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203 Report by Anna Hammerschmid and Carla Rowold

Gender pension gaps in Europe are more explicitly associated with labor markets than with pension systems

- Within Europe, gender pension gaps vary strongly
- Gender pension gaps are associated with gender differences in employment patterns
- Women's employment biographies should be strengthened

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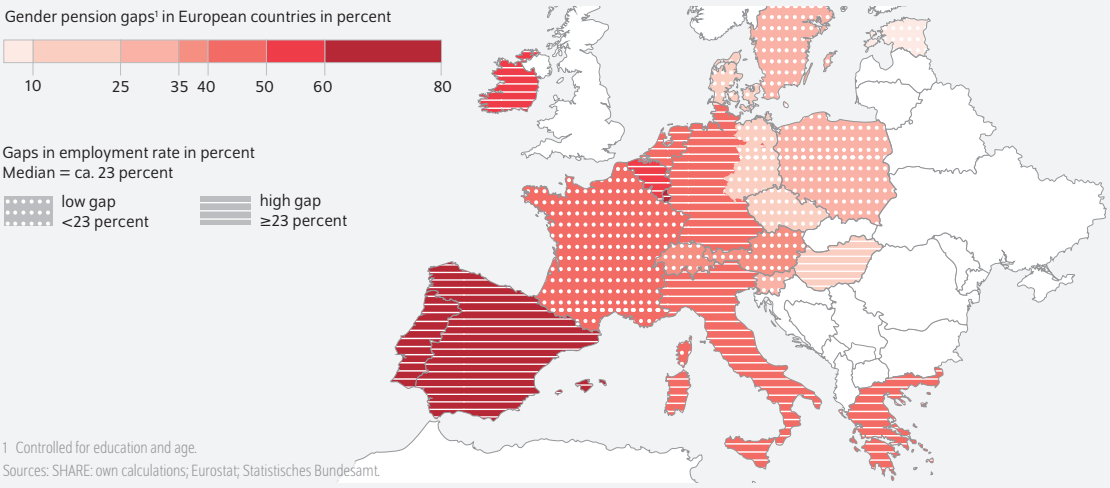
AT A GLANCE

Gender pension gaps in Europe are more explicitly associated with labor markets than with pension systems

By Anna Hammerschmid and Carla Rowold

- Within Europe, gender pension gaps vary strongly across countries
- The present study analyzes the associations between gender pension gaps and country-specific characteristics of labor markets and pension systems
- Gender pension gaps are significantly associated with gender differences in the employment and part-time employment rates
- Regarding pension system characteristics, there is no clear cross-national pattern
- Women's employment biographies should be strengthened by enabling better work-family reconciliation as well as by tax and family policy incentives

Clear pattern: Countries with higher gender pension gaps tend to have higher gender gaps in employment rate on average



1 Controlled for education and age.
Sources: SHARE; own calculations; Eurostat; Statistisches Bundesamt.

FROM THE AUTHORS

"To reduce the gender pension gap in the long run, policy measures should strengthen women's employment biographies, with a particular focus on full-time employment."
— Anna Hammerschmid —

MEDIA

Audio Interview with Anna Hammerschmid (in German)
www.diw.de/mediathek

Gender pension gaps in Europe are more explicitly associated with labor markets than with pension systems

By Anna Hammerschmid and Carla Rowold

ABSTRACT

In many European countries, there is a substantial gender pension gap. Yet, these gaps vary strongly across countries. This cross-national study examines to what extent institutional and labor market-specific factors correlate with gender pension gaps. The findings show that the gender pension gap tends to be larger in countries with larger gender-specific differences in the employment or part-time employment rate. On the contrary, the study does not find a clear statistical relationship between pension gaps and the characteristics of pension systems that were examined. The findings emphasize that gender inequalities in the labor market and in pension income are related across countries. In order to reduce pension gaps, policy makers should strengthen women's working lives by creating better conditions for the reconciliation of work and family. Moreover, they should provide more tax- and family policy-related incentives for a more equal division and acknowledgment of gainful employment and care work in the household context.

In many European countries, women receive much lower pensions than men. When the pension gaps in individual European countries are compared, a very wide range becomes apparent: gender pension gaps range from virtually zero to more than 70 percent.[1]

In light of the demographic change, gender inequality in pension income is particularly important: women are more often at risk of social exclusion and poverty in old age.[2] The subject of gender inequality in pension incomes in the member states is receiving more and more attention on the EU level as well.[3]

On the one hand, reasons for gender pension gaps can be found in employment biographies. Differences in pension income can thus be interpreted as a summary of gender inequalities during the working life.[4] On the other hand, pension income inequality can be caused by differences in the pension systems themselves, which may value certain career paths differently than others.[5] As a result, they can reinforce or reduce (gender-specific) inequality in old age.[6] Particularly in countries with very pronounced gender pension gaps, awareness of both the issue and the contributing circumstances must be raised to encourage these countries to implement actions in their own interest.

1 See Anna Hammerschmid and Carla Rowold, "Gender pension gaps – a problem in many European countries," *DIW Weekly Report*, no. 16/17/18 (2019): 156-157. (available online, accessed June 5, 2019; this applies to all other online sources in this report, unless stated otherwise).

