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Separate paths, same direction? De-standardization of male employment biographies in East and West Germany

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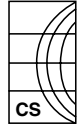
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Separate paths, same direction? De-standardization of male employment biographies in East and West Germany

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Abstract

Until the mid-1980s, labour markets in Germany were characterized by a high level of employment stability. Employment biographies of men were dominated by full-time employment in both East and West Germany and were hence quite similar in this respect, despite the two regions' enormously different institutional settings. Since that time however, important changes have occurred. Labour markets have become more flexible, as have employment biographies. However, the process towards de-standardization and increased discontinuity in employment biographies began in East Germany later than it did in the West. East German change started namely in 1990, when the German Democratic Republic was incorporated into the Federal Republic of Germany. This study uses the German Socio-Economic Panel (SOEP) to analyse how men's employment patterns in Germany have changed over three different birth cohorts. Through the use of sequence analysis the authors not only observe an increase of non-standard episodes in such biographies, such as unemployment and part-time work, but also investigate whether employment biographies have on the whole become more discontinuous in nature. In addition, the authors analyse the main differences in

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trends observed in East as opposed to West Germany as a result of differing societal and economic changes. The results of this analysis show evidence of de-standardization in employment in both regions. However, this trend follows a separate path in each region, with the process being faster in East Germany than in the West.

Keywords

Cluster analysis, cohort comparison, de-standardization, employment biography, sequence analysis

Introduction

For many decades, labour markets in both German states were characterized by a high level of stability in employment and low job mobility. Until the mid-1980s, male employment biographies remained very stable, characterized by full-time employment and a low level of discontinuity. Since then there have been important changes in men's employment biographies in both the East and the West in the direction of de-standardization (in the sense that there has been a move away from standardized life courses) and of increased discontinuity in employment trajectories (Beck, 1986; Widmer and Ritschard, 2009).

Biographies dominated by full-time employment from the start of an individual's career all the way to retirement are becoming less common. To at least some extent then, discontinuity and episodic changes have come to characterize the employment biographies of younger cohorts (Diewald et al., 2006; Giesecke and Verwiebe, 2010). On the one hand, individuals are experiencing ever more frequent episodes of unemployment during the course of their careers. On the other hand, episodes of non-standard employment, characterized by fixed-term contracts, part-time jobs or self-employment arrangements have also increased in significance. For those just starting out on their careers in particular, this trend points to increasing employment instability (Blossfeld, 2006; Buchholz and Blossfeld, 2009).

Higher levels of discontinuity imply challenges not only for social security systems due to increasing episodes of unemployment that need to be covered, but also new challenges for old age pension systems. Individuals with discontinuous employment biographies may be expected to pay less in old age pension contributions as a result of repeated episodes of unemployment or of contracts limited either to a fixed-term or to part-time employment. Furthermore, these episodes may have a negative effect on subsequent wages (Adamchik and Hyclak, 2006; Ehrenberg and Oaxaca, 1976), which would also imply lower long-term contributions to old age pension systems. Finally, discontinuous employment biographies may also be expected to affect retirement decisions and therefore the pension level of the individuals (Blekesaune et al., 2008).

In East and West Germany, changes in employment biographies towards de-standardization seem to be taking two different paths. The changes in West Germany could already be observed in the 1980s. In East Germany, however, this process started in the early 1990s, when the German Democratic Republic was incorporated into the Federal Republic of Germany. The question arises as to whether changes in employment

biographies are moving in a similar direction at a similar speed in the two regions. We ask whether the East German labour market after reunification has fully converged with its West German counterpart, and is following the same pattern of de-standardization, or indeed if the level of de-standardization in East Germany has even come to exceed the West.

In the empirical analysis of life courses, the term de-standardization refers to a move away from standardized life courses in such a way that (a) the timing of transitions between various phases in life courses becomes less fixed and is instead more flexible or (b) the number of transitions between different phases rises, and the stability and unambiguity of each phase and state decline, so that life courses become increasingly composed of cumulative transitions between various different statuses.

In the present article we make a comparison between cohorts in order to investigate whether the employment biographies of younger cohorts have changed in the sense that there are a larger number of transitions between different employment statuses and whether episodes of unemployment and part-time work have increased in significance in careers. We focus on the differences in the trends observed in East as compared to West Germany that occur as a result of institutional factors and differing social and economic changes.

We move towards answering these questions by offering solid empirical evidence of changes in men's employment biographies in East and West Germany over the last few decades, using an approach that differs substantially from those of previous studies. First, we take on the perspective of the 'life course', which means focusing not on such aggregate measures as rates of unemployment or flexible employment, but on individual processes. Second, by tracing the biographies from the age of 15 to 45 of three separate cohorts born between 1936 and 1965, we have extended the observation window immensely, substantially outreaching other studies.

We examine employment biographies via the data provided in the German Socio-Economic Panel (SOEP), which is a nationally representative household study that enables us to observe men's employment biographies and compare the biographies of different cohorts¹ against each other. We have chosen three cohorts to compare (the cohorts born from 1936 to 1945 and from 1946 to 1955, plus the German baby-boomer cohort, defining them as the Germans born between 1956 and 1965). We make our comparisons by carrying out sequence analyses that take into account the full complexity of the relevant sequences. This technique considers the entire sequence of multiple transitions between employment statuses, thus allowing us to answer questions about how changes occurring over a person's entire employment biography are structured (Malo and Muñoz Bullón, 2003).

Review of the literature

De-standardization of life courses

There have been extensive discussions on the changes in life courses in western societies over recent years. These discussions have been structured through the use of a variety of concepts and definitions.² The evolution of life courses is often characterized as a standardization period followed by a phase of de-standardization (Berger et al., 1993; Brückner

and Mayer, 2005; Widmer and Ritschard, 2009). The standardization period refers to the relatively high level of homogeneity and institutionalization that was achieved by the 1960s, particularly as seen in the life courses of men. These stable, standardized life courses reflected the constraints and opportunities provided by the educational system, the labour market and welfare state bureaucracies (Berger et al., 1993). An essential aspect of the institutionalization was the chronological order of consecutive stages through which biographies developed approximately along similar time lines, typically partitioned into three phases: education, employment and retirement (Kohli, 1994).³

The tendencies towards the de-standardization of work and family trajectories have often been discussed sociologically in the context of a broader societal trend towards individualization (Beck, 1986; Widmer and Ritschard, 2009). The underlying idea of these discussions is that in a modern society, restrictions are becoming less binding, behavioural options available to the individual are multiplying, and living arrangements and life courses are diversifying.

Within the de-standardization process it is generally said that the timing of transitions between the various phases in a life course are becoming less fixed and more flexible, and that the number of transitions between the various phases are increasing. It is claimed that the traditional sequence of life stages from education through employment to retirement is being replaced by a more de-standardized life course (Brückner and Mayer, 2005). This means, for example, that individuals may return to education after periods of employment, and change occupations more often during their working lives or undergo phases of unemployment and non-employment. In this way, the established stable chronology consisting of predictable stages is undermined so that life courses become increasingly composed of an accumulation of transitions between various statuses.

