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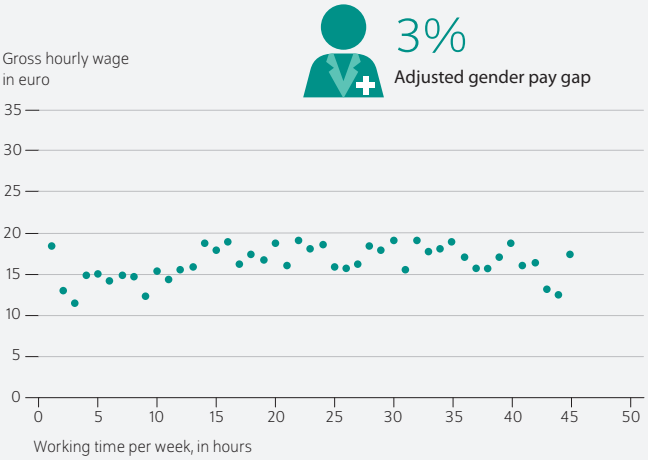
AT A GLANCE

Strong correlation between large gender pay gaps and non-linear pay in certain occupations

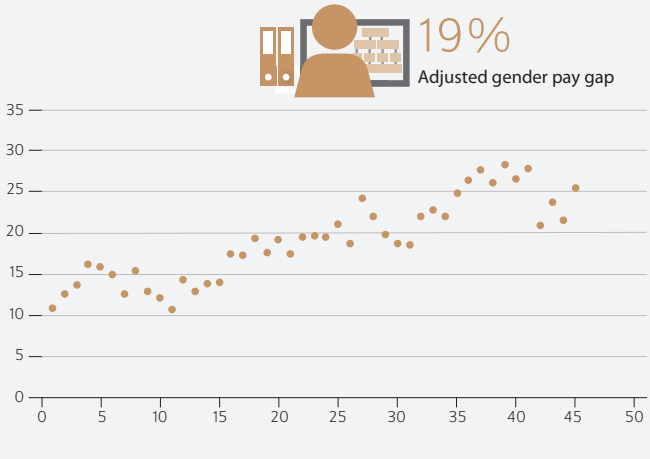
By Aline Zucco

- Data from the Structure of Earnings Study shows the adjusted gender pay gap varies between minus nine and 27 percent in different occupations
- The gender pay gap is larger in occupations where earnings increase non-linearly with the number of hours worked
- The gender pay gap is also significantly larger in occupations which are mainly performed in private companies or with more supervisory power
- Changing the organization of work and increasing top-sharing could lead to smaller pay gaps between men and women.
- Extensions of collective agreements could help reducing the gender pay gap

In nursing and medical services occupations, the pay is linear to working hours, and the gender pay gap is small...



... in occupations in business organization and strategy, employees working long hours are paid disproportionately more, and the gender pay gap is large.



Note: Weighted values. The calculations include employees between 25 and 55 years.
Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculation.

FROM THE AUTHOR

"In some occupations the hourly wage depends strongly on the number of working hours. That's the case for jobs in the company organization or in sales for instance. In these jobs working part-time, which applies mostly to women, is in a way punished. In these jobs, the gender pay gaps are large."

— Aline Zucco, author —

Strong correlation between large gender pay gaps and non-linear pay in certain occupations

By Aline Zucco

ABSTRACT

The gender pay gap of 21 percent in Germany is partly due to the fact that men and women work in different occupations. However, considerable pay gaps between men and women can also be observed within occupations, although the gap is not constant across occupations. In particular, there is a substantial gender pay gap in occupations with non-linear earnings, i.e. earnings increase non-linearly with the number of hours worked. Additionally, occupations which have a high share of leadership positions exhibit a larger gender pay gap. Occupations at public companies tend to have smaller pay gaps. Changes in the organization of work that allow more flexible working hours and top-sharing (dividing a management position into two part-time positions) could help reducing the gender pay gap. Moreover, collective agreements, which usually apply to public sector employers, could also lead to a reduction in the pay gap.

