly bound by spatial constraints because they are less willing to pay high costs to commute to and from work given that they are often just secondary breadwinners in the household. Given this lack of labour supply elasticity, the local labour market is in the hands of firms practising monopsonistic power. Led by their rationality as profit-maximising economic agents, they tend to adjust part-time wages downwards.

The second cluster concerns the cost structure of firms. The existence of fixed costs – including the administrative costs of maintaining records for each employee, recruitment and firing costs and any components of fringe benefits that are independent of hours worked – make that a firm's total labour costs do not increase proportionally with hours worked (Montgomery, 1988; Oi, 1962). As a result, part-time workers are relatively more costly to firms and therefore receive lower wages. Moreover, Hamermesh and Rees (1993) have shown that fixed costs tend to be positively related to the level of skills¹. This second element explains why part-time work is likely to induce a larger wage penalty among high-skilled workers. Furthermore, given the firms' profit-maximising behaviour, employers tend to have a clear preference for holistic or all-encompassing jobs (as opposed to the tayloristic jobs of the previous generation which relied on a high degree of specialisation within the workforce), for versatile tasks in close accordance with changing requirements on the demand side, for job rotation schemes broadening workers' overall employability throughout the whole firm, and finally, following the same logic, for multi-task jobs requiring diverse skills. An efficient work organisation based on such types of jobs can be successful only when the workforce acquires the necessary firm-specific human capital through appropriate training courses. Hence, in addition to recruitment costs these training costs make part-time workers relatively more expensive for firms which react by paying them lower wages (Lindbeck and Snower, 2000).

¹ In fact, the quality level supplied by a firm increases with the mass of skills. Given that a firm faces fixed production costs that are increasing functions of quality, indirectly fixed costs rise as the level of skills rises.

The third cluster of factors that can account for a part-time wage penalty is related to the productivity of the worker. Several theories relate productivity to number of hours of work. Arguing in one direction is that due to start-up effects, productivity rises slowly at the beginning of a working day. As a result, the worker's productivity during the last hour of work is above the average daily level of productivity (Barzel, 1973). Hence, part-time workers who work less hours are less productive and therefore paid lower wages. However, Moffitt (1984) and Tummers and Woittiez (1991) have contested this model for the development of productivity during the day. Indeed, they have shown that part-time avoids the negative 'fatigue' effect which causes marginal productivity to drop in case of long working hours or overtime. Given that average productivity is shown to peak at 34 working hours a week, part-timers are more productive than are their full-time colleagues and should be paid accordingly.

The fourth cluster of issues is related to the institutional settings in a specific region or country. Several studies have shown that part-timers have a lower level of union membership (Riley, 1997). In a theoretical paper by Skåtun (1998), the higher demand for part-timers is explained by the individual bargaining process that allows the firm to increase the surplus from the bargain. Hence, part-timers are paid less as they have less power. Vella and Verbeek (1998) find that people with characteristics that give them lower wages are given higher union premiums, and Main and Reilly (1992) report equal mark-ups for women (full-time or part-time) and men. Thus, if part-timers are less likely to be member of a union and furthermore often have characteristics that give them lower wages, then the effect of part-time on the wage is double. Furthermore, given the progressive tax structure in some countries, part-timers, who by definition earn a lower annual gross wage than full-timers, are taxed less and therefore union bargaining will often lead to a lower hourly gross wage for part-timers than for full-timers (Koskela and Vilmunen, 1996). This is the effect of the union tending to reason in terms of net wages. Hence, it will be less likely to push as hard for higher gross wages for part-timers than for full-timers as the former face a lower average tax rate. Also, the composition of income and payroll taxes may influence the difference between wages for full-time and part-time workers (Koskela and Schöb, 1999). However, the taxation and payroll system is also found to decrease the wage rate with the number of hours worked. Vella (1993) argues that the "true" wage is held constant but that the hourly wage rate decreases and is replaced by fringe benefits which are not taxable. Finally, anti-discrimination legislation may also have a decisive effect on the existence or not of a pay penalty.

The empirical literature on the effect of working hours on wages is steadily growing (Bardasi and Gornick, 2000, 2002; Hardoy and Schöne, 2004; Hirsch, 2001, 2004; Jepsen, 2001a,b; Manning and Petrongolo, 2004; Rodgers, 2002; Wolf, 2001). Very few of these studies include Belgium in their sample of countries. Jepsen (2001a) entirely focuses on Belgium in her analysis of the wage penalty induced by reduced working hours. Using the European Community Household Panel (ECHP) she finds a total unadjusted wage gap of 0.087, and that controlling for the different individual and job characteristics of part-time and full-time workers almost completely eliminates the wage gap (a 0.1% gap remains). In Jepsen (2001b) she extends the analysis to include France and Denmark and corrects for selection bias into part-time and full-time employment. The results for Belgium do not differ strongly from the ones obtained in Jepsen (2001a). Despite the fact that the estimation corrects for the fact that productive women seem to be selected into full-time employment, the wage gap continues to be entirely caused by differences in observed characteristics. As a result, she concludes that Belgian legislation to protect part-time jobs has reached its goal that consisted of abolishing any discrimination in hourly wages. Policy-makers should now focus on tackling the adverse effects of working hours on the types of jobs that are accessible to workers.

