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Christina Boll and Andreas Lagemann*

The Gender Pay Gap in EU Countries – New Evidence Based on EU-SES 2014 Data

Gender differences in wages are a persistent pattern in most European countries. This study analyses the earnings divide between men and women and the driving forces behind it in 26 countries. In 2014, the cross-country gender pay gap stood at 14.2%. However, country-level results differ tremendously with high gaps of more than 20% in Estonia and Germany and gaps below 5% in Belgium, Luxembourg, Slovenia and Romania. While part of the earnings divide can be explained by gendered sector affiliation and the high share of atypical employment among women, a large portion of the gender pay gap remains unexplained by the data. Even though the gender pay gap statistics are unable to identify the (non-)existence of discrimination, it still calls for diverse measures both at the state and the firm level.

Gender gaps in wages are an important facet of wage inequality and are some of the best documented facts in labour economics. The literature has produced an extensive set of theories helping to explain the persistence of the phenomenon.[1] With this study, we update existing figures on the gender pay gap in EU countries based on the Structure of Earnings Survey (EU-SES) for 2014.[2] We explore the magnitude and composition of the gender pay gap both as an average of the country aggregate and for 26 individual countries.

* This article is based on the following study: C. Boll, A. Lagemann: Gender pay gap in EU countries based on SES (2014), Report prepared for and financed by the European Commission – Directorate-General for Justice, Luxemburg 2018, Publication Office of the European Union, available at https://ec.europa.eu/info/sites/info/files/aid_development_cooperation_fundamental_rights/report-gender-pay-gap-eu-countries_october2018_en_0.pdf.

1 C. Boll, J. Leppin, A. Rossen, A. Wolf: Magnitude and Impact Factors of the Gender Pay Gap in EU Countries, Report prepared for and financed by the European Commission – Directorate-General for Justice, Hamburg 2016, Publication Office of the European Union.

2 We thereby use the same data and the same methodological setting as in a preceding study relying on EU-SES (2010), see C. Boll, J. Leppin, A. Rossen, A. Wolf, op. cit. This time, we use information from the Scientific Use File and from less anonymised data available at the Eurostat Safe Centre. This allows us to incorporate 25 EU countries plus Norway in our analyses. Due to missing information, Austria, Denmark and Ireland had to be excluded.

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Europe's cross-country gender pay gap stood at 14.2% in 2014, masking a tremendous heterogeneity at the country level

Gender wage discrepancies are persistent all over Europe. For 2014, we measure the cross-country gap in average wages of men and women to be about 14.2%. This number is slightly lower than the 16.6% published by Eurostat for the EU-28 in 2014.[3] The discrepancy is explicable by data constraints. Figure 1 depicts the unadjusted pay gaps in descending order. The gap considerably varies across countries. It ranges from 1.0% in Romania to 23.5% in Estonia. Most Middle and Eastern European states are exhibiting gaps clearly below EU-average (14.2%), with the Czech Republic, Slovakia and Estonia being the exceptions. Among the Western European countries, only Belgium is exhibiting a very small gap (4.2%). Moderate gaps are found for Scandinavian and Southern European countries.[4]