The beginning of the process of de-standardization can be pinpointed to the 1980s, when, as a consequence of the oil crises of the 1970s unemployment rates increased, and the path into gainful employment for young adults became more protracted and more complicated. However, changes in social values and the effects of the students' and women's movements in the 1960s may already have influenced life courses earlier (Brückner and Mayer, 2005).

Since the beginning of the 1990s, globalization and the changing labour market conditions that the reunification of Germany brought with it have both become important stimuli in the process towards greater de-standardization and discontinuity of German life courses. Repeated phases of unemployment became increasingly common, as did job changes and such non-standard employment patterns as temporary work and marginal employment.

These developments also influenced how the relevant processes were understood: what was initially seen mainly as a broadening of pathways caused by the emergence of new options in the aftermath of changes in social relations and values, began to be reinterpreted in the 1990s increasingly as difficulties in adapting to external constraints (Brückner and Mayer, 2005). Thus, developments leading to increasing discontinuities in the life course can be seen as a menace to the phenomenon of individualization, in the sense that they erode the institutional basis upon which individual decisions on how to plan and to organize one's life course could be made (Brose, 2003; Konietzka, 2010).

Employment biographies in East and West Germany

Any longitudinal analysis of employment biographies in Germany will clearly need to consider the differences between the two German states before reunification in 1990 and between Eastern and Western Germany thereafter. Despite fundamental differences between the two economic systems, the pre-unification labour markets of both former German republics were traditionally characterized by a high level of stability in employment and a low level of job mobility.

In East Germany, employment biographies for men as well as for women were normally characterized by long phases of full-time employment. In the GDR, full-time employment was the norm for both men and women and part-time work was relatively rare (Scheller, 2005: 70). Labour market mobility was also low due to guaranteed employment and small wage differentials (Sackmann, 2000).

In West Germany, too, the labour market before reunification was characterized by stability in employment. Long-term, cooperative and trust-based industrial relations and employment contracts were typical of the West German labour market (Mayer, 1997). Thus, the employment biographies of men looked very similar to employment biographies in East Germany, dominated by clear and long phases of full-time employment. Until the early 1980s, employment biographies in West Germany were rarely interrupted by spells of unemployment. However, unemployment rates were to increase thereafter to above 9% by the mid-1980s, making episodes of unemployment a much more common phenomenon. For this reason, questions began to arise as to whether job (and earnings) stability had become an obstacle to creating more jobs (DiPrete and McManus, 1996), and whether more flexibility was needed to be injected into the German labour market. Following this logic, a number of deregulation policies were introduced in West Germany during the 1990s (Diewald, 2006).

Following reunification, the former GDR was incorporated into the Federal Republic of Germany and almost every single East German institution was supplanted by its specially adapted West German equivalent (Diewald, 2006). At the moment of unification, the Eastern German economy was facing a future of industrial decline. Economic institutions, including laws, regulations or organizations, all had to be changed and replaced by Western German equivalents. Once this institutional transition was complete, the economy of Eastern Germany went into deep crisis. Within a year after unification, the number of unemployed rose to above 3 million. Industrial production fell to less than half the previous rate and the gross regional product fell precipitously through 1991 (Ghaussy and Schäfer, 1993).

In the context of this phenomenon, the question arises as to whether the East German labour market fully converged with the West German labour market and followed the same patterns of de-standardization and discontinuity. Or has the level of de-standardization in the eastern states even ended up exceeding that affecting the west of the country? Diewald (2006) concludes that if we consider the increase in non-standard employment between 1992 and 2002, employment in both regions has become more flexible, with changes in the eastern region appearing to exceed developments in the western region. By 2002, fixed-term contracts, temporary work and marginal employment had become more common in both regions, with fixed-term contracts and marginal employment rates actually higher in East Germany than in the West. In relation to labour market mobility,

neither region has shown any real dynamism. In terms of unemployment, one can see somewhat parallel developments in the two regions, with increases and decreases in unemployment rates happening concurrently, along with the fact that East Germany's employment levels began to exceed those of West Germany during the period.

The employment life courses of men and women of the baby-boomer cohort in both East and West Germany are investigated in Simonson et al. (2012). The authors conclude that discontinuity has been increasing for all groups studied, but especially so for East German men. The study investigates the consequences of these trends on retirement pension expectations. Due to the increasing discontinuity in their employment biographies, men in East Germany can expect to receive less generous pensions than their fellows in West Germany when they reach retirement age.

Trischler and Kistler (2010) show that male employment biographies are becoming increasingly discontinuous, particularly in East Germany, although they also detect a tendency towards more discontinuity in the employment biographies of West German men. Falk et al. (2000) compared the entry onto the labour market of three cohorts of university and apprenticeship graduates in the eastern and western *Bundesländer* after reunification and found evidence that East German graduates were subject to a higher risk of unemployment, which continued to have a negative effect on the stability of their subsequent careers. However, their analysis is limited to the early stages of the employment biographies of the groups studied. Longitudinal analyses comparing the employment patterns in East and West Germany before and after reunification are still relatively scarce (Mayer and Solga, 2010).

Furthermore, the ongoing de-standardization of employment careers in Germany seems not to be an isolated case in Europe. One can observe shifts away from 'normal biographies' characterized by continuous full-time employment and towards flexible and discontinuous working biographies, which are marked by more transitions between various different employment statuses (Muffels and Luijkx, 2008).

In the present article, we analyse male employment biographies. However, it should be noted that there have been some developments in female employment biographies during the period that appear similar to the changes that affected men. For example, for women, as for men, we observe an increase in the incidence of discontinuities in career paths. On the other hand, for women there is a significant increase in the importance of part-time work that is not found in male biographies. Given the multidimensional nature of the analysis (which examines changes from cohort to cohort and regional differentiation) and the different way in which female biographies have developed, we have decided not to add the gender dimension, on the grounds that to do so would hinder a concise interpretation of the results. The employment biographies of women have been analysed by the authors in a separate study (Simonson et al., 2011).

Taking into account the theoretical background that we have just discussed and the empirical evidence already in existence, we have set out to test the following hypotheses in our study:

H1: The employment biographies of men belonging to younger cohorts contain a larger number of transitions between different employment statuses (i.e. they contain more de-standardization).

Given the changed economic, institutional and social framework confronting younger cohorts, employment biographies are becoming less standardized in the sense that individuals are now changing between defined statuses more frequently.

H2: Unemployment and part-time work have increased in relevance (in terms of duration) in the employment biographies of men belonging to younger cohorts.

Economic and institutional changes that affected the cohorts differentially have led to higher unemployment and to increases in non-standard employment forms such as part-time employment.

H3: These trends are more marked in East than in West Germany.

Given institutional factors and the differing effects of societal and economic changes in the two regions under study, which have been more marked in East than in West Germany, we expect to observe deeper changes in the employment biographies of men in East Germany than of men in the West.