2 Social Protection Committee & European Commission, The 2018 pension adequacy report: current and future income adequacy in old age in the EU (2018) (available online).

3 Francesca Bettio, Platon Tinios, and Gianni Betti, The gender gap in pensions in the EU (2013) (available online); Platon Tinios et al., "Men, women and pensions," (PDF, Publications Office of the European Union, Luxembourg, 2015) (available online); Manuela Samek Lodovici et al., "The gender pension gap: Differences between mothers and women without children," *Study for the FEMM Committee*, (2016); and Social Protection Committee & European Commission, "2018 pension adequacy report."

4 For example, see Judith Flory, "The Gender Pension Gap. Developing an Indicator Measuring Fair Income Opportunities for Women and Men," *Study* (2011);
Athina Vlachantoni, "Financial inequality and gender in older people," *Maturitas*, 72 (2) (2012): 104–107; and Christina Klenner, Peter Sopp, and Alexandra Wagner, "Große Rentenlücke zwischen Männern und Frauen," WSI GenderDatenPortal (2016).

5 Ignacio Madero-Cabib and Anette Eva Fasang, "Gendered work–family life courses and financial well-being in retirement," *Advances in Life Course Research*, 27 (2016): 43–60.

6 Katja Möhring, "Employment histories and pension incomes in Europe: a multilevel analysis of the role of institutional factors," *European Societies*, 17(1) (2015): 3–26.

DOI: https://doi.org/10.18723/diw_dwr:2019-25-1

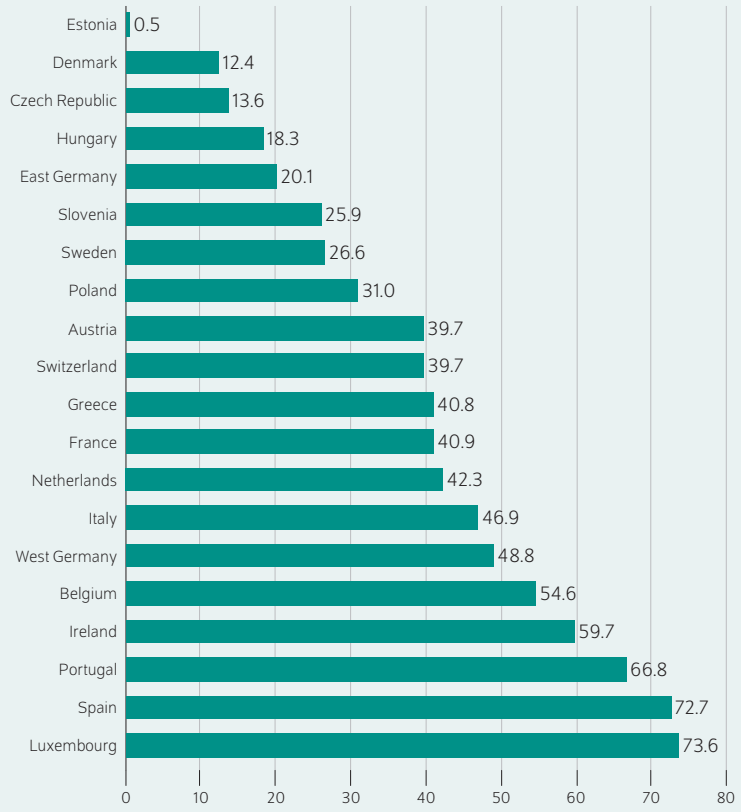
The present study[7] analyzes the correlations between country-specific gender pension gaps and the respective labor markets and pension systems. All three pillars of old-age provision – public, occupational, and private pensions – were included in the calculation of the gender pension gap. The analysis includes people over 65 years of age and also takes into account those who do not have any pension income (with a pension income of zero). Consideration of these "gender coverage gaps" is particularly relevant in cross-country comparisons, since their impact on the sizes of the gender pension gaps varies largely across countries given their varying levels.[8] Absolute pension gaps are controlled for differences in age and education between men and women. As a result, the analysis has a particular focus on the differences that arise during and after the working life (see box). To calculate the relative pension gaps, the authors divide the adjusted absolute pension gaps by the country-specific average pension income of all men.

Due to the additional adjustment by education, the pension gaps in most countries are somewhat lower (see Figure 1) than without this adjustment.[9] However, the qualitative picture is similar: pension gaps are comparatively small in Scandinavian and Eastern European countries. In Estonia, men and women receive approximately the same pension income. In the countries with highest gender pension gaps (Luxembourg, Spain, and Portugal), the adjusted pension gap is above 65 percent. When differences in education are not controlled for, the gap amounts to more than 70 percent in all three countries as shown in a previous study by the authors.

In the present study, Germany was examined separately by the two former German states based on place of residence on November 1, 1989. We took this approach because the two regions differ both socio-historically and institutionally, and gender-specific pension gaps[10] are differently pronounced as well. A separate analysis enables us to obtain a more adequate picture of the associations between labor market characteristics and pension gaps. The results confirm a pronounced difference in the gender pension gaps between West and East Germany. While the gap adjusted for age and education in the East is only 20 percent, in the West it is more than twice as high.

