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On the way to becoming a society of downward mobility? Intergenerational occupational mobility in seven West German birth cohorts (1944–1978)

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ABSTRACT

Many studies on social mobility use operationalizations of social positions that do not take occupational upgrading into account. In order to estimate social mobility patterns net of occupational upgrading, I propose an operationalization involving administrative data to measure social positions by applying a percentile approach. Based on this measurement I calculate absolute and relative intergenerational mobility patterns.

Using this operationalization, I aim to answer the question of how far intergenerational mobility patterns have changed over time in West Germany. Therefore, I analyze the occupational data of 7,416 38- to 42-year-olds born between 1944 and 1978 belonging to the sixth starting cohort of the National Educational Panel Study (NEPS). Compared to previous studies, I observe significantly higher rates of downward mobility. However, I do not find any cohort trends in absolute mobility rates and do not detect any changes in social fluidity patterns. I therefore conclude that there are no cohort trends in absolute or relative intergenerational mobility in West Germany, implying that it is not on its way to becoming a society of downward mobility. In contrast to previous studies, my results indicate high social fluidity and no changes in relative mobility over time. Hence, the picture of a rigid German social structure should be reconsidered.

1. Introduction

Intergenerational mobility has been a central area for sociological research (Blau & Duncan, 1967; Breen & Jonsson, 2005; Breen, 2019; Erikson & Goldthorpe, 1992; Erikson, Goldthorpe, & Portocarero, 1979; Gugushvili, Bukodi, & Goldthorpe, 2017; Hillmert, 2015; Hout & DiPrete, 2006; Kurz & Müller, 1987; Sorokin, 1959 [1927; Sorokin, 1959 [1927]; Torche, 2015). As social mobility is considered an indicator of the openness and equality of opportunity in a society (Blossfeld & Shavit, 1992), the legitimacy of societies is strongly associated with the mobility patterns they offer to their members (Betthäuser, 2019; Mayer & Solga, 1994). Accordingly, worsening mobility patterns within societies (e.g. increasing rates of downward mobility or lower social fluidity) are generally seen as signs of negative social development (Nachtwey, 2018).

Regarding intergenerational social mobility, two concepts have to be distinguished. On the one hand, the concept of *absolute mobility* refers to mobility in society as a whole. It helps us answer questions such as how many people are in the same (or different) social class as their parents. On the other hand, *relative mobility* examines to what extent a person's origin influences the attainment of certain social positions.

For Germany, many studies have either reported only a small increase in downward mobility or no changes at all in absolute mobility patterns (Breen & Luijkx, 2004, three periods: 1970–99; Hillmert, 2015, six cohorts: 1919–71; Müller & Pollak, 2004, three periods: 1976–99; Pollak, 2013, four periods 1976–2010). However, more recent studies point to negative developments in intergenerational absolute social mobility (Breen, 2019, six cohorts: pre-1924–past 1965; Ludwinek, Anderson, Ahrendt, Jungblut, & Leončikas, 2017, three cohorts: 1927–77; Nachtwey, 2018, the period 1970–2011; Pollak & Müller, 2020, six cohorts: 1915–75). In his study, Nachtwey (2018) concludes that Germany is on its way to becoming a “society of downward mobility,” where especially the younger birth cohorts “are caught on the downward escalator” (p. 106).

Studies on relative mobility in Germany show an increase in social fluidity for cohorts born after the Second World War (Breen, 2019; Ludwinek et al., 2017; Müller & Pollak, 2004; Pollak & Müller, 2020). This means that the association between origin and destination has decreased over time. However, this trend toward more social fluidity seems to have stopped (Breen & Luijkx, 2007) or to have reversed (Ludwinek et al., 2017; Mayer & Aisenbrey, 2007) for those cohorts born in the 1960s or later.

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This descriptive study aims to answer the question of whether Germany is on the way to becoming a society of downward mobility by looking at how both absolute and relative mobility patterns in West Germany have changed since the end of the Second World War.

Due to constant upgrading of the occupational structure and the accompanying increase in number of high-status jobs (Menés, 2017; Oesch & Piccitto, 2019), it is questionable whether reaching the same absolute status position ensures status maintenance in a changing social structure (Song et al., 2020). Therefore, I propose a measurement of social positions based on a percentile approach. Applying a percentile approach when measuring social positions allows me to take into account the effects of such occupational upgrading. Hence, I am able to compare mobility rates over time despite the changing underlying occupational distributions and to obtain a measurement that is distinct from status gains through occupational upgrading (Hilger, 2015, p. 35; Song et al., 2020). Although such approaches are scarce in occupational mobility research (for recent exceptions see: Hout, 2018b; Song et al., 2020), similar approaches have already been used to estimate absolute intergenerational income mobility (Chetty, Hendren, Kline, & Saez, 2014, 2017; Zimmerman, 1992) and to measure educational positions (Gugushvili et al., 2017; Hilger, 2015; Rotman, Shavit, & Shalev, 2016; Shavit & Park, 2016).

My study uses occupational data regarding West German men and women belonging to the sixth starting cohort of the National Educational Panel Study (NEPS) (Blossfeld et al., 2011), as well as data from the microcensus (1973–2018). Hence, I calculate percentiles by linking administrative data with survey data. With the exception of determining social positions using percentiles, I apply the same procedures as previous studies to calculate intergenerational mobility patterns. Specifically, I use mobility tables to calculate absolute mobility rates and estimate the proportional reduction of error (PRE; Jann & Combet, 2012) as well as rank–rank correlations and regressions to compute relative mobility (Chetty et al., 2014; Hout, 2018a; Song et al., 2020).

In the next section, I briefly introduce the West German context before discussing the current state of research on intergenerational social mobility in Germany and recent sociological studies applying percentile approaches. In Section 4, I provide information about the data and the operationalization of social mobility. I present the descriptive findings as well as their comparison to the results of previous studies in Section 5. Finally, the paper concludes with a discussion of these results in the context of existing literature.

2. The West German context

Following the Second World War, Germany experienced extraordinary economic development (the “German economic miracle”). This positive development continued up to the 1970s. In the 1970s and early 1980s, Germany faced two recessions caused by oil price shocks. Thereafter, GDP continued to grow steadily, albeit at lower rates than before. In the late 1990s and early 2000s, Germany faced another economic crisis, resulting in very high unemployment rates. Since the mid-2000s, Germany has experienced positive economic development with steadily decreasing unemployment rates. This development was interrupted only temporarily by the 2009 financial crisis (e.g. Becker & Blossfeld, 2017; Becker & Mayer, 2019).

Moreover, the period after the Second World War was marked by significant social modernization. As a result, the German education system expanded massively (Becker & Mayer, 2019). In the course of the educational expansion there was a strong increase in tertiary qualifications (Blossfeld, Blossfeld, & Blossfeld, 2015). The question of whether these social changes have had a positive effect on social mobility in the generational sequence is controversial (Becker & Blossfeld, 2017, p. 126; Nachtwey, 2018).

