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Part-time employment, the gender wage gap and the role of wage-setting institutions: Evidence from eleven European countries

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Part-time employment, the gender wage gap and the role of wage-setting institutions: Evidence from eleven European countries

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Résumé
Cet article analyse à quel point la surreprésentation des femmes dans les emplois à temps partiel peut expliquer l'écart de salaire horaire entre les hommes et femmes dans onze pays européens. Il étudie également dans quelle mesure les institutions de formation des salaires peuvent agir sur l'écart salarial entre les sexes et sur la pénalité salariale supportée par les femmes travaillant à temps partiel. En utilisant les données EU-SILC 2009, une double décomposition de l'écart salarial entre hommes et femmes est mise en œuvre: entre hommes et femmes travaillant à temps plein d'une part, et entre les femmes travaillant à temps plein et à temps partiel d'autre part. Les résultats montrent que la pénalité salariale observée pour les travailleuses à temps partiel est le fruit d'une ségrégation verticale et horizontale des emplois à temps partiel. L'écart salarial sexué observé pour les travailleurs à temps plein reste, quant à lui, essentiellement inexpliqué par les caractéristiques observées. Au niveau macro, l'écart salarial entre hommes et femmes tend à être plus élevé dans les pays où l'emploi à temps partiel est plus répandu. En outre, les institutions de fixation des salaires semblent réduire les écarts de rémunération selon la quotité de temps de travail. Elles diminuent réduisent aussi les écarts sexués pour les travailleurs à temps plein, en comprimant la partie inexpliquée de la prime salariale masculine.

Mots-clef
Temps partiel, salaire, genre, écart salarial, institutions, décomposition, offre de travail, Europe.

Abstract
This article examines the extent to which the overrepresentation of women in part-time jobs can explain the gender gap in hourly earnings in eleven European countries. It also investigates the extent to which some wage-setting institutions are correlated with the overall gender wage gap and the female part-time wage gap. Using EU-SILC 2009 data, a double decomposition of the gender wage gap is implemented: between men and women employed full-time and between full-time and part-time working women. Results show that the wage penalty of women employed part-time occurs mainly through vertical (and horizontal) segregation of part-time jobs. The gender pay gap between full-time workers remains mostly unexplained. At the macro level, the gender wage gap tends to be higher in countries where part-time employment is more widespread. Further, wage-setting institutions seem to reduce the female full-time/part-time pay gap and the gender gap among full-time workers through a compression of male unexplained wage premium.

Keywords
Decomposition, labor force participation, part-time, wage gap, wage-setting institutions.

Introduction

Despite a slight improvement in most European countries, there remains a substantial gender earnings gap throughout Europe (OECD 2012). To address this persistent inequality, the European Employment Strategy has sought to promote and strengthen equal opportunity policies since 1999. Increasing female labor market participation is another issue on the European political agenda. In order to reach this objective and combat the decrease in fertility, governments are being encouraged to implement policies that facilitate greater reconciliation between work and family life, in particular by enhancing part-time employment. Part-time employment has become widespread in Europe over recent decades, with an average of one in five workers having worked part-time in the EU-27 in 2015, compared with 16% ten years before.

However, developing part-time employment and reducing the gender earnings gap are different objectives that may conflict with each other. This is because part-time workers generally have lower hourly earnings than full-time employees (Jepsen, O'Dorchai, Plasman and Rycx 2005; Bardasi and Gornick 2008; Manning and Petrongolo 2008; Fernández-Kranz and Rodriguez-Planas 2011) and part-time workers are primarily women. The difference in working time between men and women has been identified as a key factor explaining the gender pay differential (Goldin 2014; Meurs and Ponthieux 2015). Yet, little attention has been devoted to the role of part-time employment as one possible additional cause for the gender wage gap. Thus, the present work aims to investigate to what extent the development of part-time work might increase gender wage inequalities.

Most research on the gender wage gap explains these penalties through individual characteristics, employer discrimination and the concentration of women into poorly paid occupations in the least-regulated and lowest paid sectors[1] (Meulders and Plasman 1993; Smith, Fagan and Rubery 1998; Fagan 2009; Matteazzi, Pailhé and Solaz 2014). As the gender wage gap varies increasingly across countries, the effect of labor market institutions has been discussed. Some studies have shown that high levels of collective bargaining coverage, a high degree of centralization of wage bargaining and high minimum wages contribute to improve gender wage equality among full-time employees (Schafer and Gottschall 2015). Such approaches, however, have failed to address the role of industrial relations for part-time employees.

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[1] The concentration of women in some sectors and employments is itself a form of discrimination.

This article measures the contribution of part-time employment to the gender earnings gap and investigates the role of both individual and wage-setting institutions in shaping wage inequalities. To this end, we run a comparative analysis between eleven European countries using EU-SILC data for the year 2009. The contribution of this study is twofold. First, the present work goes further in studying the role that part-time employment plays in the overall gender wage gap. In doing so, we use an original wage gap decomposition analysis by splitting the overall gender wage gap into two parts: the full-time gender pay differential (i.e., the pay gap between men and women employed on a full-time basis) and the female full-time/part-time pay gap (i.e., the pay differential between female full-timers and part-timers). Then, on the micro level, we analyze whether– and the extent to which – each of the aforementioned pay gaps can be explained by individual and job-related characteristics, selection[2] into (full-time and part-time) employment and unobserved characteristics.

Our second contribution relates to the macro level, at which we take advantage of the comparative analysis and the heterogeneous prevalence of part-time jobs across European countries and use them to explore the extent to which the pervasiveness of part-time employment is correlated with the overall gender wage gap and its three main components: the portion explained by gender differences in observable characteristics; the portion related to female selection into paid employment; and the remaining unexplained portion. Then, we exploit the national differences in wage-setting institutions to study the extent to which the predicted full-time gender pay gap, female full-time/part-time wage gap, male wage premium and female wage penalties are correlated with bargaining coverage, wage bargaining coordination and centralization, government intervention in wage bargaining, and minimum wages.

Previous research

Determinants of the gender wage gap and the part-time wage gap

A huge amount of the literature has been dedicated to measuring and explaining the gender wage gap (see Meurs and Ponthieux 2015 for a survey). Recent research shows that human capital factors, especially educational attainments, are now relatively unimportant, while women's career interruptions due to motherhood, shorter working hours and gender

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[2] We have to take into account that some individuals select themselves into the groups of non-employed, full-time wage earners and part-time wage earners. There may be differences in observed (such as family constraints) and non-observed (such as individual preferences) characteristics across these groups. A significant difference in wage gap could be linked with such characteristics. Thus, we consider their effects separately.

occupational segregation account for the largest portion of the gender pay gap (Waldfogel 1998; Fortin and Huberman 2002; Gannon et al.2007; Blau and Kahn 2016). With the exception of Haegeland and Klette (1999), most studies find that the gender gap does not reflect gender differences in productivity (Hellerstein, Neumark and Troske 1999; Pfeifer and Wagner 2012) and that the unexplained portion of the gender pay gap increases over time, partly due to employer discrimination (Blau and Kahn 2016).

Given that men represent a very small proportion of part-time workers, almost all analyses dealing with the contribution of part-time employment to wage inequalities focus only on women (except for O'Dorchai, Plasman and Rycx 2007 and Garnero, Kampelmann and Rycx 2014). They generally find a part-time wage penalty among female workers (Jepsen, O'Dorchai, Plasman and Rycx 2005; Bardasi and Gornick 2008; Manning and Petrongolo 2008; Fernández-Kranz and Rodriguez-Planas 2011). Several explanations have been advanced in the literature. Part-timers have less work experience (Blank 1998) and a lower commitment to paid employment (Robertson 1989; Sadler and Aungles 1990), due to individual preferences (Hakim 2002) or family constraints (McRae 2003). The part-time wage penalty may also be explained by the concentration of part-time jobs into poorly paid occupations and industries (Meulders and Plasman 1993; Smith, Fagan and Rubery 1998; Fagan 2009; Matteazzi, Pailhé and Solaz 2014) and by the existence of fixed employment costs (Oi 1962; Montgomery 1988; Hamermesh and Rees 1993; Lindbeck and Snower 2000). However, it may also be due to an increase in gender discrimination against part-time workers (Garnero, Kampelmann and Rycx 2014).

Wage-setting, wage inequality and the gender wage gap

Less research has analyzed the interplay between industrial relations and the gender wage gap (Schafer and Gottschall 2015); although recognition of the variety of wage-setting systems is important in addressing persistent pay gaps (Gannon et al. 2007). European countries differ strongly in terms of bargaining coverage, the degree to which wage bargaining is centralized as well as coordinated, and the presence and level of a statutory minimum wage, as shown in Table A1. In both Eastern and English-speaking Europe, bargaining coverage is low, wage bargaining is fragmented and the minimum wage level is low relative to median earnings. Government intervention in wage bargaining is also very limited in the United Kingdom. By contrast, collective bargaining covers all wage-earners in Sweden, Slovenia, Belgium,

France, Romania[3] and Austria. Wage bargaining is also much more coordinated in most Nordic and Continental European countries, as well as in Romania and Slovenia. It is highly centralized in Belgium, Greece and Romania. The government participates directly in wage bargaining in Belgium, the Netherlands, Portugal and Slovenia.