Similarly, Hirsch (2001) found little evidence for a wage gap between part-time and full-time working women and just a modest part-time penalty for men in the US. In a recent paper Hirsch (2004) takes a longitudinal approach, and finds that the wage gap for women can be explained by the heterogeneity of workers, but that a genuine wage penalty persists for men. These results confirmed earlier findings by Blank (1990) who could not detect a part-time penalty for women, rather the opposite being found. On the contrary, a wage penalty of 20-30% was observed for male part-time workers (Rodgers, 2002). Once more it is shown, this time by Hirsch (2001, 2004), that measurable worker and job characteristics (more limited work experience and accumulation of human capital and occupational skill requirements) account for a sizeable share of the part-time penalty. By longitudinal analysis, he then shows that much of the remaining gap reflects unmeasured worker heterogeneity (skills and tastes). Although part-time wage penalties do not turn out to be too worrisome, Hirsch (2001) does put forward a high level of inequality in terms of non-wage benefits.

Joshi and Paci (1998) use cohort data for the UK to examine the wage gap between men, women working full-time and women working part-time. They find that while the gender wage gap has narrowed between 1978 and 1991, the working-time wage gap has increased

from 40% to 48% of part-timer's pay. The increase in the pay gap is almost equally split between differences in characteristics and differences in rewards. Once labour market variables are introduced, the unexplained part of the pay gap is narrowed down from 50% to 15%, hence part-timers are found in the segment of the labour market that pays low wages. They explain this unexplained wage gap by the monopsony power of employers (part-time women do not travel far to work) as well as the difficulties for employers to evaluate the actual productivity of workers (statistical discrimination).

Compared to Jepsen (2001a,b), Bardasi and Gornick (2000, 2002), using data from the Luxembourg Income Study, find that a larger share of the part-time/full-time wage gap remains unexplained. In 2002, Bardasi and Gornick added a sixth country, Sweden, to their five-country analysis for the year 2000 of the wage-level consequences for women working reduced hours. They find that unadjusted wage gaps are largest in Italy and the US (21-22%), followed by Canada and the UK (12-15%), and Germany (8%) whereas in Sweden part-timers earn slightly more than full-time workers (+1%). Observed differences in workers' characteristics explain as little as 9% of the gap in Germany and as much as 93% of the gap in the UK. Among these 'observables', the occupation component plays a major role as opposed to the weak explanatory power of differences in human capital. Especially high levels of occupational segregation are found in the UK and in Italy. In those countries where the lion's share of the unadjusted wage gap cannot be attributed to observed differences, different returns to characteristics are the dominant explanation in Germany and the selection component in Canada, the US, Italy and Sweden. Finally, they find that the size of the pay gap varies according to the position of part-time workers in their respective full-time wage distributions and the degree of wage inequality (their position gradually worsening and wage inequality growing across Sweden, Germany, Canada and the US).

Just like Bardasi and Gornick found for Sweden, a wage premium was observed for part-time Australian women by Rodgers (2002). Female part-time employees are estimated to earn 7.4% more per hour than female full-time employees². Including a correction for selection into part-time employment status had little effect on the size or statistical significance of the part-time wage premium.

² Miller and Mulvey (1994) found that Australian part-time employees earn a premium of 15% over full-time workers after controlling for the industry of employment and human capital levels (Rodgers, 2002).

Similarly, Hardoy and Schøne (2004) show that in Norway the positive selection of workers into part-time work excludes selection as a candidate to explain the observed wage difference between part-time and full-time workers. After controlling for self-selection, the unadjusted wage penalty of approximately 5% increased to roughly 11%.

Wolf (2001) estimated a simultaneous wage-hours model (treating participation and working hours as endogenous) for Germany and the Netherlands. Her results point out that more experienced women, who accumulated more human capital during their working life, face higher wage cuts for reduced working hours than women who spent only a few years in employment. She finds significant wage reductions for German women who either work very short or very long hours. Women working normal part-time hours do not seem to suffer severe wage cuts. In contrast, wage differentials between part-time and full-time women seem to be of minor importance in the Netherlands. Despite significant differences across occupations, no evidence is found for larger wage cuts in those occupations that are hardly ever held by part-timers.

The review of existing empirical evidence leads us to conclude that a negative wage gap is systematically observed for women deciding to work part-time, however the magnitude of this wage penalty differs substantially across the studies reviewed in this section. The main reason seems to lie in the high level of heterogeneity that characterises the category of part-time employees as well as employment.