Along with social modernization, occupational upgrading has taken place. For instance, Oesch and Menés (2010) were able to identify changes in the occupational structure for the 1990–2008 period. While

they found no evidence of occupational downgrading after 1990, there has been an increase in (highly) qualified jobs, resulting in a stronger rise in the number of “lovely” occupations than in the number of “lousy” ones (Oesch & Menés, 2010, p. 528). This structural change is also evident in many other studies, pointing to an increase in mean occupational status across birth cohorts (e.g. Braun & Stuhler, 2018; Oesch & Piccitto, 2019). Thus, each new generation has, on average, a higher status than the previous generation. Furthermore, the proportion of parents belonging to the middle and upper service class has increased, while the proportion of working and lower middle-class parents has decreased (Becker & Mayer, 2019; Hertel, 2016).

The changed mobility patterns across cohorts identified in previous studies (Breen, 2019; Ludwinek et al., 2017; Pollak & Müller, 2020) could be caused by occupational upgrading rather than by changed mobility patterns. For absolute mobility, it could be argued that mobility patterns might remain stable, but higher and higher status positions must be achieved in order to avoid being downwardly mobile (Song et al., 2020) and that, therefore, decreasing mobility patterns can be observed across the cohorts. In terms of relative mobility, one could argue that the declining association between the absolute status of parents and children over the generations observed in earlier studies (Breen, 2019; Ludwinek et al., 2017; Müller & Pollak, 2004; Pollak & Müller, 2020) might be caused by the changed occupational structure, because there are more and more jobs with higher occupational status across the cohorts.

In order to answer the question of the extent to which mobility patterns in West Germany have changed net of occupational upgrading, I apply a percentile approach to determine occupational status positions. As indicated above, the use of percentile approaches in occupational mobility research is rare. However, in the US, similar approaches are already used to investigate occupational mobility (Hout, 2018b; Song et al., 2020).

3. Previous research

In addition to the subdivision of whether absolute or relative intergenerational mobility is examined (Breen, 2019; Breen & Jonsson, 2005), a distinction must be made based on how social positions are measured. In sociology, measurements of social class (class mobility) as well as status or prestige measures (occupational mobility) are particularly common (Torche, 2015). Furthermore, one can distinguish whether the absolute values or percentiles of these social positions are used to calculate mobility measures (e.g. Hout, 2018a, 2018b; Song et al., 2020). In Germany, studies on both absolute and relative mobility are predominantly class mobility studies using absolute measures of social positions. Therefore, I will first present the state of research for Germany before discussing some international studies that apply a percentile approach.

Most of the studies on Germany’s social class mobility barely detect changes in absolute mobility patterns over time (Breen & Luijkx, 2004; Müller & Pollak, 2004; Pollak, 2013). For men, these studies report downward mobility rates between 12 and 17 percent and upward mobility rates between 32 and 37 percent. For women, higher downward mobility rates and lower upward mobility rates are reported, but they converge with those of men over time (Mayer & Aisenbrey, 2007). These studies show a very high degree of consistency of absolute social mobility over time.

However, the findings of more recent class mobility research suggest that downward mobility has risen slightly, especially among men of the youngest birth cohorts (Breen, 2019, p. 452f; Hertel, 2016, p. 203; Ludwinek et al., 2017, p. 24; Pollak & Müller, 2020, p. 134). Hertel (2016) states that downward mobility among 18- to 64-year-old West German men has increased over the birth cohorts. Thus, while 17 percent of the 1945–1954 birth cohort were downwardly mobile, downward mobility amounts to 24 percent of the 1975–1984 birth cohort (p. 203). Other recent German class mobility studies have found

similar results (Breen, 2019, p. 452f; Ludwinek et al., 2017, p. 24): upward mobility has decreased, while downward mobility has increased. For men belonging to the youngest cohorts (born in the mid-1960s onward), absolute mobility rates have deteriorated. For women, there seems to have been little change over time and they continue to have higher downward and lower upward mobility rates than men (Breen, 2019; Hertel, 2016; Ludwinek et al., 2017; Pollak & Müller, 2020, p. 134). Hillmert (2015), examining absolute occupational mobility using a continuous prestige scale, draws comparable conclusions (pp. 188, 190). When considering only the birth cohorts born after the Second World War, downward mobility has risen slightly – again, especially among men of the youngest birth cohort.

Germany is characterized by a low degree of social fluidity (Breen & Jonsson, 2005, p. 232), which means that the chance of reaching an advantageous class position depends strongly on a person's social origin. Nevertheless, many study results show that opportunities have become more equal over time (Breen, 2019; Breen & Luijckx, 2007; Ludwinek et al., 2017; Mayer & Aisenbrey, 2007; Müller & Pollak, 2004; Pollak, 2013; Pollak & Müller, 2020). Thus, this body of research demonstrates that, over the course of time, the correlation between position of origin and achieved position has decreased, indicating that relative mobility has increased over the cohorts. However, while social fluidity increased for the birth cohorts of the 1940s–1960s (particularly for men), it has decreased again for the birth cohorts of the mid-1960s onward. Younger cohorts are therefore exposed to higher social closure again (Mayer & Aisenbrey, 2007).

To the best of my knowledge, there are currently no studies for Germany that use a percentile approach to calculate occupational social mobility. There are international sociological studies, however, applying such an approach (e.g. Hout, 2018a; Song et al., 2020). Using US data, Hout (2018a) calculates occupational ranks between 0 and 100 based on the proportion of people with “at least some college education” (p. 5) in the respective occupations. As a next step, the parents and their children are assigned a rank according to their occupations. Absolute mobility is then calculated by comparing these ranks, taking into account a tolerance interval (± 7.5 points). For the US, Hout was able to show that the rank–rank association between parents and children remained constant for men, while it increased slightly for women (between 1972 and 2016). The absolute mobility rates of women have hardly changed during this period; among men, Hout observed falling upward mobility rates and rising downward mobility rates.

In their analyses of father-to-son intergenerational mobility, Song et al. (2020) use occupational ranks to take structural changes in the occupational structure into account. They argue that “the relative statuses of the same occupations have necessarily changed over time” (p. 251). Therefore, they first determine the occupational rank based on the educational distribution of the workers in the respective occupations (70 micro-classes). Building on these occupational ranks, they then calculate individual-level occupational percentile ranks (between 0 and 100) for the people in each birth cohort. The resulting occupational percentile rank “indicates a person's relative socioeconomic status within a birth cohort” (p. 257). Finally, they measure absolute mobility by changes in occupational rank between generations (also using a tolerance interval of 7.5 points). While the percentile rank–rank correlation is relatively stable over time (1900–1980), the upward mobility rates have decreased and the downward mobility rates have increased (1920–1980).