The role of wage-setting institutions and collective actors obviously comes into play when looking at the institutional factors impacting earnings differentials (Rubery, Grimshaw and Figueiredo 2005; Gannon et al. 2007). Hence, wage inequalities tend to be higher in countries characterized by a liberal market economy, low bargaining coverage, and highly decentralized wage-setting regimes than in more coordinated economies (Blau and Khan 1999; Card 2001; Machin 1997; Card et al. 2004; Khan 2000; Di Nardo et al. 1996; Lee 1999; Dickens et al. 1999; Khan 2015).Comparative research has provided evidence that previous considerations about the impact of wage-setting institutions on earnings differentials also apply to gender wage inequalities. Christofides, Polycarpou and Vrachimis (2013) use a set of collective bargaining indicators to show that countries with largely unregulated labor markets have higher unexplained gender wage gaps. Most evidence from international comparative studies confirms that minimum wage systems contribute to reducing the overall gender wage gap by protecting the earnings of women employed in low-paid occupations (Grimshaw, Kampelmann and Rycx 2014; Schafer and Gottschall 2015). However, the extent of the effect depends on the level at which the minimum wage is set (Rubery, Grimshaw and Figueiredo 2005). Results are mixed regarding the effect of collective bargaining on the gender wage gap. Elivra and Saporta (2006) find that unionization is associated with smaller gender pay gaps, especially in mixed or male-dominated industries. Blau (2012) and Schafer and Gottschall (2015) also show that a higher collective bargaining coverage contributes to improving gender wage equality. However, Booth and Francesconi (2003) and Arulampalam, Booth, and Bryan (2007) show that unions may be less likely to represent the interests of women, especially those at the bottom of the wage distribution. Gender pay inequality also depends on the degree of coordination and integration of wage structures by occupation, firm and sector. Women's pay tends to be better protected by more coordinated bargaining systems (Blau and Kahn 1992).However, Schafer and Gottschall (2015) show that, compared to economy-wide or industry-wide levels, the sectoral level is less favorable.

Most of this research focuses on full-time workers only and does not address the question of the part-time wage gap. The over-representation of part-time workers among the low-paid

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[3] In Romania bargaining coverage has considerably decreased since 2011 (European Commission 2015).

and less-unionized jobs in several countries raises the question about whether wage-setting institutions reduce the part-time wage gap just as they do for the full-time gender wage gap.

Varieties of part-time systems

There are broad disparities across countries in terms of women's employment rates, which range from 46% in Malta to more than 80% in Northern European countries and Slovenia (Table A2 in the Appendix). Countries are even more heterogeneous with respect to female part-time employment. At below 10%, Eastern European countries and Greece exhibit the lowest female part-time rate, followed by Finland and other Mediterranean countries. At the other extreme, the Netherlands have the highest rate, with about three women out of four working part-time. The incidence of part-time employment is around 40% in Central European countries and the United Kingdom. Part-time employment rates among mothers are higher in almost all countries, but are largest in Austria, Germany, the Netherlands and the United Kingdom. Although part-time employment has also become more common among men, it remains below 5% at the European level. The Netherlands stand out for having the highest male part-time employment rate, which exceeds 12%, although they remain well below the female rate.

Comparative research (Fagan and O'Reilly 1998; Esping-Andersen 1999; Hall and Sokice 2001) has pointed out that explaining the development of part-time employment depends on country-specific social policies, industrial relations and the type of welfare regime. Anxo et al. (2007) identify four broad national models corresponding to different welfare regimes in regard to "time policies". Nordic countries represent the "universal breadwinner" model, which is characterized by high levels of female participation in paid employment, on both a full-time and long part-time basis. In these countries, the incidence of marginal part-time work is low (Anxo 2004), and motherhood has limited adverse effects on female employment. This is different in countries that belong to the "modified breadwinner model", such as France, where motherhood is associated with a withdrawal from paid employment for some groups of women. In these countries, women are generally employed on a full-time basis, but long part-time work is also quite widespread. Mediterranean countries belong to the "exit or full-time model", which is characterized by very low female employment rates, especially for mothers, and a scarcity of part-time jobs. Finally, the authors identify different models of "maternal part-time work", which are typified by Germany, the Netherlands and the United Kingdom. These countries are characterized by very high part-time employment

rates, and the hours generally worked by part-timers are lower than those worked in Nordic countries and in France. There exist important differences in the quality of part-time work in the three countries. For instance, in the United Kingdom part-time jobs are of very poor quality and confined to poorly-paid sectors and occupations, while part-time work also negatively affects both hourly wages and career advancement (Francesconi and Gosling 2005; Manning and Petrongolo 2008). By contrast, part-time jobs in the Netherlands are of better quality in terms of both occupational profile and hourly earnings.

Data and empirical methodology

Data

The empirical analysis is based on data provided by the European Union Statistics on Income and Living Conditions (EU-SILC, Eurostat), which allows comparative analysis of full-time and part-time European hourly wages. The EU-SILC collects comparable cross-sectional and longitudinal microdata for all EU-27 Member States. We exploit the 2009 wave because it provides information on the 2008 annual labor earnings, which is the last available information on earnings before the recent great recession. Indeed, it is well known in the literature that recessions and the subsequent sustained downturns influence women's labor market attachment and the pattern of gender segregation, with important consequences on the gender pay gap (Rubery 1988; Rubery and Rafferty 2013).

The sample comprises prime-age women and men aged25-59 living in Austria, Belgium, Finland, France, Germany, Italy, the Netherlands, Norway, Poland, Spain, and the United Kingdom[4]. The eleven selected countries are representative of the considerable European heterogeneity in terms of female labor market participation, incidence of part-time employment, size of the gender wage gap and labor market structure. In order to take into account female labor participation in paid employment, the sample includes male and female wage earners[5] and women voluntarily outside the labor market. Because of their limited number, men who are inactive (just 4.11% overall) or working part-time (just 2.8% overall) are excluded.

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[4] The non-inclusion of other European countries in our comparative analysis is data-driven (small sample size of women in part-time jobs, especially for Eastern European countries, and high non-response rate for workplace characteristics, especially for Nordic European countries).
[5] Unemployed, self-employed, family workers, disabled and retired people are excluded from the sample.

Full-time and part-time employment are defined on the basis of the spontaneous answer given by the respondent rather than the actual number of hours worked.[6]The gross hourly wage[7] is computed as the ratio between gross monthly earnings (obtained by dividing the employee's gross cash or near cash annual income earned during the income reference period and the number of months spent in employment during the same period) and the number of hours usually worked per month (recalculated from the number of weekly hours declared at the time of the interview)[8]. Current variables may have a lag between the end of the income reference period and the time of the interview. Since the timing mismatch could weaken the match between labor income (which refers to a past period) and the number of hours usually worked per week (which refers to the current situation),we keep workers who remained in the same job and who continuously worked either full-time or part-time. Furthermore, to ensure consistency between declared labor earnings and job-related characteristics, we drop workers holding more than one job. The selected sample thus over-represents workers who are stable in their working status over the year, since the most precarious workers holding temporary jobs are probably excluded. This could be a limitation, but it allows analyzing the effects on wages of structural part-time jobs without mixing them together with those created by job insecurity. Nevertheless, we conduct a robustness check of our results from the alternative definitions of hourly wage.

Micro-level analysis: Decomposition of the gender wage gap

In order to evaluate the contribution of female part-time employment to the gender gap in pay, we perform a double decomposition of the gender wage gap as follows:

$$\bar{y}_m^{FT} - \bar{y}_f = \bar{y}_m^{FT} - \left[(1-k)\bar{y}_f^{FT} - k\bar{y}_f^{PT}\right] = \left(\bar{y}_m^{FT} - \bar{y}_f^{FT}\right) + k\left(\bar{y}_f^{FT} - \bar{y}_f^{PT}\right), \qquad (1)$$

where $\bar{y}_m^{FT}, \bar{y}_f^{FT}, \bar{y}_f^{PT}, \bar{y}_f$ are the predicted mean log hourly wages for men working full-time[9], women working full-time, women working part-time, and all working women, respectively. The first part on the right-hand side of equation (1) is the full-time gender pay

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[6] Respondents reporting long workweeks have a tendency to overestimate the time they spent at their jobs working (Robinson et al. 2011). Due to this bias, the hourly gender wage gap may be compressed.

[7] We choose the standard indicator used in the literature. Focusing on monthly wages might also be relevant because of the imperfect quality of self-reported working hours.

[8] We dropped the top and the bottom 1 percent of the wage distribution in order to limit the influence of extreme values. Workers who reported working less than 5 hours per week or more than 60 hours per week were also excluded.

[9]We focus only on men working full-time because very few men are in part-time employment.

differential. The second part is the female full-time/part-time pay gap weighted by k, i.e., the share of women working part-time among all working women.