As argued subsequently, the analysis in this paper does not only attempt to address some of the issues raised in the articles reviewed above, it also aims at verifying the robustness of the results found for Belgium in Jepsen (2001a,b) by using the SES for 1995 instead of the ECHP 1995. However, we do not model the selection into full-time and part-time employment as the SES data do not contain the observables that are needed for this exercise. On the contrary the SES is a very large data set that better accounts for worker heterogeneity, and detailed occupational skills and working conditions. The data on hourly gross wage and bonuses is also more reliable in the SES than in the ECHP.

2. ESTIMATION APPROACHES

The purpose of the analysis is to measure the main reasons behind the difference in the gross hourly wage rate for similarly skilled women working in otherwise similar part-time and full-time jobs. To achieve this we use a straightforward estimation method. Reduced-form semi-logged wage equations are estimated for part-time (pt) and full-time (ft) workers:

$$\log (w_{pt}^{1,2}) = \beta_{pt}X_{pt} + \gamma_{pt}Z_{pt} + \varepsilon_{pt} \quad (1)$$

$$\log (w_{ft}^{1,2}) = \beta_{ft}X_{ft} + \gamma_{ft}Z_{ft} + \varepsilon_{ft} \quad (2)$$

The dependent variable ($w_{pt}^{1,2}$ for part-time and $w_{ft}^{1,2}$ for full-time jobs) is the log of gross hourly wages including (index 1) or excluding (index 2) bonuses³ (i.e. irregular payments which do not occur during each pay period, such as pay for holiday, 13th month, profit sharing, etc.).

The explanatory or independent variables on the right-hand side of the equations that are captured by the vectors X_{pt} for part-time and X_{ft} for full-time jobs respectively include only human capital indicators such as level of education (measured by 6 dummy variables ranging from primary to post-graduate education), prior potential experience based on the formula ‘age – 6 – years of education – seniority’, its square and its cube and tenure, its square and its cube.

The vectors Z_{pt} for part-time and Z_{ft} for full-time jobs respectively include a dummy indicating whether the individual supervises other workers or not, 20 occupational dummies corresponding to the 2nd level of the International Standard Classification of Occupations (ISCO-88), 42 industry dummies corresponding to the 2-digit NACE-codes, regional dummies, dummies relative to the type of economic and financial control of the establishments (fully state-owned, mainly state-owned, private), dummies capturing the level of collective bargaining, contract type, establishment size and finally dummies to indicate whether premia were received to compensate for overtime or shift-work, night work and/or weekend work. ε_{pt} and ε_{ft} are white noise errors terms.

The econometric work is focused on the wage gap between women working part-time and full-time using 4 different specifications. Firstly, we estimated wage equations controlling only for human capital indicators (X) and considering a measure of gross hourly wage that does not include bonuses (w^2). Secondly, the same equations are estimated using gross hourly

³ Descriptive statistics are presented in Appendix, Table A2.

wage including bonuses (w^1). A comparison of these two cases allows to check whether the size of the part-time wage penalty does indeed increase when bonuses are considered as we would expect a priori given that it appears easier for employers to discriminate against part-timers by granting them a lower share of bonuses than by paying them a lower hourly wage. Thirdly, a part-time and a full-time wage regression are estimated with gross hourly wage without the relevant share of bonuses (w^2) as the dependent variable and including the widest possible range of independent variables (X and Z). Fourthly, the same equations are estimated using the bonuses-inclusive measure of gross hourly wage (w^1). The distinction between the first two and the last two cases allows to examine how the wage effect of human capital variables varies by accounting for the influence of other controls on our dependent variable.

To estimate these wage equations we used standard OLS with White (1980) heteroscedasticity consistent standard errors well aware of the potential bias of our estimates since the models do not account for systematic selection of workers into part-time and full-time employment (Jepsen 2001b). To do so, it would have been necessary to apply a two-stage Heckman (1979) procedure. However, the dataset used in the present study does not contain the necessary supply-side variables to estimate the probability of working part-time such as household size, age of children and marital status. So standard OLS estimates are computed for each individual conditional upon his/her working hours. We do not believe this to be a weakness given that the interest of this analysis lies in the size of the dataset as well as in the exceptional richness of explanatory variables introduced in the wage equations as compared to the empirical evidence that already exists for Belgium based on the ECHP. Moreover, although a considerable number of existing analyses have controlled for systematic selection into part-time work, there still remain many methodological problems linked especially to the identification of the Heckman (1979) procedure (Manski, 1995; Vella, 1998).

