

ARTICLE

The gender pension gap in Germany: is divorce a gender-equaliser?

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(Accepted 16 September 2021; first published online 9 March 2022)

Abstract

Germany is one of the few countries in Europe that has implemented a system of ‘divorce splitting’. Under this system, the pension credits that spouses have accumulated during their marriage are combined and then split equally between them upon divorce. This study examines how divorce affects public pension entitlements in Germany, and how these patterns are influenced by the system of divorce splitting. The data for our analysis comes from SHARE-RV, a direct linkage of the Survey of Health, Ageing and Retirement in Europe (SHARE) with administrative data of the research data centre of the German Pension Insurance Fund (Deutsche Rentenversicherung Bund). The data include information on the beneficiaries’ monthly earnings and employment biographies, as well as on their pension entitlements and the credits they received through divorce splitting. The results of the analysis, which was restricted to West German men and women born between 1935 and 1954, reveal that there are large gender gaps in public pension benefit levels. However, the investigation also shows that single and divorced West German women have larger personal pension entitlements than their married or widowed counterparts. Furthermore, the public pension entitlements of divorced men and women in West Germany are very similar. This can be attributed partially to the divorce-splitting system, which tends to increase the pension benefits of divorced women, while reducing the pension benefits of their male counterparts.

Keywords: old-age security; old-age pension; gender differences; Germany

Introduction

The modern welfare state evolved at a time when work and family life were strongly gendered (Flora and Heidenheimer, 1981; Kolberg, 1991; Orloff, 1996). Although the heyday of the male breadwinner model – as a practised family form or as a normative ideal – may have represented only a short historical interlude (Secombe, 1993), it nevertheless deeply shaped the institutions of the modern welfare state. Under this model, many of the social protections for women were only derived

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rights that emanated from a woman's marital bond with a male breadwinner (Lewis, 1992; Ostner, 1998; Shire and Nemoto, 2020). A typical example of such derived rights is the survivor's pension, which is designed to protect the surviving spouse from old-age poverty following the death of the male breadwinner. While divorce can also entail a similar loss of income that results in old-age poverty, in most welfare states, the risk of divorce is not buffered to the same degree as the risk of the death of a spouse (Bonnet and Hourriez, 2012). Obviously, divorce and separation were not yet widespread when the modern welfare state came into being at the end of the 19th century, or when it was consolidated after the Second World War (Pierson, 2004). Thus, 'new social risks' emerged at a time when most welfare states were no longer open to fundamental reforms, or when they had entered a period of retrenchment (Anderson and Meyer, 2006; Bonoli, 2007; Tepe and Vanhuyse, 2010).

What has often been overlooked in the debate over the evolution of new social risks is that few countries have undertaken major efforts to overhaul their welfare states to buffer the economic risks of union dissolution. Germany played a pioneering role in this context when it introduced a system of 'divorce splitting' into the country's public retirement scheme in 1977. This measure was a direct response to the increase in divorce rates that was occurring in many European countries at that time. The introduction of the system was motivated by concerns that maintaining a strictly earnings-related pension system would inevitably result in old-age poverty for divorced women (Schmähl, 2000). Thus, in some respects, (West) German policy makers were displaying an acute awareness of the new social risks associated with growing family diversity. While Nordic countries regarded the integration of women into the labour market and the 'individualisation of social rights' as the most appropriate responses to these risks (Anderson and Meyer, 2006; Frericks *et al.*, 2009), Germany was following the logic of its familialistic and conservative regime. Thus, in Germany, it was taken for granted that the earnings and employment careers of men and women were largely unequal, and, therefore, that the 'weaker part' of a couple required special protection in case of a marital breakdown (Schmähl, 2000, 2018).

This paper uses linked survey and register data from the Survey of Health, Ageing and Retirement in Europe (SHARE) from the year 2017/2018 (SHARE-RV, Wave 7) to examine gender differences in old-age pensions in Germany (FDZ RV and MPI für Sozialrecht und Sozialpolitik, 2020; Börsch-Supan *et al.*, 2020). We raise the question of whether the practice of divorce splitting has affected public pension benefit levels, and investigate how the effects of this system have differed by gender. The analysis is restricted to West German women and men of the cohorts born between 1935 and 1954. Members of the cohorts born between 1935 and 1954 are the first to have experienced a substantial increase in the risk of divorce during their lifecourses, and are now of retirement ages. East German women and men are not included in this study because different rules and regulations applied to the East and West German cohorts examined in this paper. Furthermore, the sample sizes were too small to allow for a separate investigation by region. The analysis relies on simple descriptive measures in which we compare pension entitlements before and after accounting for divorce splitting. Multiple regressions are used to examine the socio-demographic determinants of the

pension entitlements, and to elaborate the interaction effects between marital status, birth cohort and gender. We conclude this paper with a discussion of the logic and the functions of ‘derived rights’ in conservative welfare state regimes.