In order to measure the extent to which the gender wage gap is influenced most by observed characteristics (such as lower work experience and/or occupational segregation of part-timers), unobserved characteristics (related, for instance, to lower commitment to paid employment and/or discrimination of part-timers), and selection into employment, we decompose each of the two wage gaps using the Neuman-Oaxaca procedure (2004)to account for selectivity. The procedure divides each wage differential into three components: i) an "explained part", which is the part of the raw wage differential due to different observable characteristics between groups of workers (i.e., men versus women in full-time jobs and women in full-time jobs versus women in part-time jobs); ii) an "unexplained part", which is the part of the raw wage gap due to different returns to identical characteristics, unobserved heterogeneity, or omitted variables; and iii) the "selection part", which is the part of the raw pay differential due to self-selection of women into full-time or part-time employment. The existence of a wage penalty or premium is captured by the difference between individual returns to observed characteristics and nondiscriminatory rewards obtained from a pooled regression over all groups of workers, i.e., men and women working both full-time and part-time (Neumark 1988). Since job segregation may be a form of discrimination, we analyze its specific contribution to the gender wage gap.

Log wage equations for men and selectivity-corrected low wage equations for women are estimated by Ordinary Least Squares (Maddala1983). Explanatory variables are: educational level, a second order polynomial of labor market experience[10], the country of birth, the region of residence, the degree of urbanization of area of residence, occupation, being in a managerial position with supervisory responsibility, the type of contract, the economic sector of the local unit and the firm size. Information about real labor market experience is not available for Finland, the Netherlands, Norway, or the United Kingdom. Thus, for these countries we control for potential experience measured by the usual formula: "age–number of years in education–6". Being aware that potential experience is likely to overestimate women's real labor market experience because it does not consider child-related career

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[10] Experience is measured by self-reported real experience on the labor market with no distinction between part-time and full-time work.Regrettably, the EU-SILC data do not provide information on tenure with current employer. However, several studies have shown that job tenure only marginally contributes to the gender wage gap (Blau and Kahn 2000; Meurs and Ponthieux 2006). Thus, the lack of such information limits the possible omitted variables problem.

interruptions, we include in the log wage regressions – only for these four countries –the number of children by age group (0-5, 6-11, and older than 12 years old).

To account for a possible sample selection problem, we estimate as an ordered probit model female status in employment, i.e., inactivity, part-time employment and full-time employment (Ermisch and Wright 1993). Except for workplace variables, the same set of controls is included. We use common exclusion restrictions, i.e., the annual amount of other household incomes (Blundell and MaCurdy 1999; Blundell, MaCurdy and Meghir 2007), the use of unpaid childcare and the recourse to formal childcare services for children younger than 12. There exists broad evidence on the positive effect of formal childcare on women's full-time attachment to the labor market (Del Boca 2002; Chevalier and Viitanen 2002; De Henau, Meulders and O'Dorchai 2010; Apps, Kabátek, Rees and van Soest 2012). Further, it has been shown that extended families and grandparents' support play an important role in explaining the labor force participation of women with children (Chiuri 2000; Baizan, Michielin and Billari 2002; Del Boca 2002). Lastly, for those countries with available information on real labor market experience, the number of children by age group is included in the participation decision but not in the log wage equations.

Macro-level analysis: Part-time employment, wage-setting institutions and wage inequalities

In order to explore whether the spread of part-time employment explains the gender wage gap, we examine, on the macro level, the correlation between the rate of part-time employment and the predicted gender hourly wage gap. Since part-timers have lower earnings than full-timers and are more often women, we expect that the more widespread part-time employment, the larger the gender hourly wage gap. Thus, we explore whether the spread of part-time employment is more correlated with the observable workers' characteristics, the unobservable characteristics or selection, i.e., with the explained, unexplained and selection parts of the gender wage gap. In the absence of discrimination, the prevalence of part-time employment should be more correlated with the explained part of the gender wage gap.

With the objective of examining how wage-setting institutions affect the gender wage gap and which component of the gender wage gap is the most affected by wage-setting institutions, we examine the correlation, at the macro level, between the predicted full-time gender and female full-time/part-time pay gaps with some wage-setting institutions. To check

whether institutions might affect gender discriminations (Christofides et al. 2013),we explore whether and how the unexplained portions of the two abovementioned pay gaps are correlated with wage-setting institutions.

We are interested in the roles of bargaining coverage, centralization of wage bargaining, coordination of wage bargaining and government intervention in wage-setting, and we examine them using indicators taken primarily from Visser (2015). We also consider the role of minimum wages and use the OECD Kaitz index to do so.[11] The measure for bargaining coverage is the number of employees covered by wage bargaining agreements as a proportion of all wage earners with the right to bargain, adjusted for the possibility that some sectors or occupations are excluded from this right (Traxler 1994).[12] Centralization of wage bargaining is measured by the predominant level at which wage bargaining takes place. The index ranges from 1 to 5, with higher scores suggesting a higher degree of centralization.[13] Regarding wage coordination, Visser's measure is an index that ranges from 1 to 5, with the lowest score indicating fragmented bargaining (mostly at the company level) and the highest referring to economy-wide bargaining.[14] Visser's measure of government intervention in wage-bargaining is an index that ranges from 1 to 5, with the lowest score indicating that the government is entirely uninvolved and the highest referring to government imposition of private sector wage settlements and a ceiling on bargaining outcomes[15].

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[11] The impact of these wage-setting institutions is analyzed one by one because they might be highly correlated (Visser 2011; Schafer and Gottschall 2015). For instance, in those countries where statutory minimum wages exist, a higher level of collective bargaining coverage is associated with relatively higher minimum wages, and thus higher values for the Kaitz index (Grimshaw and Bosch 2013). A number of studies have also shown that the degree of centralization of wage bargaining and collective bargaining coverage tends to be higher in countries without statutory minimum wages (Vaughan-Whitehead 2010; Eldring and Alsos 2012).

[12] We have chosen bargaining coverage instead of union density because collective bargaining coverage measures the real extent to which salaried workers are subject to union-negotiated terms and conditions for employment, while union density represents a measure of potential union bargaining clout (OECD 2004).

[13] The scores for centralization of wage bargaining are: 5 = bargaining takes place predominantly at the central or cross-industry level and there are centrally determined binding norms or ceilings to be respected by agreements negotiated at lower levels;4 = intermediate or alternating between central and industry bargaining; 3 = bargaining takes place predominantly at the sector or industry level; 2 = intermediate or alternating between sector and company bargaining;1 = bargaining takes place predominantly at the local or company level.

[14] The scores for wage bargaining coordination are: 5 = economy-wide bargaining, based on a) enforceable agreements between the central organizations of unions and employers, or on b) government imposition of a wage schedule, freeze, or ceiling; 4 = mixed industry and economy-wide bargaining: a) central organizations negotiate non-enforceable central agreements and/or b) key unions and employers' associations set pattern for the entire economy; 3 = industry bargaining with no or irregular pattern setting, limited involvement of central organizations, and limited freedoms for company bargaining; 2 = mixed or alternating industry- and firm-level bargaining with weak enforceability of industry agreements; 1 = none of the above, fragmented bargaining, mostly at the company level.

[15] The scores for the government intervention in wage bargaining are as follows: 5 = the government imposes private sector wage settlements, places a ceiling on bargaining outcomes or suspends bargaining; 4 = the government participates directly in wage bargaining; 3 = the government influences wage bargaining outcomes

In line with previous empirical evidence, we expect that the gender wage gap is lower in presence of a high bargaining coverage, high minimum wages relative to median or mean wages, a strong government intervention in wage bargaining and a high degree of coordination and centralization of pay negotiations across the economy. This is because these labor market institutions tend to compress the wage distribution. Given that institutions tend to affect unskilled workers more than skilled ones (Koeniger, Leonardi and Nunziata 2007), and that part-time workers have lower skills, on average, than their full-time colleagues, wage-setting institutions are more likely to shelter the lowest paid workers and should compress the wage differences more between full-time and part-time workers.

Results

Descriptive statistics

Large cross-country differences are observed at the level of average hourly wages. The highest wages are found in Northern European countries, and the lowest are in Poland, Spain, and Italy (Figure 1). On average, men earn more than women in all countries. The relative gender hourly pay gap is much wider in Germany, the United Kingdom, and Northern European countries where, on average, men's hourly earnings are around 30% higher than those of women (Figure 2). The gender wage gap is much lower in Belgium, Southern European countries, and Poland where, on average, men earn about 10% more than women.