Once the wage equations estimated, the Oaxaca-Blinder (1973) procedure is applied in order to decompose the wage differential into a price effect and a characteristic effect. Full-time employment is set as the reference category.

$$\overline{\log(w_{ft}^{1,2})} - \overline{\log(w_{pt}^{1,2})} = (\bar{Y}_{ft} - \bar{Y}_{pt}) \hat{\beta}_{ft} + \bar{Y}_{pt} (\hat{\beta}_{ft} - \hat{\beta}_{pt}) \quad (3)$$

where the indices ft and pt refer to full-time and part-time workers respectively, the superscripts 1 and 2 indicate that gross hourly wages include or exclude bonuses, $\overline{\log(w)}$ represents the average of the log gross hourly wage, and \bar{Y} is a vector containing the mean values of the explanatory variables (human capital characteristics only or combined with other individual and establishment variables). The first term on the right-hand side of the equation sign represents the share of the part-time/full-time wage gap that is due to differences in

observable characteristics between part-time and full-time workers. In other words, if both part-time and full-time workers were remunerated as in the reference case (full-time), how do their differing characteristics affect their respective wage rates? The second term measures the part of the wage gap explained by differences in the returns to observable characteristics. To put it differently, how much does a person with part-time characteristics gain from being employed in a full-time rather than in a part-time job? This term is often referred to as the discrimination component or the price effect.

Since we are interested in evaluating the absolute wage gap between part-time and full-time workers, the logged hourly wages and wage differential should be transformed into monetary terms. To do so, the methodology recommended by Stewart (1983) and Rodgers (2002) is applied. The predicted mean log hourly wage can be expressed as a function of the mean vector of characteristics in each equation. Note that the error terms disappear given that $\bar{\varepsilon}_{pt} = \bar{\varepsilon}_{ft} = 0$.

Hence the wage difference which can be written as follows:

$$\overline{\log(w_{ft})} - \overline{\log(w_{pt})} = \hat{\beta}_{ft} \bar{Y}_{ft} - \hat{\beta}_{pt} \bar{Y}_{pt} = \hat{\gamma} \quad (4)$$

can under certain assumptions be expressed as :

$$\overline{(w_{ft} - w_{pt})} / \overline{w_{pt}} = \exp(\hat{\gamma}) - 1 \quad (5)$$

3. DATA AND VARIABLES

The 1995 SES wave for Belgium provides information on a total of 81,562 individuals working in the private sector in establishments with more than 10 employees. In order to distinguish the working hours wage gap from the gender wage gap, we have restricted the sample to women only, this leaves us with 27.6% of the total number of observations totalling 22,516 observations. Due to restriction of the sample to employees who do or do not supervise others, 72 observations are lost leaving us with a final sample of 22,444 women. Full-time and part-time employment can be defined in various ways; in the SES, full-time employees are considered to be those who perform a full day's work for the entire week in the local unit. Part-time employees are considered to be those who, in accordance with a contract with the employer, do not perform a full day's work or do not complete a full week's work within the local unit. In other words, the survey defines part-time employment in terms of

work status rather than on the basis of the number of working hours. For our purposes, this raises the question of whether the wage differential between part-time and full-time employees derives from their work status or from their working hours. The answer to this question goes beyond the subject of this article, in which we have decided to define part-time work by simultaneously taking account of work status and working hours. In other words, individuals were divided into two groups based on their work status as reported in the SES, after which an additional selection removed from our sample those part-timers who work less than 15 hours per week and those full-timers who work less than 30 hours weekly. Workers whose weekly working hours are below 15 were omitted in order to eliminate the very casual workers who, by the definition of international organisations such as the ILO (1990), are considered to be inactive. By excluding this group of occasional workers, we avoid biasing the genuine characteristics of workers with a stronger labour market attachment (working more than 15 hours a week). This definition resulted in 15,957 (80%) women working on a full-time basis and 3,915 (20%) on a part-time basis (see Appendix, Table A1).

Table A2 (in the Appendix) summarises the main features of our sample. Full-time employed women in the sample appear to be slightly younger than their part-time colleagues: 34.6 compared to 35.9 years of age. Differences in maximum educational attainments appear to be more striking. Part-timers are over-represented among people with no education at all or a primary or lower secondary degree at most (46% as compared to 28% of full-timers). Both part-timers and full-timers are roughly equally present in the middle group with at least upper secondary education, be it of general, technical, professional or artistic nature. Finally, full-timers are much more likely to have invested in higher-level studies, either in university or non-university context or of the post-graduate type (29% compared to 11%). On the labour market, full-timers outnumber part-timers in white-collar occupations (81% compared to 72%). Two categories seem to stand out in which part-time employed women form an overwhelming majority: on the one hand, service workers and shop and market sales workers (21% of all part-timers compared to 6% of full-timers) and on the other hand, elementary occupations in sales and services (21% of all part-timer compared to 6% of full-timers). Full-time work is twice as common in manufacturing than is part-time employment. Part-timers are markedly more concentrated in wholesale and retail trade, in the hotel and restaurant branch and in other businesses. Furthermore, depending on whether bonuses are considered or not, there appears to be a wage gap of between 13 and 14% disadvantaging the part-time labour force. This hourly wage gap is somewhat higher than the one found in Jepsen (2001a) using the ECHP, namely 6.5%.

At first view, descriptive statistics suggest that the wage difference between full and part-time employed women is due to the accumulation of disadvantaging individual as well as job characteristics. However, in order to fully understand how the wage gap occurs we must rely on the multivariate analysis as described in section 2.