4. Data, measurement of occupational prestige, and the operationalization of social position

4.1. Data

I analyze the career history data of West Germans without a migration background¹ of the sixth starting cohort of NEPS (N = 10,536)². NEPS contains retrospective and prospective career history data for people born between 1944 and 1986, collected from 2007 to 2018³. To detect changes over time, I distinguish seven five-year birth cohorts (1944–1948, 1949–1953, 1954–1958, 1959–1963, 1964–1968, 1969–1973, and 1974–1978). In order to ensure the comparability of social mobility across cohorts, I have applied an age standardization (Hillmert, 2015). This means that only a person's highest occupational status between their 38th and 42nd birthday is considered in the analyses. I chose these limits to account for intragenerational mobility processes. These processes usually take place in the first years after career entry (Becker & Blossfeld, 2017) and, as studies from Germany indicate, are generally completed at the age of 40, after which occupational careers remain relatively stable (Virdia & Schindler, 2019). People who enter the labor market after their 42nd birthday are excluded from the analyses, resulting in a sample size of 7,416 people without missing values. The missing value patterns are displayed in Table S1 in the Supplementary Online Material (SOM). Two percent have missing values in their own occupation and 9 percent have missing values in their parents' occupation. Approximately 11 percent of the initial sample have missing values in one of the variables. For all steps of the sample selection and the corresponding sample sizes, see Table S2 in the SOM.

Administrative data from the microcensus (1973–2018) serve as a basis for calculating the percentiles used for the measurement of social position. I received aggregated data from the Federal Statistical Agency (*Statistisches Bundesamt*) containing information on the number of people working in certain occupations in the respective years. Since these data were collected over a long period of time, the occupational data are available according to three different classifications. First, the occupational data for the years 1973–1991 are available in a four-digit version according to the German 1975 Classification of Occupations (GCO-1975, *Klassifikation der Berufe 1975*). Second, the occupational data for the years 1993–2011 are available in a four-digit version according to the 1992 Classification of Occupations (GCO-1992, *Klassifikation der Berufe 1992*). Third, the occupational data for the years 2012–2018 are available at the four-digit level of the International Standard Classification of Occupations 2008 (ISCO-08).

¹ People with a migrant background are excluded as their parents are usually inadequately employed in the country of immigration as a result of the migration. Therefore, the reference point for maintaining status is distorted (Kao & Tienda, 1995). People from East Germany are excluded because German reunification resulted in a system change that was associated with career discontinuities for many people in East Germany (Solga & Diewald, 2001).

² This paper analyzes data from NEPS: Starting Cohort Adults, doi:10.5157/NEPS:SC6:11.0.0. Between 2008 and 2013, NEPS data were collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LifBi) at the University of Bamberg in cooperation with a nationwide network.

³ The response rates for the first wave for the different sub-samples of the NEPS SC6 are: ALWA (24.4 percent); NEPS1 (28.2 percent); and NEPS3 (30.4 percent). It should be noted that these numbers refer to the address sample. The survey was, however, conducted by telephone and up to 50 percent of the people in the address sample could not be assigned a telephone number (Antoni et al., 2011; Hammon, Zinn, Aßmann, & Würbach, 2016).

4.2. Measurement of occupational prestige

I use the magnitude prestige scale (MPS) as an indicator for the quality of an occupation. The MPS is based on large population surveys regarding the reputation of a profession and explicitly takes into account the peculiarities of the German occupational structure (Wegener, 1985, 1992)⁴. The scale ranges from 20 (farm workers) to 186 (medical doctors). Previous research has shown that such prestige measurements are comparable over time (Hout & DiPrete, 2006). Since the MPS scale is highly correlated with other prestige scales (Wolf, 1995), it can be assumed that it is also invariant over time. In the NEPS, the occupational status of parents and children according to MPS-88 is available. I use the highest reported MPS of either the father or the mother. Children have indicated the occupation of their parents when they were 15 years old – information that is considered to be reliable (Breen & Jonsson, 1997).

To convert the occupational data of the microcensus into the MPS, I followed a stepwise procedure. As a first step, I converted the GCO-1975 into the GCO-1992 (for the data covering 1973–1991). Secondly, I transformed the GCO-1992 into ISCO-88 (for the data covering 1973–2011) by using a template from the Federal Employment Agency (*Bundesagentur für Arbeit*). In a third step, I converted the ISCO-08 into ISCO-88 (for the data covering 2012–2018). Finally, I converted the ISCO-88 into MPS-88 values (Christoph, 2005; Frietsch & Wirth, 2001) for the data covering 1973–2018. This procedure enabled the use of MPS-88 for all birth cohorts.

4.3. Operationalization of social position

4.3.1. Standard approach

The standard approach uses the absolute values of the social position (status, prestige, class). These absolute values then indicate the social position of a person. To calculate intergenerational mobility, the social positions of parents (origin) and children (destination) are compared. One can distinguish between three types of absolute mobility: downward mobility (position of children < position of parents), lateral mobility (position of children = position of parents), and upward mobility (position of children > position of parents).

Fig. 1 shows the cumulative MPS distribution based on administrative data for the years 1973, 1991, and 2018. It becomes apparent that there has been a continuous upgrading in occupational status (see also Fig. S1 in the SOM). The standard approach does not consider occupational upgrading when calculating rates of upward or downward mobility. Therefore, a direct comparison assumes, for example, that a status of 60 in 1973 corresponds to the same absolute social position as a status of 60 in 1991. However, due to occupational upgrading, a status of 60 in 1991 is associated with a lower relative social position than a status of 60 in 1973 (for similar reasoning, see Song et al., 2020).

To account for this, social mobility research often takes the process of occupational upgrading into account (e.g. Breen & Müller, 2020). Thus, in studies on absolute mobility, total mobility is divided into structural mobility and circular mobility (e.g. by calculating a dissimilarity index) (Breen, 2004). Furthermore, studies on relative mobility use log-linear models to calculate UNIDIFF parameters that take into account changes in the marginal occupational distribution (Erikson & Goldthorpe, 1992; Xie, 1992).

The calculation of a dissimilarity index can give insights into the extent to which structural changes influence total mobility in a society.

⁴ I am aware of the criticism of prestige scales and their use to measure intergenerational mobility across cohorts (e.g. Goldthorpe & Hope, 1972; Wegener, 1985). Nevertheless, I use this scale because I consider it to be a “pragmatic tool” (Bihagen & Lambert, 2018, p. 9) that allows me to use a percentile approach to measure social positions. In line with previous research, I think this is appropriate as class, status, and prestige measurements are highly correlated (Bihagen & Lambert, 2018).

However, the calculation of a dissimilarity index does not give any indication of the proportion of upward or downward mobility that such processes influence. The rates of upward and downward mobility thus consist of structural and circular mobility (Song et al., 2020). Furthermore, these mobility rates are highly dependent on the (changing) marginal origin and destination distributions (Breen & Müller, 2020).