Institutional context

Despite having undergone numerous reforms since its inception, Germany’s public pension scheme is still the prototype of the Bismarckian system. It is characterised by a reliance on the first tier of the pension system (public pensions), and on a strong link between lifetime earnings and pensions (Anderson, 2015; Schmähl, 2018; Ebbinghaus, 2019, 2021). Around 90 per cent of the resident population are covered by the public pension scheme, although civil servants (*Beamte*) and certain professions (e.g. farmers) do not participate in the system. Pension entitlements are stored as ‘earning points’ in the public pension accounts, with one pension point being equivalent to the average earnings in a given year. When a person reaches retirement age, his or her pension is calculated based on his or her accumulated pension points. Although the pension system is based largely on earnings, it includes additional contribution periods – such as periods spent enrolled in education, caring for elderly and disabled family members, and receiving unemployment or social welfare benefits – during which individuals continue to accumulate pension points, albeit to varying degrees across time (Schmähl, 2018). Furthermore, parents can be compensated for providing child care (Frericks *et al.*, 2009; Möhring, 2018). A parent automatically accrues three pension points for each child who was born after 1 January 1992 and 2.5 pension points for each child who was born earlier. The child care-related earning points are transferred by default to the pension account of the mother, unless a different care arrangement is officially reported, which generally occurs in exceptional situations only. When the person reaches retirement, his or her monthly pension entitlement is calculated using the pension formula. It factors in the pension points earned, the current pension value (East Germany: €30.69; West Germany: €32.03 in 2018), the form of retirement (e.g. early retirement) and the pension type (e.g. widow’s or old-age pension).

For West Germans born before 1951, the statutory retirement age was lower for women than it was for men. A reform enacted in 1999 harmonised the regulation for women and men. Although this policy reform made it more difficult for spouses to retire around the same time, it resulted in women retiring later, and thus in women having higher pension entitlements (Engels *et al.*, 2008; Geyer and Welteke, 2021). The inclusion by default of marginal employment in the public pension scheme starting in 2013 also affected women’s pension entitlements. Prior to 2013, marginal employment was exempt from social security contributions, and could only be included upon request starting in 1999. Overall, marginal employment still does not result in significant pension entitlements. Nonetheless, this reform had an indirect impact on women’s labour market participation, as it reduced the advantages of marginal employment, and thus supported higher levels of regular employment among women.

Beyond these pension-related policies, the broader welfare state set-up defines the employment and earnings of women and men, and, thus, the gender differences

in pension benefits. In recent years, Germany has launched major policy reforms to facilitate the compatibility of work and family life, such as the expansion of public day care for children under 3 years of age (since 2005) and the introduction of the earnings-related parental leave benefit (in 2007). However, these reforms were targeted at families with young children, who are not covered in our study. A more important factor for the cohorts included in our analysis is that Germany was divided into two separate states until 1990. Thus, our cohorts entered the labour market before unification, and they were in their prime working ages between 1970 and 2000. During that period, West Germany can rightly be described as the ideal type of a familialist regime (Esping-Andersen, 1999). Conversely, the socialist East German government (until 1989/1990) regarded full-time employment as the norm for women as well as men, and this norm was enforced and supported by family policies, such as the wide availability of public full-time day care (Trappe and Rosenfeld, 1998). After unification, large East–West differences in maternal employment levels persisted.

As the ideal type of a conservative welfare state, the German system provides fairly generous ‘derived rights’ for spouses who are not employed or are only partially engaged in the labour market. Since 1911, the German pension system has provided a widow’s pension, calculated as a fixed percentage of the deceased spouse’s public pension. Initially, this pension was available to women only. However, in 1985, a ruling of the constitutional court led to the widow’s pension being changed into a survivor’s pension, which allowed widowers to access payments as well (Schmähl, 2018). Whereas prior to the reform, an individual’s own pension and earnings were not considered in the calculation of the survivor’s pension, following the implementation of the regulations in 1985, they were offset by the survivor’s pension entitlements (Schmähl, 2000). A notable feature of the survivor’s pension is that the entitlement to receive it is not an individual right, but is, instead, a purely derived right. In practice, this implies that the pension points accrued for the survivor’s pension do not appear on the pension account of the surviving spouse. It also means that the payments are lost upon remarriage.

Both the death of a spouse and divorce are social risks that are ameliorated in the German public pension system. They may be classified as derived rights, as the entitlements are closely connected to the bond a wife has to a male breadwinner. However, the entitlements that are derived from a divorce are different from those derived from a survivor’s pension. In this context, the system of divorce splitting (*Versorgungsungleich*) plays an important role. This system was introduced as part of the grand divorce reform in 1977 in West Germany. As a result of this reform, all divorces that are finalised after 1 July 1977 need to undergo a divorce-splitting process. Divorce splitting has also been implemented in East Germany, but only for divorces that are finalised after 1992.

Under this system, the pension entitlements that a couple accumulate during their marriage are combined and divided equally between the ex-spouses upon divorce. The care-related earning points, which are usually held in the account of the mother, are included in these calculations as well. Unlike in the calculation of a survivor’s pension, which does not alter the individual pension records, in the divorce-splitting process, the pension points are assigned to the individual pension accounts. For divorcing couples, divorce splitting is mandatory by law.

However, there are some loopholes that can be used to evade this mandate, such as in cases in which the two partners earn nearly equal wages (Keck *et al.*, 2019; Radenacker *et al.*, 2019). A reform enacted in 2009 also exempted very short marriages (of less than three years) from divorce splitting.

Keck *et al.* (2017) have compared the effects of divorce splitting on different pension cohorts; *i.e.* on women and men who entered retirement age in the same year. Whereas only 7 per cent of new pensioners in the 2001 cohort had a pension that was affected by divorce splitting, this share had risen to 16 per cent for the 2015 pension cohort. Thus, these simple calculations are already a strong indication that among recent cohorts of pensioners, the share of divorcees has been increasing.

Prior research and research question

While comparing pension incomes across countries can be difficult, the gender pension gap gives some indication of the differences in old-age security between women and men. By this measure, Germany has been performing exceptionally poorly in cross-national comparisons (Organisation for Economic Co-operation and Development, 2019). In 2019, the gender pension gap for Germany was 36 per cent, meaning that a woman's pension benefits were, on average, 36 per cent lower than a man's pension benefits (Eurostat, 2021). While this difference represented a substantial improvement over the gap in previous years, Germany's gender pension gap is still one of the largest among the European Union countries.

