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Möhring, Katja; Weiland, Andreas

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Couples' life courses and women's income in later life – a multichannel sequence analysis of linked lives in Germany

Running Head: Couples' life courses and women's income

Katja Möhring, University of Bamberg

Email: katja.moehring@uni-bamberg.de, Address: University of Bamberg, Feldkirchenstr. 21,
96052 Bamberg, Germany

Andreas P. Weiland, University of Bamberg

Email: andreas.weiland@uni-bamberg.de, Address: University of Bamberg, Feldkirchenstr. 21,
96052 Bamberg, Germany

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Abstract

We examine how life courses of couples in East and West Germany are linked to women's income in later life using Multichannel Sequence Analysis. By applying a couple perspective, we overcome the individualistic approach in most previous research analyzing women's old-age income. Detailed monthly information on spouses' employment and earnings trajectories from age 20 to 50 for the birth cohorts 1925-1965 (N=2020) stems from SHARE-RV, a data-linkage of the administrative records of the German public pension insurance with the Survey of Health, Ageing and Retirement in Europe (SHARE). We identify seven clusters of couples' life courses and link them to women's later life absolute individual and relative household income using a cohort comparison to identify trends over time. While in older cohorts, women in male-breadwinner type clusters achieve the lowest, and those in dual-earner type couples the highest incomes, this relationship does no longer hold in younger cohorts. Here we identify a polarization in dual-earner as well as male-breadwinner type clusters. The former increasingly diverge into successful female-breadwinner constellations and those with both partners in marginalized careers. The latter polarize between persistent male-breadwinner constellations and those in which women increase their labor market engagement.

Key words: Employment history; Family; Germany; Life course; Sequence Analysis

Number of words: 8,748 including text, endnotes, and references

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Introduction

The relationship between women's life courses and their income in old age is ambiguous. On the one hand, women accumulate less pension rights and savings due to care interruptions and the persisting gender gap in earnings (Fasang, Aisenbrey, and Schömann, 2013; Möhring 2018; Sefton et al. 2011).

They are therefore often dependent on their partner's income in order to guarantee financial security in old age. Specialization in couples is one important determinant of—sometimes quite persistent—gender inequality in working life, incomes and wealth in Western societies (e.g., Hook 2010). On the other hand, along with the job decline in male-dominated industrial sectors and generally rising career insecurity, women's income contribution in couples is of growing importance to cope with instabilities in the household income (Nieuwenhuis, Van der Kolk, and Need 2017). Previous research investigating women's well-being in later life shows there is a strong link to their previous life course, especially employment and care trajectories (Möhring 2018; Sefton et al. 2011), and that this relationship is dependent on the country-specific institutional and societal context, for example predominant gender role patterns (Madero-Cabib and Fasang 2016; Möhring 2016). Yet it remains an open question as to how couples' interrelated careers and the division of labor over the life course are associated with women's well-being in old age. This question becomes especially relevant against the background of ongoing changes in predominant gender roles and increasing career insecurity for both genders.

Most previous research on women's old age income adopts an individualistic perspective, not considering the mutual interdependence of couples' life courses and the relevance of both partners' employment. However, previous research on women's employment decisions has highlighted the link to partnership constellation and their spouse's employment (Carriero, Ghysels, and van Klaveren 2009; Drobnič and Blossfeld 2004; Evertsson and Neramo 2007). Omitting the linked lives perspective means missing an important component of women's decision-making over the life course. Furthermore, the institutional structure in modern welfare states implicitly or explicitly relates to a certain division of labor in married couples. This holds true for those policies that operate during the working career as family and labor market policy, and the taxation system, as well as for those institutions that shape later life well-being, most importantly the pension system. Consequently, we argue that division of labor and joint decision-making in couples over their life courses is crucial to understanding women's financial autonomy in old age.

We therefore examine how work and care trajectories of couples in East and West Germany are linked to women's later life individual absolute income and relative income as a share of the household income, and address two research questions: 1) which joint employment life courses in couples emerge under

different institutional conditions? 2) How well do women fare financially in later life depending on their type of couple life course (“CLC” in the following)? To answer these questions, our study integrates a multi-actor analysis of life courses with an examination of later life incomes of women using a multichannel sequence analysis (MCSQA). Basis is the data-set SHARE-RV, a linkage of administrative records of the German public pension insurance and survey data from the Survey of Health, Ageing and Retirement in Europe (SHARE) that provides monthly information on employment and earnings for the age-span 20-50. Our sample comprises women from East and West Germany born between 1925 and 1962 and their spouses. Hence, we provide a comparison of different birth cohorts and of different regional contexts, namely the male-breadwinner oriented West Germany and the more gender-egalitarian East Germany, to understand the impact of divergent institutional settings and gender norms as well as of social and political change over time. Due to the focus on couples’ linked lives, we have to exclude divorced women and those with short marriage durations.

Theory and previous research

A number of studies have examined women’s life courses and income in old age. Two main conclusions can be drawn from this previous research. First, women’s old age income is highly dependent on their previous life course, especially their balancing between paid work and care tasks (Möhring 2018; Madero-Cabib and Fasang 2016; Sefton et al. 2011). Following the linked lives approach in life course sociology (Drobnič and Blossfeld 2004) and bargaining approaches in household economics (Himmelweit et al. 2013), the configuration of women’s work and family life depends not only on their own resources, but also on the joint decision-making and division of labor in couples. Therefore, the life course perspective on women’s old age income needs to be supplemented with a couple dimension. Second, comparative research shows that the relationship between the life course and later life well-being is dependent on the institutional context, especially the design of the pension system and the institutionalization of the work-family conflict. Institutional regulations explicitly or implicitly relate to or even give an advantage to certain work-care arrangements in couples and thereby influence individuals’ decision-making and chances to take up employment or increase their earnings in the later phase of their career (Möhring 2015; Dewilde 2012; Fasang, Aisenbrey, and Schömann 2013;

Struffolino, Studer, and Fasang 2016). In the following, we will first review the determinants of CLC, focusing on which joint CLC may emerge in the different and changing institutional settings of East and West Germany. Next, we will link this to women's financial situation in later life in terms of their individual absolute income and their relative income as share of the household income.

Determinants of couple life courses

Individual level: specialization and dynamics in couples' careers

Based on the idea of a complementation of partners' labor market behavior, couples 'negotiate' their work-care arrangement depending on their opportunity structure, which is defined on the individual level by partners' bargaining resources (Himmelweit et al. 2013). Previous research has demonstrated the relevance of the educational status in this context (Hofäcker, Stoilova and Riebling 2013; Visser and Fasang 2018). Initial differences in educational status between partners set the stage for spouses' further specializing on paid work or care. The division of paid and care work in couples then establishes a process of cumulative disadvantage: care-related employment interruptions imply less labor market experience and burdens for re-started labor market activity, and therefore result in lower subsequent earnings and fewer opportunities to obtain professional positions with gainful career ladders. These disadvantages on the labor market translate into an inferior bargaining position in the couple, which will further reinforce the unequal distribution of paid, and care work over the life course. Accordingly, employment possibilities in the late career phase are hampered if no or few job experiences exist (Muller, Hiekel and Liefbroer 2020; Visser and Fasang 2018). Therefore, we expect that *CLC correspond with the educational constellation in couples with male-breadwinner type CLC becoming more likely, the greater the educational advantage of the male partner* (Hypothesis 1).

However, the division of paid work and care may shift over the CLC, for example, due to changes in the institutional and normative incentive structure. These changes may alter the employment opportunities and preferences of men and women differently, and thereby, change the bargaining positions in couples. For example, Ebner et al. (2020) show that individuals' gender values adapt to changes in the institutional setting. In this sense, East and West Germany undergo divergent developments, with the reunification as central life-course event in East Germany as it implied the assimilation into the West German male-breadwinner oriented institutional structure. In order to

understand the impact of changes over time, we differentiate two cohorts in our analysis: women born between 1925 and 1950, and women born between 1951 and 1965. Figure 1 places these two cohorts in historical time and links them to developments in East and West Germany. We follow this timeline when describing the impact of institutions and their change over time on the configurations of CLC in the following.

“Figure 1: Institutional background of women’s labor market engagement in East and West Germany”

“*** Figure 1 here ***”

“Source: own illustration; based on Trappe et al. (2015) and Trappe (1996).”