FIG. 1.– Average hourly wages (Euros) by gender
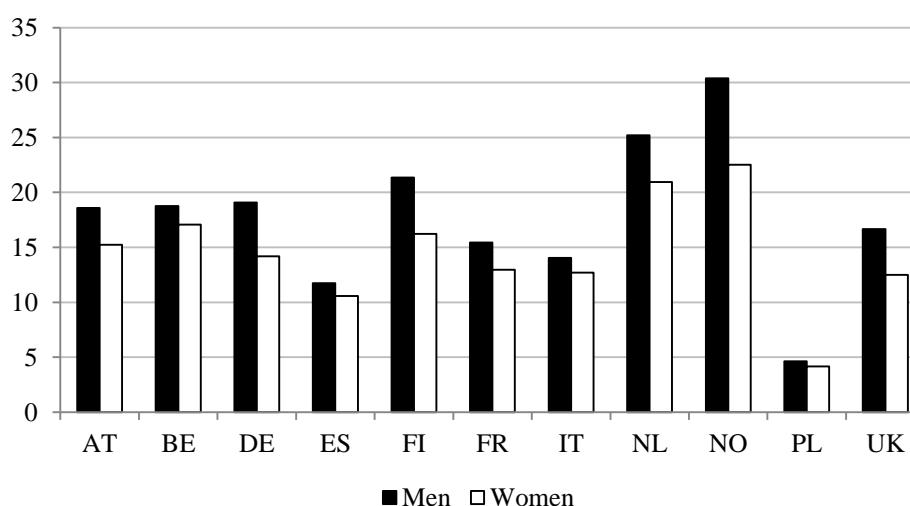
indirectly through price ceilings, minimum wages, etc.; 2 = the government influences wage bargaining by providing an institutional framework for consultation and exchanging information exchange, by providing a conflict resolution mechanism, etc.; 1 = none of the above.

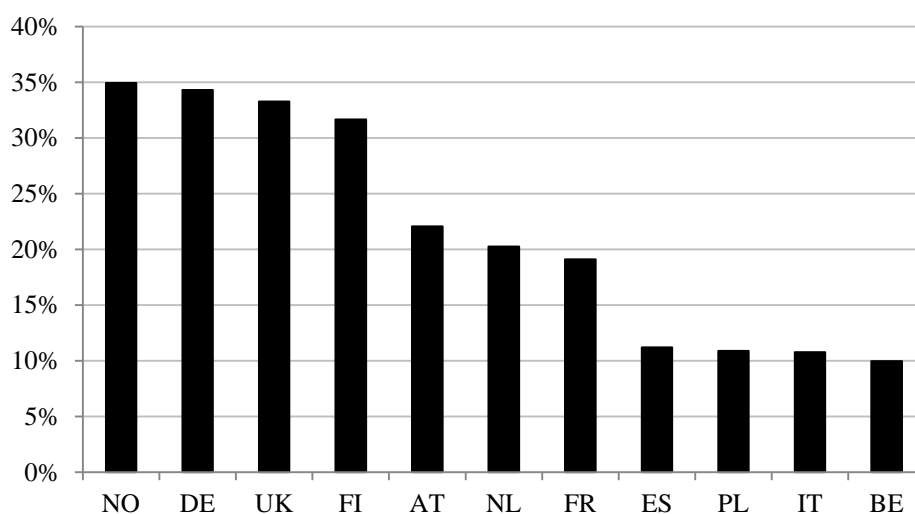FIG. 2.–Gender hourly wage gap (%) in percentage of women's average hourly wage

Figure 3*a* shows the hourly earnings differences between men and women in full-time employment as a percentage of full-time women's earnings. The largest full-time gender pay gap is found in Finland and Norway, where it is around 30%; whereas the lowest is found in Southern Europe, where it is slightly above 5%. Figure 3*b* displays the hourly earnings difference between women in full-time employment and women in part-time employment as a percentage of part-time women's earnings. In contrast to the full-time gender pay gap, Southern European countries exhibit the highest female full-time/part-time hourly earnings gap. This evidence may suggest that, in those countries where part-time employment is not a widespread working arrangement, it is also not well-paid, mainly because it may be concentrated mostly in poorly paid occupations or sectors. In Austria and the Netherlands, hourly earnings of part-timers are very close to those of full-timers, while they are even slightly higher in Belgium. These three countries are characterized by high rates of female part-time employment. Thus, this descriptive evidence could suggest that there exists a negative macro relationship between the prevalence of part-time employment and the full-time part-time pay gap.

FIG. 3.–*a*, Full-time gender wage gap (%). *b*, Female full-time/part-time wage gap (%).

a

b

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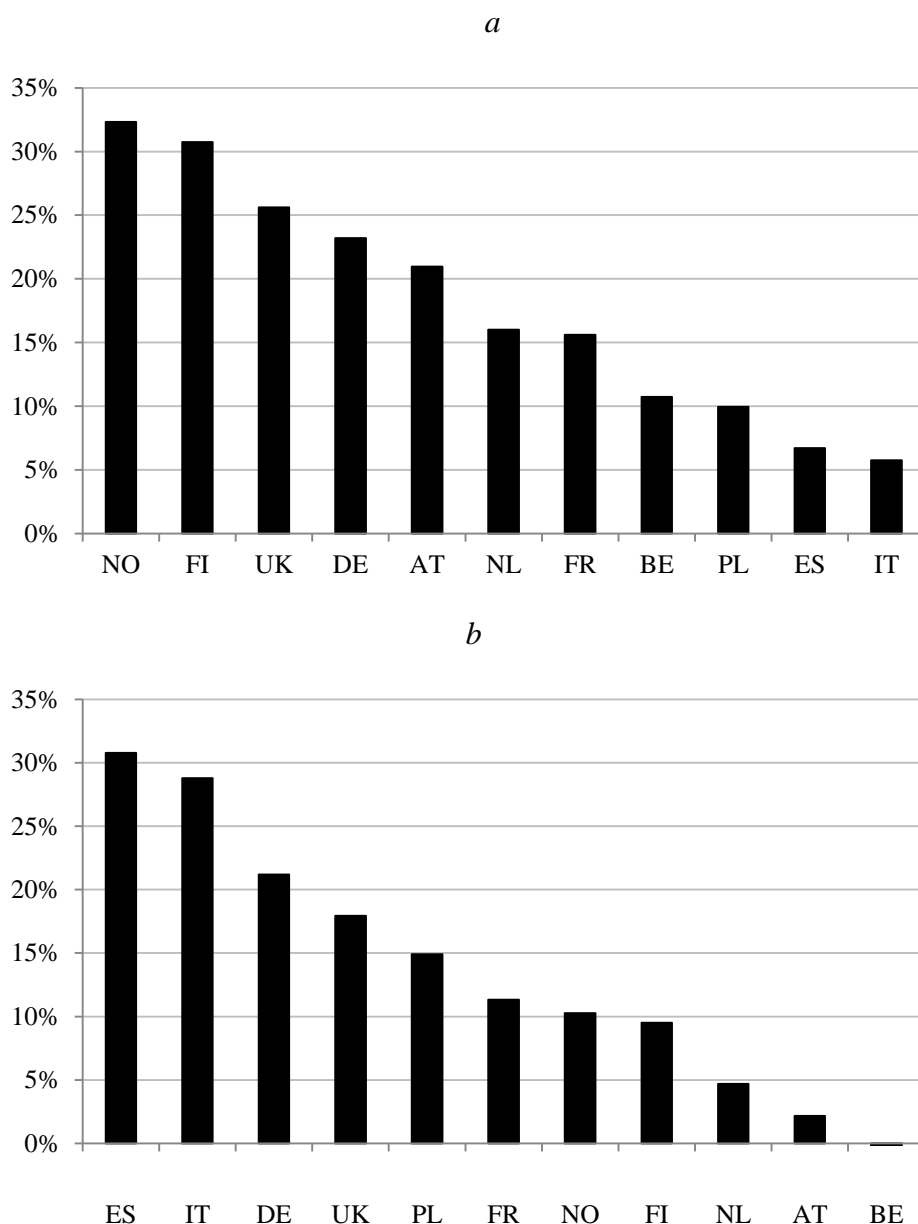
Figure 4 shows the extent to which the two pay differentials contribute to the general gender wage gap. In the figure, the female full-time/part-time wage gap is weighted by the percentage of women working part-time among all working women. Even though part-time is widespread in Northern Europe, Belgium, and Austria, part-time employment plays a minor role in explaining the overall gender wage gap in these countries, because the contribution of the full-time/part-time wage gap to the gender pay gap is limited. Conversely, in Italy and Spain, where part-time employment is not very common, the female full-time/part-time wage gap accounts for about 40% of the gender wage gap. Part-time employment also explains a significant share of the gender wage gap in Germany, the Netherlands and the United

Kingdom, where this type of work schedule is quite common for women. Thus, the diffusion of part-time employment in itself does not seem to be the main factor in explaining the gender wage gap, and the factors that may be much more important are the institutional context and the nature of part-time employment –i.e., whether it is primarily a means for maintaining the work-family balance or is mainly used as a flexible working arrangement imposed by employers. Indeed, the distribution of part-time employment across occupations and branches is country-specific. It is more concentrated in elementary occupations in countries like Spain, Poland, and France, but more equally distributed in Austria, Germany, Belgium, and Finland. The wage-setting background and legal rules regulating part-time are also very country-specific.