Figure 1

Gender pension gaps[1] in European countries
Persons aged 65+ years, controlled for education and age, in percent



1 Relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power. All three pillars of old age provision taken into account, survivor's pension excluded.

Source: SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece); own calculations.

The adjusted gender pension gap in West Germany is more than twice as large as in East Germany.

Gender pension gaps are associated with employment patterns

In order to approximate the differently pronounced gender differences in the labor market, the present study uses the gender-specific differences in the employment rate, part-time employment rate, and hourly wages across countries (see the table in the box).[11]

Continuous employment in full-time is seen as a key to financial security in old age.[12] Therefore, the present study examines the correlation between gender-specific differences in employment and part-time employment and the gender pension gaps on the cross-national level.

7 This study received financial support from the Federal Ministry of Education and Research (*Bundesministerium für Bildung und Forschung*, BMBF) (Funding code: 16SV7585) within the framework of the Joint Programming Initiative (JPI) "More Years, Better Lives". This report also incorporates some insights and parts of a seminar paper that Carla Rowold wrote as part of that project. In this context, we would also like to thank the seminar leader, Dr. Markus Schrenker, HU Berlin, for his support.

8 See Anna Hammerschmid and Carla Rowold, "Gender pension gaps" and the studies mentioned therein.

9 Anna Hammerschmid and Carla Rowold, "Gender pension gaps," pension gaps according to Definition 2. Some additional numbers in this section also stem from this source.

10 Peter Haan, Anna Hammerschmid, and Carla Rowold, "Geschlechtsspezifische Renten- und Gesundheitsunterschiede in Deutschland, Frankreich und Dänemark," in *MetallRente Studie 2019*, ed. Klaus Hurrelmann et al. (Weinheim, Basel: Beltz Juventa, 2019); Markus M. Grabka et al., "Der Gender Pension Gap verstärkt die Einkommensungleichheit von Männern und Frauen im Rentenalter," *DIW Wochenbericht*, no. 5 (2017) (in German; available online); Annika Rasner, "Gender Pension Gap in Eastern and Western Germany," *DIW Economic Bulletin*, no. 11 (2014): 42-50 (available online).

11 The focus was previously also put on these three dimensions of gender inequality in a descriptive study on gender pension gaps in cross-national comparison. See Manuela Samek Lodovici et al., "The gender pension gap," 33 et seq.

12 Ignacio Madero-Cabib and Anette Eva Fasang, "Gendered work–family life courses," 2.

Box

Data and sample selection

This study is based on data from waves 2, 4, and 5 of the Survey of Health, Ageing and Retirement in Europe (SHARE).[1] Wave 5 (survey year 2013) is the main data source. To increase the number of countries in the analysis, data from countries that wave 5 does not contain are added from previous waves (Wave 4, collected 2011/2012: Poland, Portugal, Hungary; Wave 2, collected 2007: Greece, Ireland).

The sample is restricted to respondents aged 65 and older. Respondents who received income from employment or unemployment benefits and respondents who did not provide any information on that matter are excluded from the analysis. However, we keep respondents who were not dependent employees or self-employed in the relevant year, but did indicate that they worked for pay.[2]

Calculation of pension income

All three pillars of old-age provision – public, occupational, and private pensions – are included in the calculation of annual net pension income.[3] Pension income refers to the year prior to the survey year and, in this analysis, is defined as the product of own achievements. Other pension claims, such as survivors' pensions, are not taken into account.[4] Only regular payments are included.

The sum of all the pension types is projected to annual pension amounts and adjusted for purchasing power for comparability reasons. Respondents who did not receive any pension income are included with an income of zero.

Methodology

The gender pension gap is the percentage difference in average retirement income between men and women. In the first step, country-specific cross-sectionally weighted regressions are used to calculate the absolute pension income difference between men and women, while controlling for age and education. Then the result is divided by the country-specific, weighted average pension income of all men in order to calculate relative pension gaps.

In the second step, the relative gender pension gaps are regressed on the relevant country characteristics to examine statistical associations between the pension gap and the respective labor market/pension system indicator (see table).

For the aggregate labor market indicators, we use data for the earliest available years in the relevant sources that contained data for the full set of countries (1998 and 2000), in order to get as close as possible to the situation of today's retirees during their working lives. For the aggregate indicators of pension systems, we orientate toward the point in time for which the relevant gender pension gap is calculated.

1 The SHARE data collection has been primarily funded by the European Commission. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging and from various national funding sources is gratefully acknowledged (see www.share-project.org).

2 This avoids excluding special groups of retirees from the analysis; for example, those who rely on extra income to supplement their pensions.

3 For a detailed list of pension types, see Peter Haan, Anna Hammerschmid, and Carla Rowold, "Gender Gaps in Pensions and Health: Germany, France, and Denmark," *DIW Economic Bulletin*, no. 43 (2017): 436-442 (available online).

