

From higher education to work:: patterns of labor market entry in Germany and the US

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Working Paper

From Higher Education to Work

Patterns of labor market entry in Germany
and the US

Marita Jacob

Felix Weiss

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Editorial Note:

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Abstract

Previous comparative studies describing the transition from school to work and national patterns of labor market entry have often had to simplify the complex transition processes involved. For example, the first job after education is not easy to define if a person returns to education. In addition, most of this research has concentrated on national patterns shaped by the experiences of the majority of young people. In this paper we concentrate on a particular group of school-leavers, viz. those entitled to enroll in higher education. We describe their transition patterns from school to work, including recurrent education leading to more than one instance of labor market entry after leaving education. A comparison between Germany and the United States enables us to answer the question of how various features of the tertiary education systems influence these patterns, i.e. the number of people actually returning to education and the time it takes to finally enter the labor market. The systems of higher education in Germany and the US differ in several ways that we assume to be important for the transition patterns from school to work: (a) the mode of stratification (parallel tracks in Germany vs. consecutive tracks in the US) provides different labor-market prospects and incentives for returning to education; (b) the coordination mechanism (state-controlled vs. market-based) is decisive for the diversity of institutions and their orientation to particular target groups; (c) the degree of standardization in educational programs is important for more or less smooth transitions to the labor market. Taking into account that labor-market flexibility also differs in the two countries, we derive our main hypothesis: transition patterns from higher education to the labor market in the US are less standardized and regulated than in Germany. We expect that students attending the lower-tier institutions in the US (community colleges) will display significant differences in this respect over and against their German counterparts attending a *Fachhochschule* (university of applied sciences). In our empirical analyses we actually find overall differences with regard to variance in the ages at which young people leave education and enter the labor market. US students gain much more labor-market experience in the period between their initial and ultimate exit from education. Differences between lower- and higher-tier institutions are less marked than expected, both within and between the two countries.

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1 Introduction

In many industrialized Western countries we observe prolonged transitions from school to work characterized by longer participation in education, periods of early work experience during school, and periods in which employment is the major activity. For quite a lot of young people the point at which they leave school and enter the labor market is not clearly defined. Both activities - education and employment - may overlap, or the decision to leave education may be gone back on by leaving a current job and returning to school. Intertwined educational careers and labor-market entries pose several substantial and theoretical challenges for research. On the one hand, the results of comparative research usually have to rely on very broad definitions of labor-market entry. On the other, returning to the educational system after gaining work experience may decrease or increase social inequalities, depending on the social composition of those who decide to prolong and complement their education. In this paper we focus on the first of these two questions. Our aim is to describe labor-market entry patterns in more detail to provide a more precise delineation of the differences between the two countries discussed and the way in which these patterns are affected by specific structural conditions in both the system of (higher) education and the labor market.

Previous comparative studies of the transition from school to work have shown that national differences in transition patterns are due to different (secondary) educational systems, labor-market structures, and the relationship between them (e.g. Müller & Gangl 2003; Scherer 2001; Schomburg & Teichler 2006; Shavit & Müller 1998; Wolbers 2007). However, these comparisons rely on a rough definition of labor-market entry that often neglects the complexity of the process of leaving education and entering work. A lot of research has been done comparing overall patterns of the transition from school to work, but only a few studies have gone into detail e.g. by examining specific transitions from employment back to (full-time) education. Also, the focus on secondary and post-secondary vocational education has led to a comparative neglect of the specificities of higher education. Although some comparative studies concentrating on participation and returns to tertiary education have been published recently (Arum et al. 2007; Schomburg & Teichler 2006), they have not taken account of the complex processes involved in educational careers at this stage of the life course, i.e. interruptions to gain work experience and the return to higher education to continue with one's studies.

In this paper we set out to remedy this deficit and extend previous research by looking at the following aspects: We focus on students entitled to enter higher education and describe their transition patterns. We also broaden the school-to-work perspective by extending the observation period up to age 34, thus encompassing 'adult learning'. Our main interest is in the sequential order of education and work experience and in the extent of the deviation from ordered life-course sequences that can be clearly distinguished into a phase of completed education and subsequent work entry. We examine the process undergone by young adults entering paid employment after graduation from school and inquire whether and how long education continues into adulthood, possibly alternating with work. We do this by looking at several intermediate transitions, e.g. the timing of the initial and ultimate exit from

(full-time) education and the initial and 'final' entry into the labor market. Furthermore, to describe the influence of the institutional setting of an educational system on integration into the labor market, we compare two countries: Germany and the US. The tertiary education systems in these two countries differ in various central ways, thus providing different frameworks for individual educational choices. Whereas in Germany higher education is stratified into several parallel tracks of different fields of study leading to one level of final graduation, in the US higher education is stratified more diversely and sequentially, with more flexibility between different tracks. Recent tertiary education reforms in Germany in the course of the so-called Bologna Process have partly replaced the traditional parallel courses by a sequentially ordered system (Bachelor/Master structure). Against this background, our empirical results are of particular relevance for German educational policy.