Empirical analysis

Our empirical analysis examines the employment biographies from the age of 15 to 45 of three cohorts: men born between 1936 and 1945 (Cohort 1), men born between 1946 and 1955 (Cohort 2) and men born between 1956 and 1965 (Cohort 3). Men from Cohort 1 (1936–1945) entered the labour market between the 1950s and 1960s, a period of economic revival (at least in West Germany), and of relatively highly standardized biographies in both the West and the East. In 1990, the year of German reunification, men from Cohort 1 were between 45 and 54 years old. The employment biographies of Cohort 1 are not affected by the effects of reunification within the span of observed ages (between 15 and 45).

When the men from Cohort 2 (1946–1955) entered the labour market, from the late 1960s to the mid-1970s, the great economic revival in West Germany had already come to an end. In the middle of the 1980s, when unemployment in West Germany began to reach a relatively high and persistent level, these men were in their thirties and were therefore exposed to the risk of unemployment in the middle phase of their careers. In the former GDR, however, unemployment was officially not an issue at the time. This may lead one to the assumption that before reunification, unemployment played a more important role in the careers of West German men from Cohort 2 than for their counterparts in the GDR. In 1990, men from Cohort 2 were between 35 and 44 years old, which means that we should be able to observe some effects of reunification, at least for the younger men in that cohort.

Cohort 3 is made up of German baby-boomers. The baby-boomers (born between 1956 and 1965) entered the labour force in the 1970s and 1980s and were between the ages of 25 and 34 when they felt the effects of contemporary trends towards labour market deregulation as well as of German reunification and the subsequent economic and

labour market changes. We might therefore expect this cohort to have experienced a more pronounced trend towards de-standardization.

Description of data

Our analysis uses data from the SOEP (German Socio-Economic Panel), a representative, interdisciplinary and longitudinal survey of the German population (Frick et al., 2008). We use SOEP data from 1984 to 2007, relating to the 2007 SOEP sample.⁴ We created the data set by using annual employment information on individuals, collected mainly through the biographical questionnaire, combined with further personal information, including year of birth, educational status and geographical region.⁵ Furthermore, data on marital status have been incorporated into employment biographies. The statuses collected annually that we considered relevant in employment biographies are the following: (1) education (school/university), (2) apprenticeship/training, (3) military/civil service, (4) full-time employment, (5) part-time employment, (6) unemployment and (7) other.⁶

For the purposes of our study, all biographies begin at the age of 15 and most end at the age of 45.⁷ In the initial data set, we found some overlapping statuses, where more than one status was reported within a single year. For the purposes of our analysis, we recoded each overlap into one of the six main statuses (1–6). The criteria used in this recoding were as follows: the statuses of ‘military/civilian service’ (3) and ‘unemployment’ (6) were prioritized in order to preserve such periods in the analysis, as their duration was typically short. The status ‘other’ (7) was overcoded, so that the simultaneous status was chosen. When the statuses ‘education’ (1) and ‘apprenticeship/training’ (2) existed simultaneously, they were combined into ‘apprenticeship/training’ (2). Instances of ‘full-time employment’ (4) simultaneously reported with ‘part-time employment’ (5) were combined into ‘part-time employment’ (5). Although this approach led to a loss of information, it remained possible to distinguish education from employment. Beyond the above, all remaining cases of overlaps between two different statuses were coded according to the earlier status where that status formed part of the overlap. Otherwise, the later status was used. Series of overlapping statuses were divided in such a way that the first half of the series was coded as the first status, and the second half was coded as the second status.

Methodology: Sequence analysis and optimal matching

We used sequence analysis and optimal matching methods in our analysis of the biographies, followed by a cluster analysis of the biographical sequences.⁸ Sequence analysis is a technique for describing and analysing sequential data that takes into account the full complexity of the sequences being analysed. For example, it accounts for the number as well as for the order and length of the various statuses in a person’s employment biography. A sequence is defined as an ordered list of statuses (e.g. Brüderl and Scherer, 2006; Brzinsky-Fay and Kohler, 2010); for our purposes this status refers to the status held by any particular individual in a specific year.

First of all, we describe the individual employment biographies of the three cohorts in terms of their total duration and of the duration and number of different statuses and

transitions each sequence contains. These first descriptive results are calculated separately for East and West Germany. This analysis allows us to give preliminary answers to our three hypotheses. To put it in more concrete terms, we can observe whether the younger cohorts change status more often than older cohorts (*Hypothesis 1*), undergo longer durations of unemployment and part-time employment than their older peers (*Hypothesis 2*) and whether these effects are more pronounced in East Germany (*Hypothesis 3*).

Next, in order to analyse these trends in more depth, we carry out a cluster analysis. Sequences can be compared against each other by applying the ‘optimal matching’ procedure. Optimal matching uses what is referred to as the Levenshtein distance (Levenshtein, 1966), which counts the minimum costs required to transform one sequence into another.⁹ Full optimal matching, which means every sequence is compared to every other, leads to a distance matrix that can be used as the basis for a cluster analysis. The goal of the cluster analysis is to organize the sequences into groups in such a way that the degree of similarity is maximized for the sequences within a group and minimized between groups. For this purpose we used Ward’s linkage clustering, a method of hierarchical cluster analysis (Ward, 1963). Using this method, the linkage function that specifies the distance between two clusters is computed as the increase in the error sum of squares after fusing two clusters into a single cluster. This method seeks to choose each successive clustering step in such a way that the increase in the error sum of squares at each step can be minimized. In order to decide which cluster solution is the most appropriate, one can use the so-called elbow criterion, which compares the fusion levels of the different cluster solutions. The optimum number of clusters is reached at the point where one finds the first angle in the graph plotting the fusion levels of the clusters, which means that the fusion level stabilizes and barely any information is lost by amalgamating further clusters.¹⁰

In a first step, we investigate how typical employment patterns (each defined as a cluster) change over time. In this way, we can test whether there is an increase in the number of transitions (de-standardization) in all clusters (which would support *Hypothesis 1*) and whether this increase has been felt more strongly in some clusters than in the others. Further, we can also observe the differing rates of change in unemployment and in duration of part-time employment from cluster to cluster (*Hypothesis 2*) and observe whether there are different cluster developments in the East as opposed to the West (*Hypothesis 3*). As our final step, we analyse changes in the relative importance of each of the clusters in Germany, observing whether the distribution of men in each cluster changes over time and whether such changes differ regionally.