4 A different study found a narrower gap when widows' pensions were included in the calculation. See Francesca Bettio, Platon Tinios, and Gianni Betti, The gender gap in pensions in the EU (2013) (available online). In the present study, in addition to the exclusion of survivors' pensions, payments and benefits from the war victims fund, unemployment or long-term care insurance, and alimony or lump payments are also excluded.

Significant association between gender gaps in employment and in pension

The results of the cross-country analysis shows that, in countries where women were much less employed than men at the end of the 1990s (e.g., Spain, Italy, Greece, Luxembourg, and Ireland), pension inequality between the sexes is particularly pronounced many years later.[13] On the other hand, the pension gap is quite narrow in countries or regions with small gender gaps in the employment rate (e.g., Estonia, Denmark, and East Germany, see Figure 2). In a regression analysis between adjusted gender pension gaps and gender gaps in the employment rates, there is a significantly positive relationship.

On the cross-national level, these results reflect what decomposition analyses of individual employment biographies have already determined for a number of single countries. An often large proportion of the gender pension gap is based on gender-specific differences in the number of years employed.[14] This finding has also been confirmed by studies showing that the gender pension gap in Europe among women with lower labor market participation over the life course is higher than for women who were employed for an above-average number of years.[15]

13 Statistics on employment and the gender pay gap from 1998 are used. This is the earliest year in which comparable statistics for all of the countries examined are available. At that point in time, many of the later retirees were still employed. Statistics on the part-time employment rate in 2000 are used.

14 For example, for Germany see Dina Frommert and Susanne Strauß, "Biografische Einflussfaktoren auf den Gender Pension Gap–Ein Kohortenvergleich für Westdeutschland," *Journal for Labour Market Research*, 46(2) (2013): 145-166; Carsten Hänisch and Jonas Klos, "A decomposition analysis of the German gender pension gap," *Discussion Paper Series No. 4*, Wilfried-Guth-Stiftungsprofessur für Ordnungs-und Wettbewerbspolitik, Universität Freiburg (2014). For 12 European countries, see Social Protection Committee & European Commission, "2018 pension adequacy report."

15 Francesca Bettio, Platon Tinios, and Gianni Betti, "Gender gap in pensions in the EU," 50 et seq.

Table

Indicators for gender-specific inequality in the labor markets and pension systems

Indicator (year used)	Description and comments
Relative gender gap in employment rate (1998)	· Absolute difference in employment rate between women and men in relation to employment rate of men · Positive gap = Average employment rate of men higher than that of women · Employment rate[1] = Proportion of employed persons in total population (age group 20–64 years)
Relative gender gap in the part-time employment rate (2000)	· Absolute difference in part-time employment rate between women and men in relation to part-time employment rate of men · Positive gap = Average part-time employment rate of women higher than that of men · Part-time employment rate[2] = Proportion of persons working part-time (less than 30 weekly hours worked in main profession) of all employed persons 15 and older
Gender pay gap (1998)	· Gender differences in gross hourly wages[3] based on paid employees 16 to 64, who work 15 or more hours per week, in relation to average gross hourly wages of men
Progressivity Index (2007, 2011, 2013)	· The index[4] measures the relationship between inequality in employment income and pension income; only mandatory components of pension systems · The higher the score, the more progressive the mandatory pension system (maximum value: 100).
Relative gender difference in the aggregate replacement ratio (2007, 2011, 2013)	· Absolute difference in the aggregate replacement ratio between women and men in relation to aggregate replacement ratio of men · Positive gap = Women have a higher aggregate replacement ratio in comparison to men, therefore women benefit more from the pension system's redistribution · Aggregated replacement ratio[5] = Relationship between median gross pension income of 65 to 74-year-olds and median gross earnings of 50 to 59-year-olds
Prevalence of occupational (private) pensions (2006-2013)	· Percentage proportion of respondents per country in the sample who receive occupational (private) pensions[6]

1 Sources: Eurostat, Employment rates by sex, age and citizenship, (2018) (available online, accessed June 18, 2018). For Germany (eastern/western), data based on slightly different definitions, particularly with respect to the age group (15 to under 65) were used: German Federal Statistical Office, Erwerbstätigenquoten 1991 bis 2017 (in German; available online, accessed June 18, 2018).

2 Sources: OECD, Part-time employment rate, (2018) available online, accessed June 2, 2018). For Germany (eastern/western), WSI data based on slightly different definitions: WSI, WSI GenderDatenPortal: Arbeitszeiten. Teilzeitquoten der abhängig Beschäftigten 1991–2016, (2018) (available online).

3 Sources: Eurostat, Gender pay gap in unadjusted form (1994 - 2006) (available online), accessed May 25, 2018). For the separate calculation for western and eastern Germany: SOEP v30, own calculations.

4 For eastern and western Germany, the OECD does not list separate values for the index. Each region is assigned the value of the entire country. Sources: OECD (2007), "Pensions at a Glance 2007: OECD and G20 Indicators," Public policies across OECD Countries; OECD (2011): "Pensions at a Glance 2011: OECD and G20 Indicators," Retirement Income Systems in OECD and G20 Countries; OECD (2013): "Pensions at a Glance 2013: OECD and G20 Indicators," OECD and G20 Indicators.