Much of the prior research on the gender pension gap in Germany has focused on East–West differences. As a result of the large East–West differences in women's employment behaviour, the discrepancies in the public pension benefit amounts received by women and men are small in East Germany, but are very large in West Germany. According to the official statistics of the German Pension Insurance Fund (Deutsche Rentenversicherung Bund, 2020), the gender pension gap declined from 48 per cent in 1995 to 33 per cent in 2019 in West Germany, and decreased from 33 per cent to just 4 per cent over the same period in East Germany.

In addition to examining the East–West differences in women's pension entitlements, some researchers have focused on the role of *children* in old-age security. Based on data from SHARE, Möhring (2018) analysed how having children affected women's pension entitlements in 13 European countries, including in East and West Germany. The outcome variable was the sum of individual public and occupational pension entitlements, as well as widow's pension and social assistance payments. Möhring showed that while there was a large 'motherhood gap' in pension benefits in a number of countries, in Italy and Austria in particular, the gap was not as large as it was in Germany. Indeed, she even found that in East Germany there was a pension penalty for childless women. These findings were corroborated by descriptive research by Mika and Czaplicki (2017), who also reported that the pension benefits received by childless East German women were relatively low. However, these results have to be contextualised, as the share of childlessness among the East German cohorts studied was very low (below 10%). Thus, the childless East German women were a highly selective group who may have been more

prone to health impairments, which may, in turn, have affected their employment patterns.

There are several national studies that have examined how marital status, marital histories, divorce and separation affect income and poverty levels in old age (Yabiku, 2000; McDonald and Robb, 2004; Fasang *et al.*, 2013; Peeters and Tavernier, 2015). The results of these studies differed not only because of the large variations in national pension systems, but also because of differences in how old-age income was defined, and in whether only public pension benefits or all pension entitlements or household income were taken into account. Fasang *et al.* (2013) used data from the German Socio-Economic Panel to study the effects of family status on individual pensions for the West German cohorts born between 1930 and 1939. The outcome variable included public and occupational pension benefits as well as welfare and private pension benefits. They found that never-married and divorced women had significantly better outcomes than married women. Similar findings were reported by Flory (2011) based on data from the survey Alterssicherung in Deutschland, which used benefits from public, occupational and private pensions as the outcome variable. She reported that the gender gap in pension benefits was just 19 per cent for divorced women compared to 64 per cent for married women. Like Fasang *et al.* (2013), this study examined fairly old birth cohorts: namely those born in 1942 or earlier. The divorcees of these cohorts were a very select group. Furthermore, not all of them benefited from the system of divorce splitting, because it only applied to divorces that were finalised in 1977 or later.

In the following, we seek to provide more recent evidence on the public pension incomes of West German women and men of the 1935–1954 cohorts. As well as experiencing increasing divorce rates across their lifecourses, these birth cohorts were among the first to be subject to the divorce-splitting process. Thus, these are the first cohorts we can study to explore our research question of how the system of divorce splitting has affected old-age pension entitlements in Germany. Our analysis will provide insights into the variation in public pension benefits by gender and marital status in West Germany before and after the divorce-splitting process is accounted for. In our analysis, we focus solely on public pension entitlements. Other assets or entitlements, such as those from an occupational or a private pension, or from a partner's or a survivor's pension, are not included in this investigation. Thus, our focus is not on the economic wellbeing of the household, but on the *individual public pension entitlements* of women and men in West Germany. As noted before, we do not include East Germany in our analysis. The system of divorce splitting was introduced relatively late in East Germany (*i.e.* for divorces finalised after 1992). In addition, the sample sizes would have been too small to allow for a separate investigation by region.

Data, variables and analytical strategy

Data for this analysis have been obtained from SHARE-RV (release 7.1.0), a direct linkage of the SHARE with administrative data from the research data centre of the German Pension Insurance Fund (FDZ RV and MPI für Sozialrecht und Sozialpolitik, 2020). The linked dataset includes 4,330 persons. We have limited our analysis to the 1935–1954 birth cohorts. In addition, we restricted the sample

to West Germany (including West Berlin), which reduced the dataset to 1,799 respondents. The information on the region was drawn from each respondent's last recorded place of residence in the registers. In some cases, this information was imputed by drawing on information from SHARE. We also conducted a sensitivity analysis in which we defined West Germans based on whether the respondents had received all of their pension entitlements in West Germany. The use of this definition did not substantially alter our results. We deleted another 39 persons because the information on their marital status was ambiguous or incomplete. The final analytical sample includes 1,760 respondents.

The dependent variable is the individual public pension entitlement in 2018, which is derived from the respondent's pension account in the German Pension Insurance Fund. The pension information reflects the number of points in the registers the respondent has earned. As we explained above, people accrue pension benefits mainly through employment, but also to varying degrees from other contribution periods. Furthermore, divorce affects the pension entitlements that are subject to divorce splitting. The register data allow us not only to differentiate carefully the various components of the public pension entitlements, but also to decompose how the divorce-splitting process affects individual pension benefits. Due to data protection restrictions, we do not have exact information on the pension incomes of individuals with a monthly pension payment of more than €2,200. For this income group, the Pension Fund has calculated the average pension income, and provides this information in the data. Less than 1 per cent of the women and around 5 per cent of the men in our sample were receiving public pension benefits above this level. As well as reporting the respondents' final pension benefit amounts, the descriptive part of this paper also provides information on their annual labour market earnings and employment trajectories. Both variables are available starting at age 14.