March 8 is International Women's Day, a good occasion to take a look at societal and labor market inequalities between men and women. Germany has celebrated International Women's Day since 1911, with Berlin declaring it a local holiday in 2019.

The situation for women on the labor market has significantly improved over the last century. Women in West Germany were allowed to work without the permission of their husbands[1] beginning in 1958, and not least because of this change, the female employment rate rose by 25 percentage points to 72 percent between 1959 and 2017. As a result, today, almost three-fourths of women are able to make a living from gainful employment.[2]

However, equality between men and women on the labor market is still far from a reality. Although International Women's Day has been celebrated for over a century[3] and now also includes the demand of "equal pay for equal work," there are still considerable gender differences in paid and unpaid care work.[4] While women continue to undertake the majority of unpaid work and housework, the *unadjusted* gender pay gap is stagnating at 21 percent.[5] The *adjusted* gender pay gap, which takes into account structural differences between the two groups, such as work experience, vocational and educational qualifications, was six percent in 2014.[6]

1 Cf. Bundeszentrale für politische Bildung, *50 Jahre Geschlectergerechtigkeit und Arbeitsmarkt* (2008) (in German; available online, accessed January 19, 2019; this applies to all other online sources in this report unless stated otherwise).

2 Statistisches Bundesamt, *Erwerbsbeteiligung* (in German; available online); Statistisches Bundesamt, "Frauen leben immer häufiger von eigener Erwerbstätigkeit," press release, March 7, 2018 (in German; available online).

3 Refer to background information on International Women's Day on the State Agency for Civic Education Baden-Württemberg's website (in German).

4 Claire Samtleben, "Gender Care Gap," DIW Weekly Report no. 10 (2019).

5 Statistisches Bundesamt, "Verdienstunterschied zwischen Frauen und Männern in Deutschland 2017 bei 21 percent," press release, March 15, 2018 (in German; available online).

6 The adjusted gender pay gap is calculated using data from 2014, when the most recent Structure of Earnings Survey was last conducted. Cf. Martin Beck, "Verdienstunterschiede zwischen Männern und Frauen nach Bundesländern," *Wirtscahft und Statistik* 4 (2018): 26–26 (in German).

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Box 1

Data and definitions

The analysis is based on data from the Structure of Earnings Study (*Verdienststrukturerhebung*, SES) for 2014. The SES is a linked employer-employee dataset which is collected every four years by the Federal Statistical Office. The data includes information on employees (gross pay, number of hours worked, gender, and education) and employers (company size, private or public sector) as well as information on the occupation (hierarchical group, shift work, or overtime). The data includes employees working main and side jobs but no self-employed persons. Overall, the final 2014 wave includes data on over a million employees in over 60,000 companies.

However, an important drawback of this cross-sectional data is that it lacks retrospective information. The data set therefore does not contain any information about the employment biography other than tenure. Since women tend to have more interruptions in employment and part-time experiences, which is not observed in the data, the adjusted gender pay gap can be overestimated.

Definition: occupation

The definition of occupations is based on the classification of occupations 2010 (KldB 2010). The classification into occupations depends on the knowledge and skills required. Of the 144 occupations, four that describe different ranks groups in the German Army (*Bundeswehr)* are excluded. The new occupation classification combines the definitions of various institutes, replacing the previous versions from 1988 (Federal Employment Agency) and 1992 (Federal Statistical Office). This new classification better represents the current occupational structure, as the previous versions defined male occupations in great detail and female occupations vaguely. As a result, segregation in the labor market could not be correctly reflected.[1]

According to this definition of occupation, a distinction can be made between human medicine and veterinary medicine. However, further subgroups cannot be observed within an occupation subgroup—so, it is not possible to know if a physician is a pediatrician or surgeon, for example. This means that the adjusted gender pay gap within an occupation does not necessarily result from discrimination. It can also reflect a selection process between occupations with different pay levels.

Definitions: female-dominated, male-dominated, and mixed occupations

The classification as a female-dominated, male-dominated, or mixed occupation depends on the share of women of all employees in an occupation. Female-dominated occupations have a share of female employees over 70 percent while male-dominated occupations have fewer than 30 percent women. Accordingly, mixed occupations have a share of women between 30 and 70 percent.