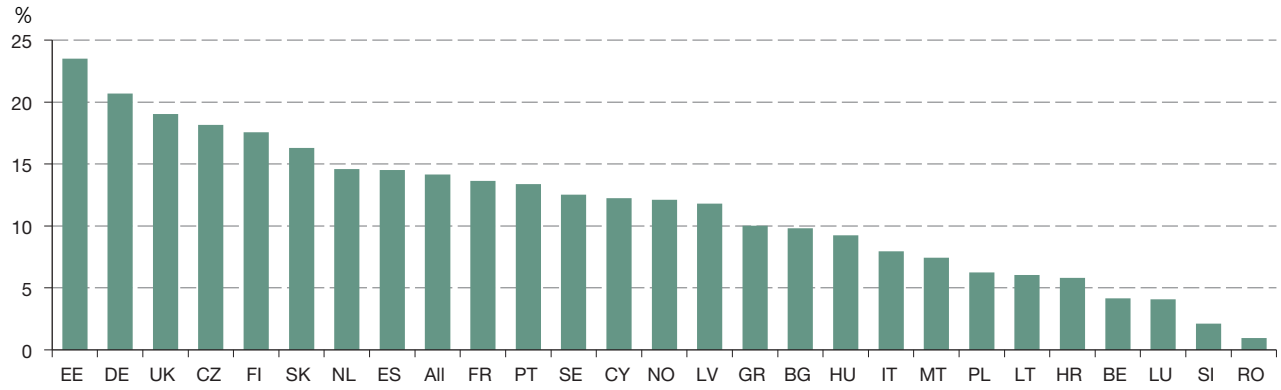
From 2010 to 2014, the unadjusted gender pay gap slightly decreased by 1.1 percentage points, from 15.3% (2010) to 14.2% (2014). The high persistence of pay gaps also holds true across OECD countries.[5]

3 Eurostat: Gender pay gap in unadjusted form by NACE Rev. 2 activity – structure of earnings survey methodology, available at http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_gr_gpgr2&lang=en.

4 Compared to 2010, most countries exhibited a decrease of the unadjusted gap, while it increased in only six countries (Bulgaria, Czech Republic, Italy, Latvia, Poland and Portugal). However, changes were mostly moderate. Only in Belgium and Romania (Latvia), the decrease (increase) was above four percentage points.

5 OECD: The Pursuit of Gender Equality. An Uphill Battle, Paris 2017, OECD Publishing, available at http://dx.doi.org/10.1787/9789264281318-en.

Figure 1
Unadjusted gender pay gap, by country and EU-average, 2014



Note: 'All' denotes the value for the cross-country sample.

Sources: Eurostat: Structure of Earnings Survey (EU-SES), 2014; HWWI, 2017.

The pay gap is composed of an explained part and an unexplained part as illustrated in Figure 2.[6]

The explained part of the gender pay gap is attributable to different (observable) characteristics of women and men and amounted to 4.8% in 2014. The unexplained part (adjusted gap) that compares men and women with similar characteristics was 9.4%. Thus, a greater portion of the overall gap was unexplained, referring to the used data set. This has also been the case in previous years. Compared to 2010, the explained gap was rather stable (-0.4 percentage points), whereas the adjusted gap decreased by 1.5 percentage points at the cross-country level.

The gender pay gap statistics are unable to identify the (non-)existence of discrimination

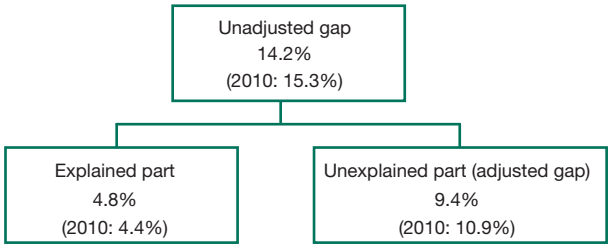
It is important to note that the adjusted gap should not be equated with discrimination, as it incorporates unmeasured wage-relevant gender differences such as actual work experience, job preferences and bargaining skills. On the other hand, what is statistically 'explained' is not necessarily free from discrimination. Women and men might face unequal access to wage-attractive jobs (e.g. leading positions, full-time jobs). Therefore, both the explained and the unexplained parts of the gap and their respective origins have to be analysed cautiously.

The adjusted gap is not fully unexplained. It is composed of two portions. One is a true 'blind spot', capturing factors already mentioned like unobserved gender differences in bargaining skills. This component, called the 'constant term', dominates the adjusted gap. In 21 out of 26 countries, the constant term was above zero and therefore increased the adjusted gap (and thereby also the overall gap); the exceptions are Lithuania, Luxembourg, Latvia, Romania and Hungary. The second component of the adjusted gap can be explained by the fact that women and men are paid differently for the same characteristic.