The paper is structured as follows: In the next section we elaborate the theoretical background of our research inquiry and describe the main characteristics of the German and American systems of tertiary education, deriving some hypotheses on the patterns of educational careers and labor-market entry in the two countries. After discussing our data and operationalization approach, we present the results of our analyses and the implications of our findings.

2 Leaving (Tertiary) Education and Entering the Labor Market

2.1 Theoretical considerations from a life-course perspective

Previous research has found evidence for the de-standardization and de-institutionalization of life courses in highly industrialized societies (e.g. Buchmann 1989; Shanahan 2000 for an overview). In this context "...*de-institutionalization* would (...) mean that states, stages, events and transitions, which at earlier times were clearly differentiated, are being reintegrated or fused." (Brückner & Mayer 2005, p. 32). One striking example of this trend toward growing diversity in life courses is the transition from school to work, for example due to prolonged participation in education, phases of unemployment, or jobs with precarious contract conditions (e.g. Buchholz & Kurz 2005; Hillmert & Jacob 2004). Summing up these results, one may conclude, that the transition from school to work is not so much an ordered sequence of first leaving school and then entering work, but rather a series of different activities that overlap and extend throughout adolescence and young adulthood. Also, returning to education after gaining work experience has various consequences for the entire transition to adulthood. Previous research shows that educational attainment correlates to a high degree with class position and unemployment risks (i.e. Ishida et al. 1995; van der Velden & Wolbers 2007). Accordingly, returning to education may have profound social consequences for later opportunities in life, albeit at the cost of forgone earnings in the labor market. The process of leaving the parental home is strongly affected by the employment situation. Enrollment at an educational institution has ambiguous affects, as it accelerates the move out of the parental home if enough resources are available and slows it down if resources are lacking (Aassve et al. 2002; Jacob &

Kleinert 2008; Nilsson & Strandh 1999) Further, participation in education is related to postponement of childbirth (Blossfeld & Huinink 1991; Lifbroer & Corijn 1999; Rindfuss et al. 1996). In short, alongside the inherent interest they have for individualized and diversified pathways between school and work, these patterns are also related to other life domains and influence the life course in areas that are of major concern for sociologists. In the following, we focus on the phenomenon to be described here: the interrelation between labor-market entry and educational participation.

As a consequence of a prolonged entry process, labor-market entry as an 'event' can often not be determined precisely due to broad variations both in the timing and the extent of integration into regular and stable employment (Light 1998). Frequently, the two analytically defined events 'leaving school' and 'taking up a job' are not clearly identifiable in empirical terms. It may indeed be preferable to speak of the first (or last) time of leaving school and the first job after leaving school - which may in fact not be the final entry into the labor market as returning to school and re-entering work may recur again. Hence, entering the labor market is a 'murky event' posing problems for comparative research, which has to grapple with the operational definition of the first 'real' or 'stable' job. This said, comparative research has nevertheless succeeded in identifying typical national transition patterns. For example, in Germany the transition from school to work appears on average to be rather smooth in terms of lower youth unemployment and less job mobility in early working careers than in most other European countries (e.g. Müller et al. 1998; Scherer 2005). In the US, by contrast, the transition from school to work can generally be characterized as a period of floundering. There are much longer testing and trial periods in early working careers involving initially low-level and/or low-paid jobs, subsequent progress through the initial years in the labor market, and often high rates of job mobility or returns to school (Arum & Hout 1998; Rosenbaum 1999).

Previous comparative research has also highlighted the fact that cross-national differences in transition patterns align with cross-national differences in the education systems and labor-market structures. In the German case, the specific patterns displayed by educational and occupational trajectories are often explained by the strong impact of the German training system via the so-called "dual system" of apprenticeships in which practical experience in a firm is combined with ongoing general education at school. Approximately two-thirds of all young Germans participate in the dual system or similar training arrangements, thus acquiring occupational credentials that are widely recognized (Blossfeld 1992; OECD 2007; Statistisches Bundesamt 2006). Accordingly, for the majority of German young people the training system functions as an institutionalized bridge facilitating labor-market integration. By contrast, the education system in the US is much more general, and there is hardly clarity about formal educational degrees and subsequent occupational pathways. Young people in the US spend rather long periods looking for a job and display quite high rates of job mobility and turnover (Arum & Hout 1998).