1 For more information on KldB 2010, see Wiebke Paulus and Britta Matthes, "Klassifikation der Berufe-Struktur, Codierung und Umsteigeschlüssel," *FDZ-Methodenreport* no. 8 (2013) (in German).

However, the gender pay gap is not the same across all occupations, as a 2017 DIW Berlin study has shown.[7] The study used data from the Institute for Employment Research (*Institut für Arbeitsmarkt- und Berufsforschung*, IAB) which provide data on daily earnings but no information about the number of hours worked. This Weekly Report builds upon the previous study, examining occupational gender pay gaps using a different data source.

Gender pay gap largest in mixed occupations

The data from the Federal Statistical Office's Structure of Earnings Study (SES) make it possible to calculate the gender pay gap based on hourly wages, as the SES contains information on gross monthly wages as well as the number of hours worked. This way, part-time employees, an important group in the labor market and especially among women,[8] can be included in the analysis.

Comparing the average wages of men and women based on all employees in 2014 confirms the results of the earlier study on full-time employees[9] : the gender pay gap is not constant across occupations (Figure 1). Although no linear relationship between the size of the pay gap and the share of women within occupations can be observed, the gap in female-dominated occupations tends to be lower than in mixed and male-dominated occupations (Box 1). The largest wage differences between men and women occur in mixed occupations, those with a balanced gender ratio. In mixed occupations such as *business organization and strategy* or *accounting, controlling, and auditing*, the gender pay gap is at 34 and

7 Katharina Wrohlich and Aline Zucco, "Gender Pay Gap Varies Greatly by Occupation," *DIW Economic Bulletin*, no. 43 (2017) (available online).

8 In Germany, 48 percent of female employees (and only 11 percent of male employees) were working part-time in 2017. Cf. Statistisches Bundesamt, *Abhängig Erwerbstätige: Deutschland, Jahre, Beschäftigungsumfang, Geschlecht* (2019) (in German; available online).

9 See Wrohlich and Zucco, "Gender Pay Gap Varies Greatly."

Figure 1

Proportion of women and unadjusted gender pay gap in various occupations
Distribution of the 30 most common occupations in female-dominated, mixed, and male-dominated occupations; female share (top scale) and gender pay gap (bottom scale) in percent

Note: Weighted values. The calculations include employees between 25 and 55 years. Occupation classifications are based on the KldB 2010.

Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculations.

The gender pay gap is largest in mixed occupations.

35 percent, respectively.[10] In female-dominated occupations such as *doctor's receptionists and assistants* as well as *nurses*, the pay gap is less than five percent. *Occupations in the automotive, aeronautic, aerospace, and shipbuilding technology*, an occupation comprised of only three percent women, has a negative gap, indicating that women in this occupation earn seven percent more than their male colleagues.

However, these pay gaps do not necessarily mean that women are being discriminated against; the gaps may also reflect differences in work experience or education. Yet when comparing the adjusted gaps,[11] there are still considerable differences in the gender pay gaps between occupations. Even though the pay gap in female-dominated occupations is on average lower than in male-dominated and mixed occupations, men with the same qualifications earn more than women in most occupations. Even in the typically female-dominated occupations of *doctors' receptionists and assistants* and *geriatric care* (98 and 85 percent female, respectively), men earn ten or three percent more than their equally qualified female colleagues. The three largest gender pay gaps are found in the following three occupations: *sales occupations (retail trade) selling clothing, electronic devices, furniture, motor vehicles, and other durables* (mixed occupation) with 27 percent; *sales occupations (retail) selling foodstuffs*

10 The gender pay gap in these occupations could be partly due to the fact that women in the financial sector have a much lower chance than men of occupying a managerial position, cf. Elke Holst and Martin Friedrich, "Hohe Führungspositionen: In der Finanzbranche haben Frauen im Vergleich zu Männern besonders geringe Chancen," *DIW Wochenbericht*, no. 37 (2016) (in German; available online).