Another key variable in addition to gender is marital status, which indicates whether a respondent was married, divorced, remarried, never married or widowed at the time of the interview in 2017. This distinction is mainly generated from the SHARE data; we draw on information from the pension registers only to identify those respondents who were remarried. We do not distinguish between respondents who were widowed and only married once and those who were widowed and married several times. Thus, the group of widowed respondents may include a small fraction of individuals who have been divorced.

In the multiple regressions, we also account for the highest educational level that was calculated based on the International Standard Classification of Education (ISCED) 1997. We differentiate between having low education (ISCED 1–2), medium education (ISCED 3–4) and high education (ISCED 5–6). Further variables are birth cohort (1935–1939, 1940–1944, 1945–1949, 1950–1954) and number of children (none, one, two, three or more). The number of children was generated from the SHARE data, particularly from the respondents' life histories. Ideally, we would have also included other background variables that are correlated with the respondents' marital status and pension benefits, particularly variables pertaining to health status. However, in our survey data, health information for each respondent was only available for the time of interview, and not for the individual's entire lifetime.

Table A1 in the Appendix provides the sample statistics by gender. The table clearly shows that for these cohorts, there were substantial educational differences by gender. For example, 32 per cent of the male respondents but just 15 per cent of the female respondents, received a tertiary degree. There were also some gender differences in the distribution by marital status. As a result of gender differences in longevity, a larger fraction of the women than of the men were widowed at the time of the interview. The table also shows that the information on the number of children was incomplete in roughly 20 per cent of the cases. Among the valid cases, about 12 per cent were childless, which corresponds fairly well with prior estimates on childlessness in West Germany for these older cohorts (Kreyenfeld and Konietzka, 2016).

In the first part of the following empirical analysis, we provide an overview of the respondents' employment patterns and lifetime earnings by gender and marital status. In the second part, we calculate the average pension incomes the respondents were receiving based on their lifetime earnings and employment careers. In doing so, we tease apart the different components of the public pension entitlements in order to determine how the pension benefits of the divorcees had been affected by divorce splitting. The final part of the investigation is comprised of a linear regression model with monthly pensions as a dependent variable. Based on the interaction models, we show how the gender pension gap evolved across cohorts, and how it differed by marital status. For the descriptive part of our study, we focus mainly on the divorced and married respondents, as all other marital status groups were too small to provide robust summary indicators.

Descriptive results

Earnings and employment trajectories by marital status

Figure 1 plots the employment patterns of married and divorced West German women and men by age. The graph for the married West German women displays the expected pattern for a familialist regime. The employment rates of the married women were seldom much higher than 50 per cent at any age. It was only very early in the women's lifecourses, and thus before they married and had their first child, that their employment rates were higher. When women were between ages 25 and 35, their employment rates dropped to about 30 per cent, while their 'gaps' became more frequent. Gaps were periods in a person's life in which no activity was recorded in the pension register. A typical reason for a gap was that the person had left the labour market. Note that so-called 'pension-related periods' were relatively common at younger and older ages. A pension-related period was a period in which an individual received pension points while in a state other than employment. At younger ages, these tended to be periods of educational participation (as well as of military/community service for the male sample). At higher ages, these pension-related periods were often unemployment spells (among the male sample) and periods spent caring for elderly or disabled family members (among the female sample) (Söhn and Mika, 2019). The employment trajectories of the divorced women were similar to those of the married women until ages 35–40. After age 40, the employment rates of the divorcees rose as high as 75 per cent.

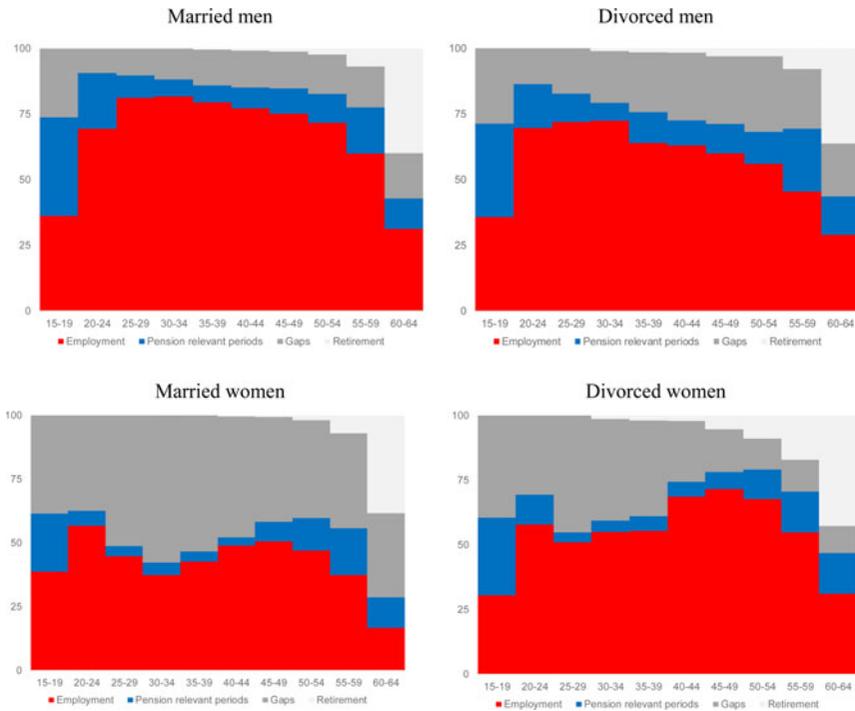


Figure 1. Employment status by age, marital status, West Germany, 1935–1954 cohorts.