However, this simplifying approach to the analysis of general patterns of labor-market integration has a number of shortcomings:

- First, the general patterns are shaped by the pattern displayed by the majority of young people. Notably in Germany, the many 'smooth' transitions via apprenticeships camouflage the patterns displayed by other transitions. In the light of the increasing importance of academic training for successful labor-market participation and the growing ratios of students participating in tertiary education, it becomes increasingly important to know more about the transition processes into and out of that subsystem, for example recurrent enrollment and labor-market entry after (final) graduation.
- Second, especially those students with the highest school-leaving certificates have a lot of options regarding their educational career, e.g. returning to (full-time) education after having gained some work experience, or interrupting an ongoing education or training course for work. However, the feasibility of entering and returning to the education system depends on both the possibilities and the incentives for returning to education or to staying in the labor market. Accordingly, a comparative approach is required to show the influence of the educational system and labor-market structures on transition patterns. In this paper we have chosen the US as an example that differs from Germany in both respects, i.e. in the arrangements of tertiary education and in labor-market regulation.

In the subsequent sections we first discuss various characteristics of tertiary education and flexibility as an important feature of labor-market structure in general, moving on from there to describe the situation in Germany and the USA in accordance with those dimensions. From this we develop hypotheses on national differences in the patterns of educational careers and labor-market integration for high-school graduates in both countries.

2.2 Educational structures and labor-market linkages

Structures of higher education

For the purpose of our inquiry, we draw upon the following distinction between dimensions of educational structures that we assume strongly influence the transition patterns between school and work: First, the *mode and type of stratification* displayed by the education system have to be considered. The *mode* of stratification has an impact on the allocation process in the labor market, usually by a corresponding hierarchy of entry positions, while the *type* of stratification (i.e. either via several parallel tracks leading to the same educational level or else via sequential courses each offering a full degree) has an influence on the feasibility of interrupting one's educational career. In the latter case, students can enter the labor market earlier without giving up their educational goals, or they can re-enter education easily to gain a higher degree.

Second, the evolution of different tertiary educational systems depends on the *mechanisms of coordination* predominant in higher education. These are either largely state-controlled or market-based. They differ in the extent to which centralized control is operative with regard to curricular and institutional issues on the one hand, and in the degree to which institutions are free to develop their own profile by catering for consumer demands with specific educational programs on the other. In line

with Arum et al. (2007), we argue that the pattern of labor-market entry will differ depending on the degree of state control. We extend their argument that deregulated systems will lead to more institutionally diversified systems and assume that certain institutions within those systems will offer more flexibility for educational career patterns. In a market-based system, second-tier institutions and institutions with low prestige are especially likely to offer greater flexibility with a view to acquiring a comparative advantage in attracting (non-traditional) students. In the case of state-controlled systems there is less need for flexibility as a competitive asset, and it will depend on policy-makers whether the educational system offers more or less flexible pathways to graduation.

The third characteristic of higher education that we consider to be relevant for transition patterns relates to the labor market. Both *standardization of educational provisions* and *occupational specificity* provide information on the abilities and competencies of school-leavers that reduces uncertainty for both students and prospective employers as to how the occupation trained for accords with to a student's own interests and preferences or the respective job demands. However, degrees in sequentially stratified systems are not only designed as terminal degrees but also function as an entry qualification for the next stage in an educational career. This ambiguity reduces their value as signals about the skills of labor market entrants. Degrees from lower cycles in sequentially stratified systems may still be good signals about the general ability of an applicant that can be drawn upon in subsequent educational cycles, but they may also be less useful in detecting occupational skills. This in its turn may result in more mismatches on the labor market and more time spent looking for a job at the outset of a young person's career. By contrast, education systems offering standardized courses and comparable quality between its institutions accompanied by a degree of occupational specificity can be expected to stabilize labor-market entry, as the match between applicants and jobs should be better.

Labor-market structures

In our discussion of the core dimensions of labor-market structures we assume that *flexibility* plays an important role, as it influences the possibilities for labor-market entrants to get a suitable job. Flexibility both offers incentives to re-enter education in the case of an unsuccessful or unsatisfactory first job and lowers the risks involved in giving up a job.

We argue that there are three reasons why transitions from higher education to work are less ordered in flexible labor markets. First, a higher turnover-rate of workers in the labor market facilitates early exits from the educational system due quite simply to the number of vacancies. Attractive jobs will divert students away from education more often than in labor markets where entrants face high disadvantages in comparison to insiders. As previous research has shown, flexible labor markets do indeed manage to integrate school leavers faster than more regulated systems (Wolbers 2007). Second, once a position is reached in a flexible labor market, the value of holding this position is smaller than in regulated labor markets. As job safety is lower in flexible labor markets, the chance of losing it is higher. Moreover, it is then easier to find a new job, which further reduces the value of holding a position. Third, re-entry into the labor market after a second period in the education system

is easier. Lock-in effects in the educational system can be expected to be shorter, which reduces the costs and the risk of re-entering the education system.