Institutional and social context in East and West Germany

Welfare state policies relate to specific gender arrangements, and thereby reward certain work constellations in couples and penalize others. In this respect, the former socialist German Democratic Republic (GDR) and the West German Federal Republic (FRG) “(...) were at opposite ends of the spectrum of how they supported mothers of small children, with the aim in the East to keep women employed and in the West to discourage them from staying in the labor market” (Trappe 1996, p. 356). West Germany represented a male-breadwinner society promoting a traditional gendered division of tasks in couples (Struffolino et al. 2016), underpinned by several elements of institutional policy and structural conditions (Trappe, Pollmann-Schult, and Schmitt 2015). In family policy, the focus was on cash benefits and long leave periods for mothers, while public childcare remained largely underdeveloped in the pre-millennial decades (Gangl and Ziefle 2015). The marriage tax premium favors one-earner and one-and-a-half-earner, while it disincentivizes a return to higher working hours after one partner once changed to part-time employment (Bach, Haan, and Ochmann 2013).

In early post-war West Germany, wage levels for industrial workers were sufficient to provide a family livelihood and cultural norms were in favor of traditional male-breadwinner arrangements, resulting in a highly gendered division of paid and care work (Schäfer and Gottschall 2015). It was neither necessary for the economic security of the family nor normatively expected for middle-class women to be in

employment. Previous research shows that individuals' life course decisions mirror these patterns (Kühhirt 2012). Furthermore, West Germany exhibits a persistent motherhood penalty in respect of wages that cannot be fully explained by job characteristics and working hours (Gangl and Ziefle 2009). Therefore, we expect that *a stable specialization in couples over the life course with men focusing on paid work and women on care will be likely in West Germany* (Hypothesis 2).

Socialist East Germany promoted a dual-earner model by means of an extensive provision of all-day public childcare and further in-kind benefits for young families. Equal participation of men and women in the labor market was strongly promoted already in the founding years of the GDR. The state encouraged the participation of mothers in the labor market by providing possibilities for maternal leave periods and part-time work, later public childcare provision was expanded (Trappe 1996). The compressed wage structure, along with the reduction of food subsidies for low-income households in 1958 (Figure 1), meant that dual-earner couples were not simply an individual lifestyle choice, but de facto an economic necessity. Starting from the 1960s, more emphasis was put on building a highly qualified workforce. Women profited from educational expansion and their tertiary education in engineering and science was promoted. To further increase women's full-time labor market participation, there was an additional expansion of public all-day childcare from the 1970s onwards (Trappe, Pollmann-Schult, and Schmitt 2015). Consequently, we expect that *dual-earner couples are the dominant CLC constellation in East Germany* (Hypothesis 3).

Change in institutional and social conditions over time

Starting from at least the mid-1970s, women's participation in the labor force slowly increased in West Germany, albeit mostly in the form of part-time employment (Trappe, Pollmann-Schult, and Schmitt 2015). In the process of sectoral change towards a service society employment and wages in traditionally male-dominated industrial sectors declined, whereas female employment and women's occupational prestige increased (Härkönen, Manzoni, and Bihagen 2016). Consequently, in West Germany the incentives for female employment became contradictory: the welfare state continued to provide institutionalized disincentives for female employment and (indirectly) supported the traditional division of labor within married couples. Even in 1992, the duration of unpaid parental leave was extended to three years; de facto incentivizing long-term labor market exits of mothers (Figure 1). Women's gains

from educational expansion and employment growth in the female-dominated service sector, however, provide incentives for women's (restarted) labor market activity in the younger cohort of our study.

After reunification, the dual-earner model promoted and culturally accepted in East Germany was at odds with the institutional structure in the West that supported a male-breadwinner family. Imposing the West German institutional system on the East, the support for working mothers was cut back substantially. The number of childcare facilities was reduced, long leave periods for childcare and tax reductions for single-earner families were granted the same way as in West Germany. Furthermore, with the East German economy struggling and unemployment rising in the years after reunification, a reduction in the demand for female workers led to shrinking employment opportunities for women in East Germany. These changes become apparent in more part-time work and non-employment of mothers in East Germany. At the same time, the employment rates of women in West Germany increased, predominantly in part-time employment. Therefore, the employment of women in East and West Germany converged in the 1990s and 2000s (Liao and Fasang 2020; Simonson, Gordo, and Titova 2011), mirroring the contradiction between institutional incentives, values, and changing structural conditions. Based on these considerations, we expect that *in East and West Germany CLC in the younger cohort will show a tendency away from clear dual-earner or male-breadwinner type clusters, respectively, towards more heterogeneity in both regions* (Hypothesis 4).

The link of couples' life courses and women's income in later life

Our data covers individuals who are in the late phase of their working career before retirement as well as individuals in retirement receiving pension income. For the former, women's financial situation is more influenced by their current labor market situation, for the latter by the regulations embedded in the German pension system. The CLC may play a role for both. For the younger cohort who is not in retirement yet, women's earnings capacity at a certain point in time depends on their human capital accumulation which is in turn dependent on the previous and current labor divisions in couples (Muller, Hiekel and Liefbroer 2020). With respect to pension income, the couple's work-care arrangement directly links to woman's ability to accumulate pension rights.

The German public pension system is the main income source for older individuals in Germany; 90 percent of people older than 65 receive benefits from the public pension insurance (BMAS 2017). It covers all employees and workers in the private and public sectors, excluding civil servants and the self-employed, and is designed as a pay-as-you-go system with a high life course sensitivity (Leisering 2003). Individuals accumulate pension earnings points (EP) commensurate with the employment income throughout their working career, and these points are translated into public pension benefits at the time of retirement. In addition, the public pension insurance also grants specific entitlements that compensate to some degree for periods of reduced or non-employment due to family care or unemployment. Over the life course, these top-up pension rights however cannot reach the level of EP related to paid employment (Leitner 2001). As a result, women's incomes in later life are higher, the more they engaged in paid work over their life course, while having children and assuming unpaid care tasks narrows opportunities to accumulate pension rights in contribution-based systems and savings in occupational and private pensions (Möhring 2018; Sefton et al. 2011). Therefore, we expect *women's absolute and relative old age incomes will be lowest in male-breadwinner type CLC, and highest in dual-earner type CLC* (Hypothesis 5a); and *this relationship will be more pronounced in the older cohort* (Hypothesis 5b). In the younger cohort, we expect to observe *increased heterogeneity in absolute incomes in male-breadwinner and dual-earner type CLC* (Hypothesis 6) as a greater differentiation of incomes and women's careers evolves in the East German transformation process and in West Germany due to women's gains from educational expansion and their enhanced employment opportunities. For the same reasons, *women's relative incomes in male-breadwinner type CLC will have improved in the younger cohort* (Hypothesis 7).

Data and method

We base our analyses on SHARE-RV data (Release 7.0.0.), which links information from the German sample of the Survey of Health, Ageing and Retirement in Europe (SHARE) with the administrative records ('Versichertenkontenstichprobe') collected by the German Pension Insurance (Börsch-Supan et al. 2013; Forschungsdatenzentrum der Rentenversicherung and Max-Planck-Institut für Sozialrecht und Sozialpolitik 2019). This data set combines monthly information on respondents' life courses, including

employment and earnings, with detailed survey information on their income in old age. We apply a multi-actor perspective to couples' life courses, merging data of married women aged 50 or older (birth cohorts 1925-1965) from SHARE waves 4 to 7 (2011-2017) with information on their spouse living in the same household. The data include 1593 women currently married and living together with their spouse with 1517 out of those having an available partner linkage. Figure SA.4 and Table SA.3 (see Appendix A in supplementary data) provide summary statistics and employment trajectories of never married ($n=70$), divorced ($n=182$) and widowed ($n=314$) women as a point of reference.

The administrative data of the pension insurance record respondents' monthly employment status and associated pension earnings points from the year individuals turn 14 until the year they turn 65. We construct couples' employment trajectories for the core labor market active phase between age 20 and 50, i.e., biography months 73 to 443; the upper limit of 50 years is set to allow for sequences of equal length and the comparability of all trajectories with the youngest sample members being 50 years old. Since our analysis builds on the prerequisite that couples have a linked life course, we exclude 33.42 percent of couples, who were either not married by the age of 40 or where a spouse has been previously divorced. Overall, this leaves us with a sample of 1010 couples.