Since the rates of absolute upward and downward mobility are of great political and public interest (Hout, 2018a; Nachtwey, 2018), a measurement of absolute mobility rates that is unaffected by changes in the marginal distribution of occupations is desirable. For this reason, I propose a measurement of social mobility comparing occupational percentile ranks between generations that are derived from administrative data. This approach enables me to hold the process of occupational upgrading constant. Hence, I can reliably compare mobility rates over time despite changing underlying occupational distributions and obtain a measurement of absolute mobility rates that is distinct from status gains through occupational upgrading (Hilger, 2015, p. 35; Song et al., 2020).

4.3.2. Percentile approach

As mentioned above, to take occupational upgrading into account, a percentile approach may be preferable to the standard approach. Here, the social position is determined using percentiles (e.g. Chetty et al., 2017, 2014; Hilger, 2015; Hout, 2018b; Song et al., 2020), meaning that the social position of a person is determined by their relative standing in society. That a person’s position within a society should be determined relative to other people is connected to the idea behind the construction of common status and prestige scales. These scales assign different values to occupations based on the distribution of resources (education, income) within them (e.g. Ganzeboom, De Graaf, & Treiman, 1992; Wegener, 1985). Similarly, economic research on intergenerational income mobility often uses a person’s relative position within a society instead of their absolute income to determine social positions (e.g. Chetty et al., 2017, 2014; Zimmerman, 1992).

As I have stated above, I assume the absolute prestige values of occupations to be relatively constant (Hout & DiPrete, 2006), since the status of occupations has hardly changed over time. However, this does not mean that the relative position of a person with the same occupation has remained the same over time. Rather, I assume that their relative position has changed (Song et al., 2020).

Applied to intergenerational occupational mobility, this percentile approach means that, instead of their absolute status values, I compare the associated percentiles of parents and children within a distribution, i.e. their relative status positions. This provides a measurement of social mobility over time net of occupational upgrading.

Although this approach accounts for occupational upgrading, the parental reference population remains distorted because it contains only a certain part of the population: people with children born at a specific time. This distortion has been well known since the seminal work of Duncan (1966). Recently, research on the advantages of prospective over retrospective approaches to social mobility has gained increased attention in sociological research (Lawrence & Breen, 2016; Mare & Maralani, 2006; Song & Mare, 2015). Processes on the labor market and the educational system, as well as fertility processes and their interrelations, affect which people have children at all and are therefore considered in the analyses of intergenerational mobility. By using a prospective approach, an attempt is made to take the linkages between education, job prestige, fertility, and social mobility into account (Mare, 2011). Nevertheless, due to the data structure, I am bound to stay within a retrospective framework. I do, however, follow the reasoning of the biased parental reference population to argue that an external framework should be used to determine the occupational percentile ranks. Regarding the data structure, it should also be noted that people in the oldest cohorts were asked retrospectively about their occupations between the ages of 38 and 42, while the younger cohorts were actually interviewed between the ages of 38 and 42. This could lead to cohort

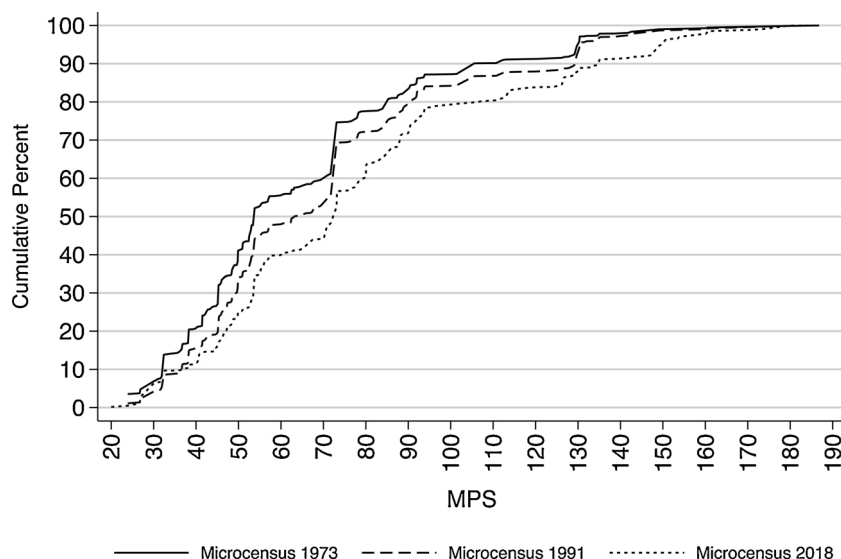


Fig. 1. Cumulative MPS distributions in 1973, 1991, and 2018.
Source: Mikrozensus, years 1973–2018; my own calculations.

differences if there were a recall bias regarding job episodes in the older cohorts. Although previous research can indicate recall bias in retrospective surveys (for example, for short unemployment episodes (Horvath, 1982)), this is not the case for job episodes lasting more than a few weeks. Respondents can usually recall their occupational episodes very well and without bias (Berney & Blane, 1997). Accordingly, the difference in the collection procedure of occupational episodes between cohorts should not introduce severe bias into the analyses.

When using a percentile approach, it is advisable to use an external reference (e.g. administrative data) to calculate social positions so that mobility patterns are not simply mirrored. If only the children of a birth cohort interviewed in a survey and their parents are used to determine social positions, the ascent of one person might result in the descent of another person. This is the case since the distributions of parents and children are directly linked. Suppose we have 100 children and their parents. If we create status percentiles based on their occupations (and if we do not have tied occupations), each percentile is occupied exactly once in the distributions of parents and children. This means that, if one child achieves a higher percentile than their parents, another child must inevitably descend.

Using all employed people to determine the percentiles (and not only parents and their children) solves the problem of mirroring mobility patterns since the social position distributions of children and parents are no longer directly related. However, basing the determination of social positions on administrative data including all employed persons means that it is not only the parents and children of a certain cohort that are compared. Hence, this position no longer only refers to other cohort members or their parents, but to society as a whole.

Thus, the percentile ranks also receive a more accessible interpretation as population percentile ranks. When, for example, the parents are assigned the 60th percentile, this indicates that 60 percent of the population in a given year had a job with a lower status than those of their parents. If the social position were to be determined within the survey, the 60th percentile would mean that 60 percent of parents

whose children were born in a particular birth cohort and who participated in the survey had a lower status.⁵

4.4. Percentile approach with administrative data

In light of the above considerations, I apply a percentile approach using administrative data to determine the social positions of parents and children. I then use these social positions to calculate absolute and relative mobility patterns. The different steps of my approach are described below.