Notes: Married N = 1,324; divorced N = 133. Pension-relevant periods: periods in which an individual accrues pension points while in a state other than employment. These periods include, for example, time spent in military service, unemployment, family care provision or educational participation. People who spend a large share of their life in these periods may receive a ‘reduced earnings capacity pension’ (*‘Erwerbsminderungsrente’*) when they reach retirement age. Gaps: periods for which there is no available information in the pension system because, for example, the person was not working and was not accruing pension points, as he or she would during pension-relevant periods. *Source:* FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

Until 2000, the average age at divorce for women was around 40 years. Since then, it has gradually increased, and is now 47 years (Statistisches Bundesamt, 2018). Hence, the results of the analysis suggest that divorce prompted many of these West German women to (re-)enter employment.

The married men in our sample had employment rates of between 75 and 80 per cent throughout their prime working ages (ages 25–50). However, the pattern for the divorced men deviated strongly from that of the married men, as their employment rates declined from mid-life onwards. At the same time, the gaps in the life-courses of these men increased. In addition, these divorced men were more likely to experience pension-related periods during which they were engaged in activities other than employment, and especially in unemployment. These findings suggest that the association between divorce and employment for men was the opposite of that for women. While we cannot establish a firm causal relationship, it seems likely that divorce pushed West German women into the labour market, while it reduced the labour market participation of men. As a result, the lifecourse patterns of women and men differed greatly by marital status (*see also* Table A2 in the

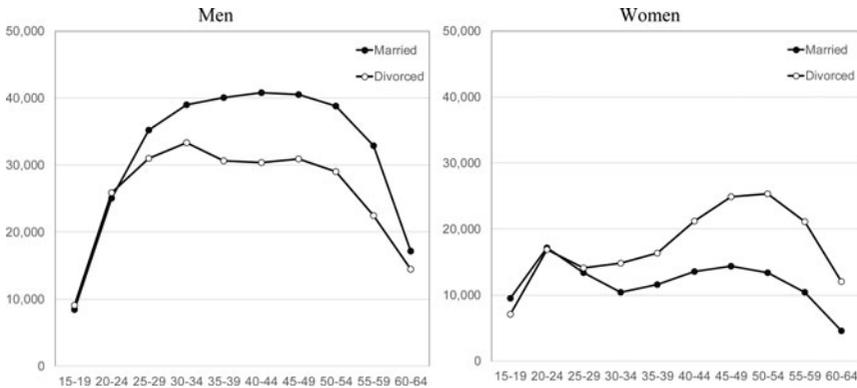


Figure 2. Average annual earnings from employment (in euros) by age and marital status (reference year 2018), West Germany, 1935–1954 cohorts.

Notes: Persons with zero earnings are coded zero in the calculation of the averages. Married $N = 1,324$; divorced $N = 133$.

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

Appendix, which provides a summary with all person-months broken down by marital status and gender).

Figure 2 displays the average annual earnings from employment by gender and marital status. Of the differences, those related to gender are the most glaring. West German women had nowhere near the average earnings of West German men. Divorced women saw an increase in their annual earnings in later life; a pattern that mirrors the above-mentioned increase in the employment rates of these women following divorce. Nevertheless, they did not reach earnings parity with men. Divorced men earned lower wages than married men. This was also the case to some degree early in the lifecourses of these men, which suggests that there was some selection into divorce among men. In sum, the lifetime earnings patterns of the divorced women and men in our sample differed greatly. While being divorced was associated with increased earnings and employment levels among women, it was associated with substantial declines in economic activity and labour market income among men.

Public pensions by gender and marital status

Table 1 provides information on the respondents' average monthly pension benefit payments by marital status and gender. The results displayed in the table support prior evidence of a very large gender pension gap in West Germany. The average monthly pension payment for West German women of the 1935–1954 cohorts was roughly €700, compared to about €1,250 for their male counterparts. Thus, the gender pension gap for the total population amounted to 45 per cent. However, we can also see that the gender pension gap varied strongly by marital status. On average, married women received €630 per month and married men received roughly €1,300 per month, which represents a gender pension gap of 51 per cent. While the gender pension gap for the married population was large,

Table 1. Monthly pensions in euros (reference year 2018), West Germany

	Men	Women	Gender pension gap (%)
All:			
Mean monthly pension (€)	1,251	689	45
N	865	895	
Married:			
Mean monthly pension (€)	1,295	629	51
N	665	659	
Divorced:			
Mean monthly pension (€)	963	1,100	-14
Mean monthly pension before divorce splitting (€)	1,093	877	20
N	65	68	

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

the pension benefits of male and female divorcees differed only slightly. Indeed, female divorcees had slightly higher pension payments than male divorcees, leading to a gender pension gap of minus 14 per cent. The table also shows that the system of divorce splitting reduced the gender pension gap considerably. Before splitting, the pension gap amounted to (plus) 20 per cent.

Although this analysis emphasises the impact of the splitting procedure on the pension benefits of divorced women, it should be noted that the gender differences in pension benefits are not only the product of the divorce-splitting system. After a divorce, women tend to work more, while men tend to work less (*see above*). The mechanisms underlying this pattern are complex. In particular, it appears that the more economically successful women of these cohorts were disproportionately likely to divorce and to remain single, while their male counterparts were disproportionately likely to enter a new marriage, and thus to leave the sample of divorcees. There may also be selection into divorce and remarriage based on the health of the respondents. As there is some evidence that divorce is more detrimental for male than for female health (Leopold, 2018; Brüggmann, 2020), male divorcees may be more likely to be negatively selected on their health status. While we are not able to account for all of the mechanisms that channel people into marriage, divorce and remarriage, we are able to take into account standard socio-demographic confounders, including education and number of children.