In a first step, we identify typical patterns of couples' careers utilizing MCSQA (Gauthier et al. 2010). MCSQA treats couples' careers as sequences consisting of two channels, which represent spouses' respective employment trajectories. We characterize spouses' employment and earnings trajectories on a monthly basis using the information on individuals' pension earnings points (EP) from the statutory pension register as described above, however, excluding top-up pension rights for childcare and unemployment as they do not reflect individual employment income and may lead to a misinterpretation of the earnings ratio in couples. EP provide us with an indicator of an individual's personal income and extent of employment since they are awarded according to an individual's pension contributions which are linked to the level of their earnings. We calculate relative monthly earnings by setting the individual pension earnings points in relation to the mean earnings points of all persons covered by the public pension insurance in a given year; relative earnings are thereby also standardized over time. One EP is thus equivalent to an annual earned income at the level of the mean income of all persons paying contributions in a specific year (the insured community, 'Versichertengemeinschaft'). For example, 0.5

EP are granted if a person achieves half of the mean wage, 1.5 EP for someone earning 50 percent more than the mean, and so on. Based on this information, we operationalize seven categories that refer to the employment status and the relative earnings for those in dependent employment. The first four different employment statuses are ranked according to these relative earnings:

1. Category 1 is employment with 60 percent or less of average pension earnings points, typically part-time or marginal employment.
2. Category 2 is employment with below-average pension earnings points (60–100 percent).
3. Category 3 indicates employment with average to above-average pension earnings points (100–150 percent).
4. Employment associated with more than 150 percent of average pension earnings points is contained in Category 4.

The other three categories include those statuses not related to dependent employment. The records of the public pension insurance provide us with information on periods of long-term sickness/disability as well as unemployment and care episodes up to a certain length, while they include no information on those periods that are not covered by the insurance. This is the case if unemployment or care periods exceed a certain length, as well as for civil servants and the vast majority of the self-employed.

5. Category 5 includes ‘other’ statuses, which are periods of sickness or unemployment, as well as, in a few cases, marginal self-employment.
6. Category 6 ‘no information’ indicates that in a given month no pension insurance record is available; this applies to civil servants, who are organized in a separate pension system, the self-employed, who mostly opt out of the public pension insurance, or when respondents have long-term exited the labor market. Based on the additional survey information from SHARE on the type of old age income and main previous employment, we can conclude which of these states was predominant in an individual’s ‘no information’ period; hence, we include this information in the cluster description in the next section.¹
7. Category 7 ‘care’ indicates child care episodes that are recorded by the public pension insurance until the youngest child reaches the age of 10.

MCSQA assesses the similarity of sequences and their respective channels through a matching algorithm (Pollock 2007). Sequences are subject to a pairwise comparison along two channels, i.e. the employment and earnings statuses of a woman and her partner in a given month. We use empirical transition probabilities to define the cost matrix (Piccarreta and Billari 2007) and a hierarchical cluster analysis utilizing a Ward algorithm.² Goodness-of-fit indicators (Figure SA.1, Appendix A) and the distributions of key biographical episodes are used to decide on the number of clusters. Sequence analysis was performed with the TraMineR package for R (Gabadinho et al. 2011).

We apply multivariate OLS regressions with the dependent variable women's individual income in EUR (mean= €11,784.79, SD= €9,855.12; Table 1 and Figure SA.2 in Appendix A). The income variable is an additive measure of respondents' annual net income from dependent and self-employment, public and occupational pension schemes, disability and sickness pension and benefits, unemployment benefits and insurance, and social assistance. Regression analyses are performed separately by pensioner status and cohort: pensioners from the birth years 1925-1950 (n=489), and non-pensioners born 1951-1965 (n=393). Therefore, in the regression analysis, the younger birth cohort only includes those with non-pension incomes (earnings from (self-)employment or non-pension public benefits). The older cohort comprises only those who are recorded as recipients of public pension benefits. Further, we conduct analyses for (non-)pensioner couples with women's relative income share within the couple (mean= 0.33, SD=0.20) as dependent variable.

In the multivariate regressions, the main independent variables are the couples' life course clusters. We further control for several covariates: women's educational attainment ISCED 1997 with low (ISCED 1/2), medium (ISCED 3/4), high (ISCED 5/6); women's relative education (women's educational attainment divided by partner's, with 1 representing equal statuses);³ age gap between spouses, women's age at marriage; number of children; the percentage of childcare in women's life courses; East or West Germany; activity status pensioner or in employment; and SHARE wave. We further run sensitivity analyses controlling for the yearly average of pension earning points in order to examine the additional contribution of CLC clusters for women's old age income and the role of income sources not associated with public pension contributions (see Table B.1. in Appendix B of supplementary data). Table 1 provides means and standard deviations for all variables.

[Table 1 here]

Results

Clusters of couples' life courses and their composition

Multichannel sequence and cluster analysis yield seven distinct clusters of couples' life courses; the associated state distribution plots are depicted in Figure 2 (women left-hand column; partners right-hand column; sequence index plots available in Figure SA.3 in Appendix A). Based on the respective extent of the labor market engagement of women and their partners, we categorize the clusters into three male-breadwinner, two one-and-a-half-earner, and two dual-earner couples. Within these categories, the clusters share certain characteristics, especially with respect to the duration and timing of care-related employment interruptions in women's careers, but also exhibit some variation. Table 2 gives an overview of the cluster characteristics; Table SA.1 in Appendix A (see supplementary data) provides more detailed information on the average status durations.

[Table 2 here]

“Figure 2: State distribution plots of couples' life course clusters”

“*** Figure 2 here ***”

“Note: unabbreviated cluster names are 1. Standard male-breadwinner, 2. Upward male-breadwinner, 3. Non-employee male-breadwinner, 4. Atypical one-and-a-half-earner, 5. Standard one-and-a-half-earner, 6. Polarized dual-earner, 7. Female-breadwinner tendency. Source: own estimations based on SHARE-RV, Release 7.0.0.”

Male-breadwinner clusters

Clusters 1-3 belong to the group of male-breadwinner types and predominantly contain couples from West Germany while the proportion of East Germans is very low (maximum of 4 percent in cluster 2). The proportion of younger cohort members is about average to slightly below-average. Women's employment histories in male-breadwinner-type clusters are rather homogeneous as they mainly enter an extensive, childcare-related employment interruption early, spanning between 25 percent (cluster 3) and 40 percent (cluster 1) of the observation period. Furthermore, women's biographies in these clusters are rather static with only around 11 transitions compared to a sample mean of 16 transitions. The main

variation between women's biographies stems from their re-entry statuses after care-related non-employment. In cluster 1 (n=188) women re-enter the labor market late in the second half of their biographies through employment associated with less than 60 percent of average earnings, indicating part-time or marginal employment. Therefore, we label this cluster as "standard male-breadwinner". Re-entry patterns in cluster 2 (n=199) and 3 (n=138) are more heterogeneous: women in cluster 2 have more substantial proportions of employment with 60-100 percent of average earnings (22 percent of the life course). Men's employment trajectories vary more between clusters than women's with respect to earnings and type of employment. Men in cluster 1 engage continuously in employment associated with average wages, whereas careers of men in cluster 2 are characterized by upward mobility and high wages of more than 150 percent of the average. Partners in cluster 3 are predominantly engaging in activities not recorded by the public pension insurance, indicating civil service or self-employment. Therefore, we label cluster 2 as "upward male-breadwinner", and cluster 3 as "non-employee male-breadwinner".

With respect to spouses' educational constellation in male-breadwinner clusters, we observe pronounced cohort differences (see Figure 3 for the average proportion of women and men who received tertiary education by cluster and cohort). In the older cohort, the share of women with tertiary degree is rather small, ranging from 5 percent in cluster 1 to 14 percent in the upward male-breadwinner cluster, and the gap to men's share of tertiary education is larger than in the one-and-a-half-earner and dual-earner clusters – apart from the standard male-breadwinner cluster with a low share of tertiary qualification among both genders. In the younger cohort, the proportion of tertiary-educated women in the upward- and non-employee male-breadwinner clusters has strongly increased, being close to or even higher or than in the one-and-a-half-earner and dual-earner clusters. Conversely, in the standard male-breadwinner cluster, the educational gap between spouses has widened in the younger cohort, since the proportion of men with tertiary education rose at a higher rate.