FIG. 4.– Gender, full-time gender, and female full-time/part-time wage gap (%)
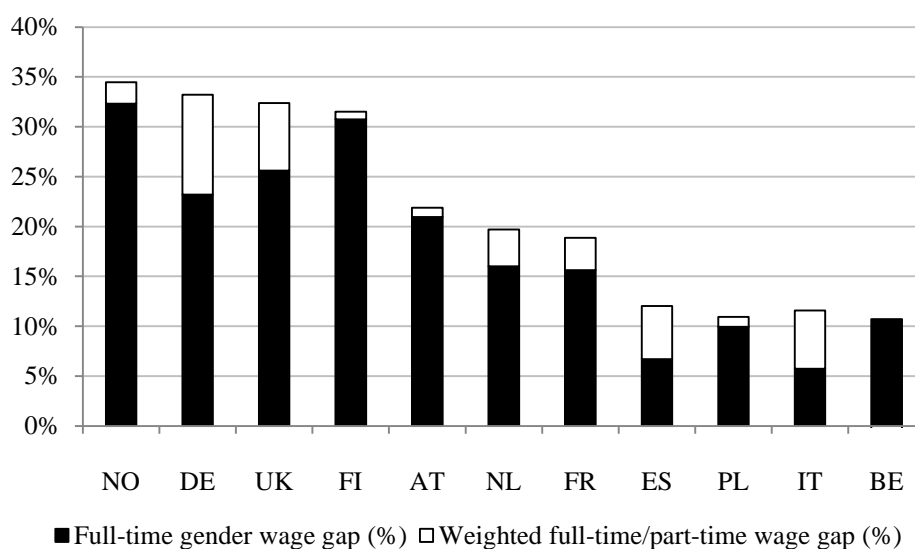
Wage gap decomposition results

Full-time gender wage gap. Table 1 shows the decomposition results of the full-time gender wage gap[16] in an explained part, a male wage premium part, a female wage penalty part and a selection part. In most countries, less than half of the full-time gender wage gap is explained by the observed workers' socio-economic and job-related characteristics that we have included in the regression. In Spain, differences in these characteristics globally fail to explain the earnings difference between male and female full-time workers. In Italy and Poland, the explained part is even negative, suggesting that full-time women have better

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[16] First and second stage estimation results are available from the authors upon request.

characteristics than men and that, in the absence of discrimination or unobserved characteristics significantly affecting the gender pay gap, they would have earned more than men.

The last four columns of Table 1 show the separate contributions to the explained full-time gender pay differential, specifically from human capital indicators, vertical and horizontal segregation[17], and other individual characteristics. The contribution of human capital (i.e., education and labor market experience) is heterogeneous across countries. In Belgium, Finland, Italy, Norway, Poland, and the United Kingdom, the negative sign associated with human capital comes from a structural effect: the percentage of women in these countries with tertiary education is now much higher compared to men. This may also be related to the fact that we control for potential experience in three of these countries. On the other hand, in Austria, Germany, and Spain, the percentage of the pay differential explained by human capital is significantly positive at around 10%.

Labor market segregation accounts for a sizable part of the observed full-time gender wage gap, especially its horizontal dimension. In all countries, full-time women are more likely than men to be clustered in less-valued sectors of economic activity and to be employed with temporary contracts in small enterprises that pay lower wages. Vertical segregation contributes to explaining the full-time gender wage gap in Northern European countries, France and the United Kingdom. In these countries, women are concentrated in less-valued occupations and might receive fewer promotions. In contrast, the explanatory power of vertical segregation is negative in Belgium, Italy, the Netherlands, Poland, and Spain. Indeed, the percentage of full-time women employed in high-valued occupations in these countries is higher relative to men. The explanatory power of other individual and household characteristics (last column) is very limited in all countries.

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[17] By vertical segregation, we mean better career opportunities (for advancement and wages) and higher rewarded positions for some workers. As a proxy for vertical segregation, we include the occupation and being in a managerial position. Horizontal segregation refers to situations in which a certain type of worker is concentrated in certain sectors of economic activity, in certain types of firms, or in a particular type of contract.

Table 1. Decomposition results for the full-time gender wage gap (men and women in full-time employment)

Country	Log-Wage Difference	Explained Part	Male full-time wage premium	Female full-time wage penalty	Selection Part	Explained Part in detail			
						Human Capital Indicators	Vertical Segregation	Horizontal Segregation	Other Characteristics
Austria	0.19	0.06	0.05	0.14	-0.06	0.02	0.00(ns)	0.04	-0.00(ns)
Belgium	0.09	0.02	0.01	0.10	-0.05(ns)	-0.01	-0.01	0.04	-0.00(ns)
Finland	0.22	0.11	0.05	0.07	-0.01(ns)	-0.02	0.06	0.06	0.00
France	0.15	0.07	0.03	0.01(ns)	0.03(ns)	0.00(ns)	0.02	0.05	-0.00
Germany	0.20	0.09	0.06	0.07	-0.03(ns)	0.02	-0.01(ns)	0.08	-0.00(ns)
Italy	0.05	-0.04	0.04	0.12	-0.06	-0.01	-0.03	-0.00(ns)	-0.00
The Netherlands	0.11	0.04	0.03	0.11(ns)	-0.06(ns)	0.01(ns)	-0.01(ns)	0.03	0.01
Norway	0.22	0.12	0.05	0.05(ns)	0.00(ns)	-0.02	0.02	0.12	-0.00(ns)
Poland	0.08	-0.03	0.04	0.12	-0.05	-0.02	-0.03	0.03	-0.00
Spain	0.09	-0.01(ns)	0.04	0.13	-0.07	0.01	-0.03	0.01(ns)	-0.00 (ns)
The United Kingdom	0.19	0.08	0.07	0.18	-0.13	-0.01	0.04	0.03	0.01

NOTE.—Standard errors of the selection part are estimated by bootstrap. Human Capital Indicators include education level and a second order polynomial of experience or potential experience, according to country. As a proxy for Vertical Segregation, we use occupation and being in a managerial position. As a proxy for Horizontal Segregation, we include firm size, type of contract, and economic activity of the firm. Other characteristics include region of residence, degree of urbanization of place of residence, and the number of children by age group, according to country.(ns) means statistically non-significant at the 0.1 level.

Selection into full-time employment has a large effect in Italy, Poland and Spain[18]. In these countries, female full-time workers are those who undergo the highest wage penalty. This result may suggest that in countries where female employment is low, working women are mainly employed on a full-time basis and are positively selected in the labor market. Those are also countries where working women employed on a full-time basis are even more discriminated against. Selection is also significant in Austria and the United Kingdom, countries characterized by a very high part-time employment rate. This evidence suggests that, in countries with a high prevalence of part-time jobs, women working full-time might be positively selected in the labor market.

But the main part of the wage difference between male and female full-time workers remains unexplained and could be attributed to unobserved characteristics. The sum of the male full-time premium and the female full-time wage penalty (larger in magnitude in most countries) represents a large share of the raw differential. This might be due to omitted variables (e.g., occupations and industries are controlled for at a relatively aggregated level, and some variables such as training and tenure are not available) or discriminatory behaviors toward male and female workers.

Female full-time/part-time wage gap. Table 2 shows the decomposition results for the second component of the gender difference in pay, i.e., the female full-time/part-time wage gap. In all countries, nearly the entire female full-time/part-time hourly wage gap is explained by socio-demographic and workplace characteristics, which is in contrast to what was previously observed for the full-time gender pay differential. In Austria, Finland, France, the Netherlands, Norway, Poland and Spain, the explained part is even greater than 100%. This means that, given their observed characteristics, female full-time workers should earn more than part-timers. In France, Germany, Italy, and the Netherlands, female part-timers undergo a wage penalty.

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[18] In these countries, differences in observed attributes of male and female full-time workers either fail to explain the gender pay gap or indicate that full-time female workers have better characteristics than their male colleagues, both in terms of educational attainments and type of occupations, and they should earn even more than men.

