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Employment Biographies of the German Baby Boomer Generation

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Abstract

Given the ageing and shrinking labor force, the baby boom cohorts are of increasing importance to the German labor market. This article presents a comprehensive analysis of the work trajectories of two illustrative baby boom cohorts, born in 1959 and 1965. We make use of the new data source BASiD. Using optimal matching methods, we consider clusters to identify typical work trajectories of the two birth cohorts. The clusters are characterized by different degrees of participation in employment. Our results show that work trajectories characterized mainly by full-time employment are declining in relevance and that more diversified work-life concepts are gaining importance.

JEL Classification: C38, J10, J16, J21, J62

1. Introduction

The German labor market is facing an ongoing demographic transition, namely the shrinking and ageing of the working population (Fuchs et al., 2011). Within the next ten years the high-birth-rate cohorts of the German baby boom, born between 1959 and 1968, will enter the higher working age, resulting in a further ageing of the labor force. Currently, the baby boom cohorts make up over 30 per cent of the active labor force (Federal Statistical Office, 2011a). With only small cohorts in subsequent years, the baby boomers will be increasingly important to the labor market. During the last three decades, they were able to gain considerable work experiences as well as important skills and competencies to maintain a prominent place in the labor market. Hence, the baby boomers represent an essential share of professionals in Germany today.

This paper adopts a holistic approach to describe and analyze work trajectories of two illustrative baby boom cohorts, the cohorts born in 1959 and

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1965. Both cohorts are better educated than older cohorts, not only because they could benefit from educational expansion (Tessaring, 1992), but also because they internalized the guiding principle of life-long learning from the time they first entered the labor market (Friebel, 2008). Consequently, labor market participation rates of both men and women of the baby boom cohorts are relatively high.[1]

Regardless of these high labor market participation rates, the two baby boom cohorts had to face labor market risks throughout their working life since unemployment rates in Germany have increased markedly, especially during the 1980s. In the 1990s, particularly in East Germany, unemployment rates again increased because of the transition process after the German reunification. Furthermore, the labor market risks of the baby boom cohorts were intensified in particular by increasing competition for occupational education and for vacancies due to cohort crowding. Unlike older birth cohorts, the baby boom cohorts experienced unemployment at the very beginning of their work trajectories. Moreover, many studies show decreasing stability of work trajectories (Dundler/Müller, 2006; Hillmert, 2004).

The aims of this paper are first, to examine typical patterns of the work history of the two baby boom cohorts and secondly, to compare the different patterns found from an intra-cohort as well as an inter-cohort perspective, considering both labor market entries and career trajectories. Although both cohorts belong to the baby boomer generation, we expect some dissimilarities between the cohorts. Due to the time lag of six years between the cohorts, cohort and timing effects resulting from different institutional settings and social structures are possible.

In order to detect typical patterns within the work trajectories of the two cohorts, we make use of the combined longitudinal dataset BASiD (Biographical data of selected social insurance agencies in Germany). A holistic approach is used to examine work history patterns of two illustrative baby boom cohorts born in 1959 and 1965. Our results show five typical work history patterns for the cohort of 1959 and six typical patterns for the cohort of 1965. The different patterns are characterized by different degrees of labor market participation. In an inter- and intra-cohort comparison, similarities as well as differences are found. Carrying out sequence analyses the aim of the paper is not to detect any causality, but to describe statistical associations of groups of typical work patterns.

The remainder of the paper is organized as follows: Section 2 provides a brief overview of the theoretical framework used to analyze work histories and

[1] In 2009, the labor market participation of men amounts to almost 90 per cent, while nearly 80 per cent of female baby boomers participate in the labor market (Federal Statistical Office, 2011a).

discusses the relevant literature. Section 3 describes the data used and its advantages for longitudinal life course research. Furthermore, first descriptive results regarding labor market entries and work histories are shown. After an introduction to the advantages of sequence analyses in Section 4, we present our results (Section 5). Finally, Section 6 concludes.

2. Theoretical Background

2.1 Work Trajectories and the Life Course Approach

Analyses of work histories, or to be more accurate, of work trajectories, belong to the fast developing field of interdisciplinary life course research. In contemporary societies, individual life courses are shaped to a great extent by work trajectories (Fournier et al., 2011). The concept of individual work trajectories is a holistic approach to the causal connection between work events and transitions (Sackmann / Wingens, 2001).

Across the first half of the twentieth century, life courses became increasingly standardized (Macmillan, 2005) and structured by age (Settersten, 2004). Moreover, working life divided individual life courses into three parts: education and preparation for work at the beginning of the life course; the work trajectory and occupational career during the middle age; and retirement in later life (Bengtson et al., 2005). Derived from the tripartite life course, Kohli (1985) formulated his theory on the institutionalization of the life course. He argues that life courses have become structuring dimensions within societies and he conceptualizes the life course as a social institution. Work trajectories are hypothesized to be dominated by "standard employment" (the so-called "Normalarbeitsverhältnis"), characterized by permanent full-time employment contracts with generally only one employer throughout the whole working life.

Even as Mückenberger (1985) was establishing the concept of "standard employment" in the mid 1980s, he was already observing its decline. He hypothesized that alternative and more flexible life course and work patterns would replace the prevalent "standard employment" relationship. The decline of the "standard employment" relationship was further enhanced by the increasing labor market participation of female baby boomers, looking for more flexible work patterns to reconcile working and family life. Although the concept of "standard employment" never applied to the whole labor force, it has been the guiding principle for legislation and social policy in Germany (e.g. pension and fiscal policy) (e.g. Kohli, 2003; Osterland, 1990).

For the study of work patterns and previous labor market experiences, the concept of work trajectories is crucial. Due to its inclusive character, the concept of trajectories allows for a holistic view of life courses. Through the examination of the duration and succession of different life course states, the concept

of trajectories is used to draw an integrated picture of individual biographies. Within the concept of trajectories, the process of individual ageing can be considered. Now on the threshold to higher working age, the baby boom cohorts have already passed through several ontogenetic stages in the life course and experienced developmental change as continuous processes throughout their lives.

In the analysis of work trajectories, social and historical contexts have to be considered since historical events and social conditions influence individual opportunities and constraints (Elder, 1974). For the German baby boom cohorts, educational and career opportunities have increased because of educational expansion during the 1960s: higher qualifications protected them from the risk of unemployment during the labor market crises in the 1980s; enhanced educational opportunities offered the possibility of extended periods of education during times of economic uncertainty. Reunification in 1990 marks a common historical event, with consequences especially for the work trajectories of East German baby boomers.

Besides the social and historical context, two central mechanisms discussed within the current debate on life course research are relevant for the analysis of work trajectories: de-institutionalization and de-standardization of life courses (Kohli, 2003; Mayer, 2009). Institutionalization theory refers to the socialization and transition of life courses into a normative construct, structured by chronological age. De-institutionalization, conversely, refers to the dissolution of the tripartite life course and to the affiliation of working lives and private lives. Under the process of individualization, people move simultaneously between different stages in life, such as work, education, family lives and leisure (Bengtson et al., 2005). The de-institutionalization of life courses leads to less predictable stages and events and to a de-standardization of life courses.