2.3 The system of tertiary education in Germany and the US

The tertiary education systems in Germany and the US differ in several ways. In this section, we discuss how the two systems can be characterized with regard to the theoretical dimensions (stratification, coordination mechanism, standardization) discussed above.

Germany

The formal requirement for entering tertiary education in Germany is success in getting through upper secondary education and attaining the *Abitur* or a vocationally oriented *Fach-Abitur*.¹ Tracking in secondary school is rather rigid in Germany, leading to a pre-selection of students entitled to enroll at the end of secondary school. The German higher education system is commonly classified as a “binary stratified” system (Goedegebuure et al. 1996) as it is (mostly) a two-tier system with universities and lower tertiary institutions (*Fachhochschulen* or universities of applied sciences). The *Fachhochschule*, introduced in the 1970s, focuses on vocationally-oriented tertiary education, whereas universities are more academically oriented, offering courses in many more fields of study, including the ‘traditional’ professions like law and medicine. There has been a clear difference in status between these two types of institution. Almost all tracks are terminal, granting degrees of varying occupational specificity. Entering a certain track therefore implies the decision to obtain a certain terminal degree. Returning to the educational system after that means obtaining more than one terminal degree – usually with no (or only minor) credit transfer to the new program. Therefore Germany counts as a typical case of parallel stratification in higher education.

The organization of studies is basically the same in both tiers, although the completion of a degree at the *Fachhochschule* takes slightly less time than the standard duration of university studies (8 instead of 9 or 10 semesters). Hence, in both institutions at least 4 to 5 years have to be spent on studying before obtaining a degree with a distinct value in the labor market. As a result, a decision for tertiary education represents a major investment.²

State coordination and intervention in higher education in Germany is comparatively strong. The federal states are responsible for providing higher education, and they control the budgets of

¹ Whereas the *Abitur* provides eligibility for all university courses, the *Fach-Abitur* only provides access to *Fachhochschulen*. Vocational schools as well as apprenticeships in the so-called dual system of vocational training also attract students who are eligible for tertiary education. Thus, concentrating mainly on tertiary education as we do here leaves aside the fact that there are feasible alternatives to enrolling at university (Hillmert & Jacob 2002). Entering the labor market with the *Abitur* but without any further qualification is uncommon (Mayer et al. 2007; Müller & Pollak 2007).

² This has changed recently with the gradual introduction of the new Bachelor/Master system in the course of the so-called European ‘Bologna Process’. However, we cannot extend our analyses to these most recent

universities and *Fachhochschulen*. They also accredit programs of study, are involved in the hiring of professors, and determine the salaries of university employees (Mayer 2003). This leads to a certain degree of standardization in study programs. Although the content, number, and type of final exams are regulated by each university separately, universities are considered to be more or less equal in quality, and there is no particular hierarchy *among* universities in Germany. Until recently, there were no tuition fees for public institutions of higher education in Germany.³

United States

In the US, graduation from high school or passing the GED exam provides formal entitlement to enroll at university. In contrast to Germany, the majority of students in the USA achieve that. While the American system of higher education is often classified as “diversified” in terms of stratification (Goedegebuure et al. 1996), the institutional setting is mainly twofold: research universities as the first tier, with selective admission procedures offering classes in liberal arts and scientific education, and granting Bachelor, Master, and doctoral degrees. In universities, the system is divided into undergraduate and graduate studies. The second tier consists of so-called community colleges, providing rather open access and offering transfer classes of two years leading to “Associates of Arts” degrees (A.A.) for continuation in higher education or terminal vocational education. In community colleges, transfer classes and terminal courses channel the students to different final levels of education. By offering high class-time flexibility in their programs, the possibility of temporary drop-out, and specific credit requirements, community colleges often cater for part-time students and older students returning to education (e.g. Brint & Karabel 1989; Cohen & Brawer 1996; Grubb 2006; Roksa et al. 2007).⁴ In contrast to Germany, both universities and community colleges clearly display a sequentially differentiated system. The possibility of entering the labor market at any stage during higher education or continuing with one’s studies implies flexibility in the planning of educational careers. The decision for or against participation in tertiary education is broken down into several smaller decisions at different stages in the life course.

Further, the American system of higher education can be described as market-coordinated, as there is very minor intervention in matters of higher education by the government, and universities compete for students e.g. by offering an environment of selective admission and/or reputation, or by offering flexible study schedules. State intervention concentrates on support for students, predominantly by loans. The state does not play an active role in shaping the institutions of higher education (Roksa et al. 2007). Degrees are not highly standardized, e.g. (community) colleges sometimes offer very specialized degrees in contrast to the very broad liberal arts degrees.

developments as our longitudinal life-course perspective would require information from university entrants and graduates several years after graduation. This of course is not yet available.