Results

Changes in employment biographies: Cohort development

In the first step of our analysis, we want to describe employment biographies and see how they develop over time (from cohort to cohort). To be specific, in Table 1 we can observe the average duration of each status as well as the average number of status transitions and of different statuses applying in the two regions of Germany. By analysing this information, we can conclude that changes have occurred in the employment

Table 1. Average duration of statuses (in years) and average number of transitions and of different statuses by cohort and region.

| | West Germany | | | East Germany | | |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | Cohort 1: 1936–1945 | Cohort 2: 1946–1955 | Cohort 3: 1956–1965 | Cohort 1: 1936–1945 | Cohort 2: 1946–1955 | Cohort 3: 1956–1965 |
| <i>Av. duration of status</i> | | | | | | |
| Education | 2.6 | 2.8 | 3.7 | 2.1 | 2.6 | 2.7 |
| Apprenticeship/ training | 2.7 | 2.7 | 2.6 | 2.6 | 2.4 | 2.5 |
| Military service | 0.9 | 1.2 | 1.0 | 1.2 | 1.9 | 1.9 |
| Full-time employment | 24.2 | 22.7 | 20.8 | 24.6 | 23.0 | 20.2 |
| Part-time employment | 0.2 | 0.3 | 0.5 | 0.1 | 0.2 | 0.3 |
| Unemployment | 0.2 | 0.8 | 1.4 | 0.2 | 0.8 | 2.5 |
| Other | 0.2 | 0.5 | 0.3 | 0.2 | 0.1 | 0.3 |
| All statuses together | 31.0 | 31.0 | 30.3 | 31.0 | 31.0 | 30.4 |
| <i>Av. number of transitions</i> | 2.4 | 3.2 | 4.0 | 2.7 | 4.1 | 5.1 |
| <i>Av. number of diff. statuses</i> | 2.8 | 3.3 | 3.6 | 2.9 | 3.9 | 4.3 |
| <i>N</i> | 1213 | 1257 | 1443 | 449 | 405 | 512 |

Notes: SOEP, weighted frequencies/non-weighted number of observations, own calculations. Differences between cohorts are significant at a 5% level of significance with the exception of changes in the duration of education and military service in East Germany, and changes in the duration of apprenticeship/training in West Germany.

biographies from cohort to cohort. In relation to the number of transitions (or changes between different statuses), we can observe that they increase from the earliest cohort to the latest one (in both regions). While for Cohort 1 the average number of changes of status was 2.4 in West and 2.7 in East Germany, it increased to 4.0 and 5.1 respectively for the baby-boomers. This confirms the first of our hypotheses. We also observe significant changes in the duration of the various statuses. The duration of full-time employment over life courses decreased; or in other words, the younger cohorts have less full-time employment than the oldest cohort in both regions of Germany. While the average length of full-time employment for Cohort 1 was 24 years in West Germany and 25 years in East Germany, Cohort 3 (the baby-boomers) work full-time for an average of three years less in the western states of Germany and five years less in the eastern states.

In parallel, the average duration of unemployment and education increased. The duration of part-time work does not increase from the earlier cohorts to the later one. Thus, these results only partially confirm our second hypothesis. While the time spent in unemployment has increased substantially, this has not been the case for the duration spent in part-time working. Furthermore, there is an increase in the total number of statuses in

both regions. Another interesting development is that for the western states of Germany, the increase in the number of different statuses is not as large as the increase in the number of changes of status. This indicates that West German working men are introducing fewer new elements in their biographies than they are experiencing changes in their working statuses.

In direct comparison between East and West Germany, our first conclusion is that the number of transitions has increased more significantly in East than in West Germany (from 2.7 to 5.1 and from 2.4 to 4.0 respectively), suggesting that the process of de-standardization has been more marked in East than in West Germany. Furthermore, the average length of unemployment has increased more drastically for East Germany. We do not observe any differences in the evolution of durations in part-time employment. These trends (partially) confirm our third hypothesis on regional differences in how working life trajectories have changed.

In order to examine the differences between the two regions in more depth, we illustrate the evolution of employment biographies from cohort to cohort in East and in West Germany in Figure 1.¹¹ For Cohort 1, the time axis ranges from 1951 to 1990. For this cohort, we observe a similar picture in East and in West Germany, with full-time employment being the dominant status. For the younger cohorts we observe the years between 1961 and 2000 (Cohort 2) and between 1971 and 2007 (Cohort 3). Here, we can identify an increase in the number of episodes of non-standard employment in the West starting in the 1980s. In the eastern region, we also observe de-standardization of male employment biographies, but this trend does not start until the 1990s, and is much more pronounced than in the western region.

In summary, we observe changes between older and younger cohorts that indicate a trend towards de-standardization in both regions. For Cohort 2 and especially for Cohort 3 – the baby-boomer cohort – we find employment patterns of men are more discontinuous, as indicated by an increasing number of transitions between full-time employment, unemployment and part-time work. For East Germany and the eastern federal states, these changes occur at a later point in time and are much more pronounced than for the West. We can thus see that these trends do not follow identical paths in the two regions of Germany, indicating that de-standardization processes occurred at different speeds in the two regions.

Changes in employment biographies: Cluster analysis

Thus far, we have been able to observe a distinct trend towards de-standardization in men's employment biographies over time. In order to examine changing employment biographies more intensively, we took the further step of identifying typical employment patterns in East and West Germany. For this purpose, we used cluster analysis to investigate changes in employment patterns from cohort to cohort. On doing so, we were able to see whether there were different patterns of de-standardization in the various clusters and to identify the employment patterns that have been getting increasingly common. In order to assemble our clusters we compared all sequences against each other (using full optimal matching) to produce a distance matrix on the basis of which the set of employment biographies could be clustered.