With reference to work trajectories, the process of de-standardization and its outcomes have resulted in a controversial debate. On the one hand, there is some evidence to support a rejection of the thesis of a de-standardization of work patterns (Brückner / Mayer, 2005; Grunow / Mayer, 2007). It is argued that throughout the last century occupational careers, firm tenure, and the "standard employment" relationship have not lost their significance. On the other hand, increasing flexibility of employment forms and decreasing stability of work contracts have been observed (Struck et al., 2006).

2.2 Related Literature on Work Trajectories of the Ageing Baby Boom Cohorts

With many years of labor market experience, the baby boom cohorts are of increasing interest to social scientists, and not only because of the size of these groups. Existing literature and analyses of life courses and work trajectories of

the baby boom cohorts share two main findings. First, the baby boom cohorts had to face increasing difficulties during their labor market entry; and secondly, subsequent labor participation shows a trend towards greater heterogenization the sense of declining stability.

With regard to labor market entry, empirical findings show that transitions from school to work are stable across all cohorts, but seem to be extended and less standardized for the baby boom cohorts. Furthermore, the first employments are of shorter duration and instability is higher compared to older cohorts (Brückner / Mayer, 2005; Konietzka, 1999). Comparisons with cohorts following the baby boom reveal similar results. These younger cohorts enter the labor market faster and gain almost immediate access to permanent employment, whereas the baby boom cohorts often found themselves in transitional employment of only short duration (Hillmert, 2001). Furthermore, the risk of unemployment during the labor market entry period was comparably lower for younger cohorts than for those born during the German baby boom (e.g. Bender / Dietrich, 2001; Hillmert, 2004). The destabilization of the first job is not without consequences, since the initial placement on the labor market is of importance to the subsequent life course (Bender et al., 2000; Blossfeld, 1985; Corsten / Hillmert, 2001).

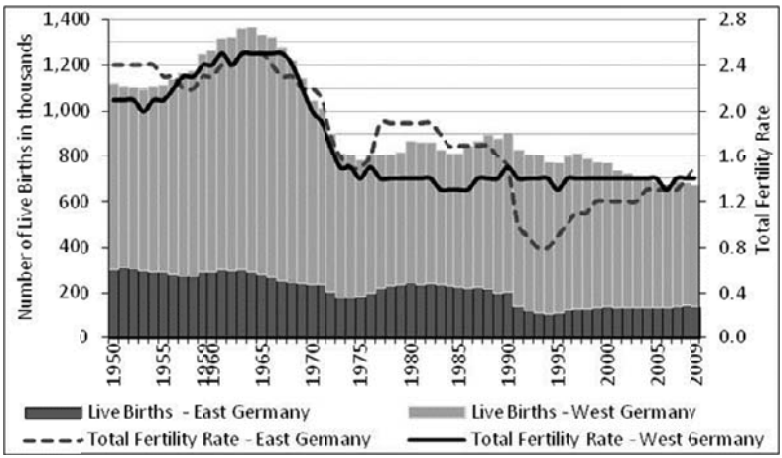
While many studies show the baby boomers' difficulties during labor market entry, only a few have examined the work trajectories of the ageing baby boom cohorts holistically. Declining stability and increasing heterogeneity are often hypothesized without empirical evidence or refer to the unemployment experience of the baby boomers (Dundler / Müller, 2006; Schmillen / Möller, 2010).

Differences between men and women are found regarding working hours and volume of work (Dressel, 2005). Part-time employment, marginal employment and flexible work hours are more common among female baby boomers. Simonson et al. (2011) compare female work patterns of baby boom cohorts with those of older cohorts. The authors find a decreasing number of women whose life courses are dominated by episodes with family and household obligations and an increasing proportion of trajectories that are dominated by employment, both full-time and part-time. Moreover, in a cohort perspective they observe more pluralized, discontinuous life course patterns, and heterogeneity of work trajectories. However, increasing discontinuity and heterogeneity do not only apply to female life courses.

2.3 Cohort Affiliation

According to Bengtson et al. (2005, 495) "economic and political conditions leave lasting marks on those born in different historical periods". Therefore, birth cohorts share similar economic and political circumstances during their

upbringing, with different effects on later life. Moreover, cohort affiliation determines factors such as educational attainment, labor market entry and labor market performance and is related to the access to economic resources (Blossfeld, 1990; Kohli, 2003). However, it is not just economic and historical circumstances that influence social and economical success; cohort size and the position within cohort sequence are also significant determinants (Engelhardt / Prskawetz, 2008).



Source: Federal Institute for Population Research 2009; Federal Statistical Office 2011a, d, c; own illustration.

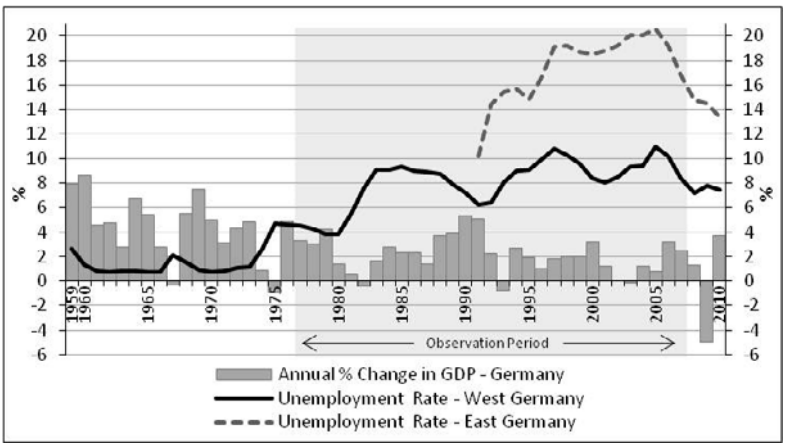
Figure 1: Live Births and Fertility Rates in Germany 1950 – 2009

The baby boom cohorts follow the relatively small birth cohorts of the post-war years. During the early post-war period, family formation was postponed due to economic uncertainties and the continuing post-war captivity of German soldiers (Schmid, 2000). In the 1960s, the economic upturn and increasing political stability led to a rising number of marriages and births – the German baby boom (cf. figure 1). The baby boom was followed by a rapid decline of birth rates in the early 1970s. Therefore, cohorts before the baby boom as well as subsequent cohorts are of relatively smaller size. Although the baby boom can be observed in the German Democratic Republic (GDR) as well, the effect was stronger in West Germany.[2] Since the reunification however, cohort-crowding effects apply for the baby boom generation across Germany. To control for different cohort-crowding effects, we select the birth cohort of 1959 that is the first cohort with more than 1.2 million births, and the cohort of 1965

[2] As a result of family policy in the GDR during the 1970s a second but smaller baby boom can be observed in the GDR during the 1970s and early 1980s.

that follows several large baby boom cohorts and marks the beginning of the end of the baby boom.