The adjusted pay gap is not identified to be at women's advantage anywhere in the country sample

The country heterogeneity is reflected not only in the size of the unadjusted gap, but also in its composition. Figure 3 plots the overall (unadjusted) gap at the country lev-

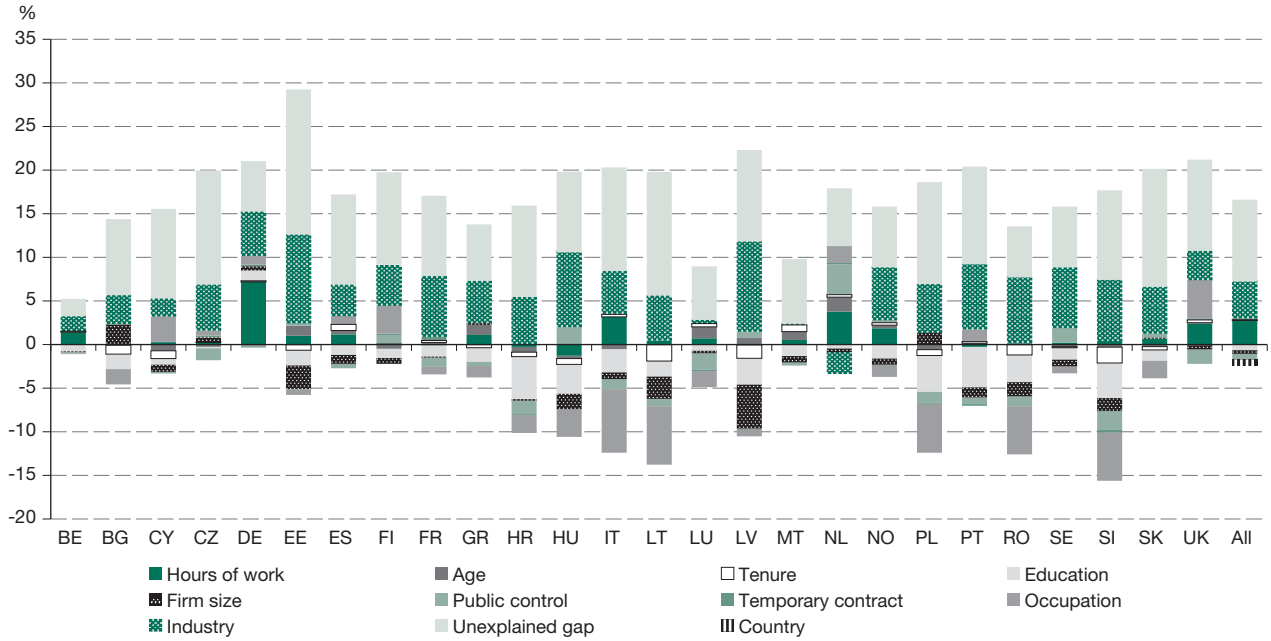
Figure 2
Unadjusted gender pay gap and its composition, cross-country sample, 2014 and 2010



Sources: Eurostat: Structure of Earnings Survey (EU-SES), 2014; HWWI, 2017.

6 The breakdown of the overall gap relies on gender-specific earnings regressions and an Oaxaca-Blinder-decomposition (R. Oaxaca: Male-Female Wage Differentials in Urban Labor Markets, in: International Economic Review, Vol. 14, No. 3, 1973, pp. 693-709; A.S. Blinder: Wage Discrimination. Reduced Form and Structural Estimates, in: Journal of Human Resources, Vol. 8, No. 4, 1973, pp. 436-455). For further methodological details see C. Boll, A. Lagemann: Gender pay gap… , op. cit.

Figure 3
Breakdown of the unadjusted gender pay gap into single characteristics, by country, 2014



Note: 'All' denotes the value for the cross-country sample.

Sources: Eurostat: Structure of Earnings Survey (EU-SES), 2014; HWWI, 2017.

el, broken down into the unexplained gap and the single components of the explained gap.