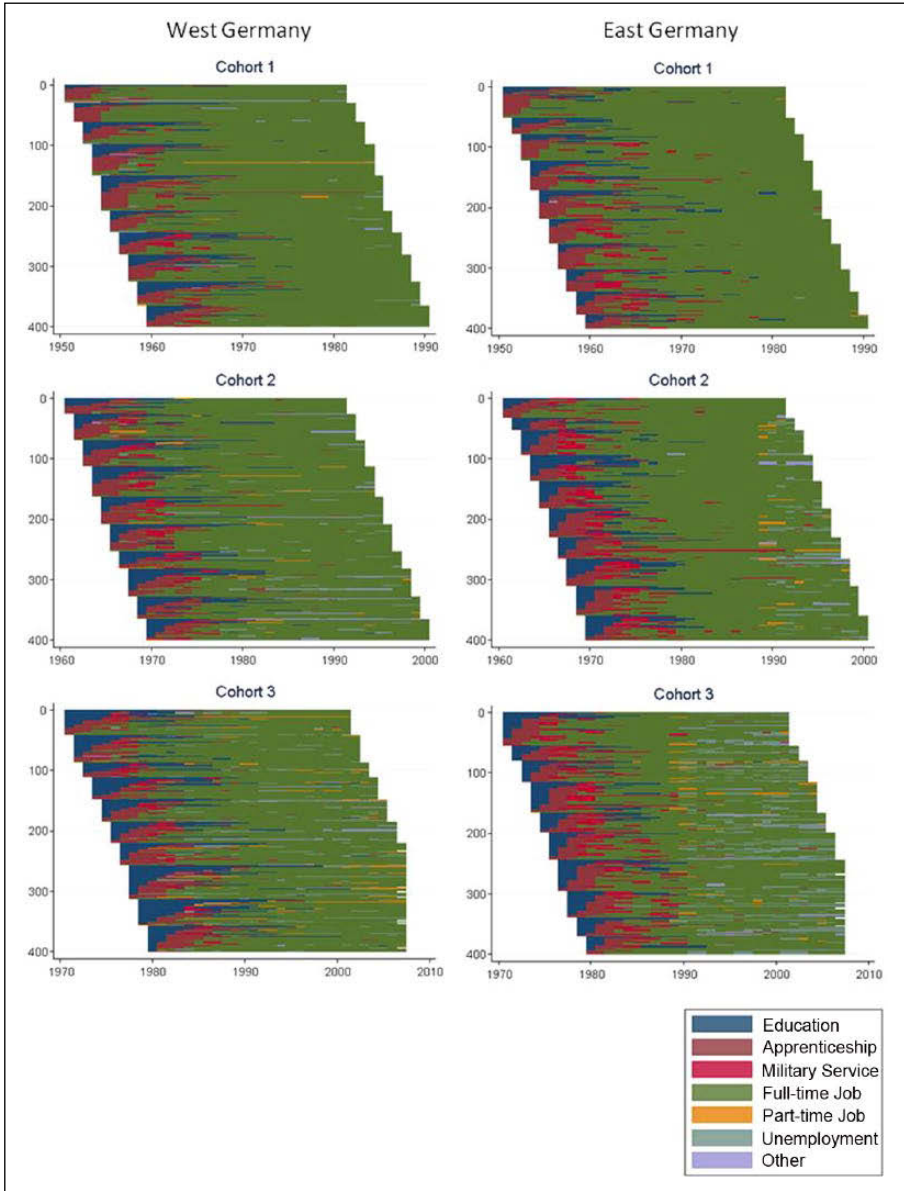


Figure 1. Development of employment biographies by cohort and region.

Notes: SOEP, weighted data, own calculations.

By using the elbow criterion, which compares the fusion levels of the various possible cluster solutions, we identified three important clusters.¹² These clusters may be characterized as follows: Cluster 1 is dominated by a shorter period in education followed by a

long period of stable full-time employment; Cluster 2 is characterized by a long period spent in education followed by employment; and Cluster 3 by a shorter time in education and discontinuous employment biographies subsequently.

Table A1 (in the Appendix) shows some descriptive indicators of the cohorts' demographics from cluster to cluster. We can observe that the majority of men in the 'Full-time, long education' cluster have a university degree. In the 'Discontinuous' cluster, we find an above-average number of men with a low level of school education, and only a few men possessing a university degree. Furthermore, the number of single and divorced men is overrepresented in comparison to the overall figure. In contrast to this, the majority of men in the 'Full-time' cluster have completed an apprenticeship and are married. As far as the differences between East and West Germany are concerned, we observe more divorced men in the East, especially in the 'Discontinuous' cluster. In terms of educational level, there are fewer men with a low level of school education, and most of these men are found in the 'Discontinuous' cluster. Furthermore, in the West German baby-boomer group every fourth person in the discontinuous cluster is a non-German citizen. In contrast, fewer than 10% of men in Clusters 1 and 2 have a non-German nationality. This indicates that in West Germany the risk of having a discontinuous working biography is much higher for non-German citizens than for Germans. In our sample for East Germany, the number of non-Germans is too small to draw any conclusions with regard to their situation.

The first step in our analysis is to look at how clusters change over time. In Figure 2 we show the relative weight of each relevant status at each age for every cluster and cohort.¹³ In the 'Full-time' cluster, education becomes more relevant and we can see how both unemployment and part-time employment gain slightly in importance – even if, after the educational period, full-time employment remains the dominant pattern in such biographies. Moving on to the second cluster, we observe that after education and military service, there was an overwhelming dominance of full-time employment, which combined with other statuses only rarely. However, we also see that for the younger cohorts, although full-time employment remains the dominant status, part-time employment and unemployment have become more significant. With the 'Discontinuous' cluster, however, matters develop differently. In this more heterogeneous cluster, we observe that unemployment gains more weight as in younger cohorts. Unemployment actually becomes quite a common status for the men in this cluster, especially in the later stages of their biographies. According to Figure 2, unemployment gains in relevance in all clusters, but this trend is more pronounced for the discontinuous cluster than for the other two groups. Regarding part-time working, no clear trend could be identified, which implies that on the basis of this analysis we can confirm our second hypothesis only partially.

In Table 2 the average number of transitions and of different status give us information on the tendency towards de-standardization in the three clusters into which we have classified the male employment biographies we are studying. If we first look at Cohort 1, we see that the 'Discontinuous' cluster has a larger number of changes of status as compared to the others. A clear de-standardization can be identified across all clusters through the increasing number of transitions between statuses and the total number of different statuses within the observed sequences (thus confirming *Hypothesis 1*). However, this trend is not equally marked for all clusters. The increase in the

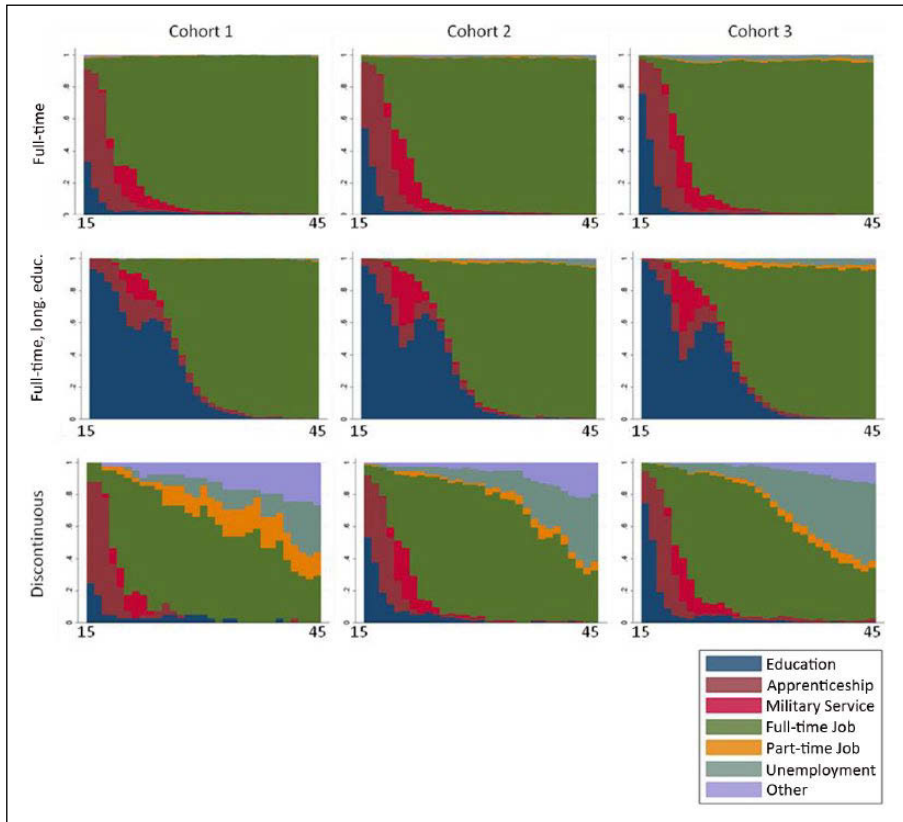


Figure 2. Cluster evolution across cohorts.

Notes: SOEP, weighted data, own calculations.

number of transitions across all cohorts is larger for the 'Discontinuous' cluster than for the other two groups. This suggests that discontinuous employment biographies are becoming even more discontinuous as compared to the other more stable employment patterns. Another observation is that for all clusters the tendency towards de-standardization is more pronounced in East than in West Germany (*Hypothesis 3*).