Cohort effects for those born within a demographic upturn have been discussed controversially (Bound / Turner, 2004; Kahn / Mason, 1987; Macunovich, 1999; Macunovich / Easterlin, 2008). Originally formulated by Easterlin (1987), the relative cohort size hypothesis states that cohort size and relative cohort size (compared to the cohorts born before and after) influence the economic and social fortune of a specific birth cohort.



Source: Federal Statistical Office 2010, 2011b; own illustration.

Figure 2: Economic Development of Germany 1959 – 2010

Of particular interest to us is the relationship between cohort size and labor market participation. First of all, individual labor market opportunities are affected by the economy (Szinovacz, 2011). Besides from the state of the economy, individual career prospects are also influenced by personal characteristics. Finally, the relative cohort size determines individual labor market opportunities. It is shown that individual labor market participation is influenced by labor supply and demand. With the availability of a larger labor force, companies can choose from more potential employees and competition for jobs increases, which particularly affects individuals' chances regarding first placement in the labor market (Korenman / Neumark, 1997).

Due to increasing labor market insecurities during the baby boomers' labor market entry in the 1980s and 1990s (cf. figure 2), we first expect to find delayed labor market entries and early unemployment experiences within both cohorts. In comparison to the cohort of 1959, we anticipate the cohort of 1965 to face even more disadvantages at the beginning of their working lives because

of their relative cohort size in comparison to the sizes of previous cohorts, and because of the timing of their labor market entry phase within the labor market crisis of the 1980s. Additionally, the younger cohort's phase of labor market establishment was affected by the reunification in 1990. The timing of the reunification especially exacerbated labor market establishment in East Germany.

Secondly, we expect to find work trajectory patterns characterized by repeating insecurity throughout the complete observation period, because of insecurities during the labor market entry phase. Previous findings moreover show an increase of discontinuity and heterogeneity within individual life courses (cf. 2.2). In subsequent sections, we therefore aim for a detailed description of work trajectories for both men and women, to find out more about the kind of heterogeneity and discontinuity of work trajectories of the baby boom cohorts. Through an intra-cohort as well as an inter-cohort perspective, we expect to find evidence for similarities as well as for dissimilarities.

Although experiences during labor market entry differ largely between those living in the former GDR and the FRG, their experiences are more similar during their work trajectories over the past 20 years. Interpreting our results, however, we look at the differences between men and women as well as at the differences between those born in the GDR and the FRG.

3. Data and Descriptions

3.1 Data

The empirical analyses are based on data from the longitudinal dataset BASiD (Biographical data of selected social insurance agencies in Germany), which brings together individual data from the German Pension Insurance (DRV) and from the Federal Employment Agency (BA) held by the Institute for Employment Research (IAB).[3] BASiD contains individual information from the reporting process of social insurance and additional information resulting from administrative procedures of the DRV and the BA. It includes information on employment subject to social security, unemployment benefit receipt under the German Social Code, Book II and III[4], factors of annuity computation and demographic information (e.g. age, sex or dates of birth of children).

The Completed Insurance Biographies (VSKT) of the Research Data Centre of the German Pension Insurance (FDZ-RV), a disproportional random sample of all individuals between 15 and 67 years of age with pension rights, serves as

[3] The study is based on the weakly anonymous data held by the IAB.

[4] In Germany, two types of unemployment benefit receipts are distinguished: Social Code, Book II (the basic income support scheme for jobseekers) and Social Code, Book III (employment promotion).

the basic data file.[5] The VSKT is representative for all individuals with pension rights in Germany on December 31st 2007. Individuals included in the VSKT were to be identified in the IAB data sets[6]. Accordingly, the initial sample of BASiD consists of 568,469 subjects who are identified within the VSKT as well as in the data sources of the IAB. The linkage of both data sources allows for a virtually continuous picture of individual work trajectories.

Since the study is based on administrative data collected by the German Pension Insurance and the Federal Employment Agency, it is limited to contributors to social insurance agencies. According to the micro census (Federal Statistical Office, 2011e), we therefore cover about 80 per cent of the German population, but cannot cover work trajectories of the self-employed and civil servants. However, the linkage of data held by the German Pension Insurance and by the Federal Employment Agency offers the possibility of describing complete work trajectories of a substantial share of the population. The combination of both data sources helps to fill gaps within the individual work trajectories.[7]

In our analyses, we concentrate on two birth cohorts of the German baby boom, those born in 1959 and 1965 respectively, and on their employment biography since the age of 18. Immigrants – both ethnic Germans as well as non-German immigrants – are excluded from the study. Non-German immigrants are excluded mostly because a majority only has short periods of employment subject to German social insurance and it is impossible to draw a complete picture of their work trajectories. Furthermore, it can be assumed that the educational and social experiences of immigrants, again both ethnic German immigrants and non-German immigrants, differ from those of German nationals.[8]

The sample used for the analyses consists of 7,232 men and women born in 1959 and 9,456 born in 1965. The proportions of men and women are equal.[9]

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5 The sample is stratified for gender, nationality, age and currently responsible pension insurance institute. Decommissioned accounts and accounts of the deceased are excluded once a year as well as accounts for which all contributions have been refunded. The sample was first drawn in 1984 for 1983 and was then handled as a panel with an annual refreshment sample (Richter / Himmelreicher, 2008).

6 The underlying data sources for the process of identification are the Employee and Benefit Recipient History (BLH), the Integrated Employment Biographies (IEB) and the Establishment History Panel (BHP).

7 While the datasets of the Federal Employment Agency offer, for example, more information about unemployment periods and participation in labor market measurements, the VSKT enhances BASiD, e.g. with information about family obligations.

8 2,697 non-German immigrants born in 1959 and 4,116 born in 1965, respectively, were excluded from the sample as well as 318 and 185 ethnic German immigrants. The number of subjects excluded from our sample is this high because of the oversampling of immigrants in the original data set.

9 The proportion of men and women, for both cohorts, is representative and corresponds to the proportion of men and women within the IEB data. Therefore, the propor-

BASiD allows us to distinguish between those who have had pension-relevant periods in the GDR before the reunification and those who have not. The proportion of individuals who have had pension-relevant periods in the GDR is 21 per cent for those born in 1959 and 16 per cent of those born in 1965.

The data is available on a daily basis with overlapping individual labor market states in some cases. To examine work trajectories, we build continuous work histories with single labor market states for every individual for every quarter of a year. The labor market state is chosen on the basis of the longest duration of one state within one quarter. Overlapping periods of employment and any other state are defined as employment periods. We distinguish between the following labor market states:

- part-time employment
- unemployment (and / or benefit receipt)
- "family time" (women only)[10]
- civilian service / military service (men only)
- other states (illness / (early) retirement)
- no information.