First, I use the administrative data of the microcensus (1973–2018) to determine social positions. For every year, I know how many people have worked in which occupation and which MPS value is assigned to each occupation. Based on this information, I build occupational percentile ranks using the MPS distributions for each microcensus of the years 1973–2018. For the handling of tied occupations, I used a distribution-free percentile estimator (Harrell & Davis, 1982). This estimator does not assume a parametric form of the distribution; nor does it assume a symmetrical distribution. Instead, it determines the percentile from a combination of order statistics of the distribution. Thus, this method is suitable for determining the percentile for a variety of empirical distributions (Harrell & Davis, 1982).⁶ By so doing, I know which percentile rank belongs to the respective MPS of each occupation.

Fig. 2 illustrates this procedure and shows that occupational upgrading has taken place across the whole status distribution. As a result, ever-higher status positions must be achieved in order to reach the same relative position in the status distribution. The points in the graph reflect the percentile pairs (1st 1973, 1st 2018, ... 100th 1973, 100th 2018) and the corresponding MPS values for the respective year. This figure shows the shift in the prestige associated with each of the percentile pairs. If there has been no upgrading, all percentile pairs would lie on the line $y = x$, indicating that the same MPS values lead to the same relative position in the status distribution in both 1973 and 2018.

⁵ Depending on one's research interests, one might also be interested in examining the competition between parents in the transmission of status advantages. This would require a within approach that calculates status distributions based only on parent and child distributions. For the above-mentioned methodological reasons (mirroring of the mobility patterns), I have declined such an approach.

⁶ I also used other methods for handling ties (minimum, maximum, mean), but these do not change the results (see Figures S2–S4 in the SOM).

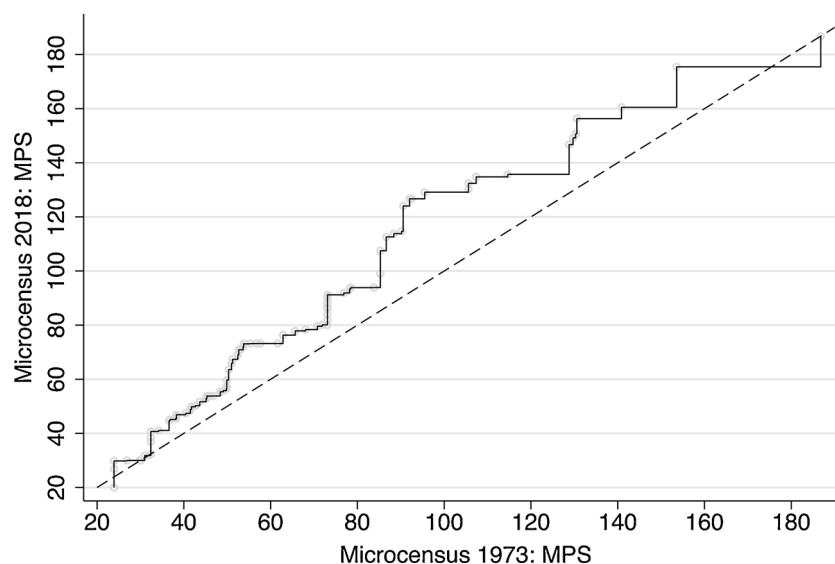


Fig. 2. Illustration of the use of percentile rank pairs to detect occupational upgrading between 1973 and 2018. Source: Mikrozensus, years 1973–2018; my own calculations.

As a second step, for each cohort, I determine in which percentile of the administrative status distribution the parents are classified. In order to be able to make this assignment, I select a microcensus as a reference for the parents of each cohort. Let us consider an example. For the parents of the fifth cohort, I use the 1982 microcensus as a reference. The children of the fifth cohort were born between 1964 and 1968 and were therefore around 15 years old in 1982. Since the question regarding parents' occupation in the NEPS related to the time of the child's 15th birthday, this microcensus should be appropriate as a reference for the fifth birth cohort.⁷ The parents are classified in the percentile ranks according to their occupational status on this basis. Their percentile ranks ranging between 1 and 100 are used as a measure for their social position.

As a third step, I repeat this procedure for the children using a different microcensus as a reference for each cohort.⁸ The percentile ranks range between 1 and 100 and are used as a measure for the social position of the children.

Thus, for the children and their parents I have a measurement of their social position that represents their relative position in the administrative status distribution in the respective year. This enables me to compare these positions over the generations net of occupational upgrading. As the percentiles are determined based on administrative data and not within the cohorts of the survey, my approach does not assume that the origin and destination distributions within the cohorts of the survey are identical.⁹ Instead of using fixed marginal distributions

⁷ For parents of the first two birth cohorts (1961 and 1966), I calculated the percentile values based on time series analysis on microcensus data from 1973 to 2018, as the 1973 microcensus consists of the earliest data available. I used the 1973 microcensus as reference for the parents of the third cohort, the 1976 microcensus as reference for the parents of the fourth cohort, and the 1987 microcensus as reference for the parents of the sixth cohort.

⁸ The 1987 microcensus serves as reference for the first cohort, as they were born between 1944 and 1948 and were aged 40 in 1986. The 1991 microcensus serves as reference for the second cohort, the 1996 microcensus for the third cohort, the 2001 microcensus for the fourth cohort, the 2006 microcensus for the fifth cohort, the 2011 microcensus for the sixth cohort, and the 2016 microcensus for the seventh cohort.

⁹ If one could use a within survey approach to calculate the percentiles, all origin and destination percentiles within the cohorts of the survey would have the same relative size. Using my approach, the percentiles of the administrative data have the same relative size in the respective years.

within the cohorts of the survey, I transform the absolute MPS values into relative social positions using administrative data.

Table 1 shows the descriptive results of this classification, separated by cohorts and gender. It can be seen that the MPS, the parental MPS, the percentile ranks for men, and the parental percentile ranks continuously increased over the cohorts 1954–1958 and 1974–1978. However, the percentile ranks for women did not. This could be an indication of the selective labor market participation of women (Breen & Müller, 2020). This assumption is also supported by the higher percentile ranks of women's parents compared to those of men up to the 1964–1968 cohorts, indicating that women from higher social strata in these cohorts were more likely to be active in the labor market. Furthermore, for each cohort, the mean of the absolute MPS values and the percentile ranks of children are higher than those of their parents. The comparatively high MPS values and percentile ranks of the first two cohorts could indicate that only a selective part of these cohorts participated in the surveys. This could contribute to an overestimation of the rates of upward mobility for these cohorts, which could lead to negative cohort trends regarding upward mobility. In terms of relative mobility, the association between parents and children might be underestimated in these cohorts.

5. Analytical strategy

I measure absolute occupational mobility by comparing the social position of parents and children, measured by the percentile approach explained above. I use mobility tables in which I map origin and destination separated by cohort and gender (100 × 100). I refer to lateral mobility when the percentile rank of parents and children is identical. People who have a lower percentile rank than their parents are downwardly mobile. Those who have reached a higher percentile rank than their parents are upwardly mobile.