4. WAGE EQUATIONS AND DECOMPOSITION RESULTS

As specified in section 2, variations of the wage equation are analysed and decomposed. The first set of estimations only include human capital indicators as explanatory variables, and aims at estimating the “market-wide” discrimination, it also allows us to compare the return to human capital between full-timers and part-timers.

Comparison of the first two cases (see Table 1) shows that including bonuses into our measure of gross hourly wage increases the part-time/full-time wage gap only slightly, by 1%, from 13 to 14%, meaning that full-time working women earn a wage that is on average 13-14% higher than their part-time-time colleagues. In monetary terms, the bonuses-exclusive wage gap amounts to 1.23 EUR whereas an inclusion of bonuses raises the gap to 1.47 EUR.

TABLE 1: OAXACA-BLINDER DECOMPOSITION

	HC without bonus (1)	HC with bonus (2)	All without bonus (3)	All with bonus (4)
Overall wage gap:				
(wage ft – wage pt) in EURO	1.23	1.47	1.23	1.47
(wage ft – wage pt) / wage pt	0.13	0.14	0.13	0.14
log (wage ft) – log (wage pt)	0.11	0.12	0.11	0.12
Non-explained part:	0.04***	0.03***	-0.01	0.00
(in % of total)	(31.6)	(27.6)	(-5.0)	(-2.3)
t-stat	6.6	5.6	-1.1	-0.5
Explained part:	0.08***	0.09***	0.12*	0.12
(in % of total)	(68.4)	(72.4)	(105.0)	(102.3)
t-stat	25.4	21.9	-1.9	-0.8

Notes: ft and pt stand for full time and part-time, respectively. Part-time is defined as a range of weekly working hours between 15 and 29 and full-time corresponds to weekly working hours equal or above 30. The level of significance of the different components of the gender wage gaps have been computed according to the methodology developed by Oaxaca and Ransom (1998). * Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level.

The wage regressions in which we examine the wage influence of human capital variables demonstrate that every level of education higher than primary education systematically has a much larger positive effect on full-timers’ than on part-timers’ wages (see Appendix, Tables A3 and A4). The same holds true for prior potential experience and tenure. The inclusion of

bonuses in gross hourly wage in the second case slightly strengthens the positive impact of human capital on both full-time and part-time working women's wages in more or less equal proportions so that the gap remains almost the same.

Hence this seems to indicate that full-timers get a higher return to their human capital, or in other words that part-timers are rewarded less for their human capital. This is inefficient to the extent that women who aim at working part-time will not get the necessary incentives to increase their human capital and hence society will attain only a sub-optimal level of human capital. Moreover, women with a high level of human capital will not be attracted to take on part-time employment thereby limiting the labour supply available for this type of jobs. This trend is being observed in the Scandinavian countries.

Human capital differences seem to explain 68% of the observed wage gap or 83 euro cent in the first case, leaving an hourly wage differential of 39 euro cent unexplained or due to discriminatory pay practices. In the second case when relevant bonuses are included in gross hourly wage, differences in human capital between part-time and full-time working women explain a slightly greater share of the observed wage gap, that is 72% or 1.06 euro, leaving 41 euro cent as an unexplained hourly wage gap. Note that in both cases, both the explained and the unexplained component of the Oaxaca-Blinder (1973) decomposition are highly statistically significant at the (1% level). These results are different from what was found in Jepsen (2001b). Using the same specification but a different data set (ECHP), she demonstrated that 2/3 of the wage gap was due to discrimination or in other words due to human capital not being rewarded identically, and only 1/3 of the wage gap could be ascribed to differences in human capital. Once the selection bias was taken into account, part-timers were found to be better off in part-time employment than in full-time employment, thus completely reversing the results, indicating that there is a selection process that decreases the element of discrimination.

The second set of estimations includes *inter alia* sectoral and occupational covariates (see Appendix, Table A4). Computing this second set of estimations has been done for two main reasons. As the descriptive data showed us, part-time employment is not always the same as full-time employment and since the observations above call for more explanations, we thought it useful to link wage determination to types of jobs. We have therefore applied an extended human capital approach incorporating into the wage equation variables that account for the labour market situation of employees (e.g. establishment size, industry, occupation and

type of employment contract)⁴. The idea is to adjust wages for the differentials generated by the varying nature of employment, given that they may give rise to a wage difference between equally productive workers. One could argue that industrial and occupational variables are endogenous to discrimination as they are likely to be a reflection of labour market discrimination in itself and that these variables are unsuitable for this type of analysis. However, controlling for industry and occupational groups is of importance if we are to try to understand the wage-gap between part-timers and full-timers. Thus in the following we are not investigating a “market wide” wage gap, as above, but rather a “within industry and occupational group” wage gap. The changes in the wage gap decomposition will give us a hint towards the unequal treatment within employment as opposed to the “market wide” discrimination computed above. One has to bear in mind the influence of adding variables to the wage regression as well as its impact on the wage decomposition. It is well known (Cain, 1986) that the choice of variables has an arbitrary influence on the decomposition between a price effect and a characteristics effect, the price effect tending to decrease with an increase in the number of variables. However, taking these two comments into consideration we still think it is of use for the present analysis to include labour market variables.