"Figure 3: Proportion of female and male partners with tertiary education across cluster and cohort"

*** Figure 3 here ***

"Note: unabbreviated cluster names are 1. Standard male-breadwinner, 2. Upward male-breadwinner, 3. Non-employee male-breadwinner, 4. Atypical one-and-a-half-earner, 5. Standard one-and-a-half-earner, 6. Polarized dual-earner, 7. Female-breadwinner tendency. Source: own estimations based on SHARE-RV, Release 7.0.0."

One-and-a-half-earner clusters

The labor market trajectories of couples in clusters 4 (n=95) and 5 (n=86) exhibit characteristics of both male-breadwinner and dual-earner couples. In cluster 4, both spouses display atypical careers. In women's employment trajectories, 'no information' periods are most prevalent (43 percent of the life course) indicating self-employment, civil service, and long-term labor market exits. Additional analyses of income sources with SHARE-data show that women in cluster 4 exhibit the highest average of incomes from self-employment. Therefore, self-employment rather than childcare related labor market exits is predominant in women's 'no information' periods in cluster 4 and leads us to classify this cluster as one-and-a-half-earner rather than male-breadwinner. Cluster 4 contains the highest share of women born 1951-1965 (69 percent), but a below-average share of East German women 8 percent). Men's trajectories are characterized by high career discontinuity and an increasing share of the state 'other', which indicates unemployment and sickness/disability (24 percent). Therefore, we label cluster 4 as "atypical one-and-a-half-earner". Women's life courses in cluster 5 show a mean of 16 transitions due to shorter childcare-related employment interruptions, which amount to 10 percent of the trajectories. Instead, we observe a higher degree of labor market engagement, yet linked to below-average earnings. Overall, cluster 5 exhibits a more equal labor market engagement of spouses than cluster 4. Partners in this cluster achieve average wages in continuous employment, effectively resembling the standard biographies in cluster 1. Therefore, we label cluster 5 as "standard one-and-a-half-earner". About 20 percent of couples in this cluster are from East Germany, which is close to the sample mean.

Dual-earner clusters

Clusters 6 and 7 represent different dual-earner types and encompass predominantly East German couples at proportions of 80 percent and 53 percent, respectively. Women's trajectories in these clusters are characterized by a strong labor market attachment and short and fragmented childcare interruptions which cover a mere 8 percent (cluster 6) and 4 percent (cluster 7) of the careers observed. In cluster 6 (n=244), spouses' employment careers are highly similar and mostly consist of employment associated with 60-100 percent of average earnings. Most notably, trajectories of men and women in this cluster exhibit a high degree of volatility with the maximum number of transitions for the sample (28 for women

as opposed to a mean of 16). Further, for both partners we observe an increasing polarization over time, which is especially apparent in the last quarter of the observation window: the trajectories differentiate into episodes associated with rising incomes on the one hand, and episodes of unemployment and long-term sickness/disability on the other. This is an indication of the dualization into upward mobility or precariousness of employment trajectories in East Germany following German reunification. Therefore, we label this cluster as “polarized dual-earner”. Cluster 7 (n=60) is the smallest group and pools exceptional couples’ careers. Childcare-related employment interruptions among women are uncommon and extremely short. Over their career, women continuously achieve average (41 percent) and above-average earnings (21 percent), whereas partners’ careers are often discontinuous and display on average lower earnings. Therefore, cluster 7 represents a special case of a dual-earner type and is labeled as “female-breadwinner tendency”.

In both cohorts, the differences in educational status between spouses are smaller in the one-and-a-half-earner and dual-earner type clusters than in the male-breadwinner clusters (Figure 3). In the older cohort, the largest gender gap exists in the atypical one-and-a-half-earner cluster with 17 percentage points, followed by the standard one-and-a-half-earner and the polarized dual-earner clusters with around 6 percentage points, whereas in the female-breadwinner tendency cluster, equally 48 percent of both partners have attained tertiary education. In the younger cohort, the gender gap reduces in the atypical one-and-a-half-earner cluster and remains constant in the standard one-and-a-half-earner cluster, so that the gap amounts to around 7 percentage points in both clusters. In the polarized dual-earner cluster, the gender gap closes in the younger cohort, and in the female-breadwinner tendency cluster, women even surpass men by 29 percentage points.

When we view these results in the light of our hypotheses, we arrive at the following conclusions. First, our results provide mixed evidence for Hypothesis 1: the CLC clusters indeed mirror the educational constellation of couples in the older cohort, however, less so in the younger cohort. The educational advantage of male partners is more pronounced in male-breadwinner clusters with the exception of the spouses’ homogeneously low share of tertiary education in the standard male-breadwinner cluster. In contrast, spouses’ education is more similar in the dual-earner and one-and-a-half-earner clusters, apart from a larger gender gap among older cohort members in the atypical one-and-a-half-earner cluster. For

younger cohort members, who were more affected by the changes induced by reunification and educational expansion, the link of CLC cluster and educational constellation becomes more ambiguous. Women in the female-breadwinner tendency cluster, but also those in the upward- and non-employee male-breadwinner clusters benefitted from educational expansion, which however did not close the gender gap as partners experienced a similar increase.

In line with Hypotheses 2 and 3, male-breadwinner clusters are dominated by West Germans, dual-earner couples are predominantly East German. The share of East German women in the standard one-and-a-half-earner cluster is slightly below average. Almost all clusters consist of equal proportions of the two birth cohorts 1925-50 and 1951-65. The exceptions are the female-breadwinner tendency cluster and the atypical one-and-a-half-earner cluster, of which especially the latter exhibit substantially higher proportions of younger cohort members. Therefore, Hypothesis 4 is not supported as we find a higher tendency of the younger cohort to group in the more male-breadwinner leaning atypical one-and-a-half-earner cluster, but not in the more egalitarian standard one-and-a-half-earner. The female-breadwinner tendency cluster predominantly includes East German couples with women economically benefitting from the German reunification in the second halves of their careers. We will now turn to analyze to what extent these patterns are mirrored in women's old age incomes.

Women's old age incomes

Table 3 depicts regression models on women's individual annual income for pensioners from the older and non-pensioners from the younger cohort (Table 3). Model 1 includes control variables along with the educational ratio in couples as an indicator of spouses' initial status differences. In Models 2 and 3 we add couples' life course clusters with and without controlling for spouses' relative education. Model 4 controls for the number of children and the relative proportion of the observation period women spent providing childcare.

[Table 3 here]

The clusters of couples' life courses prove to be a significant predictor of women's absolute income in the older, pensioner cohort (Models 2a-4a): the highest incomes are achieved by women in dual-earner and one-and-a-half-earner clusters, the lowest in male-breadwinner couples. Accordingly, women in the

female-breadwinner tendency cluster exhibit the highest absolute incomes in later life with about €9,553 ($p < 0.001$) more than the reference category, followed by the standard one-and-a-half-earner cluster (€7,347; $p < 0.001$) and the polarized dual-earner cluster (€5,585; $p < 0.001$). Women's incomes in male-breadwinner arrangements, and in the atypical one-and-a-half-earner cluster, are in comparison substantially lower. Still women in the upward male-breadwinner cluster (€901; $p < 0.05$), non-employee male-breadwinner cluster (€1,195; $p < 0.01$) and the atypical one-and-a-half-earner cluster (€1,505; $p < 0.01$) have significantly higher incomes than those in the reference cluster of standard male-breadwinners (Model 3a). Controlling for the number of children and the proportion of childcare in Model 4a renders differences between the standard-, upward-, non-employee male-breadwinner, and atypical one-and-a-half-earner clusters insignificant, whereas the relevance and ranking of the standard one-and-a-half-earner, polarized dual-earner, and female-breadwinner tendency clusters mostly remains stable. Accordingly, the income advantage of women in the former group of clusters compared to the standard male-breadwinner cluster is mainly due to shorter childcare interruptions, while women in the latter group of clusters achieve higher incomes due to their better earnings and employment quality over the life course. Results for women's relative incomes (Table A.2, Model 1a-4a) depict a similar ranking of CLC clusters; women with higher absolute incomes also hold a greater share of the household income, with the exception of women in the upward male-breadwinner cluster exhibiting a significantly smaller income share than the reference category.