³ There are very few fee-based private institutions of higher education in Germany (see Beck & Wilhelm 2003).

⁴ The pronounced vertical stratification of the system stems from the huge prestige differences between the institutions and from stratification within the institutions (Geiger 1996; Roksa et al. 2007) mirrored in the tuition fees commonly charged for higher education. Prestigious institutions charge much higher fees.

Comparing the two education systems (see Table 1 for a summary), it becomes clear that the American system offers more opportunities for the interruption of educational careers than the German system. In section 2.5 we will derive some more specific hypotheses on the national differences.

2.4 Labor-market flexibility in Germany and the US

Labor-market institutions in Germany and the US structure work-related life-course events and sequences in different ways. The US labor market can be characterized as less regulated (e.g. DiPrete & McManus 1996; Gangl 2004; Kappelhoff & Teckenberg 1987). In Germany, employment protection legislation is comparatively strong (OECD 2004). This means that the dismissal of employees is restricted and the turnover rate in the labor force is lower than in the US. Therefore we can classify the German labor market as less flexible than the American labor market, where the turnover rate is high in international comparison, the stability of jobs is low, and job duration is shorter.

Table 1. Summary: Characteristics of the tertiary education system and the labor market in Germany and the US

	Germany	US
<u>Tertiary Education</u>		
<i>Mode of Differentiation</i>	parallel	sequential
<i>Coordination</i>	state	market
<i>Standardization</i>	high	low
<u>Labor Market</u>		
<i>Flexibility</i>	low	high

2.5 Hypotheses

Our theoretical considerations lead us to expect that transition patterns from school to work for students entitled to enroll in higher education will differ in several ways between Germany and the US. Our main hypothesis is the following: *Sequential stratification of higher education, lower standardization of degrees, and a more flexible labor market will give students more incentives and options to interrupt education and gain work experience. Therefore we expect the overall transition pattern from school to work to be less standardized for students in the US than in Germany.*

Our theoretical distinction of differences in tertiary education between the two countries lead to some more specific hypotheses regarding the patterns of educational careers and labor-market entry of students entitled to enroll in higher education. Due to the different modes of differentiation, we expect

that in the US, students will more often split their educational careers into separate phases, whereas in the German system of parallel tracks interrupting one's studies is less feasible.

In this case we should observe the following patterns:

- The number of educational episodes per student is expected to be higher in the US than in Germany.
- The proportion of students interrupting their educational career should be higher in the US than in Germany. This also leads to a higher proportion of 'late' leavers in the educational system of the US.
- The gap between leaving education for the first time and leaving education for the last time should be longer in the US than in Germany.

Second, in line with our arguments about the different mechanisms of coordination, we expect the community colleges in the American (market-based) system to be most open and flexible in terms of organization and the timing of one's studies in order to attract students. This is not the case for the lower tier of the (state-controlled) German system, as the capacities are mainly planned and financed centrally by the state. Therefore *the difference in transition patterns between Germany and the US is partly due to the different setting of lower-tier institutions. The differences regarding first-tier universities are less pronounced.*

Empirically, we expect the following:

- Age variance at final entry into the labor market should be largest for the US community colleges.
- The difference between age at first and age at final entry to the labor market is largest in the US community colleges, while US universities and German universities do not differ substantially.

Higher education in Germany and the US also differs in the extent to which it is standardized. In more standardized systems, allocation to the labor market is problematic because there is less certainty about the applicant skills and competencies in the process of matching potential employees to jobs. Therefore labor-market integration in Germany is more stable than in the US. Regarding labor market flexibility we derive a similar hypothesis: more flexible labor-market regulations in the US imply lower hurdles for school-leavers entering the labor market at the expense of higher turnover and shorter job durations. This leads us to the following hypotheses: *Entering the labor market in Germany is a 'smoother' process than in the US. For those who interrupt their education, periods of interim work experience differ substantially in the two countries, and gaining work experience during one's educational career is much more common in the US than in Germany.*

We expect this to be corroborated by the following observations:

- Age variance at first and final entry into the labor market is expected to be higher in the US than in Germany.

- In general, higher labor-market flexibility in the US should materialize in a higher number of students with labor-force experience acquired before their final period in education.

3 Data, Variables, and Methods

To capture the overlap between educational careers and labor-market entry, detailed longitudinal data are necessary. We use two cohort data sets: the (West-)German Life History Study (GLHS) conducted by Mayer and colleagues for West Germany (Max Planck Institut für Bildungsforschung 2004) and the NLSY79 (National Longitudinal Study of Youth 1979) for the US (U.S. Department of Labor 2008). The German Life History Study (GLHS) contains information about the educational and labor-force status on a monthly basis. We draw on the samples of the cohorts born in 1964 and 1971. Both cohorts were interviewed in 1998, and those born in 1971 were also interviewed in a second wave in 2004. We use the cases with valid observations in both waves only. Of the total of 2543 cases, we omit 1769 who did not take exams qualifying them for tertiary education (*Abitur* or *Fachhochschulreife*). The remaining sample contains 774 cases.