3.2 Labor Market Entry and Work History – Descriptive Results

The majority of both cohorts enter the labor market after having completed their occupational training between the age of 18 and 29 (Reinberg / Hummel, 2006). This stage in the cohorts' life courses can be described as the transitional period from educational institutions to the workplace. Table 1 shows selected characteristics of the labor market entry period as well as some characteristics of the work history of the two birth cohorts, separately for men and women.

With regard to labor market entry, it can first be shown that women of both cohorts gain work experiences earlier in the life course than men (cf. tab. 1). Despite the educational expansion of the 1960s, women of the baby boom cohorts still show a lower educational level than men (Reinberg / Hummel, 2006). Therefore, female transitions from school to work often take place earlier in the life course. In both cohorts, men are more likely to enter the labor market between the ages of 26 and 29, the typical labor market entry age of university

tion equals the proportion of men and women with contributions to social insurance agencies. We abstain from weighting the data because of the lack of longitudinal weights.

[10] A woman is considered to take family time when she is either on parental leave, or her employment biography shows a gap directly after she gave birth to a child, or if she is caring for another family member and pays compulsory contributions to the German Pension Insurance.

graduates. In West Germany, the younger cohort enters the labor market later than those born in 1959, possibly due to extended education and occupational training as well as due to the labor market crisis of the 1980s. Determined by the former GDR system, almost all East Germans have made their first work experience before the age of 22. With regard to the age of the first unemployment experience, there are gender and cohort differences as well as differences between East and West Germany. In both cohorts, more women experience unemployment early in the life course. Additionally, while about half of all men in both cohorts have never been confronted with unemployment by the age of 41, only about 39 per cent of all women reach the same age without any episode of unemployment. Between the ages of 18 and 21 almost 14 per cent of all women born in 1959 face unemployment at least once, while only about 8 per cent of men experience unemployment at this very young age. Gender differences diminish within the younger cohort, but can still be observed. In East Germany, labor market problems occur during the transformation process after the German reunification. The younger birth cohort shows significant labor market problems between the ages of 26 and 29 and the older cohort at 30 and above, respectively. Women in East Germany were especially affected by unemployment (Quack / Maier, 1994).

The data also reveals that the younger cohort was confronted with unemployment at a younger age. By the age of 30, 43 per cent of those born in 1965 had already been unemployed at least once. In comparison, only about a third of those born in 1959 had to experience unemployment before the age of 30. However, by the age of 42, the difference between the cohorts has diminished to 5 percentage points.

Looking at selected characteristics of the work trajectories of both cohorts from the age of 18 until today, gender differences as well as East-West differences are observable within both cohorts. As already demonstrated by the characteristics of labor market entry of both cohorts, women face longer durations of unemployment throughout their work history. Moreover, the modernized male breadwinner model that is characteristic for the German welfare state (Pfau-Effinger, 1999), seems to be prevalent for West Germans in both cohorts. While men spend the majority of the years of their work trajectories in full-time employment, women more often tend to work part-time. Accordingly, female work trajectories are more heterogeneous than those of men, as the measures of concentration show. The average number of labor market states and the average number of episodes defined as the time spent in one labor market state without gaps, affirm this hypothesis.[11] Throughout their work trajectories,

[11] Although men by definition cannot be in the state "family time", the average amount of states is still comparable, due to the state "civilian service / military service" (not included in the table). Moreover, since the difference between the average amount of states for women and men is greater than one, an explanation only based on the additional state "family time" cannot cover all of the observed difference.

Table 1

Selected Characteristics of Labor Market Entry and of Work History

	Cohort of 1959					Cohort of 1965				
	Total	Men	Women[a)]	West	East[b)]	Total[c)]	Men	Women[a)]	West	East[b)]
n	7,232	3,653	3,579	5,698	1,534	9,456	4,777	4,679	7,938	1,518
%	100.00	50.51	49.49	78.79	21.21	100.00	50.52	49.48	83.95	16.05
Age of first employment experience up to the age of 42 in %										
18–21	71.93	69.31	74.60***	65.97	94.13***	65.65***	61.17	70.23***	59.86	96.04***
22–25	6.36	6.90	5.81+	6.93	4.24***	9.95***	11.20	8.68***	11.10	3.96***
26–29	9.55	12.48	6.57***	11.69	1.63***	14.24***	17.17	11.26***	16.94	/
30–42	9.72	9.75	9.70	12.32	/	8.99	9.94	8.01***	10.71	/
No	2.43	1.56	3.32***	3.09	/	1.16***	0.52	1.82***	1.39	/
Age of first unemployment experience up to the age of 42 in %										
18–21	10.92	8.08	13.83***	13.30	2.09***	13.76***	12.94	14.60*	16.31	0.40***
22–25	11.38	11.77	10.98	14.08	1.37***	9.74***	9.21	10.28+	10.62	5.14***
26–29	9.62	8.43	10.84***	10.78	5.35***	19.08**	15.91	22.31***	13.73	47.04***
30–42	24.14	21.52	26.82**	16.90	51.04***	18.63***	17.52	19.77**	19.40	14.62***
No	43.93	50.21	37.52***	44.95	40.16***	38.79***	44.42	33.04***	39.93	32.81***

Average duration in different labor market states in quarters (sd)										
Full-time	50.14 (32.20)	59.00 (32.53)	41.10*** (29.20)	45.11 (32.90)	68.83*** (20.57)	46.92*** (31.35)	55.05 (32.49)	38.61*** (27.79)	44.06 (31.59)	61.89*** (25.22)
Part-time	4.59 (11.10)	0.98 (4.30)	8.27*** (14.26)	4.81 (11.67)	3.75*** (8.64)	5.45*** (12.02)	1.53 (5.62)	9.46*** (15.09	5.15 (11.58)	7.05*** (11.58)
Unemployment	5.60 (9.30)	4.93 (9.41)	6.29*** (9.14)	5.17 (9.06)	7.20*** (9.97)	7.73*** (12.05)	6.66 (11.33)	8.82*** (12.65)	6.92 (11.09)	11.94*** (15.50)
Family timed)	20.00 (24.44)	/ /	/ /	23.02 (26.69)	10.33*** (10.28)	16.78*** (21.18)	/ /	/ /	18.31 (22.63)	10.75*** (12.38)
No information	27.48 (31.63)	32.19 (32.85)	22.67*** (29.57)	32.37 (9.30)	9.30*** (30.94)	30.01*** (14.85)	34.69 (32.16)	25.23*** (28.88)	33.99 (31.51)	9.19*** (16.03)
Average number of labor market states (sd)										
	3.34 (1.16)	2.94 (0.99)	3.75*** (1.18)	3.20 (1.13)	3.86*** (1.15)	3.40** (1.14)	2.96 (0.97)	3.85*** (1.13)	3.31 (1.10)	3.86*** (1.24)
Average number of labor market episodes (sd)										
	8.28 (6.21)	6.86 (5.41)	9.73*** (6.62)	7.21 (5.33)	12.28*** (7.47)	8.18 (5.54)	7.06 (5.28)	9.32*** (5.56)	7.65 (5.19)	10.94*** (6.42)
Measure of concentration in %[e)]										
	89.57	84.81	95.89	88.50	94.46	90.15	85.72	96.67	89.47	94.80