While the clear income advantage of women belonging to dual-earner clusters as compared to the male-breadwinner clusters generally persists in the younger, labor market active cohort, we find evidence in favor of a polarization within all three types of CLC clusters (Table 3, Models 2b-4b). First, women's incomes in the male-breadwinner clusters have diverged (Model 2b): while the absolute income of women in the upward male-breadwinner cluster is at a similarly low level to that of the reference category of standard male-breadwinner cluster, women in the non-employee male-breadwinner cluster achieve incomes around €3,837 higher ($p < 0.001$). The same trend applies to one-and-a-half-earner clusters. In the younger cohort, women's incomes in the atypical one-and-a-half-earner cluster are not even significantly different from the reference cluster, and after accounting for the number of children and proportion of childcare, incomes are even significantly lower (-€2,327; $p < 0.001$). In contrast, the

income situation of women belonging to the standard one-and-a-half-earner cluster has not changed substantially across cohorts. Again, women in this cluster exhibit the second highest incomes, however the income gap to the reference category has decreased to €4,951 ($p < 0.001$) (Model 4b). The polarization trend appears likewise in the dual-earner clusters. After controlling for the duration of care episodes (Model 4b), the income of women in the polarized dual-earner cluster is not significantly different from the reference of standard-male-breadwinner cluster. In contrast, the incomes of women in the female-breadwinner tendency cluster remain the highest in the younger cohort (€14,765, $p < 0.001$).

We find no evidence in favor of higher relative incomes of women in the younger cohort (Table A.2, Model 2b). Differences between the standard male-breadwinner, non-employee male-breadwinner, and atypical one-and-a-half-earner clusters are not significant, whereas women in the upward male-breadwinner cluster hold a 6 percentage points lower share than the reference of standard male-breadwinner cluster 1 ($p < 0.001$). Women in the standard one-and-a-half-earner and polarized dual-earner clusters exhibit a 7 percentage point higher income share than the reference category ($p < 0.001$), while women in the female-breadwinner tendency cluster hold the largest income share 22 percentage points higher than in cluster 1 ($p < 0.001$).

To sum up, the regression results for women's absolute and relative incomes provide some support for our hypotheses. In the older, pensioner cohort, we did indeed observe the pattern expected in Hypothesis 5a of women's absolute and relative incomes increasing linearly from male-breadwinner to dual-earner constellations with low incomes in male-breadwinner clusters and the atypical one-and-a-half-earner cluster, medium incomes in standard one-and-a-half-earner cluster and polarized dual-earner cluster, and highest incomes in the female-breadwinner tendency cluster. In line with Hypotheses 5b and 6, the link of CLC and women's absolute incomes indeed is more ambiguous and incomes are more heterogeneous in the younger, labor market active cohort. We observe a polarization of women's incomes *within* the male-breadwinner, one-and-a-half, and dual-earner type clusters in the younger cohort as compared to the older cohort. Furthermore, we find no general enhancement of women's relative income position in the younger cohort—also not in the male-breadwinner type clusters as expected in Hypothesis 7. Consequently, even for women in clusters with higher absolute incomes in the younger, labor market active cohort, their spouses' situation improved similarly.

Conclusion

Previous research has extensively studied how women's life courses are related to different forms of their well-being in old age. The life course of their spouse, which represents an important component of women's opportunity structure and decision-making over their life course, has been widely disregarded so far. Our study is the first to integrate a linked lives perspective into the analysis of women's income situation in old age, drawing on a unique data source of combined survey and administrative information. On the basis of MCSQA, we identified seven clusters of couples' life courses for the birth years 1925 to 1965 in East and West Germany. These clusters were categorized into three male-breadwinner, two one-and-a-half-earner, and two dual-earner type couples.

Taken together, our results reveal polarization of employment histories and increased inequality in younger, labor market active cohorts as compared to older pensioner cohorts. This applies not only to dual-earner couples, but also to male-breadwinner constellations. Dual-earner clusters polarize along the lines of upwards and downwards mobility. As these constellations are predominant in East Germany, this polarization is mainly a consequence of the extensive system transformation. While women in the female-breadwinner tendency cluster feature even more successful careers and higher incomes in the younger cohort, we observed a precarization in the polarized dual-earner cluster with increasingly discontinuous employment trajectories after German reunification. Male-breadwinner clusters polarize between persistent male-breadwinner constellations and those in which women increase their labor market engagement in the younger cohort. The non-employee male-breadwinner cluster is a 'male-breadwinner light' type in the younger cohort with more homogamous couples as women take advantage of their enhanced educational achievements. In contrast, women in the upward male-breadwinner cluster specialize on care tasks also in the younger cohort and consequently cannot achieve higher old age incomes despite gains in educational attainment. This applies even more to women in the atypical one-and-a-half earner cluster, who cannot translate their gains in educational status in better incomes in the younger cohort, but fall behind women in most male-breadwinner clusters.

Reasons why higher educational qualifications of women do not go together with adaptations in their labor market behavior might be manifold. In West Germany, even the members of the younger cohort still

faced an underdeveloped public childcare infrastructure coupled with persistent conservative norms regarding the employment of mothers. Another reason might be the relevance of educational institutions as partner market: educational qualifications might not necessarily be the manifestation of increased career orientation, but rather function as a signal in the partner market. Finally, the lower heterogeneity in women's incomes in the older cohort might also stem from redistributive elements integrated in the German public pension which make pension incomes more equal than labor market earnings.

When we place our results into the larger context of comparative research in this area, we arrive with the following conclusions. Previous research shows a strong consistency of educational status, working career characteristics, and women's later individual income. For West Germany, Fasang et al. (2013) and Sefton et al. (2011) show that the more (full-time) employment the higher the later income. In contrast, Dewilde (2012) arrives with mixed results regarding the relevance of women's employment history for later household income. Our study adds to this, first, by integrating the individual and the household perspective, second, by including younger birth cohorts in the analyses, and finally, by analyzing the impact of crucial turning points as the system transformation in East Germany. With this, we can show that initial educational status and the educational constellation in the couple are not unambiguously related to the subsequent division of paid and care work in the couple, and do not pre-determine women's later income position, especially in the younger birth cohort in our study. Consequently, educational status does not always translate into higher incomes later on when women do not adjust their career behavior accordingly. Our results are partly in line with Liao and Fasang (2020), who show a trend towards more gender equality in labor division in West Germany. However, according to our results, the more gender egalitarian labor market participation is not distributed equally among couples and is not mirrored by equal gains in women's later life income position in couples.

Furthermore, we can show that couples may depart from their initial work-care constellation, for example, due to macro-level disruptions as the German reunification, or new employment opportunities arising from economic change. These changes and turning points alter, and polarize, the further course and outcomes of CLC—yet, always interacting with individual agency. Consequently, our study shows in accordance with life course theory that institutional and normative conditions interact with individual ambition and behavior in determining women's career possibilities and outcomes. While women in East

Germany initially had more favorable conditions to pursue a career, this has changed after reunification when success became more dependent on personal ambitions and the willingness to be regional mobile (Gosch 2003; Reichelt and Abraham 2017). Increased labor force participation and upward mobility of women can also be observed in the West—interestingly especially in the “non-employee male-breadwinner” cluster where both spouses have higher shares in civil service or self-employment. However, persistent gender norms and unequal taxation limit women’s ambitions often to part-time or low-income jobs (Bach et al. 2013).

Our analysis has several limitations. The number of cases for some less common life course patterns are low as we had to restrict our sample to observations where consent had been given for data linkage, partner information was available, and the marriage was of sufficient duration. We nevertheless chose to portray small clusters if they represented meaningful social phenomena. We cannot provide any generalizations for couples with atypical marital trajectories, divorced or widowed women. Divorced and single women achieve on average higher individual old age incomes than married and widowed women in West Germany, while no relationship between family status and income exists for older women in East Germany (Kreyenfeld et al. 2018); hence, our results tend towards the lower bound of West German women’s incomes. Furthermore, the life course data stemming from the administrative records of the German public pension insurance excludes some employment statuses such as civil service. Here, we were able to make assumptions on the nature of these episodes based on the survey information from SHARE. We do believe that using administrative records to reconstruct couples’ biographies has certain advantages given that retrospective survey information is biased by recall error (Kreyenfeld and Bastin 2016). Furthermore, the data does not include information on gender ideologies, which however might be relevant for life course decisions (Nitsche and Grunow 2016). Finally, we focused on the relationship of CLC and women’s later life income in this study, including husbands’ income only indirectly in the measure of relative income. Further research is necessary examining the role of CLC for men’s income.