The NLSY79 is a cohort panel representative for the US population containing 12,686 cases at its start-up in 1979.⁵ At that time, the respondents were between 14 and 22 years old.⁶ They were interviewed annually (from 1994 biannually) about a broad range of topics involving detailed information about educational attainment. Labor force status and the number of hours worked are available in weekly arrays. We use respondents of the birth cohorts from 1960 on, with complete information until age 34, and among those only cases that have attained either a high-school degree or GED.⁷ That leaves us with a sample size of 2045 for our empirical analyses.

Variables

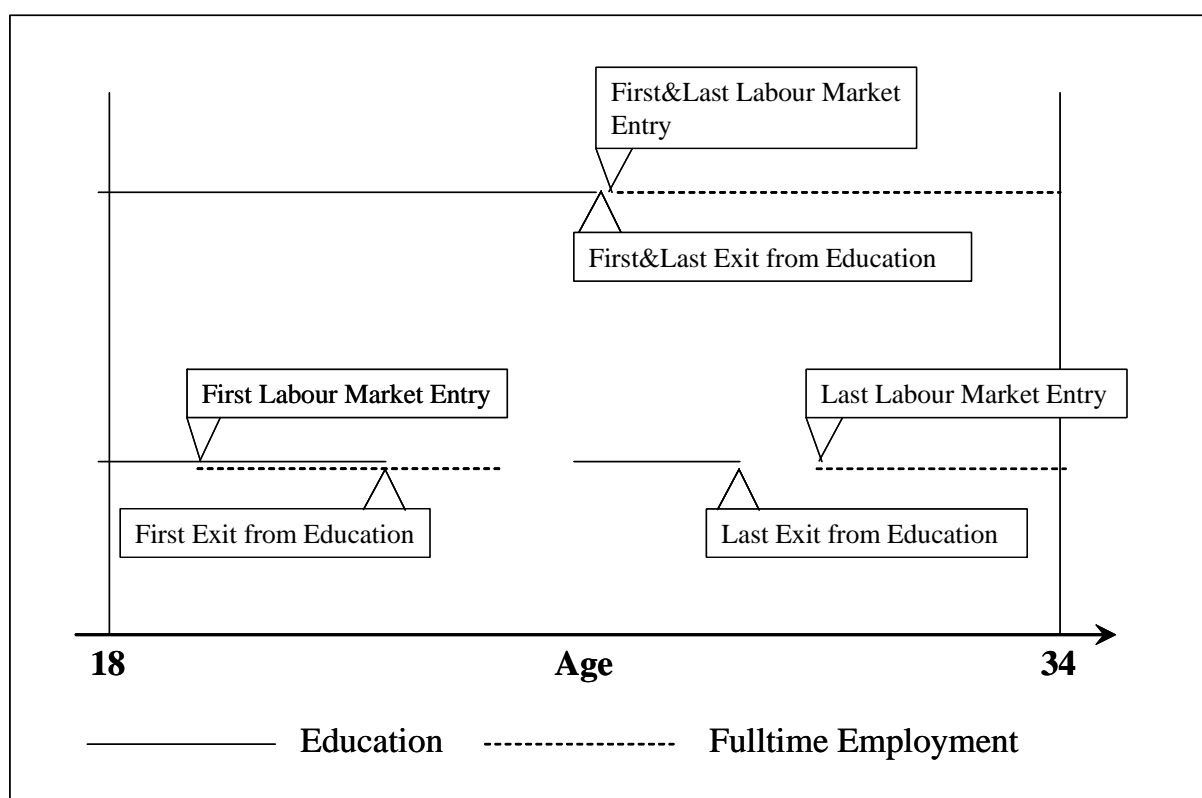
To describe transition patterns we define some points and events for comparison. In section 2.1 we have highlighted the problems of defining “leaving school” and “entering the labor market.” Taking the transition as a continuum with overlapping periods, at least two events at the margins can be defined: the beginning of that process, i.e. “*first exit from full-time education*” defined by an extended break in education and engagement in another activity (a job or any other activity outside the education

⁵ Using panel data and retrospective data for comparison may lead to some problems (Solga 2001). However, as panel mortality in the NLSY79 is rather low, systematic sample differences caused by the design may also be low. The fact that the data for the German 1971 cohort are a 2-wave panel further alleviates this problem. With reference to problems of selective memory in retrospective data, we assume that (formal) education is remembered quite accurately (see Reimer 2004 for potential problems of recall in retrospective surveys). In our empirical analyses it turned out that even brief employment episodes that might easily be forgotten are in fact reported by the German respondents (cf. Figure 4).