To calculate relative occupational mobility, I also use social positions, measured using the percentile approach. To detect changes in the association between origin and destination across the cohorts, I use the measure of PRE proposed by Jann and Combet (2012), Jann and Seiler (2014). This measure indicates by how much the prediction error in estimating children's social position is reduced when information on the social position of parents is included. Higher PRE values indicate lower relative mobility, since this means that the parental information can better predict the positions of the children – in other words, there is a stronger correlation between origin and destination. The standard errors for the PREs are based on 1000 bootstrap replications. Similar

Table 1
Descriptive statistics (mean and standard deviation) over cohorts, by gender.

Men							
Cohort	1944–1948	1949–1953	1954–1958	1959–1963	1964–1968	1969–1973	1974–1978
MPS	89.9 (43.1)	87.8 (42.8)	86.8 (39.8)	91.2 (42.2)	92.9 (41.5)	93.9 (42.1)	102.8 (41.9)
Parental MPS	68.9 (37.4)	67.7 (37.4)	67.3 (35.9)	73.8 (37.5)	75.0 (37.7)	80.0 (39.4)	87.8 (42.4)
Percentile rank	64.4 (31.7)	61.4 (32.4)	59.5 (30.5)	61.1 (31.4)	61.7 (30.9)	61.2 (30.6)	67.8 (29.4)
Parental percentile rank	57.4 (29.1)	53.4 (29.2)	51.1 (29.5)	55.4 (29.7)	55.9 (29.8)	58.1 (30.4)	62.1 (30.4)
N	457	606	660	791	809	440	181
Women							
Cohort	1944–1948	1949–1953	1954–1958	1959–1963	1964–1968	1969–1973	1974–1978
MPS	86.8 (36.6)	85.5 (36.0)	86.1 (34.1)	87.6 (34.1)	87.4 (35.8)	91.4 (36.2)	92.7 (38.5)
Parental MPS	73.6 (40.8)	70.4 (37.6)	72.5 (38.2)	76.3 (38.2)	77.1 (38.3)	80.8 (39.4)	88.7 (42.9)
Percentile rank	67.4 (25.1)	64.2 (26.2)	62.3 (24.1)	62.7 (23.9)	60.2 (25.7)	62.2 (25.6)	63.1 (25.5)
Parental percentile rank	59.6 (31.0)	56.2 (29.6)	55.7 (29.9)	57.7 (29.4)	57.8 (29.7)	58.8 (30.3)	63.2 (29.8)
N	306	426	564	770	735	484	187

Standard deviation in parentheses. Source: Mikrozensus, years 1973–2018; NEPS SC6 11.0.0; my own calculations.

approaches have already been applied in educational attainment research (e.g. Breen, Holm, & Karlson, 2014).

Due to the size of the origin–destination tables (100 × 100), I do have structural zeros in the mobility tables. Therefore, I refrained from calculating UNIDIFF parameters, as they are sensitive to structural zeros. However, I calculate rank–rank correlations and rank–rank regressions as additional measures of relative mobility (Chetty et al., 2017; Song et al., 2020; Zimmerman, 1992). I used Stata 16 and some user-written ados to conduct my statistical analysis (2007b, Cox, 2002; Jann, 2007a, 2014, 2018; Jann & Seiler, 2019; Seed, 2002; Watson, 2004). Additionally, I used R 4.0.0 (R Core Team, 2020) and the hmisc (v4.4.0; Harrell et al., 2020) package to calculate the percentiles, applying the procedure by Harrell and Davis (1982). The code can be found in the Additional Online Material.

6. Results

6.1. Absolute occupational mobility

Fig. 3 shows the absolute occupational mobility patterns for men and women using the *standard approach*. It is apparent that there is a slight tendency for both men and women toward increased downward mobility. However, this tendency is not statistically significant. While 65 percent of men in the 1944–1948 cohort were upwardly mobile, in the youngest cohort this is only the case in 58 percent. The downward mobility rate increased from 30 percent to 38 percent over the cohorts. For women, we see that upward mobility across the cohorts declined from 59 percent to 52 percent, while downward mobility increased from 37 percent to 41 percent.¹⁰

Applying the *percentile approach* leads to different results (Fig. 4). As expected, for each cohort, the percentile approach estimates upward mobility rates (between 48 percent and 55 percent) that are lower than when using the standard approach. Furthermore, the percentile approach leads to higher downward mobility rates (between 40 percent and 52 percent).

Based on the percentile approach, the absolute mobility patterns of

¹⁰ After consultation with the Research Data Center (LifBi) and because there are no suitable weighting variables for the specific data structure in the datasets, I decided not to weight the data for the analyses.

men seem to remain constant. For women, there is slightly greater fluctuation, but the amplitude is very low. There is no statistically significant time trend in mobility patterns for women either. However, it can be concluded that, over time, the mobility patterns of women have become more similar to those of men. Men and women belonging to cohorts born after 1964 have very similar mobility patterns. This could be due to the fact that the selectivity of women in employment is declining across the cohorts (Table 1). In general, Germany seems to be characterized by very stable patterns of absolute mobility.

My results regarding changes in mobility patterns over time are robust even if I use different quantiles (quartiles, deciles, or ventiles; see Figs. S5–S7 in the SOM) or a tolerance region (tolerance interval of 7.5 points; see Fig. S8 in the SOM). However, we see that the larger the used quantile (e.g. deciles vs quartiles), the higher the rates of upward and downward mobility.

6.2. Relative occupational mobility

I draw two conclusions regarding relative mobility in Germany since the end of the Second World War (Fig. 5). First, there has been no significant change in relative mobility, whether for men or for women. There has been no change in the social fluidity of German society during this period. Higher rates of relative mobility are estimated for men in the second and women in the first and fourth cohorts, but this deviation is small and not statistically significantly different from the majority of estimates for the other cohorts. Second, the PRE values are relatively low – below 0.15. In other words, even if the social backgrounds are known, predicting occupational positions when people are about 40 years old is a difficult task. These results indicate that the association between origin and destination was low in the past and has consistently remained low over time.