5 For eastern and western Germany, there are no separate values. Each region is assigned the value of the entire country. Sources: Eurostat, Aggregate replacement ratio for pensions (excluding other social benefits) by sex, (2018) (available online, accessed July 30, 2018); European Institute for Gender Inequality, Gender differences in the aggregate replacement ratio, (2018) (available online, accessed May 26, 2018).

6 SHARE waves 2, 4 and 5, own calculations.

Pension gaps related with differences in part-time employment rate

Examining the relative differences in the part-time employment rate shows that their relation with pension gaps is also significant (see Figure 3).[16] Countries with a very low gender pension gap, such as in Eastern Europe and Scandinavia, also exhibit relatively little difference in the part-time employment rate between men and women. This finding on the European level confirms a study for Germany that identified the gender-specific full-time/part-time difference as the main driver of the gender pension gap in Germany.[17] In a study for European countries, the theoretical elimination of differences in work time and employment was simulated, which reduced the gender pension gap by seven and ten percent, respectively.[18]

Gender pay and pension gap not clearly associated

Another possible influencing factor for the gender pension gap is that women earned less than men and therefore paid lower pension contributions in the course of their employment history. The gender pay gap, that is, the gender difference in hourly wages,[19] is one of the most widespread

16 This result proves to be robust when absolute gender differences are used in the part-time employment rates instead of relative ones. Moreover, if Luxembourg is excluded, there is still a significant, qualitatively similar association. Only the level of significance changes in each of these cases from five to ten percent.

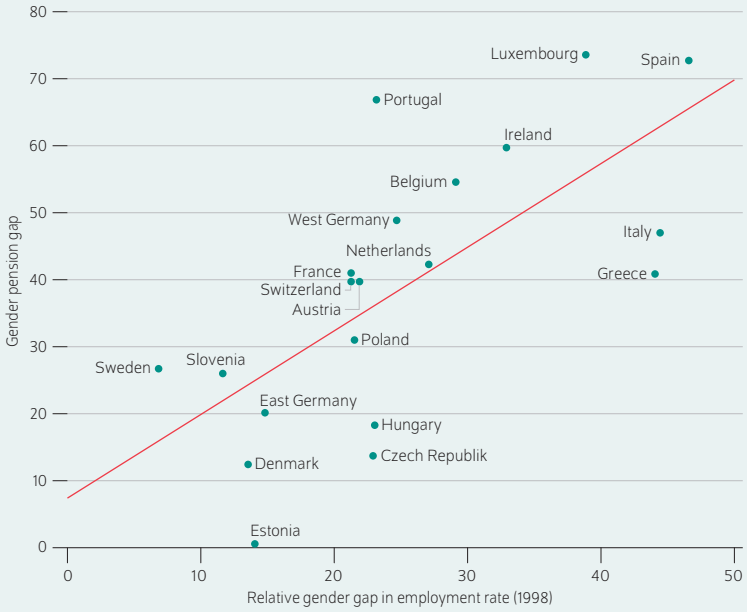
17 Dina Frommert and Susanne Strauß, "Biografische Einflussfaktoren."

18 Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap in Pensions: Evidence from EU-SILC and the OECD Pension Model," *Social Protection & Jobs Discussion Paper*, no. 1917 (2019). For a projection of changing employment biographies in younger cohorts on the future German gender pension gap in the statutory pension, see Christian Westermeier et al., "Veränderung der Erwerbs- und Familienbiografien lässt einen Rückgang des Gender-Pension-Gap erwarten," *DIW Wochenbericht*, no. 12 (2017) (in German; available online).

19 See glossary on the gender pay gap.

Figure 2

Gender pension gaps[1] and the relative gender gap in the employment rate[2]
In percent



1 Controlled for education and age, relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power.

2 Positive gap indicates a higher employment rate of men compared to women.

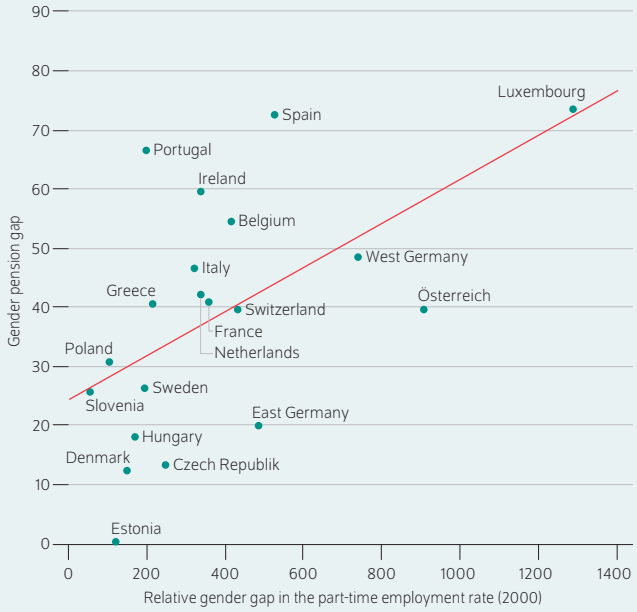
Note: The illustrated line shows the regression-based association between the gender pension gaps and the relative gender gap in the employment rate. The slope is significant at the one percent level.