Source: BASiD v1, 1951–2009, own calculations. Further labor market states (illness, civilian service/military service and retirement) are not displayed due to small numbers and for privacy reasons.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ $^{+}p < 0.10$ (*t*-test/two sample test of proportion); a) reference group: male same cohort; b) West same cohort; c) reference group: total cohort of 1959 d) Comparing the average duration without information, one has to bear in mind that the state "family time" only applies to women. If a man absents himself from the labor market due to family obligations, it is not reported in the dataset and is therefore coded with the state "no information". However, we assume that the number of men taking family time is negligible. e) The measure of concentration indicates the percentage of different work trajectories. For example, in the cohort of 1959, 89.57% of all work trajectories are different from each other. (Brzinsky-Fay et al., 2006, 441).

women are not only employed in several different work contracts, but also spend some time meeting family obligations. On average, women born in 1959 spend five years in "family time" and women born in 1965 four years, respectively. In addition, transitions between different states are more common among women than among men.

The differences between East and West Germans are highly significant. In East Germany, the members of both cohorts were confronted with a different economic system and suffered from structural change after reunification. Accordingly, East Germans' work trajectories are characterized by longer durations of unemployment and more frequent changes of labor market states. The German reunification took place when the older cohort was 31 years of age and the younger cohort, 25. Thus, the younger cohort in East Germany in particular had to adapt to a changing labor market system during their period of labor market establishment.

4. Using Sequence Analysis to Identify Different Types of Work Trajectories

We have chosen the sequence analysis method to describe and analyze work trajectories of the cohorts of 1959 and 1965 in order to detect their typical work patterns. The holistic character of sequence analysis methods enables us to compare work trajectories in their entirety (Mayer, 2009) instead of observing limited time periods only within the work history of individuals by analyzing the dependency of life course events and transitions (Windzio, 2001).

Work trajectories can be regarded as sequences of different labor market states. The first step in sequence analysis therefore is the definition of different labor market states per predetermined time unit. The BASiD data sets include information on individual work trajectories on a daily basis, but since the work trajectories of both cohorts already comprise 25 years, it is reasonable to generate one pooled labor market state for each quarter of a year. The labor market state with the longest accumulated episode within each quarter has been chosen to represent the complete quarter.

In a second step, sequences of all members of each of the birth cohorts are compared to each other by the optimal matching method. The optimal matching method is used to measure the similarity between pairs of sequences (Scherer / Brüderle, 2010); in our case this is between pairs of individual work trajectories. One advantage of the optimal matching method compared to other sequence analysis methods is the chance to consider durations of consecutive states (Abbott / Tsay, 2000; Aisenbrey, 2000). In this process, one seeks to find the minimum costs that are needed to transform one sequence into another. A similarity measure for each pair of sequences is calculated and written to a similarity matrix (Brzinsky-Fay et al., 2006). The transformation is made by

two fictional operations: the substitution of one element by another; and the insertion and deletion (indel) of single elements within a sequence. For the following analyses, we have calculated the substitution costs based on the average transition probability from one labor market state into another. The lower the probability of transition between two states, the higher the costs of substitution. The so-called "indel-costs", on the contrary, are fixed to half of the maximum of the substitution costs. The minimum costs of the transition of one sequence into another are calculated using the Needleman-Wunsch algorithm (Needleman / Wunsch, 1970) based on the Levenshtein distance (Levenshtein, 1966).

In the third and last step, cluster analyses of the distance matrix are performed. To obtain the most homogenous and commensurate clusters, a hierarchical cluster analysis according to the Ward's criterion is conducted (Bacher et al., 2010). The optimal matching analyses as well as the cluster analyses are run separately for both cohorts.

5. Results

Results of the hierarchical cluster analyses, following the optimal matching analyses, suggest five interpretable clusters for the birth cohort of 1959 and six interpretable clusters for the birth cohort of 1965.[12] In both cohorts, the clusters hierarchically result from three main groups of work trajectories, which were found in an intermediate step of the hierarchical cluster analyses (cf. app. 1). The three groups are characterized by different degrees of participation in employment subject to social security contributions (cf. fig. 1). The first group is dominated by *full-time employment* with only small gaps. The second group contains more *diversified work trajectories* with very heterogeneous work patterns. Finally, the third group is defined by work patterns characterized by long durations outside the social insurance system and therefore covers those with *work trajectories outside the scope of social insurance:* the self-employed and civil servants as well as the labor reserve, i.e. people who are neither working in a job subject to social contributions, nor receiving social benefits.

5.1 The Birth Cohort of 1959

For the birth cohort of 1959, men mainly show full-time dominated work trajectories, while women form the majority in family-oriented, more diversified trajectories. Table 2 gives a detailed overview on the characteristics of the different clusters of work trajectories of those born in 1959.

[12] In case of clustering sequence data, conventional test statistics cannot be used to determine a suitable number of clusters (Brzinksy-Fay 2007, 413). Thus, theoretical considerations with regard to the dendrograms (cf. app. 1) of hierarchical cluster analysis were necessary.

Table 2

Clusters of Different Work Trajectory Patterns of Those Born in 1959

	"full-time"	"interrupted employment"	"family time"	"late entrants"	"outside the scope of social insurance"
Men (%)	68.97	25.41	/	58.18	63.59
Women (%)	31.03	74.59	100.00	41.82	36.41
East (%)	31.80	37.69	5.55	3.93	7.47
West (%)	68.20	62.31	94.45	96.07	92.53
Average duration in different labor market states in quarters (sd)					
Full-time	84.79 (14.44)	48.87 (20.34)	26.81 (18.23)	29.17 (20.63)	17.93 (17.66)
Part-time	0.89 (3.60)	13.33 (18.20)	4.10 (7.39)	4.61 (9.89)	1.33 (4.38)
Unemployment	3.35 (5.96)	11.87 (13.50)	4.40 (5.58)	6.05 (9.61)	2.44 (4.75)
Family time	1.71 (4.42)	13.42 (17.21)	57.63 (20.01)	5.60 (13.51)	0.65 (2.99)
No information	6.26 (9.42)	8.15 (11.18)	6.52 (8.76)	53.79 (18.32)	76.65 (20.26)
Average number of labor market states (sd)					
	2.99 (1.12)	4.21 (1.01)	3.75 (1.01)	3.26 (0.97)	2.83 (1.03)
Average number of labor market episodes (sd)					
	7.48 (6.00)	12.77 (7.22)	7.98 (4.87)	6.80 (4.54)	6.13 (4.67)
Total					
n	2,459	1,515	667	1,399	1,192
%	34.00	20.95	9.22	19.34	16.48

Source: BASiD v1, 1951–2009, own calculations.