Notes

- (1) For a subsample of observations relating to people already interviewed in SHARE wave 3 (SHARELIFE), we compared the employment statuses from the administrative pension data with the employment statuses from retrospective life course interviews. These analyses support the conclusions drawn from the types of old age income.
- (2) We tested several matching algorithms and cost regimes with rather similar results: Dynamic Hamming Distances produced clusters rather similar to those depicted in the Results section, as did the application of an Optimal Matching algorithm with constant costs of 1 for substitutions and 2 for insertions and deletions. We chose the Optimal Matching algorithm with a data-driven cost matrix because it provided the lowest intra-cluster heterogeneity.
- (3) For the relative measure, we linearize education by utilizing the average years of education associated with each ISCED 1997-level in East and West Germany. This approach further accounts for the distinct educational systems and adjusts for potential measurement errors (Schneider 2016).

References

- Bach, S., Haan P. and Ochmann, R. (2013). Taxation of Married Couples in Germany and the UK: One-Earner Couples Make the Difference, *International Journal of Microsimulation*, 6, 3–24.
- Becker, G. S. (1985). Human Capital, Effort, and the Sexual Division of Labor, *Journal of Labor Economics*, 3, 33–58.
- Börsch-Supan, A., Brandt, M., Hunkler, C., Kneip, T., Korbmacher, J., Malter, F., Schaan, B., Stuck, S. and Zuber, S. (2013). Data Resource Profile: The Survey of Health, Ageing and Retirement in Europe (SHARE), *International Journal of Epidemiology*, 42, 992–1001.
- Bundesministerium für Arbeit und Soziales (2017). Alterssicherung in Deutschland 2015 (ASID 2015) - Tabellenband 3: Deutschland. <https://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/Forschungsberichte/fb-474d-alterssicherung-deutschland-2015.pdf>.
- Carriero, R., Ghysels, J., and van Klaveren, C. (2009). Do Parents Coordinate Their Work Schedules? A Comparison of Dutch, Flemish, and Italian Dual-Earner Households. *European Sociological Review*, 25(5), 603–617.
- Dewilde, C. (2012). Lifecourse determinants and incomes in retirement: Belgium and the United Kingdom compared, *Ageing and Society*, 32, 587–615.
- Drobnič, S., and Blossfeld, H.-P. (2004). Career patterns over the life course: Gender, class, and linked lives. From Inequality. Vol. 21 Kalleberg, A. L., Morgan, S. L., Myles, J. and Rosenfeld, R. A. (Eds.), 139–64, Amsterdam: Elsevier JAI.
- Ebner, C., Kühhirt, M. and Lersch, P. (2020). Cohort Changes in the Level and Dispersion of Gender Ideology after German Reunification: Results from a Natural Experiment, *European Sociological Review*, online first.
- Evertsson, M. and Neramo, M. (2007). Changing Resources and the Division of Housework: A Longitudinal Study of Swedish Couples, *European Sociological Review* 23, 455–70.
- Fasang, A. E., Aisenbrey, S. and Schömann, K. (2013). Women's Retirement Income in Germany and Britain, *European Sociological Review*, 29, 968–80.

- Forschungsdatenzentrum der Rentenversicherung, Max-Planck-Institut für Sozialrecht und Sozialpolitik (2019). SHARE-RV: Release version: 7.0.0. DOI: 10.6103/SHARE.SHARE-RV.700
- Gabadinho, A., Ritschard, G., Müller, N. S. and Studer, M. (2011). Analyzing and Visualizing State Sequences in R with TraMineR, *Journal of Statistical Software*, 40, 1–37.
- Gangl, M. and Ziefle, A. (2009). Motherhood, Labor Force Behavior, and Women’s Careers: An Empirical Assessment of the Wage Penalty for Motherhood in Britain, Germany, and the United States, *Demography*, 46, 341–69.
- Gangl, M. and Ziefle, A. (2015). The Making of a Good Woman: Extended Parental Leave Entitlements and Mothers’ Work Commitment in Germany, *American Journal of Sociology*, 121, 511–63.
- Gauthier, J.-A., Widmer, E. D., Bucher, P. and Notredame, C. (2010). Multichannel Sequence Analysis Applied to Social Science Data, *Sociological Methodology*, 40, 1–38.
- Gosch, S. (2003). Ergebnisse der sächsischen Wanderungsanalyse, in: *Statistik in Sachsen*, pp. 60-62.
- Härkönen, J., Manzoni, A. and Bihagen, E. (2016). Gender inequalities in occupational prestige across the working life: An analysis of the careers of West Germans and Swedes born from the 1920s to the 1970s, *Advances in Life Course Research*, 29, 41–51.
- Himmelweit, S., Santos, C., Sevilla, A., and Sofer, C. (2013). Sharing of Resources Within the Family and the Economics of Household Decision-making, *Journal of Marriage and Family*, 75, 625–39.
- Hofäcker, D., Stoilova, R. and Riebling, J. R. (2013). The Gendered Division of Paid and Unpaid Work in Different Institutional Regimes: Comparing West Germany, East Germany and Bulgaria, *European Sociological Review*, 29, 192–209.
- Hook, J. L. 2010. “Gender Inequality in the Welfare State: Sex Segregation in Housework, 1965–2003.” *American Journal of Sociology* 115 (5): 1480–1523.
- Kühhirt, M. (2012). Childbirth and the Long-Term Division of Labour within Couples: How do Substitution, Bargaining Power, and Norms affect Parents' Time Allocation in West Germany?, *European Sociological Review*, 28, 565–82.

- Kreyenfeld, M. and Bastin, S. (2016). Reliability of Union Histories in Social Science Surveys: Blurred Memory, Deliberate Misreporting, or True Tales?, *Advances in Life Course Research*, 27, 30–42.
- Kreyenfeld, M., Mika, T., and Radenacker, A. (2018). Der Gender Pension Gap in Ost- und Westdeutschland: Welchen Einfluss hat eine Scheidung auf die Alterssicherung?, *Sozialer Fortschritt*, 67, 973–996.
- Leisering, L. (2003). Government and the life course. From *Handbook of the Life Course*, Mortimer, J. T. and Shanahan, M. J. (Eds.), 205–25, Boston, MA: Springer US.
- Leitner, S. (2001). Sex and Gender Discrimination Within EU Pension Systems, *Journal of European Social Policy*, 11, 99–115.
- Liao, T. F. and Fasang, A. E. (2021). Comparing Groups of Life-Course Sequences Using the Bayesian Information Criterion and the Likelihood-Ratio Test, *Sociological Methodology*, 51, 44–85.
- Madero-Cabib, I. and Fasang, A. E. (2016). Gendered work–family life courses and financial well-being in retirement, *Advances in Life Course Research*, 27, 43–60.
- Möhring, K. (2015). Employment Histories and Pension Incomes in Europe. *European Societies*, 17, 3–26.
- Möhring, K. (2016). Life course regimes in Europe: Individual employment histories in comparative and historical perspective. *Journal of European Social Policy*, 26(2), 124–139.
- Möhring, K. (2018). Is there a motherhood penalty in retirement income in Europe? The role of lifecourse and institutional characteristics. *Ageing & Society*, 38(12), 2560–2589.
- Muller, J.S., Hiekel, N. and Liefbroer, A. (2020). The Long-Term Costs of Family Trajectories: Women’s Later-Life Employment and Earnings Across Europe, *Demography*, 57, 1007–1034.
- Nieuwenhuis, R., van der Kolk, H. and Need, A. (2017). Women’s earnings and household inequality in OECD countries, 1973–2013, *Acta Sociologica*, 60, 3–20.
- Nitsche, N. and Grunow, D. (2016). Housework over the Course of Relationships: Gender Ideology, Resources, and the Division of Housework from a Growth Curve Perspective, *Advances in Life Course Research*, 29, 80–94.