The explained gap is negative in seven countries and practically zero in two countries. In 17 countries, the explained gap is positive – that is, it increases the overall gap – with the maximum value in Germany (14.9%). Only in Germany, Belgium and the Netherlands, does the explained part exceed the unexplained part of the overall gap. However, the unexplained part is not identified as negative anywhere and only in Belgium as lower than 5%. It is thus this term that comprises the bulk of factors that prevent women from catching-up throughout Europe.[7]

Gendered sector affiliation can be identified as the strongest driver of the explained pay gap

Concerning the contributions of single characteristics to the gender pay gap, a gendered sorting into industries and into atypical employment (part-time work, temporary contracts) predominantly widens the pay gap. In all countries, except the Netherlands, sector segregation of male and female workers contributes to the wage gap. In general, women are overrepresented in industries with low pay levels (and accordingly underrepresented in well-paid industries). The deviating result for the Netherlands originates in their stark underrepresentation of females in comparatively low-paid manufacturing sectors. The educational level mostly mitigates the gap. In all countries but Germany, women are on average more highly educated than men. Women work more often in part-time and temporary jobs than men. In most countries, both features are associated with lower hourly earnings. Since 2010, working hours have gained importance as a contributing factor to the gender pay gap at the EU average, especially in Germany and the UK, whereas this factor has lost importance in Belgium. Furthermore, firm characteristics (firm size, public control) tend to decrease the pay gap. Occupational segregation mitigates the gap in most countries. This common result in multivariate analyses such as this has to be interpreted in the context of several further factors: Some occupations are concentrated in a few sectors; and although the segregation of workers into 'typical' male and female occupations is an EU-wide phenomenon, the pay-attractiveness of occupations varies between countries. Hence, it does not come as a surprise that the role of occupational segregation notably differs at the country level: Whereas this factor significantly adds to the pay gap in the UK, it notably decreases the gap in Italy.

7 Between 2010 and 2014, the adjusted gap decreased by 1.5 percentage points (pp) in the cross-country sample. The drop has been highest in Belgium and the UK (-3.8 pp each).

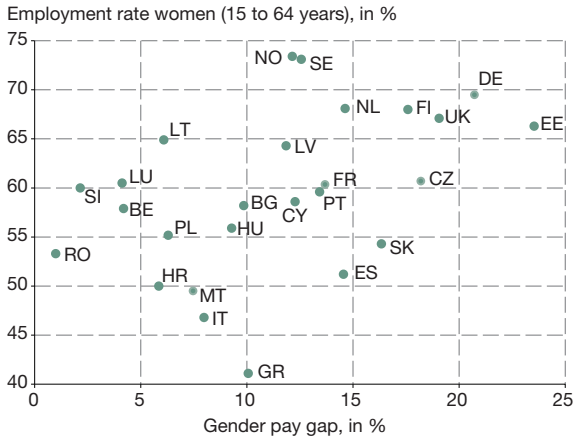
Further peculiarities for a correct understanding of the gender pay gap

Some characteristics are very important for a correct understanding of the gender pay gap. First, actual work experience is not directly measurable with the data at hand. Hence, gender differences in work interruptions and their earning consequences are part of the unexplained gap. A rich body of literature, however, confirms severe earning losses for women due to family-related breaks, in particular from the life course perspective.[8] Second, some characteristics carry different wage premiums for women and men. For example, in 22 out of 26 surveyed countries, men receive higher wage premiums on average than women for the same sector affiliation. This hints at considerable intra-sectoral gender heterogeneity with respect to the sorting into occupations and hierarchical positions. Furthermore, wage disadvantages associated with flexible and part-time jobs also differ between sectors; women who regularly place higher value on these jobs than men are penalised more strongly in some sectors than in others. Goldin argues that differences in the cost of time flexibility at the firm level are crucial in this regard.[9]

Can't we have both? High female employment rates and low gender wage gaps seem to be mutually exclusive