11 The adjusted gender pay gaps were calculated using a fixed effects model. Cf. Aline Zucco, "Occupational characteristics and the Gender Pay Gap," DIW Discussion Paper No. 1794 (2019) (available online).

Figure 2

Proportion of women and adjusted gender pay gap in various occupations
Distribution of the 30 most common occupations in female-dominated, mixed, and male-dominated occupations; female share (top scale) and gender pay gap (bottom scale) in percent

Note: Weighted values. The calculations include employees between 25 and 55 years. Occupation classifications are based on the KldB 2010.

Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculations.

The adjusted gender pay gap varies greatly across occupations.

(female-dominated occupation) with 24 percent; and *metal working* (male-dominated occupation) with 23 percent. In contrast, women working in *education and social work* and *police and criminal investigation, jurisdiction and the penal institution* earn two and nine percent, respectively, more than their male colleagues after controlling for differences in work experience and qualifications.

When comparing these results with the gaps for full-time employees determined in a previous study,[12] there are some striking differences. For example, the unadjusted gender pay gap for full-time *doctors' receptionists and assistants* is 43 percent. When part-time employees are included, it decreases to one percent (unadjusted) or nine percent (adjusted). This result indicates not only that the gender pay gap for part-time and full-time employees differs considerably in some cases, but also that part-time employees play an important role in determining the gender pay gap.

In occupations with high gender pay gaps, hourly wage depends on the number of hours worked

To understand the relationship between hours worked and the wage differences between women and men, it is worth considering the hourly wage as a function of weekly hours. For those employed as *nurses*, the hourly wage is relatively constant (Figure 3). Thus, employees working 15 hour or 45 hour per week earn 18 euros per hour on average while those working 20 hour or 35 hour per week earn 19 euros per hour. This result shows that in this occupation, the gross wage is independent of the number of hours worked. Therefore, it can be regarded as an occupation with linear

12 See Wrohlich and Zucco, "Gender Pay Gap Varies Greatly".

Figure 3

Linearity of earnings ...

... in nursing, emergency medical services, and obstetrics

... in business organization and strategy

Note: Weighted values. The calculations include employees between 25 and 55 years. Occupation classifications are based on the KldB 2010.

Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculations.

Hourly wages strongly depend on the number of hours worked per week in some occupations, in others not at all.

earnings, one in which employees are remunerated proportionally.

In *business organization and strategy*, on the other hand, the gross hourly wage varies much more: it ranges from 11 euros for up to 11 hours a week to 28 euros for 37 or more hours a week (Figure 3). A clear trend is visible here: the average hourly wage in this occupation increases with the number of hours worked. People working in *business organization and strategy* are paid non-linearly according to the number of hours worked. Their wage increases non-linearly (convexly) compared to the number of hours worked.

Differentiating between occupations with linear and non-linear earnings, the adjusted gender pay gap is relatively small for the former (three percent for *nursing*), but much larger in the latter (19 percent for *business organization and strategy*). A similar correlation was established in the American labor market.[13]

As part-time employment is a primarily female phenomenon in Germany, women are particularly affected by low hourly wages in occupations with non-linearly high wages. This correlation illustrates why occupations with non-linear earnings have higher gaps than occupations with linear earnings.

The *non-linearity index* developed at DIW Berlin is used to illustrate the relationship between the linearity in earnings of

Box 2

Methodical approach

The analysis refers to the gross hourly wage, which is the quotient of the gross monthly wage and the weekly hours worked multiplied by 4.3. The adjusted gender pay gap is estimated in a regression model with fixed effects for occupation and gender and the interaction of both terms. It is controlled for age, tenure, education, company size, if the company is in East or West Germany, and if the employee has a permanent contract or a managerial position.[1]

The multivariate regression estimates if the adjusted, occupation-specific gender pay gap correlates with the selected occupational characteristics. To do this, the information on all employees (such as gender, performance group, shift allowance) is aggregated on the occupational level. For the non-linearity index, the average wage of all employees working more than 45 hours is subtracted from the average wage of all employees working fewer than 25 hours and compared with the average wage of all employees with more than 45 hours.