Multiple regression results

Table 2 reports the results from an ordinary least squares (OLS) regression that controls for gender, cohort, level of education, number of children and marital status. The dependent variable is the monthly pension payments received in 2018. Thus, the coefficient can be interpreted as absolute increases or decreases in the

Table 2. Ordinary least squares regression, dependent variable: monthly pension payments in 2018 (in euros), West Germany

	β
Gender (Ref. Men):	
Women	-517***
Birth cohort (Ref. 1935–39):	
1940–1944	17
1945–1949	36
1950–1954	-24
Education level (Ref. Low):	
Medium	154***
High	269***
Number of children (Ref. Childless):	
One child	-17
Two children	-82*
Three and more children	-153***
Marital status (Ref. Married):	
Never married	-192***
Divorced	51
Remarried	95**
Widowed	12
Constant	1,139***
N	1,760

Notes: Flags for missing values were inserted into the regression. Ref.: reference category.

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

pension benefit payments compared to the reference category. The model shows that even after even controlling for the above-mentioned socio-demographic background variables, we still observe a large gender difference in pension entitlements. Women's pension payments were €517 lower than those of men. Thus, the gender pension gap would be smaller if we took into account the large differences in the socio-demographic characteristics, and particularly in the educational attainment levels, of the women and men of these cohorts. The regression results suggest that there were no changes in pension benefit levels across cohorts. As expected, we observe a strong positive correlation between education and pension entitlements. In line with prior research, we find a negative relationship between pension benefits and number of children (Mika and Czaplicki, 2017). The model also controls for marital status, and shows that compared to being married, there was a negative relationship between being never married and pension benefit levels. However, the results for marital status are not very telling, because they are

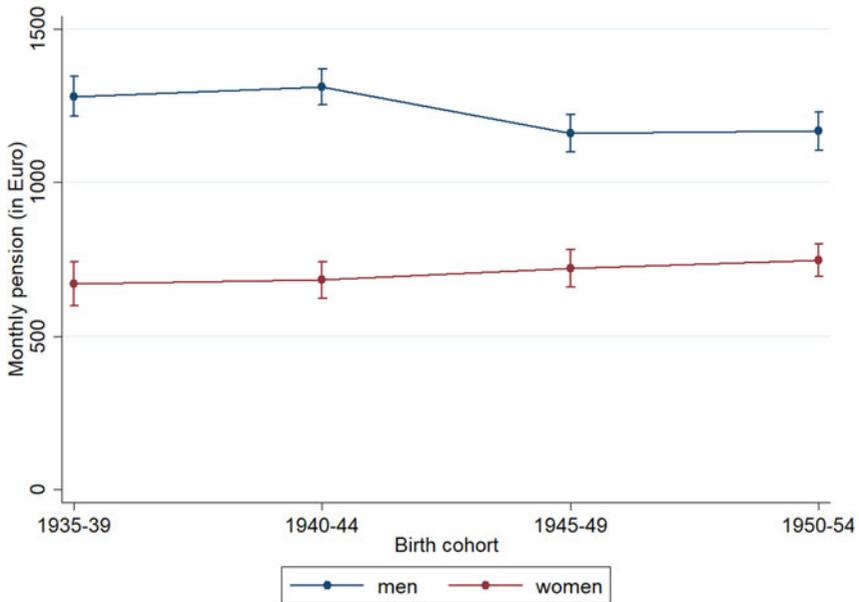


Figure 3. Predicted monthly pension payments and 95 per cent confidence bounds by cohort, region and gender, West Germany.

Note: Further controls in the model are education, number of children and marital status.

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

based on the assumption that the parameter is the same for both genders. The following interaction model relaxes that assumption and illustrates how the patterns differed by gender.

Figure 3 plots the predicted values from a model that includes an interaction of birth cohort and gender. The results of the simple regression model (see Table 2) suggest that there was little change across cohorts. However, the interaction model shows that there were diverging patterns by gender. While men's public pension benefits declined across the birth cohorts, women's pension benefits were increasing. Despite this convergence, the pension levels of men and women have not yet reached parity. The pension benefits of women of the most recent West German cohorts (1950–1954) in our sample were 36 per cent lower than those of their male counterparts, controlling for differences in educational levels. Overall, the convergence in women's and men's pension benefits was largely due to the decline in men's benefits, and not to any significant improvements in women's benefits.

Figure 4 provides the results from the interaction of marital status and gender. Divorced women had higher pension benefits than both married and widowed women. While remarried and never-married women also had relatively high pension benefits, this group was rather small, and thus the confidence bounds were very wide. For men, the reverse pattern can be observed, with men who were widowed and married having the highest pension benefits. Among the men in the sample, those who were divorced and never married had the lowest pension