Sources: Gender pension gaps: own calculations based on SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece). Employment rates in 1998: Eurostat; German Federal Statistical Office.

Countries with higher gender differences in the employment rate in 1998 have later a higher average gender pension gap.

Figure 3

Gender pension gaps[1] and the relative gender gap in the part-time employment rate[2]
In percent



1 Controlled for education and age, relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power.

2 Positive gap indicates a higher part time employment rate of women compared to men.

Note: The illustrated line shows the regression-based association between the gender pension gaps and the gaps in the part time employment rate. The slope is significant at the five percent level.

Sources: Gender pension gaps: own calculations based on SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece). Part time employment rates in 2000: OECD; WSI.

The larger the gender gaps in the part-time employment rate in the year 2000, the larger are later the average gender pension gaps.

indicators of gender inequality in the labor market. The present analysis, however, does not find a statistical association between the gender pay gap and the pension gap on the cross-national level (see Figure 4). Countries with a large gender pay gap do not necessarily have a wider gender pension gap.[20]

The lack of a clear association between the gender pay gap and the gender pension gap does however not mean that women's level of earned income is not reflected in the amount of their pensions. For example, a simulation study for European countries shows that the (simulated) gender pension gap is reduced by nine percentage points on average when the gender pay gap is artificially set to zero.[21]

In fact, the lack of statistical association could be explained by factors that might mask and attenuate these correlations across countries. On the one hand, there are countries with marked gender-specific differences in employment rates and relatively narrow pay gaps. In particular in some southern European countries, such as Italy and Greece, the relatively few employed women tend to receive comparatively high wages, resulting in a rather narrow raw gender pay gap.[22]

On the other hand, the redistributive patterns of the pension systems can cushion the direct impact of gender-specific wage differences on the pension gap. In Estonia, for example, women benefit more than men from the redistribution in the pension system (see next section). This is one possible explanation for the high gender pay gap in Estonia not being

20 Another study also reported this finding: Francesca Bettio, Platon Tinios, and Gianni Betti, "Gender gap in pensions in the EU."

21 Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap." For the U.S., for example, a study also showed that a large proportion of the gender-specific gap in pension income is due to gender differences in wages. See William E. Even and David A. Macpherson, "When Will the Gender Gap in Retirement Income Narrow?" *Southern Economic Journal* 71(1) (2004): 182–200.

22 Claudia Olivetti and Barbara Petrongolo, "Unequal Pay or Unequal Employment? A Cross-Country Analysis of Gender Gaps," *Journal of Labor Economics*, 26(4) (2008): 621-654 (available online). Unlike the gender pay gap, annual earnings include differences in income due to work time differences and due to differences in participation. When this measure is considered instead, a slight positive correlation with the gender pension gap becomes apparent in the European context, see Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap."

reflected in the gender pension gap. Nevertheless, there are numerous examples of countries with substantial pay *and* substantial pension gaps, such as Switzerland, Austria, West Germany, Ireland, and the Netherlands.

No clear pattern between pension gaps and pension system characteristics

To determine the extent to which country-specific pension systems influence the gender pension gap, we consider several factors: general redistribution, effective gender-specific redistribution, and the prevalence of occupational and private pensions.

The general redistributive components of pension systems can mitigate gender-specific inequality in the labor market.[23] To quantify the general redistributive character of the various pension systems, we use the OECD Progressivity Index. The lower the inequality in pension income in relation to inequality in employment income, the more progressive the pension system and the higher the score of the index. However, the cross-country analysis does not detect a significant association with the gender pension gap, probably due to the Progressivity Index only including mandatory components of pension systems (see Figure 5).

Beyond that, some pension systems effectively reduce the impact of gender differences in the life courses, for instance by taking periods of child care into account in the pension amounts.[24] Relative to their respective earned income, women tend to benefit from such components more strongly than men. In this analysis, the relative gender difference in the aggregate replacement ratio[25] was used as a measure of redistributive tendencies with a gender-specific impact. A positive difference means that due to redistribution, women receive higher pensions (median) in comparison to men in relationship to gender-specific median pre-pension earnings. The findings show no statistically significant association between this measure and the gender pension gap (see Figure 6).

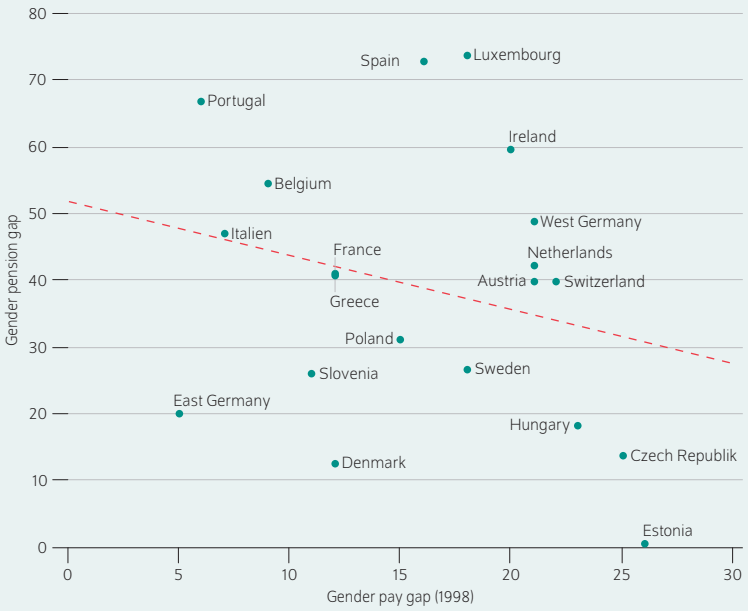
Prevalence of private and occupational pensions