Table 2.Decomposition results for the female full-time/part-time wage gap

Country	Log-Wage Difference	Explained Part	Female full-time wage premium	Female part-time wage penalty	Selection Part	Explained Part in detail			
						Human Capital Indicators	Vertical Segregation	Horizontal Segregation	Other Characteristics
Austria	0.07	0.12	-0.14	0.03(ns)	0.06(ns)	0.03	0.06	0.03	-0.00(ns)
Belgium	-0.00(ns)	0.07	-0.10	-0.01(ns)	0.04(ns)	-0.00(ns)	0.06	0.02	0.00(ns)
Finland	0.05	0.15	-0.07	-0.14(ns)	0.10(ns)	0.02	0.08	0.04	0.00(ns)
France	0.12	0.12	-0.01(ns)	0.09	-0.08	0.01	0.05	0.05	0.01
Germany	0.21	0.17	-0.07	0.09	0.03(ns)	0.02	0.09	0.06	0.00(ns)
Italy	0.23	0.18	-0.12	0.09	0.08	0.04	0.07	0.08	-0.00(ns)
The Netherlands	0.05	0.06	-0.11(ns)	0.03	0.06(ns)	-0.01(ns)	0.04	0.04	-0.02
Norway	0.08	0.10	-0.05(ns)	0.16(ns)	-0.14(ns)	0.01(ns)	0.05	0.05	-0.00(ns)
Poland	0.18	0.26	-0.12	-0.02(ns)	0.06(ns)	0.05	0.13	0.08	-0.01
Spain	0.26	0.27	-0.13	0.02(ns)	0.09	0.06	0.11	0.10	0.00(ns)
The United Kingdom	0.20	0.17	-0.18	-0.00(ns)	0.21	0.02	0.12	0.04	-0.01

NOTE.—Standard errors of the selection part are estimated by bootstrap. Human Capital Indicators include education level and a second order polynomial of experience or potential experience, according to country. As a proxy for Vertical Segregation, we use occupation and being in a managerial position. As a proxy for Horizontal Segregation, we include firm size, type of contract, and economic activity of the firm. Other characteristics include region of residence, degree of urbanization of place of residence, and the number of children by age group, according to country. (ns) means statistically non-significant at the 0.1 level.

The relative contributions of explanatory variables to the female full-time/part-time wage gap display two important features. First, human capital indicators matter in explaining the female full-time/part-time earnings difference. This is because full-timers have a higher average educational level and more labor market experience than part-timers. Second, the female full-time/part-time wage gap occurs mainly through segregation of part-time jobs (Matteazzi, Pailhé and Solaz 2014). The percentage of the explained part due to segregation, without distinguishing between the vertical and horizontal, is much higher in Northern European countries, Austria, and Belgium. The vertical dimension of job segregation contributes the most to explaining the full-time/part-time wage gap. In other words, the concentration of part-timers in low-paid occupations at the bottom of the employment hierarchy is the main driver of their lower wages relative to women working full-time.

Robustness check. A robustness check of the decomposition results from different definitions of hourly wage is carried out for those countries with available information on both annual and monthly gross earnings, i.e., Austria, Italy, Poland, Spain, and the United Kingdom. The results, presented in Tables A3 and A4 in the Appendix, show that mean log wages computed using the annual definition of income are in general slightly higher than mean log wages computed from monthly earnings. This can be plausible given that the definition of annual gross labor earnings includes some payments excluded from the definition of monthly labor income[19].

As for full-time workers, the gross log wage differences computed from the monthly labor income are remarkably consistent across samples A (used up to now) and B, which includes workers previously excluded by precaution because of the time lag between interview time and income reference period. The same considerations hold for the decomposition results.

Regarding the gross log wage differences between female full-time and part-time workers, which are computed from the monthly labor income, small divergences are pointed out across samples A and B in the cases of Italy, Poland, and Spain. However, for all countries, the explained part, its components and the unexplained parts are almost equal in sign, magnitude,

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[19]According to EU-SILC guidelines (2010), in declaring her gross monthly earnings a person *should* take into account supplementary salary payments (13th or 14th month payments), or payments like holiday pay, profit sharing, and bonuses on a monthly basis. Differently, the definition of gross annual earnings also includes additional payments based on productivity, allowances for transport to or from work, allowances paid for working in remote locations, and other payments made by the employer to the employee other than 13th or 14th month payments, payments such as holiday pay, profit sharing, and bonuses.

and significance. This evidence makes us confident about the selection of our analysis sample.

When we compare results of both pay differentials obtained using sample A and the two different definitions of hourly wage for all countries, once again, the explained part and its components are almost equal in sign, magnitude, and significance. Similar conclusions can be drawn for the unexplained and selection parts[20]. This makes us confident about the definition of hourly earnings adopted in this study.

Gender wage gap, part-time employment and wage-setting institutions

The spread of part-time employment and the gender wage gap

Panel A of figure 5 shows that the overall gender wage gap tends to be higher in countries where the share of part-timers is higher. Differences in observable characteristics (like education, type of occupation and industry) contribute substantially to explaining the gender wage gap in countries where part-time employment is a widespread working arrangement, (Panel B). By contrast, the unexplained part of the gender wage gap tends to be lower in countries where part-time employment is more widespread (Panel C). The contribution of selection to the overall gender wage gap is really small in all countries (Panel D). This evidence suggests that part-time employment contributes to the gender wage gap and that part-time workers are less discriminated against or have less relevant differences in unobservable traits in countries where part-time is more widespread.

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[20] As for Italy, we find evidence of a significant part-time wage penalty when using the gross annual earnings in computing hourly wages, whereas the part-time wage penalty is not statistically significant when using the gross monthly earnings. Since monthly earnings do not include some additional payments – such as payments based on productivity, bonuses or benefits – that are included in annual earnings, this difference may suggest that Italian part-time workers are less likely to receive some additional payments that are, instead, paid to full-time workers.

FIG. 5.–Part-time employment and predicted gender wage gap, explained, unexplained and selection part

A

B

C

D
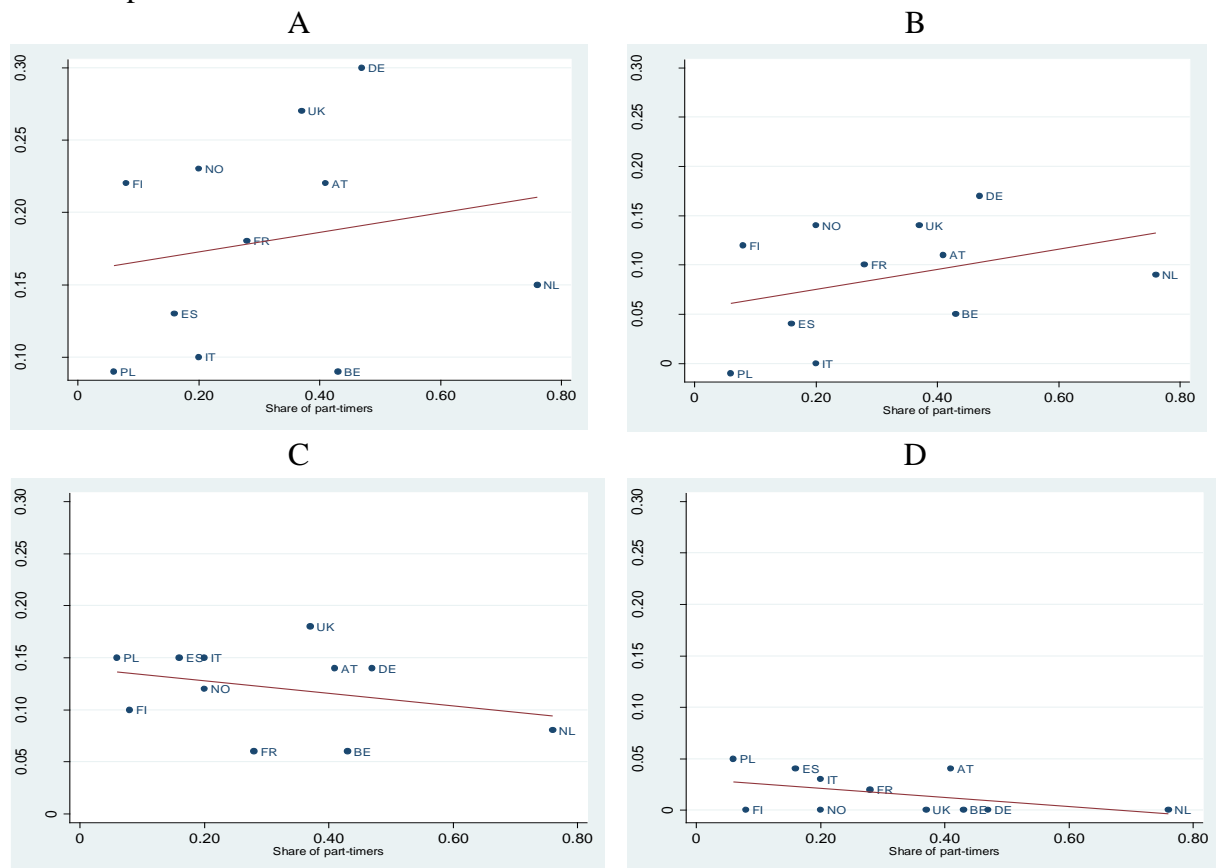
Wage-setting institutions and earnings inequality

Table 3 shows the correlation of wage-setting institutions with the predicted full-time gender pay gap and the female full-time/part-time wage differential. The results suggest that, with the exception of the level of collective bargaining coverage, wage-setting institutions are more effective at reducing the pay gap between women in full-time and part-time jobs than between male and female full-time employees. Indeed, greater involvement of governments in wage bargaining, together with more centralized and a more coordinated wage bargaining, are negatively correlated with the pay gap between female full-timers and part-timers. Our results suggest that wage inequality between female full-timers and part-timers diminishes with the relative level of statutory minimum wage.[21] This is in line with studies affirming that a policy goal pursued by setting relatively high minimum wages also limits wage dispersion,

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[21] The result is statistically significant when we use the Kaitz index based on mean wages instead of using median wages, which are less sensitive to outlying values (Boeri 2012)

especially in the lower tail of the distribution because it provides a minimum floor (Brown 1999; Di Nardo *et al.* 1996; Lee, 1999; Autor *et al.* 2010; Grimshaw and Rubery 2013). Bargaining coverage that is more encompassing and wage bargaining that is more centralized and coordinated are also negatively associated with the pay gap between female full-timers and part-timers. By contrast, their impact on the full-time gender wage gap isnot statistically significant.