In the next step, we analyse changes in the relative significance of each of these clusters in Germany. In Table 3, we observe that the percentage of men in the 'Full-time' cluster is much higher in Cohort 1 than in Cohorts 2 and 3. This indicates that there are fewer men in the younger cohorts whose biography is dominated by long-term, stable, full-time employment. On the other hand, the proportion of people in the 'Full-time, long education' cluster grows as cohorts get younger, partially as a result of the educational expansion that has occurred in Germany since the 1980s. In addition, within the younger cohorts the proportion of men in the 'Discontinuous' cluster is much higher than it is within the oldest cohort. The two younger cohorts, especially the baby-boomers, include a higher proportion of biographies containing spells of employment with a lower level of stability.

Table 2. Average number of transitions and of number different statuses per cohort, cluster and region.

| | West Germany | | | East Germany | | |
|-----------------------------------|--------------|-----------|-----------|--------------|-----------|-----------|
| | Cohort 1 | Cohort 2 | Cohort 3 | Cohort 1 | Cohort 2 | Cohort 3 |
| | 1936–1945 | 1946–1955 | 1956–1965 | 1936–1945 | 1946–1955 | 1956–1965 |
| <i>Cluster 1: Full-time</i> | | | | | | |
| Av. number of transitions | 2.2 | 2.8 | 3.5 | 2.6 | 3.7 | 4.5 |
| Av. number of diff. statuses | 2.7 | 3.2 | 3.5 | 2.8 | 3.8 | 4.1 |
| N | 841 | 796 | 785 | 349 | 246 | 262 |
| <i>Cluster 2: Full-time/educ.</i> | | | | | | |
| Av. number of transitions | 2.6 | 3.5 | 4.2 | 3.3 | 4.2 | 5.0 |
| Av. number of diff. statuses | 2.9 | 3.4 | 3.7 | 3.1 | 3.7 | 4.0 |
| N | 335 | 379 | 505 | 96 | 118 | 106 |
| <i>Cluster 3: Discontinuous</i> | | | | | | |
| Av. number of transitions | 3.7 | 4.6 | 5.8 | 3.7 | 5.4 | 6.3 |
| Av. number of diff. statuses | 3.5 | 4.0 | 4.1 | 4.3 | 4.6 | 4.6 |
| N | 37 | 82 | 153 | 4 | 41 | 144 |

Notes: SOEP, weighted data, own calculations. Differences between cohorts are significant at a 5% level of significance.

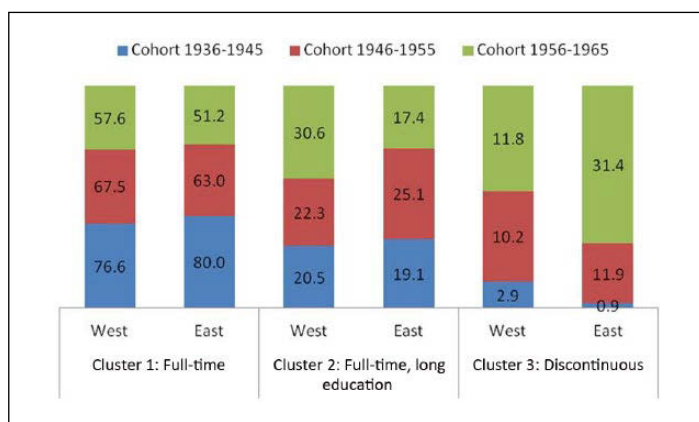
If we consider East and West Germany separately (Figure 3), we observe that this trend is mainly driven by the population from the eastern region. In the data for East Germany hardly anybody in Cohort 1 is in the discontinuous cluster. This is due to the fact that the observed employment biographies of this oldest cohort were spent in the former GDR, where interruptions in employment such as unemployment or other circumstances were very rare after the educational period had been completed. On the other hand, 31% of baby-boomers belong to Cluster 3 (with a low level of employment stability), indicating that a large proportion of individuals were to suffer unstable employment biographies after the German reunification.

In West Germany, although there are also fewer people in the younger cohorts with biographies dominated by long and stable full-time employment (the ‘Full-time’ cluster), the proportion of individuals in the ‘Discontinuous’ cluster (indicating a low level of stability in employment) does not change as dramatically from cohort to cohort as it does in East Germany. We can therefore conclude that while de-standardization of employment biographies is a real trend in both regions, it has been much more pronounced in East Germany than in West Germany.

Table 3. Relative weights of the clusters by cohort (in percentages).

| | Cluster 1: Full-time | Cluster 2: Full-time, long educ. | Cluster 3: Discontinuous |
|---------------------|-------------------------|-------------------------------------|-----------------------------|
| Cohort 1: 1936–1945 | 77.3 | 20.2 | 2.5 |
| Cohort 2: 1946–1955 | 66.6 | 22.9 | 10.5 |
| Cohort 3: 1956–1965 | 56.2 | 27.7 | 16.1 |

Notes: SOEP, weighted data, own calculations. Differences between cohorts are significant at a 5% level of significance.

**Figure 3.** Relative weights of the clusters by region and cohort.

Notes: SOEP, weighted data, own calculations.

To summarize, we have observed that by taking typical employment patterns into consideration (via clusters) we have been able to identify a trend towards de-standardization (*Hypothesis 1*). This occurs in all the clusters, but the trend is more marked in the ‘Discontinuous’ cluster than in the others. Further – and especially in East Germany (see *Hypothesis 3*) – increasing numbers of people are suffering increasingly discontinuous biographies, as is indicated by the ‘Discontinuous’ cluster increasing in size. In addition to this, we have also observed that unemployment has become more common for all the clusters (*Hypothesis 2*) but has become especially so for the ‘Discontinuous’ cluster. All in all, as time goes on, more and more men (especially in East Germany) are living discontinuous career paths, and these discontinuous paths are becoming even more discontinuous and containing more spells of unemployment.

Summary and conclusions

In the present study, we have analysed the trends towards de-standardization in East and West Germany, (a) by describing the evolution from older to younger cohorts in

the employment biographies of men and (b) by grouping typical employment patterns together into clusters and examining how those clusters have evolved over time, and testing to see whether there has been any change in the relative prominence of each cluster.

This analysis has allowed us to answer the following questions, which until now had been only partially answered in the literature due to a dearth of longitudinal analyses comparing patterns of employment in East and West Germany before and after reunification:

1. Has there been a trend towards de-standardization in the employment biographies of men?
2. Have unemployment and part-time work increased in relevance (in terms of the duration of such episodes in employment biographies)?
3. Are these trends more marked in East than in West Germany?

In answer to the first question, our results show that there has been significant de-standardization in the employment biographies as the number of transitions between employment statuses have increased over time. We observe this phenomenon both by directly comparing the number of transitions from cohort to cohort and also through our cluster analysis. The number of changes of employment status have increased for all clusters but this change has been especially significant for the 'Discontinuous' cluster. Further, the weighting of this cluster increased over time, meaning that more men are now living discontinuous employment biographies than was the case in the past.