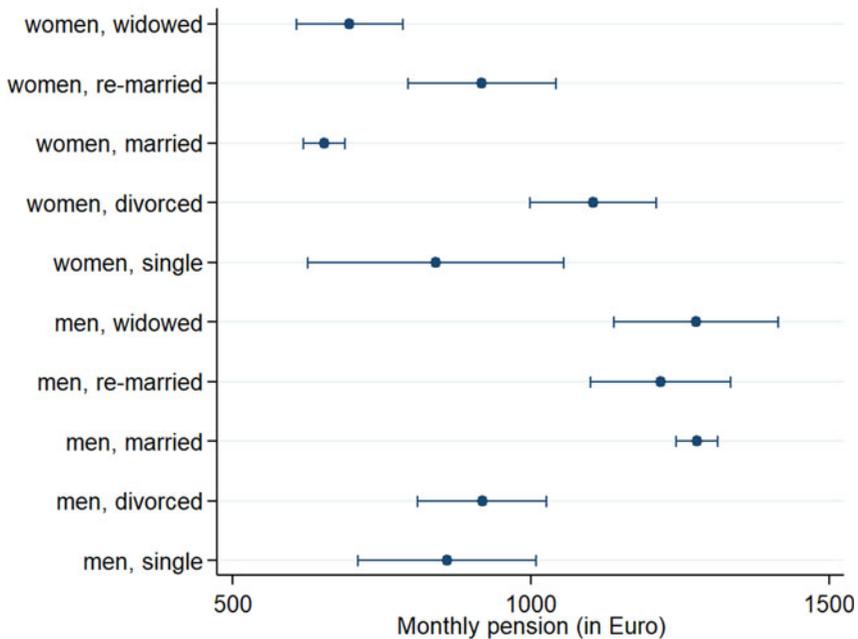


Figure 4. Predicted monthly pension payments and 95 per cent confidence bounds by cohort, marital status and gender, West Germany.

Note: Further controls in the model are cohort, education and number of children.

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

benefits by far. An interesting group are the remarried men, who did not differ from their married counterparts. As we noted above, it is likely that this group was highly positively selected. Overall, the results of the analysis support those of our prior descriptive study, which showed that in West Germany, divorced women and men were receiving roughly equal public pension benefit payments in 2018, at around €1,000 per month.

Summary and conclusions

In this paper, we used linked survey and register data from the SHARE-RV to study gender differences in pension payments in West Germany. The analysis was restricted to the 1935–1954 cohorts, as they are among the first cohorts who were exposed to a high risk of divorce across their lifecourses, and who have now reached retirement ages. The results of the analysis support prior evidence showing that there are large differences in the pension benefits of women and men in West Germany (*see e.g.* Eurostat, 2021). While the gender pension gap was found to narrow across cohorts, large gender differences were observed even for the most recent cohorts (born in 1950–1954). Furthermore, the analysis showed that the association between marital status and public pension benefits differed greatly for women and men. On average in 2018, married women in Germany were receiving pension payments of only around €600 per month, while divorced

women were receiving about €1,100. For men, the opposite pattern was observed: divorced men were receiving less than €1,000 per month, while married were receiving roughly €1,300. The analysis revealed further that the introduction of the divorce-splitting process had a sizeable impact on the pension benefits of West German divorcees: *i.e.* it increased the pension benefits of West German women by 26 per cent, while it reduced the pension benefits of West German men by 12 per cent. After accounting for the role of divorce splitting, we no longer found any significant differences between the pension benefits of divorced women and men in West Germany.

The most important finding of this paper is that divorce is a 'gender equaliser' in the conservative West German welfare state. Furthermore, our decomposition of pension entitlements demonstrated that the system of divorce splitting has been a major component in the convergence of pension benefit levels among divorced women and men. Thus, the divorce-splitting system must be characterised as a highly effective policy for achieving gender equality. While recognising the effectiveness of the divorce-splitting system, it should be pointed out that both divorced men and divorced women appeared to be doing worse than married men, as their average public pension benefit payments in 2018 were just €1,000 per month. As in other European countries, the divorce rate in Germany has been increasing in recent years. After reaching a high point of 43 per cent in 2004, the rate has declined slightly, but was still 31 per cent in 2018 (Statistisches Bundesamt, 2021). In light of these trends, our results suggest that divorce may result in old-age poverty for growing shares of future pensioners, regardless of gender. Thus, the divorce-splitting system is an effective equaliser among divorcees. However, the root problem remains the gendered division of work during marriage. A 'male breadwinner pension' may be enough to sustain a single household, but not two separate ones. The problem becomes worse if we consider that divorce often leads to the liquidation of private pensions and assets.

This paper provides policy-relevant insights into the gender differences in public pension benefits. However, this study has several limitations. We focused solely on public pensions. Indeed, the vast majority of residents in Germany are covered under the public pension scheme, and it is also the main pillar of the old-age income of most individuals. Nevertheless, occupational and private pensions – the second and third tiers in the retirement income framework – have grown in importance as a result of recent reforms. The so-called '*Riester-Rente*' is a private pension that offers public transfers depending on the number of children the beneficiary has. This private pension is more beneficial for women than for men (Klammer, 2017). However, the cohorts who are examined here have not benefited substantially from the *Riester-Rente*. More important are the gender differences in access to occupational pensions. Prior studies have shown that women are far less likely than men to receive occupational pension benefits, as these types of pensions are more common in male-dominated industry branches (Klammer, 2017). Thus, the gender differences we found may have been even larger if occupational pensions had been considered in this investigation. With our data, we were unable to analyse the contributions of occupational pensions in a meaningful manner. Although information on occupational pension benefits and private assets is collected in the SHARE-RV data, it is difficult to generate robust and reliable estimates based

on this information. Apart from the well-known problems associated with collecting financial information in surveys, the sample size of the divorcees was small. In addition, for some items (in particular for the occupational pension benefit amounts), these problems were aggravated due to high levels of non-response. For similar reasons, we refrained from analysing the (equalised) household income of divorcees using the SHARE data. Taking a household perspective would lead to different results, as such an analysis would account for the fact that married couples are able to pool their resources. However, we would argue that prior research has probably focused too much on the household perspective, and too little on individual entitlements. Thus, concerns about the alarmingly low public pension entitlements of married women have been too easily brushed aside, based on the assumption that couples share their financial resources. This perspective not only disregards the considerable instability of marital unions, it fails to take into account that individual entitlements and financial autonomy largely define each partner's bargaining power in a relationship.