To summarize, our empirical evidence is in line with other studies (Koeniger, Leonardi and Nunziata 2007; Blau 2012; Khan 2015) in that it suggests wage-setting institutions are more effective at compressing earnings at the bottom of the wage distribution. As a result, they are more effective at reducing the female full-time/part-time pay gap than the full-time gender wage difference because women – especially those employed on a part-time basis– are more likely to be in the lower tail of the wage distribution.

The last three columns of Table 3 show the correlation between wage-setting institutions and the unexplained parts of the gender wage gap, i.e., the male wage premium, the female full-time wage penalty and the female part-time wage penalty[22], expressed as a share of the overall predicted gender wage gap. All wage-setting indicators are negatively and significantly correlated with male wage premiums. Men's rewards due to unobserved characteristics tend to be reduced as a result of the wage-compression effects from more inclusive collective bargaining coverage, higher levels of minimum wages, greater involvement of governments in wage setting and more centralized and coordinated wage bargaining. For full-time workers, the Kaitz index is negatively correlated with both the male wage premium and the female wage penalty. This means that higher levels of minimum wages benefit mostly women by compressing wage dispersion. For females in part-time jobs, the higher the Kaitz index the higher the wage penalty, which is a bit surprising. But this result is driven by France, the country with the highest Kaitz index and a positive part-time wage penalty, while the other countries with a statutory minimum wage have no female wage penalty. All other wage-settings indicators have no effect on the reduction in the female full-time/part-time penalty. Overall, wage-setting institutions contribute to diminishing the gender wage gap by reducing the male premium. They also reduce the female part-time/full-time wage gap.

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[22] As reported in Tables 1 and 2.

Table 3.Correlation of wage-setting institutions with predicted wage differences and their unexplained parts

	Predicted full-time gender wage gap	Predicted female full-time/part-time wage gap	Male wage premium / Overall gender wage gap	Full-time female wage penalty/ Overall gender wage gap	Part-time female wage penalty/ Overall gender wage gap
Government intervention in wage bargaining (Govint)	-0.21	-0.65***	-0.57**	-0.28	-0.17
	(0.33)	(0.25)	(0.27)	(0.32)	(0.33)
The predominant level at which wage bargaining takes place (Level)	-0.13	-0.51**	-0.64***	-0.11	0.10
	(0.33)	(0.29)	(0.26)	(0.33)	(0.33)
Coordination of wage-setting (Coord)	0.13	-0.62***	-0.62***	-0.28	-0.08
	(0.33)	(0.26)	(0.26)	(0.32)	(0.33)
Adjusted Coverage	-0.12	*-0.45*	-0.54**	-0.23	0.25
	(0.33)	(0.30)	(0.28)	(0.32)	(0.32)
Kaitzindex[a](median)	0.31	*-0.59*	-0.59*	-0.61*	0.83***
	(0.47)	(0.40)	(0.40)	(0.40)	(0.28)
Kaitz index [a] (mean)	*0.30*	-0.67*	-0.68**	-0.62*	0.77**
	(0.48)	(0.37)	(0.37)	(0.39)	(0.32)

NOTE.—(a) Kaitz index takes zero values for countries where a statutory minimum wage does not exist. Thus, in model estimation, we also control for a dummy variable equal to one if a statutory minimum wage exists, and zero otherwise. Significance level: * 15%; ** 10%; *** 5%. Values in italics are significant at the 20% level. Standard errors are in parenthesis.

Source: Govint, Level, Coord, and Adjusted coverage are derived from Visser's database (2015). See the text for variable definitions. Kaitz index is derived from the OECD database (2014).

Conclusion and discussion

This article examines the extent to which part-time employment explains the gender gap in hourly earnings in eleven European countries using EU-SILC microdata. It also investigates to what extent the gender wage gap and its components are correlated with the spread of part-time employment. Furthermore, it examines the extent to which some wage-setting institutions (e.g., bargaining coverage, minimum wage levels, government intervention in wage bargaining and the degree of centralization and coordination of wage setting) are correlated with the overall gender wage gap, the full-time gender wage gap and the female full-time/part-time pay gap.

The econometric analysis shows some common features across European countries. First, women in part-time jobs are highly segregated into poorly paid sectors and, especially, low paid occupations. Both vertical segregation (the concentration of part-timers at the bottom of the occupational ladder) and horizontal segregation (the concentration of part-timers into low paid industries and temporary contracts)explain most of the pay differences between women working full-time and women working part-time.

Second, the wage gap between female full-timers and part-timers is largely explained by job characteristics and individual characteristics, mainly human capital. Further, in most European countries there is no evidence of a pay penalty for female part-timers. One reason for the "non-discrimination" against part-timers (except for the endogenous discrimination associated with both vertical and horizontal segregation) might be the wages protection policies for part-time workers and the guarantee of a minimum hourly wage.

Third, the gender wage gap among full-timers remains mostly unexplained after controlling for a large set of variables. Women employed on a full-time basis appear to be discriminated against in comparison to their male full-time colleagues. In most of the countries, women full-timers are also segregated into low paid sectors and less-valued occupations.

The comparative analysis shows that the gender wage gap tends to be higher in countries where part-time employment is a widespread working arrangement. However, the gender gap between female part-timers and full-timers in these countries is mainly explained by observable characteristics. In Germany, the Netherlands, and the United Kingdom, part-time is more widespread than in Southern Europe and it is more developed in female-dominated and low-paid sectors, which thus explains a large share of the gender wage gap. The

comparative analysis also shows that wage-setting institutions seem to reduce the female full-time/part-time pay gap by compressing earnings at the bottom of the wage distribution, and they reduce the gender gap among full-time workers by compressing the male unexplained wage advantage.

This study has some limitations. First, it would have been very interesting to measure the gender pay gap among part-timers. Unfortunately, due to the very low participation of men in part-time employment (and the consequently small sample sizes), we cannot measure and decompose it. Moreover, taking into account the self-selection of men in part-time employment is tricky, since the motivations for male part-time employment are specific (see O'Dorchai, Plasman and Rycx 2007). Second, we cannot control for some observable characteristics (such as training and tenure) and, thus, we may overestimate the unexplained part of the gender full-time wage gap. Third, our measurements of wages and working hours are self-reported. Due to the possible under-declaration of higher wages and over-declaration of long working hours, the observed wage inequalities may be underestimated.

The increase in part-time employment has been a means for increasing labor force participation in many European countries, but at the price of an increased gender gap. This paper shows that in countries where part-time is widespread, the gender hourly pay gap is larger. However, it also shows that part-time is far from being the only factor that explains this. Further, the evidence of a substantial unexplained gender wage gap in Europe calls for a strengthening of policies against wage discrimination in Europe, which could be achieved through a combination of policy measures: i) an equal pay policy enacted through equal pay legislation and anti-discrimination laws that focus on maintaining equal wages for full-time workers; ii) an equal opportunity policy that enables women to have more continuous working careers and that encourages the desegregation of employment by gender and working hours; and iii) the strengthening of wage-setting institutions with a focus on the upper part of the wage distribution (and glass ceiling), which deserves more attention given that it is at the heart of gender wage inequalities, especially in a context where the labor market participation of highly educated women is increasing.

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Appendix

Table A1. Wage-setting indicators

Country	Adjusted coverage (Adjcov)	The predominant level at which wage bargaining takes place (Level)	Government intervention in wage bargaining (Govint)	Coordination of wage-setting (Coord)	National minimum wage (Nmw)	Kaitz index
AT	98.0	3	2	4	0	-
BE	96.0	5	4	5	2	0.52
BG	33.0	2	3	2	2	n.a.
HR	60.0	2		2	2	n.a.
CY	53.6	2	2	2	1	n.a.
CZ	44.4	1	2	2	2	0.38
DK	82.0	3	2	4	0	-
EE	24.0	1	2	1	2	0.40
FI	78.8	3	3	3	0	-
FR	98.0	3	3	2	2	0.63
DE	61.7	3	2	4	0	-
EL	83.0	5	3	4	2	0.48
HU	28.7	1	3	2	2	0.47
IE	28.5	1	3	**1**	2	0.47
IT	80.0	3	2	3	0	-
LV	20.7	1	3	1	1	0.47
LT	11.4	1	3	1	2	0.44
LU	59.0	2	3	2	2	0.55
MT	60.7	1	3	2	2	n.a.
NL	82.7	3	4	4	2	0.50
NO	68.0	3	3	4	0	-
PL	15.7	1	2	1	2	0.46
PT	82.7	3	4	2	2	0.50
RO	98.0	5	3	4	2	0.41
SK	40.0	2	3	2	2	0.45
SL	92.0	3	4	4	2	0.51
ES	81.4	3	3	2	2	0.39
SE	91.0	3	2	4	0	-
UK	32.7	1	1.5	1	2	0.46

Source: Adjcov, Level, Govint, Level, Coord, Nmw are derived from Visser's database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention andSocial Pacts, 1960-2014 (ICTWSS - Version 5.0). See Visser (2015) and p. 11 of this article for the definition of indicators. Kaitz index is derived from the OECD database (2014). Wage-setting indicators refer to 2009, except for adjusted coverage in AT (2008), BE (2008), LU (2008) and BG (2010).