- Piccarreta, R. and Billari, F. C. (2007). Clustering work and family trajectories by using a divisive algorithm, *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 170, 1061–78.
- Pollock, G. (2007). Holistic trajectories: a study of combined employment, housing and family careers by using multiple-sequence analysis. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 170, 167–183.
- Reichelt, M., and Abraham, M. (2017). Occupational and Regional Mobility as Substitutes: A New Approach to Understanding Job Changes and Wage Inequality. *Social Forces*, 95, 1399–1426.
- Schäfer, A. and Gottschall, K. (2015). From wage regulation to wage gap: How wage-setting institutions and structures shape the gender wage gap across three industries in 24 European countries and Germany, *Cambridge Journal of Economics*, 39, 467–96.
- Schneider, S. L. (2016). The Conceptualisation, Measurement, and Coding of Education in German and Cross-National Surveys. *GESIS Survey Guidelines*, 3.
- Sefton, T., Evandrou, M., Falkingham, J. and Vlachantoni, A. (2011). The relationship between women's work histories and incomes in later life in the UK, US and West Germany, *Journal of European Social Policy*, 21, 20–36.
- Simonson, J., Gordo, L. R. and Titova, N. (2011). Changing employment patterns of women in Germany: How do baby boomers differ from older cohorts? A comparison using sequence analysis, *Advances in Life Course Research*, 16, 65–82.
- Struffolino, E., Studer, M. and Fasang, A. (2016). Gender, education, and family life courses in East and West Germany: Insights from new sequence analysis techniques, *Advances in Life Course Research*, 29, 66–79.
- Trappe, H. (1996). Work and Family in Women's Lives in the German Democratic Republic, *Work and Occupations*, 23, 354–77.
- Trappe, H., Pollmann-Schult, M. and Schmitt, C. (2015). The Rise and Decline of the Male Breadwinner Model: Institutional Underpinnings and Future Expectations, *European Sociological Review*, 31, 230–42.

Visser, M. and Fasang, A. (2018). Educational assortative mating and couples' linked late-life employment trajectories, *Advances in Life Course Research*, 37, 79–90.

Appendix

[Table A.1 here]

[Table A.2 here]

Tables

Table 1. Sample means and standard deviations

	Mean	Standard deviation
Women's individual annual income in EUR	11874.79	9855.12
Women's relative income share	.33	.20
Birth cohort 1925 -1950	.50	.50
Birth cohort 1951-65	.50	.50
East German	.27	.44
Number of children	2.0	1.17
Education low	.18	.38
Education medium	.61	.49
Education high	.21	.41
Relative education	.94	.16
Age gap between partners	2.91	4.03
Age at marriage	24.02	5.12
Wave 5	.10	.3
Wave 6	.84	.37
Wave 7	.01	.09
Proportion of life course spent on childcare	21.19	20.13

Source: own estimations based on SHARE-RV, Release 7.0.0.

Table 2. Cluster characteristics

Cluster	No. of transitions	% life-course childcare	% cohort 1951-1965	% East German	No. of children	N
(1) Standard male-breadwinner	10.52	40.01	44.15	3.19	2.50	188
(2) Upward male-breadwinner	11.42	28.78	46.23	4.02	1.96	199
(3) Non-employee male-breadwinner	11.08	24.96	49.28	3.62	2.04	138
(4) Atypical one-and-a-half-earner	11.81	15.62	69.47	8.42	1.75	95
(5) Standard one-and-a-half-earner	16.48	10.33	48.84	19.77	1.6	86
(6) Polarized dual-earner	28.18	8.07	49.59	79.92	2.03	244
(7) Female-breadwinner tendency	20.63	3.95	61.67	53.33	1.38	60
Total	16.27	21.19	50.4	26.83	2.0	1010

Source: own estimations based on SHARE-RV, Release 7.0.0.

Table 3. Linear regression models for women's absolute individual incomes by cohort

	Cohort 1925-1950 (only pensioners)				Cohort 1951-1965 (only non-pensioners)			
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Constant	-789.1	2255.1	-456.2	7245.0***	-8636.3***	-5158.9***	-7112.7***	1436.8
Education (Reference cat.: Low)								
Medium	2743.8***	2677.0***	2368.1***	2233.4***	1560.2**	1813.8***	1532.6**	1468.4**
High	3312.6***	3612.2***	2729.8***	2662.3***	8051.7***	7449.3***	6728.2***	6632.2***
Rel. education	4523.0***		2823.4*	2330.3*	3412.2*		2310.8	1440.2
Age gap	126.0**	96.7*	99.3*	59.0	-27.6	-50.2	-49.8	-56.5
Age at marriage	63.9	44.1	51.8	-17.6	148.9***	105.6**	107.0**	37.2
East German	3505.7***	-8.79	303.8	269.5	-42.9	-2564.9***	-2511.5***	-2957.3***
Couple life course cluster (Reference cat.: (1) Standard male-breadwinner)								
(2) Upward male-breadwinner		901.6*	1141.7**	522.9		467.2	732.3	-626.1
(3) Non-employee male-breadwinner		1195.7**	1324.8**	468.9		3837.6***	4054.1***	2299.2**
(4) Atypical one-and-a-half-earner		1505.3**	1615.1**	309.5		505.8	483.1	-2327.6***
(5) Standard one-and-a-half-earner		7347.7***	7329.1***	5218.1***		4951.4***	4910.6***	2116.3**
(6) Polarized dual-earner		5585.9***	5415.0***	3402.4***		3244.0***	3222.2***	428.7
(7) Female-breadwinner tendency		9553.1***	9652.0***	6781.6***		14765.3***	14742.3***	11474.9***
Number of children (Reference cat.: 0)								
1				-1958.6*				-1714.6*
2				-3034.7***				-1641.2*
3				-3189.5***				-912.0
4 or more				-3013.4**				-1346.3
Prop. childcare				-60.1***				-106.4***
R ²	0.18	0.28	0.28	0.31	0.37	0.46	0.46	0.48
Observations	489	489	489	489	393	393	393	393

Note: * p < 0.05, ** p < 0.01, *** p < 0.001; additional control variable: SHARE wave. Source: own estimations based on SHARE-RV, Release 7.0.0.

Table A.1. Average status durations for women (W) and partners (P) across clusters

Status	Employment with relative earnings of								Other	No		Care		
	< 60%		60% – 100%		100% – 150%		>150%			Information				
	W	P	W	P	W	P	W	P		W	P			
(1) Standard male-breadwinner	22.57	2.71	10.01	24.52	2.46	61.20	0.36	3.91	3.95	5.17	20.64	2.48	40.02	-
(2) Upward male-breadwinner	15.76	2.51	21.52	5.98	5.81	25.38	1.06	52.47	7.09	10.85	19.98	2.81	28.78	-
(3) Non-employee male-breadwinner	18.45	3.06	15.44	7.55	7.04	5.96	1.12	1.03	6.16	10.06	26.82	72.33	24.96	-
(4) Atypical one-and-a-half-earner	24.78	6.22	7.92	19.36	2.31	36.0	0.31	8.08	6.02	23.69	43.03	6.66	15.62	-
(5) Standard one-and-a-half-earner	20.07	3.06	52.07	19.85	9.56	64.35	0.83	3.98	5.17	6.32	1.98	2.44	10.33	-
(6) Polarized dual-earner	26.03	12.19	41.86	25.18	8.94	13.79	0.65	2.78	12.07	11.55	2.38	3.51	8.07	-
(7) Female-breadwinner tendency	6.64	5.48	19.02	32.72	40.99	27.67	20.58	19.07	6.9	11.84	1.9	3.22	3.96	-
Total	20.55	5.53	24.64	25.8	8.19	31.05	1.91	14.11	7.31	10.74	16.35	12.77	21.06	-

Source: own estimations based on SHARE-RV, Release 7.0.0.

Table A.2. Linear regression models for women's relative incomes by cohort

	Cohort 1925-1950 (only pensioners)				Cohort 1951-1965 (only non-pensioners)			
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Constant	-0.13***	0.10***	-0.067	0.11**	-0.29***	-0.062*	-0.21***	-0.088
Education (Reference cat.: Low)								
Medium	0.022**	0.041***	0.022**	0.025***	-0.025	-0.011	-0.029	-0.025
High	-0.032*	0.031**	-0.023	-0.022	0.018	0.058**	0.007	0.011
Rel. education	0.24***		0.17***	0.14***	0.21***		0.17***	0.16***
Age gap	0.005***	0.004***	0.004***	0.003***	0.003	0.001	0.002	0.002
Age at marriage	0.002*	0.001	0.002*	0.000	0.004***	0.002*	0.002*	0.001
East German	0.15***	0.028*	0.048***	0.047***	0.11***	0.042**	0.046**	0.033*
Couple life course cluster (Reference cat.: (1) Standard male-breadwinner)								
(2) Upward male-breadwinner		-0.020*	-0.0050	-0.020*		-0.062***	-0.041*	-0.065***
(3) Non-employee male-breadwinner		0.054***	0.060***	0.035**		0.022	0.041	0.008
(4) Atypical one-and-a-half-earner		0.036*	0.043**	0.010		0.025	0.024	-0.030
(5) Standard one-and-a-half-earner		0.16***	0.16***	0.10***		0.067***	0.069***	0.020
(6) Polarized dual-earner		0.17***	0.16***	0.097***		0.067***	0.070***	0.021
(7) Female-breadwinner tendency		0.21***	0.22***	0.15***		0.22***	0.23***	0.18***
Number of children (Reference cat.: 0)								
1				-0.033*				-0.002
2				-0.042**				-0.014
3				-0.035*				-0.010
4 or more				0.010				-0.009
Prop. childcare				-0.002***				-0.002***
R ²	0.25	0.35	0.36	0.40	0.38	0.43	0.44	0.46
Observations	469	469	469	469	236	236	236	236

Note: * p < 0.05, ** p < 0.01, *** p < 0.001; additional control variable: SHARE wave. Source: own estimations based on SHARE-RV, Release 7.0.0.