When the whole set of explanatory variables are included in the wage regressions, the bonuses-exclusive wage gap between part-timers and full-timers is 13% just as in the first case where we examined the wage impact of human capital variables only. Again the inclusion of bonuses increases the gap by 1% to 14% (see Table 1). However, now a much larger part of the gap is explained by differences in observed characteristics due to the much larger number of control variables in our equations. In the bonuses-exclusive case, 105% of the wage gap is explained and –5% unexplained but testing for statistical significance shows that the unexplained wage gap is not significant whereas the explained part is but only at the 10% level. After bonuses have been included into gross hourly wage, these proportions slightly change so that 102% of the wage gap can be attributed to differences in observed characteristics and –2% to different returns. However, in this case, neither of the decomposition components are statistically significant. The wage-gap is entirely explained by differences in characteristics of the individuals as well as of the jobs. This result goes in the same direction as Jepsen (2001b), where the price effect completely disappears once sectoral and occupational variables are included in the regression. What was also found in Jepsen (2001b) was that the Belgian results are heavily influenced by the selection term, although it is not statistically significant. Using a specification as in the first set of estimations in the current study, the unobservables leading to a selection of women with a potential for higher

⁴ One would also ideally include variables on commuting time and manner of transport in order to test the monopsony theory set forward in the British studies. Unfortunately the SES database does not contain this information.

earnings into full-time employment result in part-time women being better off in part-time employment than in full-time employment. But when one includes variables describing the labour market, then this selection bias disappears. This could indicate that the selection of women with a higher earning capacity into full-time employment is more a selection of women into specific types of jobs that are not available to part-time women and that this is the reason for the negative price-effect.

CONCLUSION

Although the results in this article and in Jepsen (2001a,b) are not identical, they both lead to the same types of conclusions. Both this article and Jepsen (2001a,b) find that human capital is not rewarded in the same manner in full-time and part-time employment, which, as already stated is inefficient. The price effect, however, varies among the two studies, from accounting for 1/3 of the wage gap in this study to 2/3 in Jepsen (2001b). Including job-related variables decreases the price effect thereby leading to the same result in both studies. Hence in the Belgian labour market there seems to be no sign of a “within industry and occupational group” wage-gap, while there does seem to be a “market-wide” wage gap. In other words, although discrimination legislation seems to be working, there is a major problem with the type of job opportunities open to part-timers and this needs to be dealt with at risk of observing a sub-optimal equilibrium of human capital and a lack of labour supply for part-time work.

Indeed, a glance at the 2004 Belgian Action Plan for Employment (SPF, 2004) shows that more efforts are needed to bring down both gender segregation in occupations and in sectors. While occupational segregation has been stable between 1999 and 2003, segregation in sectors has increased by 1.3%, both being slightly higher than the EU average. The biggest gender imbalances characterise industry branches (19% of women) and a number of service sectors such as transport and communications (21% of women). From our descriptive statistics (see Appendix, Table A2), it is clear that part-time jobs are markedly more concentrated in whole sale and retail trade, in the hotels and restaurant branch and other businesses. These are particularly poorly paid sectors in Belgium (Gannon *et al.*, 2005; Rycx, 2002; Rycx and Tojerow, 2002).

This problem of segregation calls for specific policy answers. Especially the case of low-skilled women should be given due attention. Low-skilled workers or those with little labour market experience often have to accept atypical forms of employment in return for their selection disadvantage. For example, commercial service branches apply less demanding selection requirements but in return offer mainly part-time or temporary employment contracts. Moreover, in Belgium (as in Greece, Italy and Spain) collective bargaining

establishes minimum wages which are effectively well above the statutory minima reducing in this way the employability of low-skilled workers (Dolado *et al.*, 1997).

At the European level, the country-specific employment guidelines should be brought more in line with the specific national context. Indeed, it is for the better that the Belgian government has not taken action in response to the recommendation addressed specifically to Belgium near the end of 2003 by the European Employment Taskforce to allow for more wage differentiation across sectors. As long as segregation across industry branches and occupations exists, an increase in inter-industry wage disparity risks seriously harming women given that they are over-represented in the less remunerative and productive sectors as well as being predominant in part-time and other atypical employment forms.

To conclude, as long as part-time jobs remain atypical jobs concentrated in the secondary segment of the labour market, the fact that women are over-represented in them will continue to be an important source of gender discrimination in the labour market. In the context of the European Employment Strategy that provides important incentives for member states to reach the Lisbon target by 2010 while actively promoting gender equality, we deem it particularly important for policy-makers to continue their efforts to improve the labour market situation of women, which implies profoundly tackling the drawbacks associated with part-time work.