The study additionally analyzes the prevalence of private and occupational pensions that are typically closer tied to stable employment biographies and do often not cover periods of unemployment or care work. As a result, they can make inequalities stemming from the labor market more severe[26] and can thus have particularly unfavorable effects on the pension income of women.[27] In Germany, for example, the gender pension gap is larger for occupational and private pensions compared to public pensions.[28] Women receive less frequently and considerably lower payments from occupational pensions.[29]

The cross-country analysis shows neither a clear relationship between the prevalence of occupational pensions and the pension gap nor between the prevalence of private pensions and the pension gap. However, differences in the prevalence rates among men and women must also be taken into account.[30] In the cross-country comparison, Sweden and the Netherlands show a similar prevalence of occupational pensions (54 and 60 percent, respectively). In Sweden, however, there is hardly any difference between women and men, while in the Netherlands only about half as many women as men are recipients of occupational pensions. Despite a similar overall prevalence of occupational pensions, this

Figure 4

Gender pension gaps[1] and gender pay gaps[2]
In percent



1 Controlled for education and age, relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power.

2 Gender differences in gross hourly wages

Note: The illustrated line shows the regression-based association between gender pension gap and gender pay gaps. The slope is not statistically significant.

Sources: Gender pension gaps: own calculations based on SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece). Gender pay gaps in 1998: Eurostat; own calculations using SOEP v30.

From a cross-country perspective, there is no clear relationship between the gender pay gap in 1998 and later gender differences in pension income.

23 Athina Vlachantoni, "Financial inequality and gender."

24 See Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap," for simulations of the impact of child care periods on the gender pension gaps in Europe (which varies across countries).

25 The aggregate replacement ratio indicates how much income retirees receive in comparison to employed people; in other words, the ratio of the median gross pensions of 65- to 74-year-olds to the median gross earnings of 50- to 59-year-olds.

26 Katja Möhring, "Employment histories," 9.

27 Jay Ginn, "European pension privatisation: taking account of gender," *Social policy and society*, 3(2) (2004): 123-134; and Therese Jefferson, "Women and retirement pensions: A research review," *Feminist Economics* 15:4 (2009): 115-145.

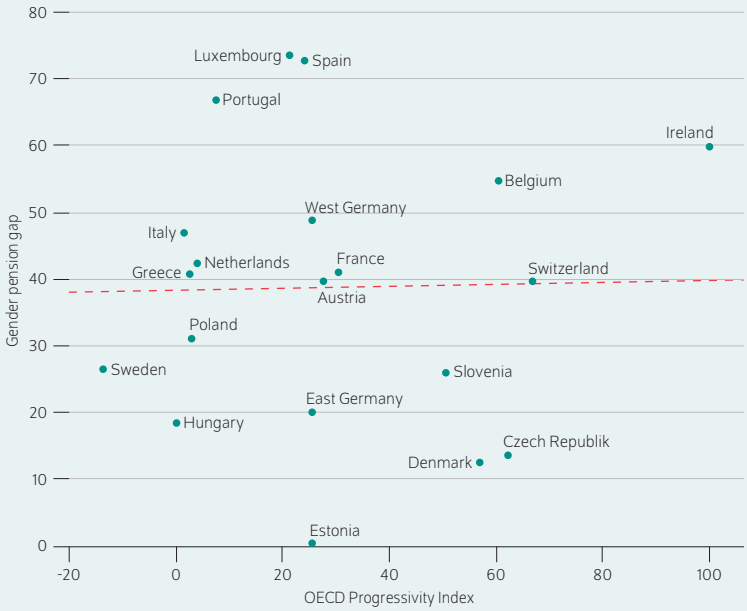
28 Carsten Hänisch and Jonas Klos, "A decomposition analysis."

29 Christina Klenner, Peter Sopp, and Alexandra Wagner, "Große Rentenlücke."

30 Francesca Bettio, Platon Tinios, and Gianni Betti, "Gender gap in pensions in the EU," 59 et seq.

Figure 5

Gender pension gaps[1] and progressivity of pension systems[2]
Gender pension gaps in percent, Progressivity Index in points (best value 100)



1 Controlled for education and age, relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power.

2 As indicated by the OECD Progressivity Index that measures the relationship between inequality in earnings and pension income.