13 Claudia Goldin, "A Grand Gender Convergence: Its Last Chapter," *American Economic Review* 104, no. 4 (2014): 1091–1119.

1 For more information, see Aline Zucco, "Occupational characteristics and the Gender Pay Gap."

Figure 4

Non-linearity index and adjusted gender pay gap in the 30 most common occupations
Non-linearity index and gender pay gap in percent

Note: Weighted values. The calculations include employees between 25 and 55 years. Occupation classifications are based on the KldB 2010.

Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculations.

The gender pay gap is on average higher in occupations with a high convexity index (very disproportionate pay) than in occupations with proportional pay.

occupation and the gender pay gap in general. The non-linearity index reflects the relative difference between the wages of employees in a given occupation who work 40 or more hours a week and the wages of employees in this occupation who work fewer than 25 hours per week (Box 2).

If the 30 most common occupations are ranked in descending order according to the non-linearity index, commercial and business-related services and production occupations[14] are at the top (Figure 4). Commercial and business services occupations include employees working in *business organization and strategy, purchasing and sales,* and *retail sales*. The high degree of non-linearity means that the relative wage difference between people with a high number of hours worked per week and those with a low number of hours worked per week in these occupations is over 30 percent. Occupations in *electrical engineering, machine building and operating,* and *metalworking* are classified as production occupations. The non-linearity index in these occupations is between 31 and 29 percent, which indicates longer hours are disproportionately rewarded.

In other production occupations such as *energy technologies* (four percent), pay is much more proportional. Occupations with linear earnings include medical occupations (*nurses, doctors' receptionists and assistants*) as well as jobs in the public sector, including such occupations as *police and criminal investigation, jurisdiction, and the penal institution* as well as public school teachers. In the public sector, almost all employees are paid in accordance with collective agreements which guarantee equal hourly pay for all, regardless of the number of hours worked. According to the argument for the

14 The classification in sectors and types of occupations follows the Bundesagentur fuer Arbeit's definition. See Britta Matthes, Holger Meinken, and Petra Neuhauser: "Berufssektoren und Berufssegemente auf Grundlage der KldB 2010". Methodenbericht der Statistik der BA.

Table

Linear regression of occupational characteristics to the adjusted gender pay gap in occupations

	Coefficient
Non-linearity Index	0.132 ***
Average number of overtime hours	−0.004
Average amount of shift bonus	0.000
Hierarchy level (reference: difficult activity)	
Share of employees with supervisory power	0.135 **
Share of employees with difficult to very difficult activity	0.001
Skilled work	0.038
Unskilled work	0.126
Female share	0.069
Female share^2	−0.104
Share of public firms	−0.147 ***
Constant	0.118 **
Number of occupations	140
R^2	0.201

Note: The calculations include employees between 25 and 55 years. Occupation classifications are based on the KldB 2010.

Significance levels: ***p<0.001 **p<0.05 *p<0.1. The gender pay gap is the difference in hourly wages between men and women in a respective occupation, taking into account age, length of time at the company, education, company size, company location (east/west), if it is a managerial position, and if the employee has a permanent contract or not.

Reading aid: A positive coefficient indicates an increase of the Gender Pay Gap within occupations if the respective characteristic rises. Thus, this occupational property has a positive effect on the Gender Pay Gap if it is statically significant.

Source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, SES 2014, own calculations.

American labor market,[15] the linearity in earnings in medical occupations could be due to standardized treatment processes. These make it easier for individual employees to be replaced by their colleagues. Thus, shorter working hours are not tied to productivity losses and therefore do not lead to wage penalties.

The wage difference between women and men tends to be larger in occupations with non-linear earnings than in occupations with linear earnings. The occupations with the highest degree of disproportionate earnings (*business organization and strategy* as well as *physical security, personal protection, fire protection and workplace safety*) are also occupations which have very large adjusted pay gaps between men and women of 19 and 17 percent, respectively. Conversely, in some occupations with linear remuneration, such as jobs in *nursing, emergency medical services and obstetrics* and in *police and criminal investigation, jurisdiction, and the penal institution*, there are very small or negative adjusted gender pay gaps of minus three percent and minus nine percent, respectively.