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APPENDIX

TABLE A1. DESCRIPTION OF THE SAMPLE

	# Observations	(%)
Overall sample (SES, 1995):	81,562	
of which women	22,516	0.28
of which men	59,046	0.72
Sample of women filtered for missing values related to the monitoring variable	22,444	
of which full-timers*	16,028	0.71
of which part-timers*	6,416	0.29
Final sample of women after removing part-timers working less than 15 hours per week and full-timers who work less than 30 hours weekly:	19,872	
of which full-timers**	15,957	0.80
of which part-timers**	3,915	0.20

* The definition of full-time and part-time is based on the type of contract as reported in the SES.

** Part-time is defined as a range of weekly working hours between 15 and 29 and full-time corresponds to weekly working hours equal or above 30.

TABLE A2. MEANS OF SELECTED VARIABLES IN THE SAMPLE

<i>Variables:</i>	Part-time women	Full-time women
Gross hourly wage excluding bonuses (in EURO) (full-time wage - part-time wage) / part-time wage	9.25	10.48
		13%
Gross hourly wage including bonuses (in EURO) (full-time wage - part-time wage) / part-time wage	10.47	11.94
		14%
Age (years)	35.9	34.6
Education:		
No degree, primary or lower secondary	0.46	0.28
General, technical, artistic or professional upper secondary	0.43	0.43
Higher non university, university and post-graduate	0.11	0.29
White-collar workers	0.72	0.81
Sector of activity:		
Manufacture	0.16	0.33
Electricity, gas, steam and hot water supply, recycling	0.03	0.03
Construction	0.01	0.01
Wholesale and retail trade, repair of motor vehicles	0.26	0.18
Hotels and restaurants	0.04	0.02
Transport and travel	0.04	0.05
Post and telecommunications	0.04	0.04
Financial intermediation, insurance and pension funding	0.19	0.18
Real estate and renting	0.01	0.01
Computer and related activities	0.01	0.02
Other business activities	0.22	0.15
Occupation:		
Legislators, senior officials and managers	0.01	0.05
Professionals	0.02	0.09
Technicians and associate professionals	0.09	0.16
Clerks	0.39	0.46
Service workers and shop and market sales workers	0.21	0.06
Craft and related trades workers	0.03	0.07
Plant and machine operators	0.04	0.06
Sales and services elementary occupations	0.21	0.06
Number of observations	3,915	15,957

Notes: Descriptive statistics refer to the weighted sample. Part-time is defined as a range of weekly working hours between 15 and 29 and full-time corresponds to weekly working hours equal or above 30.

TABLE A3: REGRESSION RESULTS CONTROLLING ONLY FOR HUMAN CAPITAL

Dependent variable:	Individual gross hourly wage <i>without</i> bonuses (log)		Individual gross hourly wage <i>with</i> bonuses (log)	
	Part-time women	Full-time women	Part-time women	Full-time women
Intercept	5.590*** (0.021)	5.318*** (0.014)	5.628*** (0.023)	5.347*** (0.015)
Education:				
Primary or no degree	Reference	Reference	Reference	Reference
Lower secondary	0.025** (0.013)	0.076*** (0.010)	0.027* (0.014)	0.096*** (0.012)
General upper secondary	0.115*** (0.014)	0.296*** (0.010)	0.140*** (0.015)	0.346*** (0.012)
Technical/artistic/professional upper secondary	0.059*** (0.017)	0.242*** (0.012)	0.089*** (0.018)	0.283*** (0.014)
Higher non university short type, higher artistic training	0.314*** (0.021)	0.503*** (0.011)	0.358*** (0.023)	0.573*** (0.013)
University and non university higher education, long type	0.635*** (0.041)	0.777*** (0.014)	0.694*** (0.041)	0.856*** (0.015)
Post-graduate	0.388* (0.203)	0.918*** (0.042)	0.435** (0.184)	1.004*** (0.044)
Prior potential experience:				
Simple	0.009*** (0.003)	0.031*** (0.002)	0.011*** (0.003)	0.032*** (0.002)
Squared/10 ²	-0.041** (0.019)	-0.117*** (0.015)	-0.057*** (0.021)	-0.130*** (0.017)
Cubed/10 ⁴	0.054 (0.035)	0.165*** (0.032)	0.083** (0.038)	0.189*** (0.036)
Seniority in the company:				
Simple	0.018*** (0.003)	0.037*** (0.002)	0.032*** (0.003)	0.047*** (0.002)
Squared/10 ²	-0.002 (-0.027)	-0.111*** (0.014)	-0.074** (0.029)	-0.165*** (0.016)
Cubed/10 ⁴	0.024 (0.062)	0.192*** (0.029)	0.143** (0.066)	0.287*** (0.033)
R^2 adjusted	0.446	0.490	0.488	0.498
F -test	140***	715***	169***	769**
Number of observations	3,915	15,957	3,915	15,957

Notes: Part-time is defined as a range of weekly working hours between 15 and 29 and full-time corresponds to weekly working hours equal or above 30. White (1980) heteroscedasticity consistent standard errors are reported between brackets. * Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level.