Figures

Figure 1. Institutional background of women's labor market engagement in East and West Germany

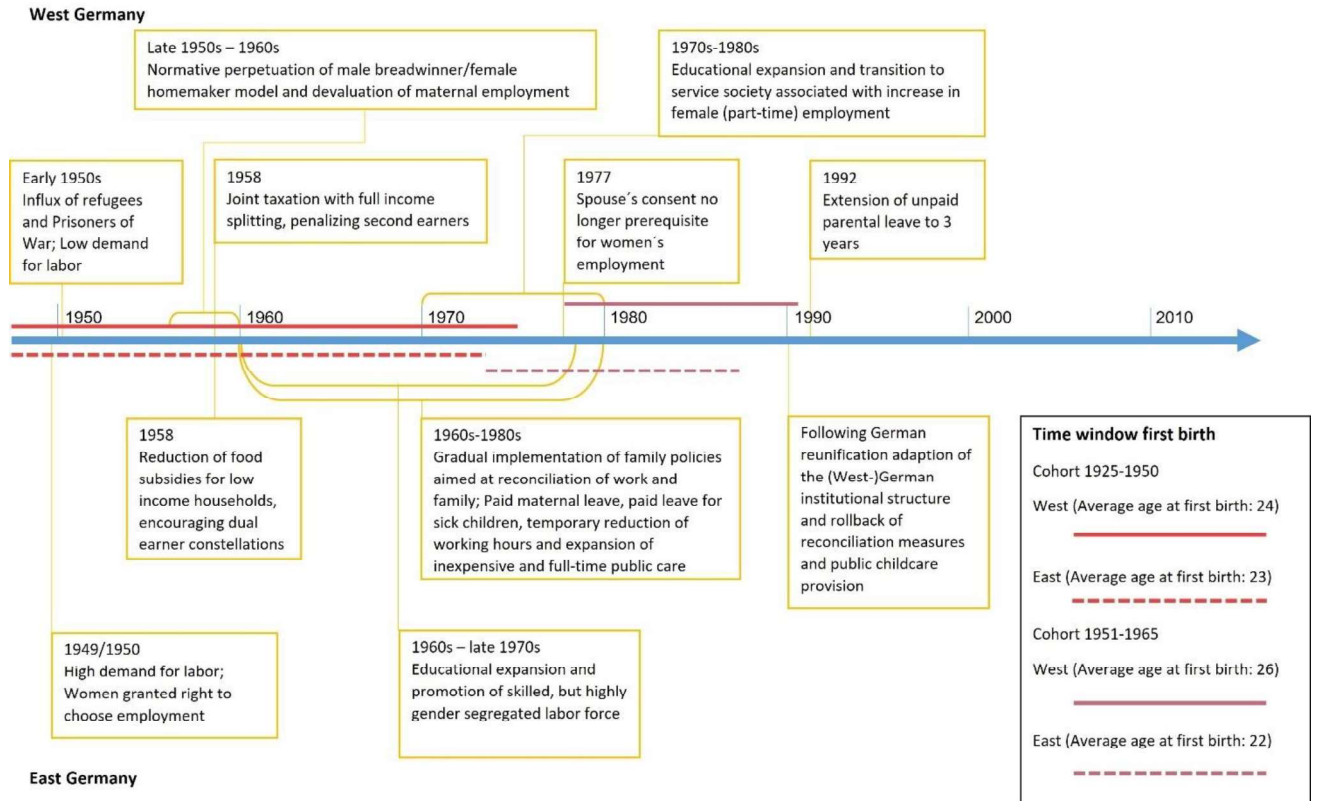


Figure 2. State distribution plots of couples' life course cluster

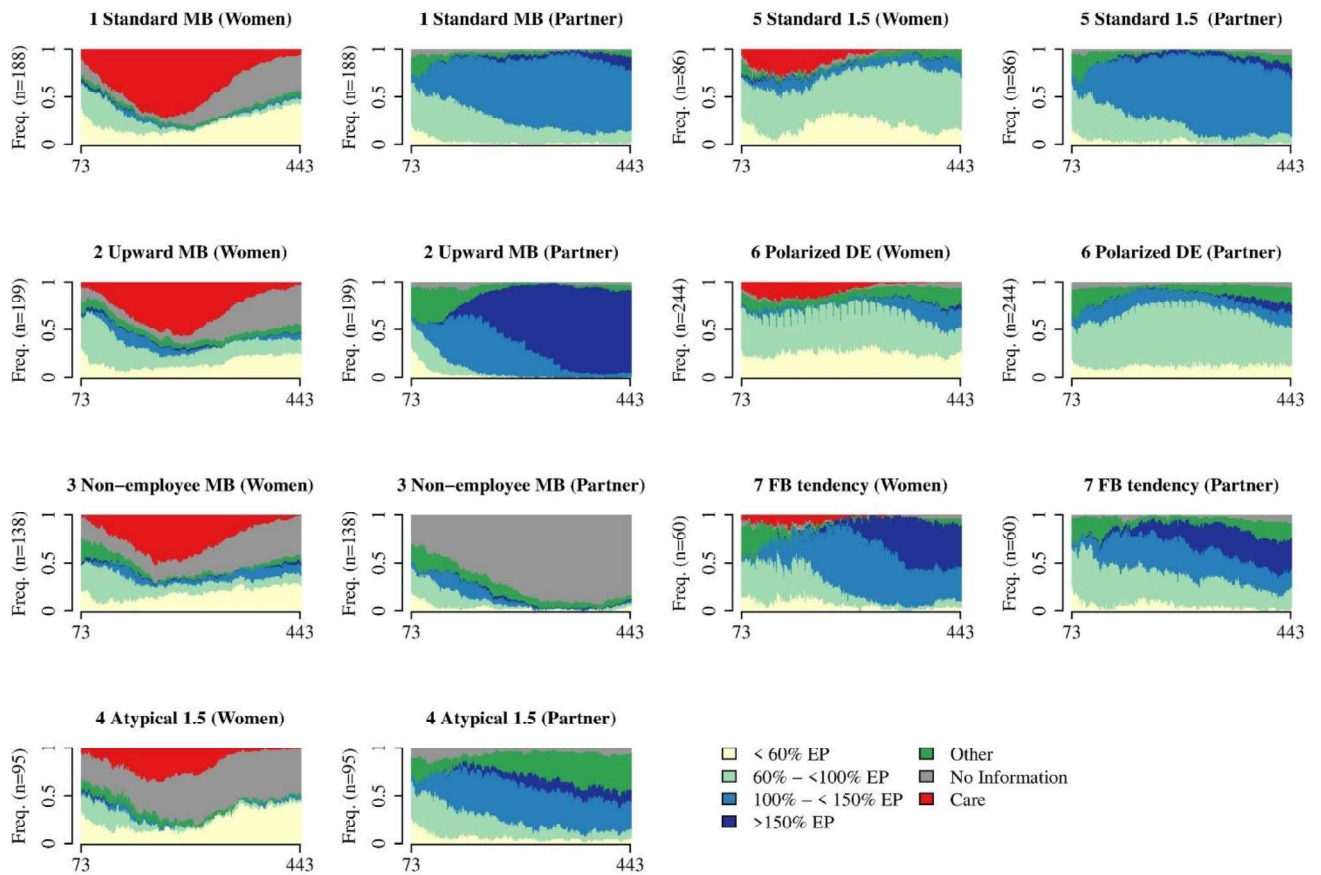


Figure 3. Proportion of female and male partners with tertiary education across cluster and cohort