It is important to note that the divorce-splitting system affects only formerly married individuals. Thus, women and men who are unmarried throughout their lives do not profit from this regulation. Although women who are cohabiting or single are more likely than married women to be full-time employed, a large fraction of these women work reduced hours after having a child. In the event of separation, these women do not profit from the system of divorce splitting, and they tend to have lower pension benefits because of the time they spent performing unpaid care work. Thus, this group is at particularly high risk of experiencing old-age poverty. A major policy-related conclusion that could be derived from our investigation is that the divorce-splitting system should be expanded to non-marital unions. The recent Ninth German Family Report includes recommendations along these lines (Bundesministerium für Familie, Senioren, Frauen und Jugend, 2021: section 3). While such a reform would certainly improve gender equality, its overall effects would be more ambiguous. Ultimately, this policy is built on the assumption that spouses engage in gendered care and employment behaviour. Governments are increasingly reforming their welfare states under the assumption that women and men now have equal labour market opportunities (Daly, 2011). The reform of the German maintenance law of 2008 is an example of such a development. Thus, rather than being expanded to the unmarried population, it is more likely that the system of divorce splitting will be curbed or abolished.

A severe limitation of our investigation is that some of our results may be attributed to selection into a particular marital status. For example, healthier individuals are more likely to get married (Perelli-Harris *et al.*, 2018), and poor health and depression are strongly related to divorce. Divorce may lead to a (further) deterioration in health status, although the effect of divorce on health seems to be more negative for men than for women (Brüggmann, 2020). There are also feedback effects, as poor health lowers an individual's employment chances and earnings, whereas unemployment and low earnings reduce a person's chances of remarriage (Hiyoshi *et al.*, 2015). We accounted for standard confounders (such as education and children), but we could not account for health status, as we did not have good prospective measures for this variable. Thus, we were unable to disentangle fully the complex

interplay of health, employment, marital status and old-age security. However, examining these relationships would be a promising avenue for future research.

Data

This paper uses data from SHARE Waves 1, 2, 3, 4, 5, 6, 7 and 8 (DOIs: 10.6103/SHARE.w1.710, 10.6103/SHARE.w2.710, 10.6103/SHARE.w3.710, 10.6103/SHARE.w4.710, 10.6103/SHARE.w5.710, 10.6103/SHARE.w6.710, 10.6103/SHARE.w7.711, 10.6103/SHARE.w8cabetta.001), see Börsch-Supan *et al.* (2013) for methodological details. The SHARE data collection has been funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA No. 211909, SHARE-LEAP: GA No. 227822, SHARE M4: GA No. 261982, DASISH: GA No. 283646) and Horizon 2020 (SHARE-DEV3: GA No. 676536, SHARE-COHESION: GA No. 870628, SERISS: GA No. 654221, SSHOC: GA No. 823782), and by DG Employment, Social Affairs and Inclusion. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the US National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C), and from various national funding sources is gratefully acknowledged (see www.share-project.org).

Acknowledgements. This paper emanated from a paper published in German that used previous SHARE-RV data which included older cohorts (Kreyenfeld *et al.*, 2018). For detail comments on an earlier version of this paper, we thank Christina Boll. Thanks to Miriam Hils for language editing. All remaining errors are ours.

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Appendix

Table A1. Sample statistics

	All	Women	Men
<i>Percentages</i>			
Gender:			
Men	49	–	–
Women	51	–	–
Birth cohort:			
1935–1939	21	19	22
1940–1944	26	25	27
1945–1949	25	25	26
1950–1954	28	31	24
Education level:			
Low (ISCED 1–2)	14	22	6
Medium (ISCED 3–4)	62	63	61
High (ISCED 5–6)	24	15	33
Number of children:			
Childless	10	9	11
One child	18	16	20
Two children	32	32	32
Three and more children	22	24	20
Missing	18	19	17
Marital status:			
Married	75	74	77
Remarried	6	6	6
Single	3	2	5
Divorced	8	8	8
Widowed	8	11	5
Case numbers	1,760	895	865

Note: ISCED: International Standard Classification of Education.

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

Table A2. Distribution of total person-months (ages 14–66) by activity states, marital status and gender

	Men		Women	
	Married	Divorced	Married	Divorced
	<i>Percentages</i>			
Regular employment	65	55	41	52
Marginal employment	0	1	3	1
Education	6	6	3	5
Unemployment	2	6	2	4
Care (elderly and child care)	0	0	18	13
Retirement	6	7	6	9
Other (including military/community service)	5	3	1	1
Gaps	16	23	26	14
Total	100	100	100	100
Person-months	414,960	40,560	411,216	42,432

Notes: States are priorities by main activity. If a person is regularly employed and has a small child (and thus would receive additional pension credit for performing child care), the person is considered as regularly employed only (for details, see Stegmann, 2018).

Source: FDZ-RV, SHARE-RV (release 7.1.0), own estimates.

Cite this article: Kreyenfeld M, Schmauk S, Mika T (2023). The gender pension gap in Germany: is divorce a gender-equaliser? *Ageing & Society* 43, 2700–2720. <https://doi.org/10.1017/S0144686X21001513>