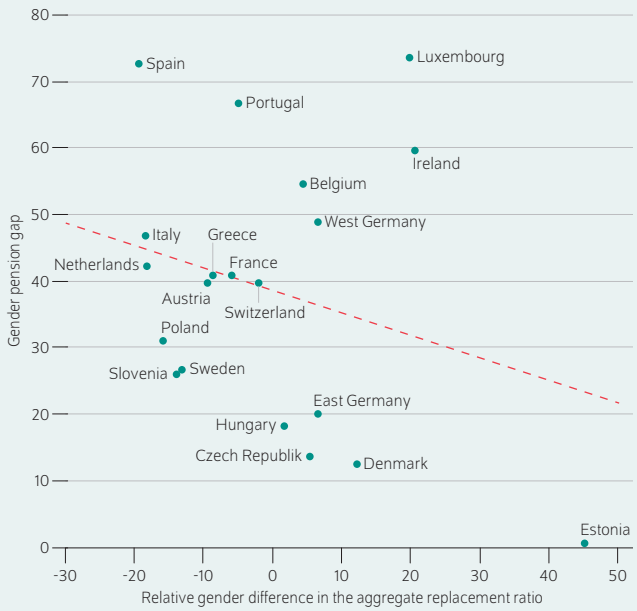
Note: The illustrated line shows the regression-based association between the gender pension gaps and the progressivity of pension systems. The slope is not statistically significant.

Sources: Gender pension gaps: own calculations based on SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece). Progressivity Index: OECD (2007-2013).

The varying degrees of general redistribution in pension systems across countries are not statistically linked to the respective gender pension gaps.

Figure 6

Gender pension gaps[1] and gender differences in aggregate replacement ratios[2]
In percent



1 Controlled for education and age, relative to the average pension income of men, including persons (65+) who are not receiving a pension income, cross-sectionally weighted, adjusted for purchasing power.

2 Positive values indicate that women benefit more from redistribution in the pension system compared to men.

Note: The illustrated line captures the regression-based association between the gender pension gaps and gender differences in the aggregate replacement ratios. The slope is not statistically significant.

Sources: Gender pension gaps: own calculations based on SHARE waves 5, 4 (Hungary, Poland, Portugal) und 2 (Ireland, Greece). Aggregate replacement ratios: Eurostat; European Institute for Gender Inequality.

The cross-country analysis shows no clear statistical relationship between the gender pension gaps and gender-specific redistribution in the pension systems.

gender difference in the prevalence rate seems to be reflected in the gender pension gap – which is much higher in the Netherlands than in Sweden.

Although the cross-country analysis did not detect a clear pattern between the pension system characteristics and the gender pension gap, e.g. redistributive measures and care allowances should quite mechanically reduce the gender pension gaps for the individual countries. The fact that this mechanical relationship is not reflected in the cross-country pattern might be due to the inability of one-dimensional indexes to adequately capture the complexity of pension systems. Additionally, elements of the pension systems must be examined in their interaction with each other and with the gender differences in labor markets,[31] which was not possible in the present study due to a limited number of countries.

Conclusion: higher incentives for female employment should be provided

Taking a cross-country perspective, this study examines the extent to which the gender pension gap is associated with characteristics of labor markets and pension systems. The analysis did not detect a statistically significant pattern between the gender pension gap and the country-specific characteristics of pension systems. Other important factors might mask these relationships. Focusing solely on one-dimensional characteristics of pension systems to explain the variation in gender pension gaps among European countries turns out to be insufficient.

When examining the differences in labor markets, the analysis shows that higher gender pension gaps tend to be present in countries in which the employment rate and part-time employment rate differ strongly by gender. Together with the

31 The interaction between individual employment biographies and institutional design appears to play a role for women in particular. See Katja Möhring, "Employment histories."

results of other studies,[32] these findings indicate that gender-specific differences in employment histories are fundamental mechanisms behind the pension gap. In conjunction with different employment histories of men and women, differences in care and house work in the family context must also directly be taken into account: women spend considerably more of their lives outside the labor market than men.[33]

Therefore, the findings emphasize the necessity of strengthening female working lives to further reduce the gender pension gap. A particular policy focus should be the reconciliation of work and family life for both genders. Moreover, a more equal division of employment and care work between partners should be aimed for. In the special case of Germany, eliminating the practice of tax splitting for married couples (*Ehegattensplitting*) could increase the employment of women.[34] In addition, extending the number of "partner months" in the parental benefit system could contribute to a more equal division of care work and gainful employment between the sexes,[35] narrowing the gender pension gap in the long term. Besides, whether or not care work in the family context is adequately remunerated by society and pension systems is an additional question that arises in the context of gender pension gaps.

32 For examples, see Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap"; Katja Möhring, "Employment histories"; and Ignacio Madero-Cabib and Anette Eva Fasang, "Gendered work–family life courses."

33 Maciej Lis and Boele Bonthuis, "Drivers of the Gender Gap." For the distribution of gainful employment and care work in German families, see Claire Samtleben, "Also on Sundays, Women Perform Most of the Housework and Child Care," *DIW Weekly Report*, no. 10 (2019) (available online).

34 Stefan Bach et al., "Ehegattenbesteuerung: Individualbesteuerung mit übertragbarem Grundfreibetrag schafft fiskalische Spielräume," *DIW Wochenbericht*, no. 13 (2017) (in German; available online).

35 Also see Claire Samtleben, "Also on Sundays."

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