Investigating the group of full-time work trajectories first, we observe that men dominate this cluster. During the considered observation period from the age of 18 to the age of 42 (25 years), members of the "*full-time*" cluster on average spend almost 21 years in full-time employment (cf. tab. 2). Other labor market states only play a minor role in these relatively stable work trajectories. The "*full-time*" cluster includes more than one third of the cohort of 1959.

The cluster of "*interrupted employment*" trajectories can especially be distinguished from the remaining clusters by the average number of labor market states and the average number of labor market episodes, which are relatively high and indicate pluralized, heterogeneous work trajectories. For example, the average number of labor market episodes within this cluster amounts to almost 13. Hence, a member of this cluster experienced on average almost 12 transitions between different labor market states within 25 years. This cluster is

clearly dominated by women. Work trajectories belonging to the "*interrupted employment*" cluster usually start with episodes of full-time employment. Around the age of 25, which is about the women's average age at the birth of her first child (Pötzsch / Sommer, 2009), these episodes of full-time employment are often interrupted by periods of family time. After the interruption, the majority of women belonging to this cluster seem to return to the labor market with reduced working time. The proportion of unemployed is relatively high within the "*interrupted employment*" cluster and rises especially after the reunification in 1990 (cf. app. 2). The increase in unemployment periods after 1990 supposedly results from the high proportion of East Germans within the "*interrupted employment*" cluster.

The "*family time cluster*", as one of the diversified patterns of work trajectories, represents an even more traditional gender pattern, consisting of 95 per cent West German women. The cluster shows work trajectories with very long episodes of family time after a short period of full-time employment. On average, women belonging to this cluster spend more than 14 years meeting family obligations. The "*family time cluster*" is the smallest cluster found, covering only 9 per cent of those born in 1959.

Long periods without information about labor market participation are found in the remaining two clusters. Within the cluster of "*late entrants*", these periods appear at the beginning of the work trajectories (cf. app. 2) and probably result from extended periods of education in West Germany (Konietzka, 1999). It represents about 20 per cent of those born in 1959.

The last cluster contains all of those with "*work trajectories outside the scope of social insurance*" and represents about 17 per cent of the baby boom cohort of 1959.[13] Since the cluster of "*work trajectories outside the scope of social insurance*" comprises the self-employed and civil servants as well as the labor reserve, no further interpretation is possible.

5.2 The Birth Cohort of 1965

The cluster analysis for those born in 1965 suggests six reasonably interpretable clusters. In comparison to the birth cohort of 1959, it can initially be stated that these six clusters show even more pluralized work trajectories, especially with regard to the labor market entry. The cluster dominated by full-time work trajectories is comparably smaller within the younger cohort: the "*full-time*" cluster only comprises about 23 per cent of those born in 1965, but 34 per cent of the older cohort (cf. table 2 and 3).

[13] The cluster size is comparable to similar studies. Stegmann (2008) e.g. found that 15 percent of those belonging to the birth cohorts of 1940 to 1950, who contribute to the statutory pension scheme, show very short periods of employment subject to social insurances.

Instead, within the cohort of 1965 two groups of "*late entrants*" are found: "*full-time: late entrants*"; and "*pluralized late entrants*". The cluster of "*full-time: late entrants*" is characterized by continuous full-time employment after a comparably late labor market entry. Including the most recently available figures, those belonging to this cluster spend on average almost 17 years in full-time employment, five years less than those belonging to the genuine "*full-time*" cluster. The "*full-time: late entrants*" cluster is dominated by men, who make up more than two thirds of this group.

Table 3

Clusters of Different Work Trajectory Patterns of Those Born in 1965

	"full-time"	"full-time: late entrants"	"pluralized late entrants"	"interrupted employment"	"family time"	"outside the scope of social insurance"
Men (%)	68.21	69.54	53.09	20.54	/	61.14
Women (%)	31.79	30.46	46.91	79.46	100.00	38.86
East (%)	26.17	12.68	0.65	31.65	6.30	5.78
West (%)	73.83	87.32	99.35	68.35	93.70	94.22
Average duration in different labor market states in quarters (sd)						
Full-time	85.95 (14.00)	65.66 (16.70)	21.54 (13.77)	38.03 (17.74)	23.29 (16.97)	18.00 (16.88)
Part-time	1.62 (4.59)	1.18 (3.40)	8.52 (12.21)	17.65 (19.98)	4.78 (8.72)	1.66 (4.61)
Unem-ployment	5.21 (7.91)	3.23 (5.39)	7.99 (9.60)	19.58 (18.84)	6.63 (8.50)	4.45 (7.25)
Family time	2.01 (5.26)	0.94 (3.34)	4.87 (10.94)	11.74 (13.35)	52.52 (16.92)	1.28 (4.55)
No information	2.98 (6.34)	27.63 (14.40)	56.61 (12.97)	9.92 (12.13)	12.42 (13.38)	73.78 (21.52)
Average number of labor market states (sd)						
	2.94 (1.18)	3.12 (0.91)	3.51 (0.91)	4.36 (0.95)	3.97 (0.94)	3.01 (1.00)
Average number of labor market episodes (sd)						
	7.11 (5.41)	6.51 (4.17)	7.60 (4.19)	12.93 (6.16)	8.26 (4.22)	6.88 (4.89)
Total						
n	2,186	1,727	923	1.738	857	2,025
%	23.12	18.26	9.76	18.38	9.06	21.41

Source: BASiD v1, 1951–2009, own calculations.

Within the "*pluralized late entrants*" cluster, by contrast, women and men are almost equally represented. While the "*full-time: late entrants*" cluster contains both East and West Germans, East Germans are underrepresented within the "*pluralized late entrants*" cluster. It can be concluded that full-time late entrants established themselves on the labor market after an extended period of

education, while the more pluralized late entrants remain in more instable employment situations.

The "*interrupted employment*" cluster of those born in 1965 mostly consists of women (68 per cent). It shows somewhat similar work trajectories to the "*interrupted employment*" cluster of the cohort of 1959. Again, the cluster consists of a high proportion of East Germans and unemployment rates rise after reunification. Similarly to the older cohort, a "*family time*" cluster is found, containing mainly West German women. The two "*family time*" clusters are very similar and illustrate the persistence of traditional gender role patterns over time. However, women of the cohort of 1965 seem to return to the labor market slightly sooner (cf. app. 2).

Finally, we also identify a cluster of men and women "*outside the scope of social insurance*". Considering a period of 25 years on average, we have no information about the labor market state for about 19 years in this cluster. Again, it is inadvisable to further interpret this cluster. Nevertheless, this cluster of work trajectories "*outside the scope of social insurance*" comprises 21 per cent of all individuals. This contrasts with the older cohort where we find only about 17 per cent of work trajectories outside the scope of social insurance. Thus, in the younger cohort a smaller share of people is found in dependent employment and therefore is entitled to payments from the social insurance. We rather infer that members of this cluster are self-employed or work as civil servants than belonging to the labor reserve. To a certain extent, this circumstance may also result from the necessity to look for other types of employment during economic crises (e.g. self-employment, freelancing).