Regarding the second question, episodes of unemployment have gained in relevance in terms of their total duration. This fact too is observable in all the clusters but it is especially true in the 'Discontinuous' cluster. However, in relation to part-time employment, no clear upward trend can be seen for men. In this regard, there is a clear differentiation in the evolution of men's biographies as opposed to those of women, for whom part-time employment has become a more significant factor in the last few decades (Simonson et al., 2011).

Third, both of these trends (de-standardization and increasing unemployment) are more pronounced in East than in West Germany. In East Germany, we can observe a higher average rate of increase in the number of transitions than in West Germany. Further, the relative importance of the 'Discontinuous' cluster has increased more steeply in the eastern than in the western part of Germany.

These results are in line with Trischler and Kistler's (2010) empirical study, which also shows an increase in discontinuity in the employment biographies of men. The authors also find that this process is more pronounced in East than in West Germany.

To draw a line from the empirical results to theoretical considerations one might state that the biographies of the oldest cohort mainly followed the institutionalized life course scheme outlined by Kohli (1994), containing the tripartition into education, a long phase of employment and retirement. For the second cohort and for the baby-boomers in particular, this uniformity in life courses is obviously reduced. It remains unclear whether this fact actually indicates any de-institutionalization – not only in the sense of changing trajectories but also of changing norms as postulated by Brose (2003) – as we have not

made any analysis of subjective expectations and perceptions in relation to the changes we have detected.

One restriction on our analysis was the limited information we had available to us on employment statuses. The retrospective information provided by the SOEP allow us to distinguish only between full-time and part-time employment, neither telling us the exact number of hours worked nor giving us any information on fixed-term contracts or self-employment arrangements. Such an analysis would be only possible for Germany by considering the SOEP's more detailed information on employment situations (which are collected annually). However, this information is not available for before 1984, which means that the opportunities to make comparisons of life courses between different cohorts are very limited.

How this trend might evolve in the future, and whether biographies from the two regions of Germany will tend to converge or further diverge in the long run are among the questions that remain unclear. However, based on our results, we can infer the emergence of further challenges for the German social security system, which will certainly have to consider the divergent evolution of the labour market in the eastern and western states of Germany in order to avoid both the perpetuation of significant regional differences in social security outcomes and the exclusion from adequate coverage of groups with non-standardized biographies in the future. In order to better evaluate the implications of changed employment histories for pension provision, it might be very reasonable to begin making projections on the future employment biographies of younger cohorts and on their incomes during old age (Grabka and Rasner, 2013).

Another question that our study has left open relates to implications that the observed trends are likely to have in the long term on the identity of men and on their position in society, especially in East Germany. As the literature has shown, the experience of unemployment and of precarious employment situations may have serious effects on the integration of men into social networks, as well as on their well-being and self-perception. It might therefore be well worthwhile keeping in mind more far-reaching effects of changing employment biographies on society, as well as the more immediate consequences.

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Notes

1. Employment biographies for women are analysed in Simonson et al. (2011).
2. For an overview, see Scherger (2007) as well as Konietzka (2010).
3. Although the terms standardization and institutionalization are often used as synonyms, there are significant differences between the two concepts. Standardization refers to life course sequences as actually recorded empirically, while institutionalization reflects the foundation of life courses on the basis of the norms and regulations affecting them (Konietzka, 2010).
4. We use SOEP version 26.

5. In order to distinguish between East and West Germany, we use information about the geographical area in which each man lived before German reunification. After reunification, we find that 5.31% of men from the second cohort and 8.94% of men from the baby-boomer cohort had an East–West German migration experience.
6. Other statuses unusual for our sample, such as ‘pensioner’ or ‘man with primary domestic duties’, have been also coded as ‘other’.
7. The limitation to the age of 45 was imposed for comparability reasons in relation to the baby-boomer cohort.
8. We used the SQ-Ado for Stata (see Brzinsky-Fay et al., 2006) for our analyses. For general information on the sequence analysis method, see e.g. Brzinsky-Fay et al. (2006), Brzinsky-Fay and Kohler (2010) and Scherer and Brüderl (2010).
9. To deal with the costs related to the transformations, we use the default settings of Stata (insertion/deletion costs: 1; substitution costs: 2).
10. For a more extensive description of the data and methodology used, see Simonson et al. (2011).
11. Four hundred observations have been randomly selected for each group for purposes of assessing comparability between East and West Germany and in order to avoid overplotting.
12. In this process, we opted to use the same cluster analysis for all the cohorts in order to enable comparisons to be made. We also decided to use the same clusters for East and West Germany for the same reason.
13. Although the relative weights of the clusters differ considerably between East and West Germany, the composition of each cluster does not show any systematic regional differences from cohort to cohort. For this reason, the results are not displayed separately for each region, although separate graphics for each region are available on request.

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Résumé

Jusqu'au milieu des années 80, le marché du travail se caractérisait par une grande stabilité de l'emploi. Les biographies professionnelles des hommes étaient dominées par

le travail à temps plein, en Allemagne de l'Est comme en Allemagne de l'Ouest, affichant beaucoup de similitudes à cet égard, malgré des institutions très différentes dans les deux régions. Toutefois, depuis cette époque, d'importants changements sont intervenus. Les marchés du travail sont devenus plus flexibles et les biographies professionnelles aussi. Ce mouvement vers la dénormalisation et la plus grande discontinuité des biographies professionnelles a commencé plus tard à l'Est qu'à l'Ouest. En Allemagne de l'Est, le processus de changement a démarré en 1990, après la réunification de la République démocratique allemande avec la République fédérale d'Allemagne. Nous avons utilisé le Panel socio-économique allemand (GSOEP) pour analyser les changements de profils d'emploi de trois générations masculines en Allemagne. En nous appuyant sur une analyse séquentielle, nous avons observé une augmentation des épisodes atypiques dans les biographies, comme des périodes de chômage et d'emploi à temps partiel, et nous avons examiné l'évolution de la nature discontinue de l'ensemble des biographies professionnelles. Nous avons également analysé les principales différences constatées entre les évolutions de l'Est et de l'Ouest de l'Allemagne, en conséquence des changements économiques et sociaux. Le résultat de cette analyse a mis en évidence la dénormalisation de l'emploi dans les deux régions. Toutefois, ce processus suit deux trajectoires différentes dans chaque région, le mouvement étant plus rapide à l'Est qu'à l'Ouest.