TABLE A4: REGRESSION RESULTS WITH FULL SET OF CONTROL VARIABLES

Dependent variable:	Individual gross hourly wage <i>without</i> bonuses (log)		Individual gross hourly wage <i>with</i> bonuses (log)	
	Part-time women	Full-time women	Part-time women	Full-time women
Intercept	5.515*** (0.027)	5.306*** (0.021)	5.603*** (0.029)	5.379*** (0.021)
Education:				
Primary or no degree	Reference	Reference	Reference	Reference
Lower secondary	0.032** (0.014)	0.066*** (0.008)	0.026* (0.014)	0.070*** (0.009)
General upper secondary	0.097*** (0.015)	0.194*** (0.009)	0.098*** (0.016)	0.208*** (0.010)
Technical/artistic/professional upper secondary	0.075*** (0.015)	0.190*** (0.011)	0.076*** (0.016)	0.205*** (0.011)
Higher non university short type, higher artistic training	0.191*** (0.020)	0.305*** (0.011)	0.200*** (0.200)	0.329*** (0.011)
University and non university higher education, long type	0.434*** (0.036)	0.461*** (0.014)	0.465*** (0.465)	0.487*** (0.015)
Post-graduate	0.315** (0.151)	0.571*** (0.034)	0.343** (0.142)	0.603*** (0.035)
Prior potential experience:				
Simple	0.009*** (0.002)	0.023*** (0.002)	0.010*** (0.003)	0.024*** (0.002)
Squared/10 ²	-0.030* (0.016)	-0.075*** (0.012)	-0.036** (0.017)	-0.080*** (0.014)
Cubed/10 ⁴	0.031 (0.031)	0.095*** (0.026)	0.042 (0.034)	0.106*** (0.029)
Seniority in the company:				
Simple	0.012*** (0.003)	0.026*** (0.002)	0.023*** (0.003)	0.035*** (0.002)
Squared/10 ²	0.010 (0.020)	-0.078*** (0.012)	-0.056** (0.022)	-0.132*** (0.013)
Cubed/10 ⁴	-0.033 (0.043)	0.135*** (0.025)	0.083** (0.046)	0.229*** (0.027)
Overtime paid (yes)	0.068*** (0.023)	0.032*** (0.010)	0.066*** (0.024)	0.027** (0.011)
Bonus for shift work, night work and/or weekend work (yes)	0.005 (0.011)	0.025*** (0.008)	0.003 (0.011)	0.022*** (0.009)
Supervises the work of co-workers (yes)	-0.003 (0.019)	0.121*** (0.009)	-0.003 (0.020)	0.120*** (0.009)
Occupation (20 dummies)	Yes	Yes	Yes	Yes
Contract:				
Unlimited-term employment contract	Reference	Reference	Reference	Reference
Limited-term employment contract	-0.056*** (0.017)	-0.060*** (0.010)	-0.067*** (0.019)	-0.071*** (0.012)
Apprentice/trainee contract	/	-0.425*** (0.129)	/	-0.494*** (0.127)
Other employment contract	-0.029 (0.071)	0.008 (0.039)	-0.043 (0.073)	-0.019 (0.041)
Region:				
Brussels	Reference	Reference	Reference	Reference
Wallonia	-0.008 (0.013)	-0.041*** (0.008)	-0.012 (0.014)	-0.038*** (0.008)
Flanders	-0.050*** (0.012)	-0.065*** (0.006)	-0.062*** (0.012)	-0.072*** (0.007)
Establishment economic and financial control:				

More than 50% privately owned	Reference	Reference	Reference	Reference
Fully state owned	-0.144** (0.060)	-0.121*** (0.021)	-0.173** (0.072)	-0.167*** (0.024)
More than 50% state owned	-0.011 (0.033)	-0.005 (0.013)	-0.004 (0.034)	-0.030** (0.013)
Other	0.018 (0.015)	0.033*** (0.010)	0.026 (0.016)	0.043*** (0.010)
Level of wage bargaining:				
Collective agreement only at the national and/or sectoral level	Reference	Reference	Reference	Reference
Collective agreement at the company level	0.066*** (0.009)	0.034*** (0.005)	0.083*** (0.010)	0.041*** (0.006)
Other	-0.024* (0.014)	-0.022*** (0.007)	-0.025* (0.015)	-0.021*** (0.008)
Size of the establishment (log)	0.022*** (0.003)	0.027*** (0.002)	0.025*** (0.003)	0.030*** (0.002)
Industry effects (42 dummies)	Yes	Yes	Yes	Yes
R^2 adjusted	0.649	0.684	0.680	0.699
F -test	377***	258***	788***	270***
Number of observations	3,915	15,957	3,915	15,957

Notes: Part-time is defined as a range of weekly working hours between 15 and 29 and full-time corresponds to weekly working hours equal or above 30. White (1980) heteroscedasticity consistent standard errors are reported between brackets. * Statistically significant at the .10 level; ** at the .05 level; *** at the .01 level.