6. Discussion

The study sheds light on previous work trajectories of two illustrative cohorts of the German baby boom – the birth cohorts of 1959, and of 1965. While the cohort of 1959 is the first high-birthrate cohort after the Second World War, the cohort of 1965 follows several cohorts with a population greater than 1.2 million. According to the relative cohort size hypothesis (Easterlin, 1987; Engelhardt / Prskawetz, 2008), the cohort size, relative to the cohorts born before and after, influences the economic and social achievements of a specific birth cohort. We therefore first assumed that both cohorts were confronted with increasing difficulties and insecurities during their labor market entry period, and those born in 1965 in particular. Further complications are the prevailing difficulties on the labor market during the 1980s and 1990s, affecting both cohorts at different times in their employment careers. Moreover, we expected that insecurities at the beginning of individual working lives affect economic fortune during the subsequent work trajectories. According to the cumulative inequality theory, disparities at the beginning of the life course lead to inequalities across

the complete life span (Ferraro et al., 2009). Using the optimal matching method we secondly aimed to find typical patterns in the work trajectories of those born in 1959 and 1965 respectively that would reflect these insecurities. Lastly, we assumed that gender as well as East-West differences would be found with regard to typical patterns of career trajectories.

Labor market entrants were confronted with difficulties performing their transition from the educational system into first occupation, as the demand for labor at this time was relatively low. In addition, we conclude that the labor market was also relatively saturated. This resulted in further difficulties for the birth cohort of 1965. Studies of the baby boomer generation so far have been mainly based on the inter-generational comparison with older or younger cohorts. We, however, show that intra-generational differences must also be considered.

Intra-cohort as well as inter-cohort differences have been found. Our analyses of both cohorts' labor market entry showed that the younger cohort – those born in 1965 – was confronted with considerably greater difficulties than those born in 1959. By the age of 30, 44 per cent of the younger cohort had already experienced unemployment at least once. This compares with only 32 per cent of the older cohort who had experienced unemployment at the same age. This results in particular from increasing labor market insecurities during the 1980s and 1990s, the same period of time as those born in 1965 finished their education and entered the labor market.

Regarding the debate on de-standardization and increasing discontinuity, our findings require a differentiated interpretation. First, we observe remarkably high measures of concentration for both cohorts, pointing to highly diversified work trajectories (cf. Table 1). We also recognize high average numbers of labor market states and episodes, pointing to lower stability of work contracts and higher labor market mobility. Moreover, looking at the labor market entry we detect that the younger cohort in particular suffered from economic crises, leading to de-standardized transitions from the education system into first employment.

Labor market insecurities and unemployment can be observed for both cohorts at the same period of time, namely at the time of general labor market crises and, especially for East Germans, after the German reunification. We conclude that the actual economic situation is of great influence on individual occupational outcomes.

However, we also find a meaningful number of clusters showing typical patterns of work trajectories. In spite of increasing de-standardization, we therefore also find some commonalities within a variety of different work trajectories. A comparison of both cohorts shows that within the cohort of 1965 later and more pluralized labor market entries took place. Diversified work and life concepts result not only from de-standardization, but also from de-institutionalization of work trajectories. With this in mind, the hypothesis of de-institutio-

nalization refers to the dissolution of the tripartite life course or the so-called "standard employment" pattern (Mückenberger, 1985). A growing group of "*late entrants*" to the labor market point to the de-institutionalization of the transition from school to work. The "standard employment" pattern is found within the "*full-time*" clusters for both cohorts. Although in every cohort "*full-time work trajectories*" represent the largest cluster, the majority within each cohort belongs to clusters that are characterized by further pluralization.

The majority of both cohorts do not explicitly reveal obvious labor market problems in the second half of their work trajectories. Instead, long durations of unemployment are concentrated on a small minority of people (Schmillen / Möller, 2010).

Our findings show that long durations of unemployment are concentrated in an "*interrupted employment*" cluster in each cohort. This cluster comprises a high number of East Germans. Although it has now been over 20 years since the reunification, our results show that work trajectories are still characterized by differences between East and West.

Since the social security system in Germany is still based on the "standard employment" pattern (Kohli, 2003; Osterland, 1990), less institutionalized work trajectories with an increasing number of discontinuity result in poorer social security, especially in later life (Trischler / Kistler, 2011).

Finally, with regard to the hypothesized gender differences, it can be stated that for both cohorts we find a mostly male-dominated cluster of "*full-time work trajectories*" on the one hand and a female-dominated "*interrupted employment*" cluster alongside the also female-dominated "*family time cluster*"; this applies especially to West German women. Women are at particularly high risk of poor social security coverage because they have to reconcile employment and family life. Therefore, they more often show strongly pluralized work trajectories with an increasing number of transitions between different labor market states. Female work patterns, in this sense, rather resemble individual puzzles than predetermined, institutionalized work trajectories (Krüger / Born, 1991). Female work trajectories are often structured by family events. Whereas in the past, marriage caused women to retreat from the labor market, for our cohorts the birth of a child often causes substantial change in women's work trajectories (Tölke, 1989), resulting in heterogeneous work biographies and, especially for West German women, in long family-related timeouts.

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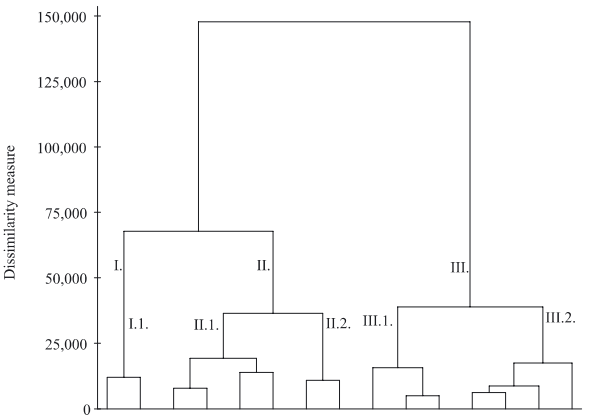
Appendices

Appendix 1: Dendrograms

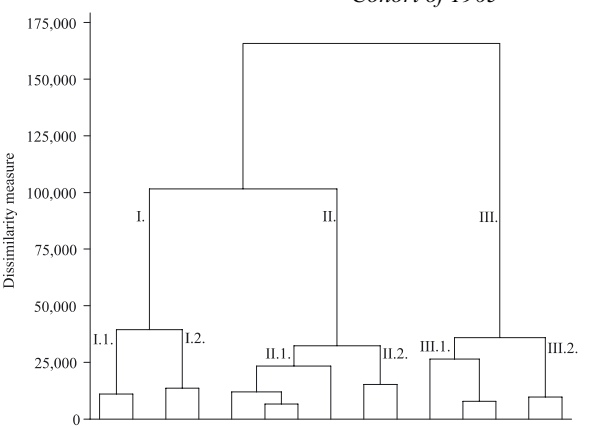
Cohort of 1959



I. Full-Time Employment
I.1. "full-time"
II. Diversified Work Trajectories
II.1. "interrupted employment"
II.2. "family time"
III. Work Trajectories Outside the Scope of Social Insurance
III.1. "outside the scope of social insurance"
III.2. "late entrants"

Source: BASiD v1, 1951 – 2009, own calculations.