Finally, the findings point to a trade-off between two key aims of gender mainstreaming policy: low gender wage gaps and high female employment rates (Figure 4). Based on cross-country analysis, the evolving picture appears to show that we still cannot have both. There may be several reasons for this. First, in countries with rather egalitarian gender roles as well as ample arrangements for flexible work and part-time jobs, women are enabled to enter the labour market, which results in a high female employment rate. These jobs come at the cost of severe wage disadvantages, however, that primarily affect women. Conversely, in countries with low family-career compatibility, e.g. due to poor public childcare infrastructure and scarce flexible work arrangements, only women with high earnings potential access the market; indeed if they can get past this hurdle, these women seem to access attractive job attributes as easily as men. This results in rather low gender wage gaps as they are observed in Eastern European countries. Furthermore, typical low-paid female tasks, like nursing and caretaking, regularly decrease the women's average pay. Therefore, in countries where these tasks are performed mainly outside the market, pay gap statistics appear to be more favorable for women, albeit alongside less favorable female employment statistics.

Figure 4
Relationship between gender pay gap and female employment rate across EU countries, 2014



Sources: Eurostat: Labour Force Survey (EU-LFS), 2014; HWWI, 2017.

Policy implications: Four strategies seem crucial to close the gender divide in earnings

What are the policy implications of this study? First, to get a full picture of women's earnings perspectives in Europe, one has to take female participation opportunities into account. A mere focus on pay gaps would be short-sighted. Strategies that foster female employment have a 'double dividend' as they also boost female wages because any improvement in the reconciliation of work and family helps women to better use their talents.

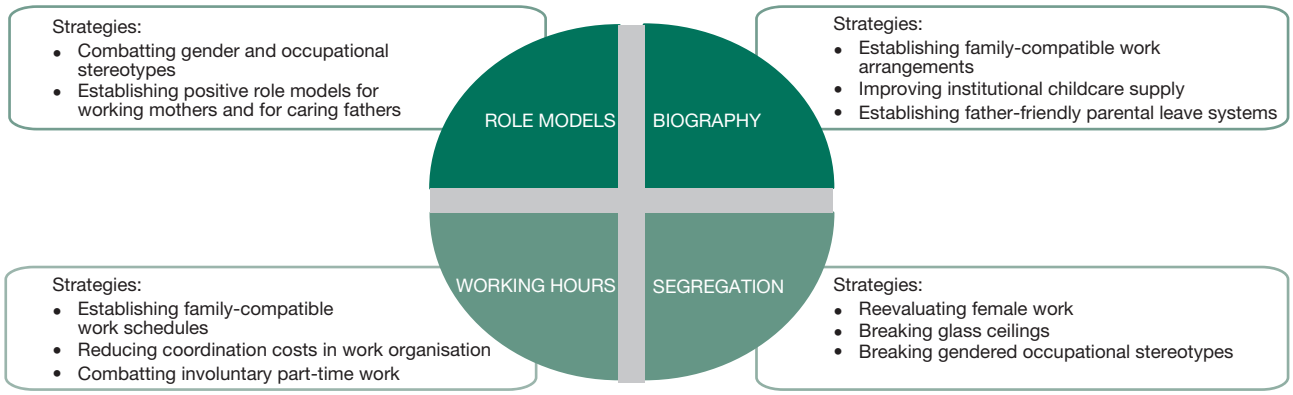
Second, four strategies seem crucial to close gender pay gaps: breaking stereotypes, avoiding long family breaks, combatting part-time penalties and fostering female career advancement and leadership.

Breaking gender and occupational stereotypes is key to combat gender-typical occupational choices. Gender role stereotypes stem from ingrained cultural and social attitudes toward traditionally masculine and feminine roles. Children develop gender schemata at an early age. As adolescents, they make occupational decisions which may be misdirected if they are determined by stereotype threats instead of individual interests and talents. To tackle stereotypes, it is necessary to implement awareness-raising and capacity-building training activities, particularly for pre-school and school teachers as well as for public service staff who operate in this area, e.g. em-

8 See for Germany e.g. C. Boll, M. Jahn, A. Lagemann: The gender lifetime earnings gap – exploring gendered pay from the life course perspective, in: Journal of Income Distribution, Vol. 25, N, 2017, available at http://jid.journals.yorku.ca/index.php/jid/article/view/40355.