Gender pay gap higher in management positions, private companies

Overall, although linearity correlates with the gender pay gaps it is not the only reason pay gaps differ so greatly between occupations.[16] Therefore, in a linear regression, the size of the occupation-specific gender pay gap is related to other characteristics, such as the average number of overtime hours or the share of women within an occupation (Table).[17] The results confirm the positive correlation between non-linearity and the size of the gender pay gap. On the other hand, neither the number of overtime hours nor the amount of the shift bonus can explain the differences between the gender pay gaps. The distribution of hierarchical groups is also included in the model, showing that the gender pay gap in the respective occupations increases the higher the share of employees in leadership positions is. The result confirms previous studies which observed a higher gender pay gap at the upper end of the wage distribution and among managers than in the rest of the labor market.[18] This finding can also be attributed to the "glass ceiling,"[19] the invisible barrier preventing women from advancing to higher-level management positions at the same rate as men. In 2018, only nine percent of all executive board members of the 200 largest companies in Germany were female.[20]

As expected, the correlation between the share of women and the size of the gender pay gap is not statistically significant.[21] On the other hand, the gender pay gap is significantly smaller for those working in the public sector than those working in the private sector.[22] This may be due to the fact that public sector companies more often pay according to collective agreements.[23] Collective agreements are a useful means of reducing the pay gap between men and women

15 See Goldin, "A Grand Gender Convergence".

16 The following paper offers a good overview of further studies on the causes of the gender pay gap: Francine D. Blau and Lawrence M. Kahn, "The Gender Wage Gap: Extent, Trends, and Explanations," *Journal of Economic Literature* 55, no. 3 (2017): 789–865.

17 See Aline Zucco, "Occupational characteristics and the Gender Pay Gap." However, for a more intuitive interpretation of the results, the gender pay gap is given here as the difference between wages earned by men and women, unlike in the study cited.

18 Elke Holst and Anne Marquardt, "Differences in Full-Time Work Experience Explain almost a Quarter of the Gender Pay Gap in Management Positions," *DIW Weekly Report* 34/35 (2018): 315–324 (available online); Patricia Gallego Granados and Katharina Wrohlich, "Gender Pay Gap besonders groß bei niedrigen und hohen Löhnen," *DIW Wochenbericht* no. 10 (2018): 173–179 (in German; available online).

19 See for example James Albrecht, Anders Björklund, and Susann Vroman, "Is there a glass ceiling in Sweden?" *Journal of Labor Economics* 21, no. 1 (2003): 145–177 and Wiji Arulampalam, Alison L. Booth, and Mark L. Bryan, "Is there a glass ceiling over Europe? Exploring the gender pay gap across the wage distribution," *Industrial and Labor Relations Review* 60, no. 2 (2007): 163–186.

20 Elke Holst and Katharina Wrohlich, "Increasing Number of Women on Supervisory Boards of Major Companies in Germany: Executive Boards Still Dominated by Men," *DIW Weekly Report* no. 3 (2019): 19–34 (available online).

21 Previous DIW Berlin and Federal Statistical Office analyses also found no correlation between the proportion of women and the gender pay gap. Cf. Claudia Finke, "Verdienstunterschiede zwischen Männern und Frauen. Eine Ursachenanalyse auf Grundlage der Verdienststrukturerhebung, 2006," *Wirtschaft und Statistik* 1 (2011): 36–48; Wrohlich and Zucco, „Gender Pay Gap Varies Greatly."

22 The Federal Statistical office also confirms this significant difference between public and private sector companies, see Finke, "Verdienstunterschiede zwischen Männern und Frauen,"; Claudia Finke, Florian Dumpert, and Martin Beck, "Verdienstunterschiede zwischen Männern und Frauen. Eine Ursachenanalyse auf Grundlage der Verdienststrukturerhebung 2014," *Wirtschaft und Statistik* 2 (2017): 43–62 (in German). The authors of a recent HWWI study observed a gender pay gap of six percent in the public sector and 24 percent in the private sector, cf. Chistina Boll and Andreas Lagemann, "Verdienstlücke zwischen Männern und Frauen im öffentlichen Bereich und in der Privatwirtschaft– Höhe, Entwicklung 2010–2014 und Haupteinflussfaktoren," HWWI Policy Paper 107 (2018) (in German; available online).