Cohort of 1965

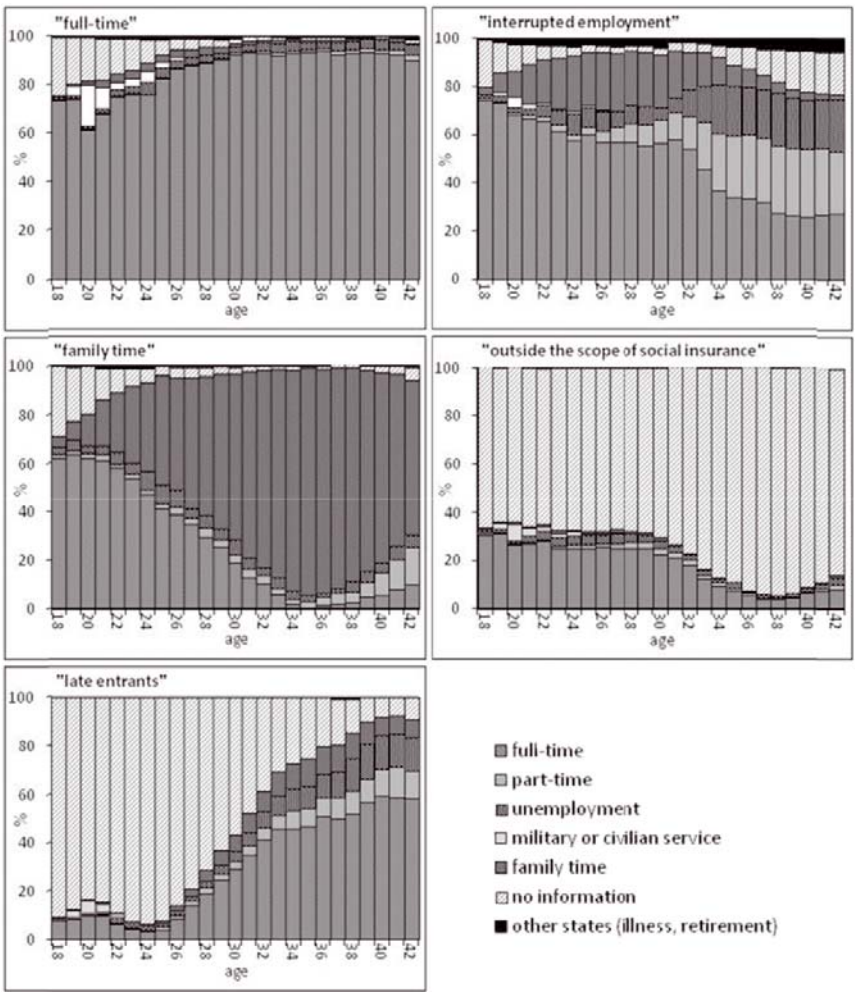


I. Full-Time Employment
I.1. "full-time"
II.2. "full-time: late entrants"
II. Diversified Work Trajectories
II.1. "interrupted employment"
II.2. "family time"
III. Work Trajectories Outside the Scope of Social Insurance
III.1. "outside the scope of social insurance"
III.2. "pluralized late entrants"

Source: BASiD v1, 1951 – 2009, own calculations.

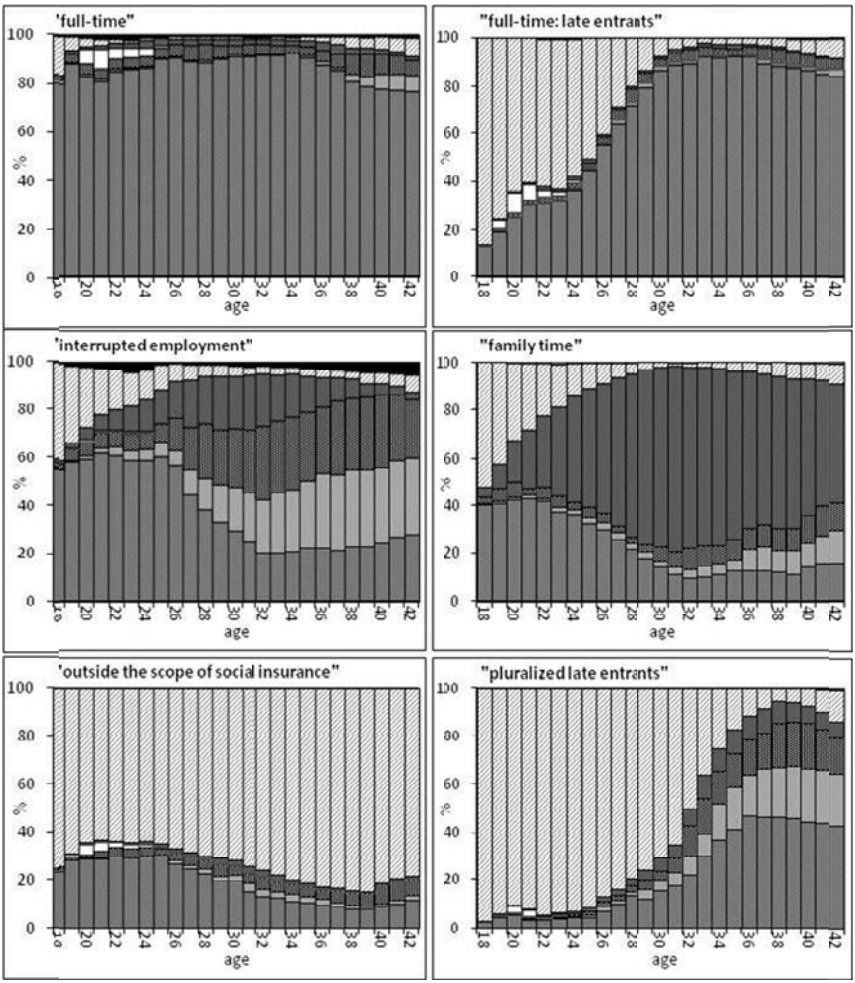
Appendix 2: Work Trajectories over Time

Clusters of Different Work Trajectory Patterns of Those Born in 1959 over Time



Source: BASiD v1, 1951–2009, own calculations.

Clusters of Different Work Trajectory Patterns of Those Born in 1965 over Time



Source: BASiD v1, 1951–2009, own calculations.