I obtain similar results by estimating rank–rank regressions (Fig. 6) and rank–rank correlations (see Fig. S9 in the SOM). These also show that there has been no significant change in relative mobility over time. I therefore do not detect any trend toward more social fluidity in Germany. The estimates for the rank–rank regression slopes and the rank–rank correlations are at about 0.25 to 0.4. These values are similar to those reported by Song et al. (2020) using a percentile approach for the US. Rank–rank slopes and PRE values are based on different metrics. Therefore, to compare these, one could use squared rank–rank slopes

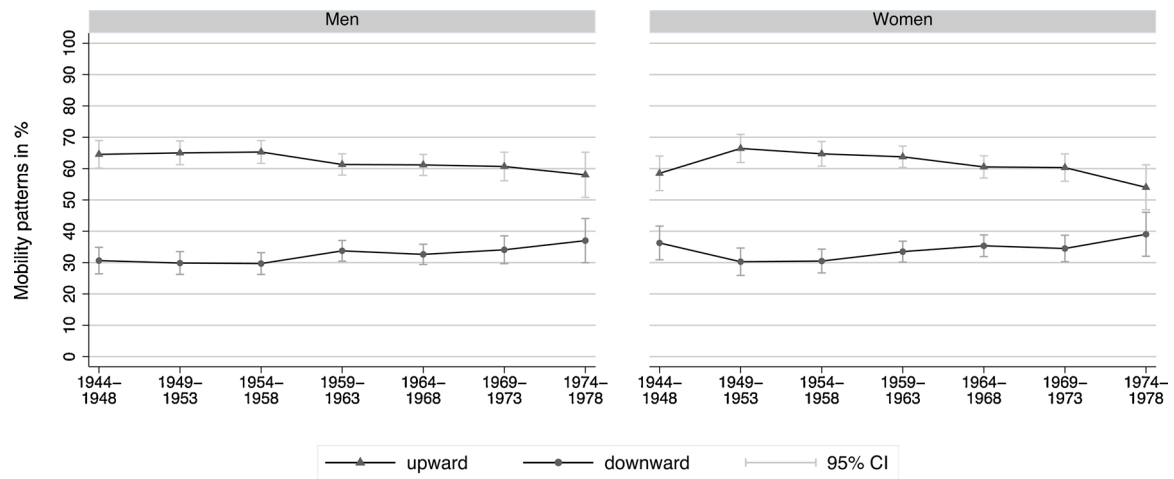


Fig. 3. Mobility patterns with 95 % CI over cohorts using the standard approach, by gender.
Source: Mikrozensus, years 1973–2018; NEPS SC6 11.0.0; my own calculations.

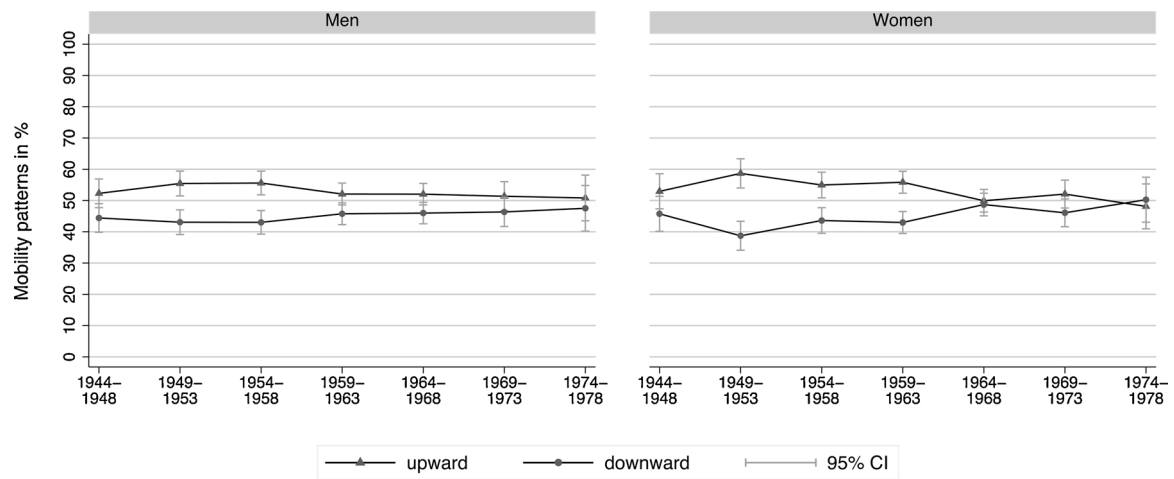


Fig. 4. Mobility patterns with 95 % CI over cohorts using the percentile approach, by gender.
Source: Mikrozensus, years 1973–2018; NEPS SC6 11.0.0; my own calculations.

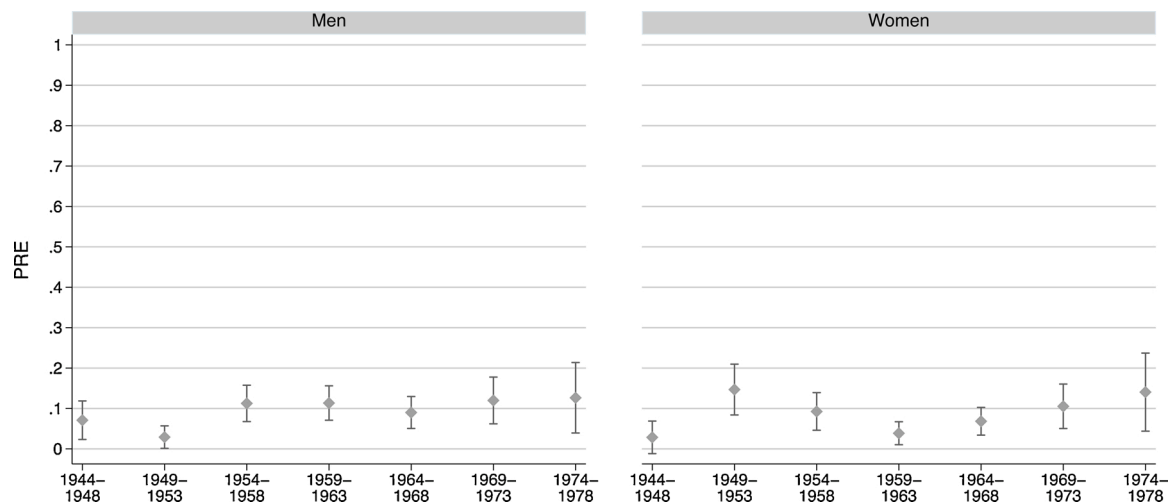


Fig. 5. PRE with 95 % CI over cohorts using the percentile approach, by gender.
Note: PRE values are estimated using OLS regressions and bootstrapped standard errors (1,000 replications).
Source: Mikrozensus, years 1973–2018; NEPS SC6 11.0.0; my own calculations.