⁶ The birth cohorts of the two data sets differ. In Germany, the data are based on individuals born in two selected years, whereas in the US the sample consists of individuals in a 4-year age range. In using data from several cohorts, we have to be aware that the variance we observe in each country could partly be due to differences between the cohorts. The difference between the German cohorts is larger because the birth years vary more. Our hypothesis is that there is more variance in the US than in the German patterns, so our results can only be biased towards rejection of the hypothesis.

system); and the end of the transition from school to work, i.e. the “*first job after the last time enrolled in education*”. The latter is always as late as the former; it is later if there is an intervening period involving any other activity (neither school nor work) or if someone returns to full-time school after the first exit. An alternative perspective is to focus on labor-market entry by looking at the “*first entry into the labor market*” and the “*last entry into the labor market.*” As we are interested in educational careers and intertwined labor-force experience, we only take account of first and last entry into full-time work.⁸ Again, first and last entry are the same if there has been no return to education (see Figure 1 for an illustration of our variables).

Figure 1. Schematic illustration of our variables for the transition from school to work



The concrete operationalization of the events illustrated above requires some definition of what we consider phases of education and being in the labor market. We use a rather broad definition of participation in education. In Germany, we regard both apprenticeships and being enrolled at a university or *Fachhochschule* as ‘being in education.’ Although apprentices already work part-time in the training company, we argue that apprenticeships should not be counted as labor-market experience, but rather as labor market-oriented education. Not only is the pay for apprentices very low, they also have compulsory school phases and are not necessarily fully integrated into the working

⁷ Further, we have omitted all cases included in special subsamples, viz. poor whites, Hispanics, blacks, and the military subsamples.

⁸ Full-time work is defined as working at least 25 hours per week.

process.⁹ For the US, we have defined participation in education according to the NLSY definition of being enrolled in “regular school” after receiving a high-school degree or GED. In this definition, regular schools after high-school graduation are junior/community colleges and 4-year colleges/universities. We have reconstructed the first and last exit (until age 34) from education by the first three-month or longer period of not being in education. Entering the labor market is defined by any work of more than 25 hours per week.

We use event-history methods to analyze the process of leaving education and (finally) entering the labor market, starting at the time of leaving general upper-secondary education. This approach is suitable if state changes (i.e. leaving education, returning to education, entering the labor market, etc.) vary over time and right-censored observations occur. Although for most of the respondents we know whether and when they have left education and entered the labor market, for some students the last event, i.e. finally entering the labor market may not have occurred during the observation period. As we are aiming at a description of the overall country-specific patterns of the transition from school to higher education and work, we use survivor curves. These show the probability of remaining in the group that has not (yet) experienced an event. At the start of the “time at risk” the survivor rate is 1, meaning that all individuals are in the risk group. As time goes on, more and more individuals experience events and leave the risk group. The shape of the survivor curve shows the pattern of the occurrence of events in a population. A steep line indicates that many individuals experience an event at the same time in the observed population, which indicates in our case that events typically occur at the same time in an observed population.

4 Empirical Results

4.1 Transition patterns of high-school leavers and students with *Abitur*

Our main hypothesis is that transition patterns in the US are less standardized than in Germany. Table 2 provides statistics summarizing the most important characteristics of the transition patterns, mostly in accordance with our theoretical considerations. In the upper part of the table we only look at labor market entry, i.e. the first and last transition from school to work, neglecting all other activities. Here we only retain those cases that have already entered full-time employment up till the censoring age of 34 years. Hence we have calculated the gap between the first job after the first exit from education and the first job after the last exit. Contrary to our expectations, age variance at the first transition from school to work does not differ much between the two countries. But both age and age variance at the

⁹ By contrast, Kerckhoff (1995) considers apprenticeships as being education accompanied by work experience, leading him to the conclusion that the transition from school to work in Germany is much less clear than in the US. An important difference between being enrolled in higher education and participation in an apprenticeship is that in the latter case returning to education means that expected earnings are higher and opportunity costs in the case of returning to education are higher. As we are mainly interested in interruptions of educational careers caused by acquisition of work experience, opportunity costs of returning will arise in any case.

last transition to the labor market are higher in the US. Further, the mean gap between the first and last transition from school to work is over three years in the US and only two and a half years for students in Germany.

We also find a higher number of educational periods without any interruption in the US than in Germany (1.6 vs. 2.0) for those students that enter post-secondary education. At first glance, this difference appears to be small, but we should bear in mind that the average educational period of German students is longer and that they obtain higher occupational degrees.