9 See C. Goldin: A grand gender convergence. Its last chapter, in: The American Economic Review, Vol. 104, No. 4, 2014, pp. 1091-1119.

Figure 5
Crucial strategies for closing the gender pay gap



Source: Own illustration.

ployment agencies. Furthermore, this challenge requires that social partners get involved, checking prevalent work evaluation schemes with a special focus on a potential devaluation of 'female' work. Relatedly, more positive role models should be established for working mothers, female leadership and women in STEM professions. The public sector has a pioneer role in this regard.[10]

Action both at the state and firm level is needed to combat long family breaks. At the state level, full-time and high-quality childcare facilities remain an urgent necessity, as well as parental leave systems that stimulate fathers' family support. According to robust international empirical evidence, extensive provisions of transferable leave tend to enforce a traditional intra-couple work division. On the contrary, 'daddy weeks', which are exclusively assigned to fathers, effectively stimulate fathers' uptake of leave when combined with a high wage replacement rate. At the firm level, flexible work arrangements with respect to time and place of work are crucial to balance work and family needs and to ease a quick job re-entry after family breaks.

Working hours are, together with segregation, the two main drivers of current gender pay gaps, as far as what is observable in earnings data. Part-time is a continuous trend shaping women's employment patterns in Western Europe. Still, reduced weekly working hours are penalised in terms of hourly wages. The literature suggests that the extent to which this happens notably differs between sectors, related to sector-specific time and leadership cultures and technologies. Thus, as regards the roots of part-time wage penalties, a stronger focus should be placed on the sector and firm level, addressing the responsibility of the social partners. Empirical evidence suggests that increasing the range of working time options at the firm level would increase both attractiveness and feasibility of part-time work among career-oriented mothers – and fathers. Actors at the firm level should strive for more integrated solutions towards arrangements close to full-time work. This would not only boost gender equality but also tap underused human resources, thereby increasing economic efficiency.

Vertical segregation does not directly show up in our data, but gender-specific sector premiums (and a vast body of literature) hint at the importance of gender differences in hierarchical sorting within firms.[11] To break down barriers to women's climb up the career ladder, a mix of (partially already identified) policies seems appropriate. At the level of the state and society, the establishment of positive role models, the introduction of quotas for women's representation in boards and a more extensive provision of full-day childcare are positive measures. At the firm level, more strategies fostering women's participation in training and promotion programmes are required, particularly for women who work part-time. Last but not least, female managers and family-active fathers are also needed as positive role models at the corporate level. Hence, a 'one size fits all' policy to close the gender gap in pay seems inappropriate. There is a lot to be done in a collaborative effort with various actors.

10 In Germany, the unadjusted gender pay gap in the public sector stood at 5.6% in 2014 and was virtually unchanged compared to 2010 (see C. Boll, A. Lagemann: Verdienstlücke zwischen Männern und Frauen im öffentlichen Bereich und in der Privatwirtschaft – Höhe, Entwicklung 2010-2014 und Haupteinflussfaktoren, HWWI Policy Paper No. 107, Hamburg 2018, Hamburgisches WeltWirtschaftsInstitut, available at http://www.hwwi.org/fileadmin/hwwi/Publikationen/Publikationen_PDFs_2018/HWWI_Policy_Paper_107.pdf.

11 This also applies to the public sector: In 2014, men's higher frequency in managerial positions was the most important single driver of the gender pay gap in the German public sector and in both of its subsectors O (Public Administration, Defence and Compulsory Social Security) and P (Education), see C. Boll, A. Lagemann: Verdienstlücke..., op. cit.