23 In the entire German economy in 2014, 45 percent of occupations are paid according to collective agreements. In *public administration, defense, and social security*, on the other hand, the figure was 100 percent. Cf. Statistisches Bundesamt, *Tarifbindung nach Betrieben und Wirtschaftszweigen 2014* (2019) (in German; available online).

as it has been shown that women are poor negotiators compared to men.[24]

In addition to linearity, the proportion of companies in an occupation that are publicly owned is also negatively linked to the gender pay gap. Moreover, the gender pay gap is significantly higher in occupations in which a large share of employees has leadership positions.

Conclusion: employers can reduce the gender pay gap by increasing workplace flexibility

The German labor market is very segregated and the wage level in female-dominated occupations is often lower than the level in male-dominated occupations.[25] Thus, the gender pay gap is partly related to the fact that women and men work in different occupations. However, the gender pay gap varies significantly across occupations and women are still earning less than their male colleagues, even in most female-dominated occupations.

This study shows that the degree of proportionality between the number of hours worked and pay can largely explain why some occupations have very large gender pay gaps and others very small gaps. In some occupations, the hourly wage strongly depends on how many hours the employees work and thus people in these occupations are paid disproportionately to their working hours. Employees in occupations such as *business organization and strategy or purchasing and sales* are rewarded non-linearly the more they work. This also means that part-time work, which is most often performed by women, is particularly "costly" in these occupations. One reason for the non-linearity in earnings in these occupations is, for example, that some employment contracts dictate high bonuses for employees who are consistently present or, if necessary, also work a lot of overtime.

In contrast, health and care occupations in particular are characterized by linearity, which is associated with small gender pay gaps. The duties in these occupations are characterized to a large extent by standardized processes; shift work in these occupations requires documentation of the treatment process in patient files so that all colleagues can treat patients equally. Therefore, the employee can easily substituted by a colleague which and, thus, working fewer hours is not associated with higher costs either for employers or for employees.

According to the recommendation for the American labor market,[26] the gender pay gap can only disappear when flexible working hours are no longer associated with (disproportionate) wage losses. This would encourage concepts such as top-sharing—splitting a leadership position into two part-time positions—for occupations in *business organization and strategy*. In other occupations, such as commercial or manufacturing occupations, standardizing processes could improve the substitutability of employees and thus lead to a lower gender pay gap, similar to the situation in the health sector. This change in work organization requires not only a change in thinking on the part of employers but also on the part of employees, as it requires a willingness to make oneself dispensable and to hand over work to colleagues.

Furthermore, the results confirm that the collective agreements in most public sector companies are associated with smaller gender pay gaps, as they guarantee equal pay for all employees. Expanding collective agreements and a making a stronger commitment to collective bargaining could therefore lead to smaller gender pay gaps.

This study also points out that the proportion of employees in leadership positions within occupations correlates positively with wage differences between men and women, which suggests the presence of a glass ceiling. Political and operational measures that increase the proportion of women in leadership positions could thus also contribute to reducing the gender pay gap.

24 See Linda Babcock and Sara Laschever, *Women Don't Ask: Negotiation and the Gender Divide* (Princeton: Princeton University Press, 2003); Blau and Kahn, "The Gender Wage Gap: Extent, Trends, and Explanations." A general overview of studies on the gender pay gap on the labor market can be found in Rachel Croson and Uri Gneezy, "Gender Differences in Preferences," *Journal of Economic Literature* 47, no. 2 (2009): 448–74.

25 See Wrohlich and Zucco, "Gender Pay Gap Varies Greatly."

26 See Goldin, "A Grand Gender Convergence."

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LEGAL AND EDITORIAL DETAILS

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