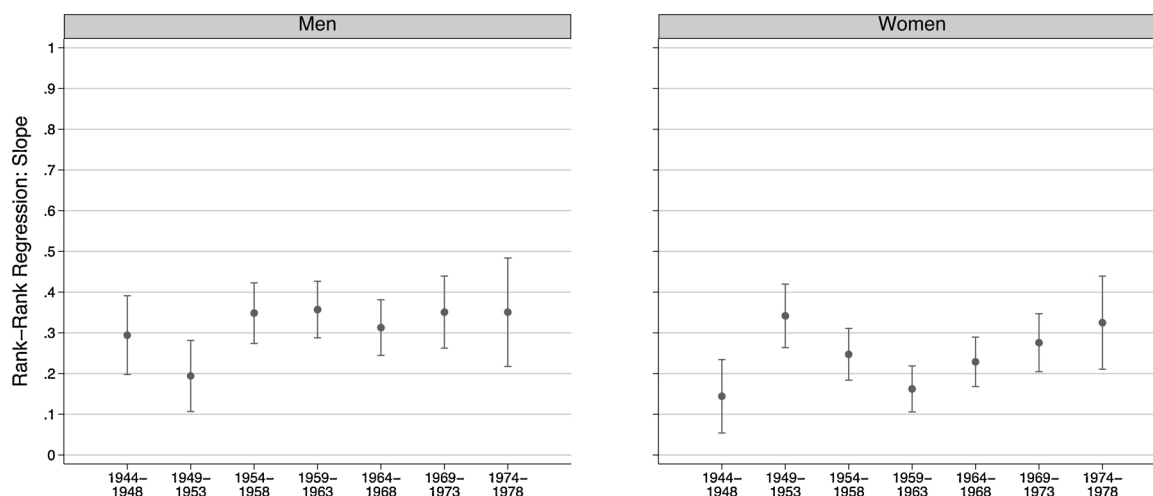


Fig. 6. Slopes of rank–rank regressions (destination–origin) with 95 % CI using the percentile approach over cohorts, by gender. Source: Mikrozensus, years 1973–2018; NEPS SC6 11.0.0; my own calculations.

(0.06–0.16), which are very similar to the reported PRE values.

One might be tempted to argue that these results are caused by the measurement of social positions. However, measuring the social position using percentiles does not remove the association between origin and destination. Furthermore, when examining relative mobility using the standard approach (using absolute MPS values), I do not find any change in relative mobility over cohorts either (see Figs. S10–S12 in the SOM).

7. Discussion and conclusion

The aim of this paper was to describe absolute and relative social mobility in West Germany since the end of the Second World War. I thus answer the question of whether there have been changes in mobility patterns indicating that Germany is on the way to becoming a society of downward mobility.

The present study examined absolute and relative intergenerational occupational mobility over seven five-year birth cohorts in West Germany (1944–1978), based on data from the sixth starting cohort of the NEPS. The MPS (Wegener, 1985, 1992), a metric scale taking into account the peculiarities of the German labor market, served as a basis for the study. I proposed an operationalization of intergenerational mobility based on a percentile measurement of social positions. This measurement rests upon the status distribution found in administrative data (microcensus 1973–2018). I am optimistic that this operationalization is capable of estimating mobility patterns, while controlling for occupational upgrading. Additionally, I think that using a cohort approach by applying age standardization (ages 38–42) makes a meaningful comparison possible across cohorts.

Based on this percentile approach to social mobility, I was able to illustrate that the standard approach (e.g. the absolute comparison of status positions) reports higher rates of upward mobility and lower rates of downward mobility. Many of the previous studies report absolute downward mobility rates of between 12 percent and 24 percent (e.g. Breen & Luijkx, 2004; Müller & Pollak, 2004; Hillmert, 2015; Pollak, 2013; Hertel, 2016; Pollak & Müller, 2020). However, I find significantly greater downward mobility rates. Two factors might explain why my results differ from previous research. First, the standard approach to measuring social mobility used in previous research tends to estimate higher rates of upward mobility and lower downward mobility rates, as it does not account for occupational upgrading. Second, most of these studies do not use age standardization. Hence, all people in a given year are included in the analyses (period approach) and not – as in this study – only people of the same age across different cohorts (cohort approach). The period approach likely reports higher upward mobility rates.

Compared to previous absolute mobility studies (e.g. Breen & Luijkx, 2004; Hertel, 2016; Hillmert, 2015; Müller & Pollak, 2004; Pollak, 2013), my results show two major differences. First, I report significantly lower upward mobility rates and significantly higher downward mobility rates, as stated above. Second, I do not see a trend toward more downward mobility in the youngest cohorts. The cohorts born immediately after the Second World War have slightly higher rates of upward mobility and lower rates of downward mobility than subsequent cohorts. However, these differences are not statistically significant. Therefore, I conclude that Germany is not moving toward becoming a society of downward mobility. In accordance with previous studies (e.g. Breen & Müller, 2020; Pollak & Müller, 2020), I find an equalization in mobility patterns between men and women. From the 1964 birth cohort onward, they are very similar.

Contrary to previous studies (e.g. Breen, 2019; Ludwinek et al., 2017; Mayer & Aisenbrey, 2007; Pollak & Müller, 2020), I do not identify a tendency toward more social fluidity for the post-war birth cohorts. Relative mobility has not changed significantly either for men or for women across the cohorts. In contrast to previous studies, which often base their trend statements on UNIDIFF parameters for which no confidence intervals are reported, I calculate confidence intervals for both PRE and rank–rank correlations parameters. Neither shows a statistically significant trend. However, the low PRE values indicate that the association between social origin and destination in Germany is rather small. Knowing the social position of the parents hardly allows any conclusions to be drawn about the destination of the children. Therefore, based on my results, the picture of the rigid German social structure should be reconsidered.

One limitation of my study is that I only have microcensus data available from 1973 onward. Therefore, I have had to estimate the percentile limits for the parents of the first two cohorts using time series analyses. This could be one reason for the special position of the first two cohorts. In addition, the small number of cases in the last cohort could be criticized, as this makes it difficult to identify any potential significant effects. However, it should be mentioned that the calculated absolute and relative mobility patterns of the other cohorts are not affected by this. When looking only at cohorts 3–6, my conclusions hardly change. Above all, we see great consistency in the mobility patterns.

One argument that could be put forward against my approach is that log-linear models, which would render the use of my rather complex operationalization unnecessary, could control the changed margins due to structural change. It is indeed true that log-linear models can be used to calculate relative mobility and are insensitive to changed margins. However, this is not sufficient for the analysis of absolute social mobility

(Hilger, 2015; Song et al., 2020). Absolute mobility patterns often dominate academic and political debates on social mobility (e.g. Hout, 2018a; Nachtwey, 2018). Using log-linear models does not provide absolute mobility patterns taking occupational upgrading into account.

In summary, I conclude that the German social structure is much more flexible and characterized by more social mobility than has previously been assumed (e. g. Breen & Luijkx, 2004; Breen & Jonsson, 2005; Mayer & Aisenbrey, 2007; Hertel, 2016; Breen, 2019; Pollak & Müller, 2020). In other words, social inequalities in occupational status are not simply passed on from one generation to the next. This social process is astonishingly constant over time: there are almost no trends in intergenerational social mobility in Germany after the Second World War. The association between social origin and social destination was and is comparably low. Therefore, I do not see Germany moving toward being a society of downward mobility, but rather constantly remaining an open society with a great deal of social mobility.

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Declaration of Competing Interest

The authors report no declarations of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.rssm.2021.100609>.

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