Table A2. Employment rates and working hours

Country	Male employment rate (%)	Female employment rate (%)	Male part-time employment rate (%)	Female part-time employment rate (%)	Maternal part-time employment rate (%)	Average number of weekly hours of work by female part-timers
BE	85.7	73.8	6.4	40.8	47.0	23.7
BG	82.7	75.8	1.4	1.9	1.3	20.5
CZ	90.5	74.1	1.2	7.1	8.9	22.5
DK	86.9	82.5	7.1	29.0	n.a.	21.0
DE	86.1	75.4	7.3	46.9	67.4	18.4
EE	77.4	75.7	4.9	11.3	11.6	21.2
IE	77.8	66.8	7.1	30.7	42.0	18.6
EL	88.3	62.3	2.3	9.2	10.3	19.9
ES	77.3	64.4	3.7	20.9	28.1	19.0
FR	87.7	76.7	4.4	28.9	34.5	23.1
HR	79.3	70.1	4.0	7.0	7.3	20.7
IT	84.7	59.1	3.9	28.4	34.1	21.5
CY	89.2	76.2	3.0	10.4	11.8	20.3
LV	73.7	74.5	6.0	8.3	9.0	21.5
LT	74.2	77.5	5.9	8.1	8.0	21.7
LU	90.8	71.4	3.1	35.4	46.6	20.2
HU	79.1	66.9	2.9	5.8	6.7	23.7
MT	89.3	45.9	2.5	25.0	34.7	21.1
NL	92.0	80.7	13.6	73.2	85.8	19.9
AT	87.4	78.4	6.2	45.3	60.1	20.8
PL	83.7	71.6	3.2	8.3	9.2	21.7
PT	84.7	74.9	2.8	10.4	9.6	19.0
RO	80.5	66.9	6.6	7.2	7.8	23.1
SI	86.4	83.2	4.4	7.6	7.5	20.3
SK	84.2	71.2	2.1	3.9	4.0	23.1
FI	84.3	80.5	4.4	12.4	11.6	20.0
SE	86.9	81.9	8.5	36.4	39.4	25.0
UK	85.7	74.6	5.7	38.9	54.5	19.0
NO	88.3	83.5	8.8	36.1	n.a.	20.3

NOTE.—Source: Eurostat Labor Force Survey (2009).Participation rate refers to the annual average for men and women aged 25-54 years. Part-time employment rate is defined as part-time workers as a % of total employment.

Table A3. Robustness Checks for Full-time Gender Wage Gap

	AT			IT			PL			SP			UK		
Wage computed using income:	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly
Sample	A	A	B	A	A	B	A	A	B	A	A	B	A	A	B
Mean Male Log-wage	2.82	2.67	2.66	2.53	2.39	2.39	1.37	1.31	1.30	2.36	2.37	2.35	2.68	2.66	2.67
Mean Female Log-wage	2.64	2.52	2.51	2.47	2.34	2.32	1.28	1.24	1.22	2.28	2.29	2.26	2.48	2.47	2.48
Log-Wage Difference	0.19	0.15	0.15	0.05	0.05	0.07	0.08	0.07	0.08	0.09	0.08	0.09	0.20	0.19	0.19
Explained Part															
Other Characteristics	-0.00 (ns)	-0.00 (ns)	-0.00 (ns)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00 (ns)	-0.00 (ns)	-0.00 (ns)	0.01	0.01	0.01
Human Capital Indicators	0.02	0.02	0.02	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	0.01	0.01	0.01	-0.01	-0.01	-0.01
Horizontal Segregation	0.04	0.04	0.03	-0.00 (ns)	0.00 (ns)	0.00 (ns)	0.03	0.03	0.03	0.01 (ns)	0.00 (ns)	0.00 (ns)	0.03	0.03	0.03
Vertical Segregation	0.00 (ns)	-0.01 (ns)	-0.00 (ns)	-0.03	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	0.04	0.05	0.04
Total Explained Part	0.06	0.05	0.04	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.01 (ns)	-0.02	-0.01 (ns)	0.08	0.08	0.08
Unexplained Part															
Male full-time wage premium	0.05	0.05	0.05	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.07	0.07
Female full-time wage penalty	0.14	0.14	0.16	0.12	0.14	0.16	0.12	0.09	0.09	0.13	0.12	0.14	0.18	0.16	0.19
Selection Part	-0.06	-0.09	-0.10	-0.06	-0.08	-0.10	-0.05	-0.03	-0.03	-0.07	-0.07	-0.08	-0.13	-0.11	-0.14

NOTE.— The selection of sample A is explained in Section III A. Sample B includes also those individuals excluded from sample A in order to manage the issue of time lag between the end of the income reference period and the time of the interview when computing the hourly wage (individual included in sample B are: i) workers who have changed job since the previous year; ii) workers who worked some months full-time and some months part-time during the income reference period; iii) workers who spent the last 12 months in full-time employment and now are not in a full-time job; iv) workers who spent the last 12 months in part-time employment and now are not in a part-time job; v) workers who were inactive for the last 12 months and are now working). (ns) means not statistically significant at 1% level.

Table A4. Robustness Checks for Female Full-time/Part-time Wage Gap

	AT			IT			PL			SP			UK		
Wage computed using income:	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly	Annual	Monthly	Monthly
Sample:	A	A	B	A	A	B	A	A	B	A	A	B	A	A	B
Mean Male Log-wage	2.64	2.52	2.51	2.47	2.34	2.32	1.28	1.24	1.22	2.28	2.29	2.26	2.48	2.47	2.48
Mean Female Log-wage	2.56	2.41	2.40	2.24	2.23	2.21	1.10	1.00	1.04	2.02	2.02	2.04	2.28	2.27	2.28
Log-Wage Difference	0.07	0.11	0.12	0.23	0.11	0.11	0.18	0.24	0.18	0.26	0.27	0.22	0.20	0.20	0.20
Explained Part															
Other Characteristics	-0.00 (ns)	-0.00 (ns)	0.00 (ns)	-0.00 (ns)	-0.00 (ns)	-0.00	-0.01	-0.01	-0.00	0.00 (ns)	0.00 (ns)	0.00 (ns)	-0.01	-0.01	-0.01
Human Capital Indicators	0.03	0.03	0.03	0.04	0.03	0.03	0.05	0.05	0.04	0.06	0.06	0.05	0.02	0.02	0.02
Horizontal Segregation	0.03	0.03	0.03	0.08	0.05	0.06	0.08	0.08	0.08	0.10	0.09	0.09	0.04	0.04	0.05
Vertical Segregation	0.06	0.06	0.07	0.07	0.05	0.06	0.13	0.14	0.11	0.11	0.13	0.11	0.12	0.12	0.13
Total Explained Part	0.12	0.12	0.11	0.18	0.13	0.14	0.26	0.26	0.23	0.27	0.28	0.25	0.17	0.17	0.18
Unexplained Part															
Female full-time wage premium	-0.14	-0.14	-0.16	-0.12	-0.14	-0.16	-0.12	-0.09	-0.09	-0.13	-0.12	-0.14	-0.18	-0.16	-0.19
Female part-time wage penalty	0.03 (ns)	-0.01 (ns)	0.02 (ns)	0.09	0.01 (ns)	0.02 (ns)	-0.02 (ns)	0.05 (ns)	0.02 (ns)	0.02 (ns)	0.02 (ns)	-0.01 (ns)	-0.00 (ns)	0.02 (ns)	0.03 (ns)
Selection Part	0.08	0.14	0.13	0.08	0.11	0.12	0.06 (ns)	0.02 (ns)	0.05 (ns)	0.09	0.09	0.11	0.21	0.16	0.19

NOTE.— The selection of sample A is explained in Section III A. Sample B includes also those individuals excluded from sample A in order to manage the issue of time lag between the end of the income reference period and the time of the interview when computing the hourly wage (individual included in sample B are i) workers who have changed job since the previous year; ii) workers who worked some months full-time and some months part-time during the income reference period; iii) workers who spent the last 12 months in full-time employment and now are not in a full-time job; iv) workers who spent the last 12 months in part-time employment and now are not in a part-time job; v) workers who were inactive for the last 12 months and are now working); vi) workers who had more than one job during the income reference period. (ns) means not statistically significant at 1% level.