Mots-clés

Analyse séquentielle, analyse typologique, biographies professionnelles, comparaison de générations, dénormalisation

Resumen

Hasta mediados de la década de 1980, los mercados de trabajo en Alemania se caracterizaban por un alto nivel de estabilidad en el empleo. Las biografías de empleo masculinas eran dominadas por empleos de tiempo completo, tanto en Alemania Oriental cuanto en Alemania Occidental y eran, por lo tanto, bastante similares a este respecto, a pesar de los entornos institucionales enormemente diferentes de las dos regiones. Desde entonces, sin embargo, se han producido cambios importantes. Los mercados de trabajo se han vuelto más flexibles, al igual que las biografías laborales. Sin embargo, el proceso hacia la desestandarización y el creciente aumento de la discontinuidad en las biografías laborales comenzó en Alemania del Este, antes que en la del Oeste. El cambio en Alemania Oriental comenzó alrededor de 1990, cuando la República Democrática Alemana se incorporó a la República Federal de Alemania. Utilizamos el Panel Socioeconómico Alemán (SOEP) para analizar cómo los patrones de empleo de los hombres en Alemania han cambiado a lo largo de tres cohortes de nacimiento diferentes. El uso de análisis secuencial nos permite no sólo observar un aumento de los episodios no estándar en este tipo de biografías, tales como el trabajo y el desempleo a tiempo parcial, sino también investigar si las biografías laborales, en general, tienden naturalmente a ser más discontinuas. También analizamos las principales diferencias en las tendencias observadas en el Este a diferencia de Alemania Occidental

como consecuencia de diferentes cambios sociales y económicos. El resultado de este análisis es que se observa evidencia de desestandarización en el empleo en ambas regiones. Sin embargo, esta tendencia sigue un camino distinto en cada región, siendo el proceso más rápido en Alemania del Este que en el Oeste.

Palabras clave

Análisis de conglomerados, análisis secuencial, biografía de empleo, comparación de cohortes, desestandarización

Appendix

Table A1. Descriptive indicators of the cohorts' demographics across clusters (in percentages).

| | West Germany | | | | East Germany | | | |
|--|--------------|-----------|-----------|-------|--------------|-----------|-----------|-------|
| | Cluster 1 | Cluster 2 | Cluster 3 | Total | Cluster 1 | Cluster 2 | Cluster 3 | Total |
| Cohort 1: 1936–1945 | | | | | | | | |
| <i>Demographics</i> | | | | | | | | |
| German nationality | 87.9 | 89.0 | 88.4 | 88.1 | 99.8 | 100.0 | – | 99.9 |
| <i>Education (*)</i> | | | | | | | | |
| Low school education | 77.9 | 7.8 | 84.9 | 63.5 | 70.9 | 12.9 | – | 60.0 |
| Intermediate school education | 14.2 | 25.6 | 8.8 | 16.4 | 21.1 | 18.0 | – | 20.7 |
| High school education | 7.7 | 66.5 | 6.2 | 20.0 | 8.0 | 69.1 | – | 19.3 |
| Apprenticeship | 82.2 | 41.7 | 67.3 | 73.5 | 91.3 | 52.7 | – | 84.0 |
| University degree | 8.2 | 73.8 | 1.7 | 21.5 | 22.1 | 88.1 | – | 34.6 |
| <i>Marital status at the last observation point (**)</i> | | | | | | | | |
| Single | 7.1 | 13.7 | 22.4 | 8.9 | 5.6 | 2.3 | – | 4.9 |
| Married | 83.3 | 79.6 | 67.5 | 82.1 | 86.5 | 85.4 | – | 86.4 |
| Divorced | 8.9 | 6.5 | 8.1 | 8.4 | 7.6 | 10.0 | – | 8.2 |
| N | 841 | 335 | 37 | 1213 | 349 | 96 | 4 | 449 |
| Cohort 2: 1946–1955 | | | | | | | | |
| <i>Demographics</i> | | | | | | | | |
| German nationality | 89.1 | 86.8 | 85.5 | 88.2 | 98.3 | 100.0 | 100.0 | 98.9 |
| <i>Education (*)</i> | | | | | | | | |
| Low school education | 71.7 | 8.0 | 67.9 | 57.0 | 30.6 | 1.2 | 43.9 | 24.6 |

(continued)

Table A1. (Continued)

| | West Germany | | | | East Germany | | | |
|--|--------------|-----------|-----------|-------|--------------|-----------|-----------|-------|
| | Cluster 1 | Cluster 2 | Cluster 3 | Total | Cluster 1 | Cluster 2 | Cluster 3 | Total |
| Intermediate school education | 22.5 | 21.2 | 23.2 | 22.2 | 65.8 | 39.7 | 55.4 | 58.0 |
| High school education | 5.8 | 70.8 | 8.9 | 20.8 | 3.6 | 59.1 | 0.1 | 17.5 |
| Apprenticeship | 86.3 | 46.9 | 62.4 | 75.1 | 92.3 | 57.7 | 88.2 | 83.1 |
| University degree | 6.5 | 70.2 | 10.8 | 21.2 | 4.2 | 84.8 | 0.1 | 24.0 |
| <i>Marital status at the last observation point (**)</i> | | | | | | | | |
| Single | 11.2 | 15.6 | 20.8 | 13.2 | 10.0 | 11.6 | 15.9 | 11.1 |
| Married | 77.5 | 74.6 | 60.5 | 75.1 | 75.6 | 62.3 | 52.0 | 69.5 |
| Divorced | 10.9 | 9.7 | 18.7 | 11.4 | 13.9 | 25.3 | 31.2 | 18.8 |
| N | 796 | 379 | 82 | 1257 | 246 | 118 | 41 | 405 |
| Cohort 3: 1956–1965 | | | | | | | | |
| <i>Demographics</i> | | | | | | | | |
| German nationality | 90.0 | 91.6 | 75.5 | 88.7 | 100.0 | 99.6 | 100.0 | 100.0 |
| <i>Education (*)</i> | | | | | | | | |
| Low school education | 60.6 | 9.4 | 71.5 | 46.0 | 11.8 | 0.0 | 27.1 | 14.7 |
| Intermediate school education | 34.8 | 17.8 | 16.4 | 27.4 | 79.5 | 45.5 | 69.5 | 70.6 |
| High school education | 4.7 | 72.8 | 12.1 | 26.5 | 8.7 | 54.4 | 3.3 | 14.7 |
| Apprenticeship | 85.9 | 47.9 | 72.3 | 72.7 | 92.6 | 65.9 | 92.7 | 88.0 |
| University degree | 3.7 | 61.6 | 3.9 | 21.5 | 8.7 | 72.8 | 3.4 | 18.2 |
| <i>Marital status at the last observation point (**)</i> | | | | | | | | |
| Single | 13.5 | 22.6 | 22.0 | 17.3 | 9.9 | 13.7 | 27.7 | 16.2 |
| Married | 74.1 | 70.0 | 61.8 | 71.3 | 69.5 | 74.2 | 49.2 | 64.0 |
| Divorced | 11.8 | 7.6 | 15.8 | 11.0 | 20.5 | 12.1 | 23.0 | 19.8 |
| N | 785 | 505 | 153 | 1443 | 262 | 106 | 144 | 512 |

Notes: SOEP, weighted data, own calculations. (*) Low school education: no school degree or Hauptschulabschluss; Intermediate school education: Realschulabschluss or other school degree; High school education: Abitur or Fachhochschulreife. (**) The status 'widowed' is not indicated since being widowed is not typical for the observed population. The measuring point is the last year of observation, which is at the age of 45 for most cases. The results for Cohort 1, Cluster 2 in East Germany are not displayed, given the small number of observations. Information on education and marital status includes some missing values.