Table 2. Descriptive statistics of transitions from school to work in Germany and the US (cases with uncensored educational careers until age 34)

	<i>Germany</i> Mean (Std. dev.)	<i>USA</i> Mean (Std. dev.)
All cases entering the labor market until age 34		
Age at first transition from school to work	23.9 (3.4)	20.1 (3.0)
Age at last transition from school to work	26.5 (3.5)	23.4 (5.0)
Gap between first and last transition from school to work (in months)	30.5 (43.6)	39.2 (60.4)
Mean no. of educational periods if entering post-sec. education	1.6 (0.7)	2.0 (1.3)
Mean duration of educational periods	36.3 (24.2)	22.1 (19.1)
Cases with multiple transitions only		
Age of re-entry to education	24.1 (3.1)	22.2 (3.9)
Gap between first exit and (first) re-entry from/to education (in months)	23.2 (26.5)	31.4 (41.7)
Gap between first and last labor market entry (in months)	71.0 (39.5)	84.6 (52.3)
Labor force experience (in months) before last labor market entry	26.4 (26.8)	59.5 (45.2)
N (not censored)	671	1950
N (multiple transitions)	289	925
N (all cases)	774	2045

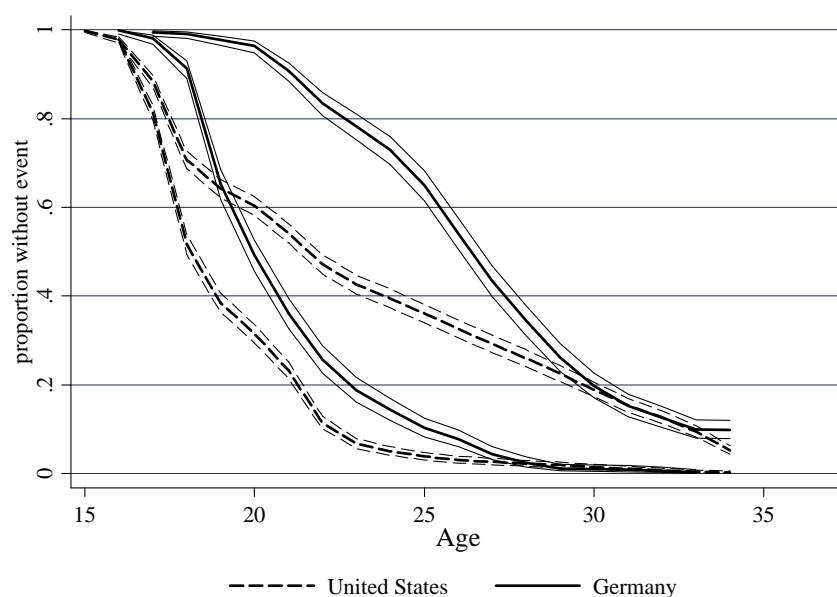
Source: GLHS 64/71; NLSY79, own calculations

Here the cases that have indeed interrupted their educational career are of particular interest (bottom half of the table). We expected one indicator of less standardized transitions in the US to be that the proportion of persons returning to education is higher in the US than in Germany. This is confirmed by the data. 37% of our German sample and 45% of our US sample re-enter education after an interruption. On average, re-entry occurs later in Germany than in the US (age 22 in Germany vs. age 24 in the US), with approximately the same age variance. This is likely to be conditioned by longer secondary tracks and compulsory military service in Germany, retarding the start into higher education. The mean gap between the first time of leaving education and re-entry is longer in the US, and its variance is much higher - again supporting our main hypothesis of less standardized educational careers in the US. Only considering those cases that interrupt, on average in the US we observe a 7-year transition period of intermittent work and education, whereas in Germany the phase

between first and last labor market integration including re-entry into the education system by definition lasts about 6 years on average. Also, in this period between the first and the final exit from education some work experience is already gained. There is a big difference in the mean (accumulated) work experience before finally entering the labor market. In the US those who return to education have gained about five years' work experience on average during their educational career, whereas we observe only two years in Germany (see also Figure 4 below).

To go into more detail on these processes of leaving education and entering the labor market, we use survivor curves for a graphical description of age variance at several stages and for overall transition patterns beyond simple means and variances. In addition, survivor functions enable us to include in the analyses those cases that are still in education at the time of the interview. In Figure 2 we show survivor curves for the last month in education before the first and the last exit. The survivor curves show the estimated (conditional) percentage of students that have either not left education yet or that have not re-left education in the case of returnees. For example, at the age of 20, 51 percent of all persons in Germany entitled to enroll at university have left the education system for the first time, whereas in the US this applies to almost 75 percent. Five years later, at age 25 almost two-thirds (64 percent) in the US have left the educational system permanently.

Figure 2. First and last exit from education in Germany and the US (survivor curves and 95%-confidence intervals)



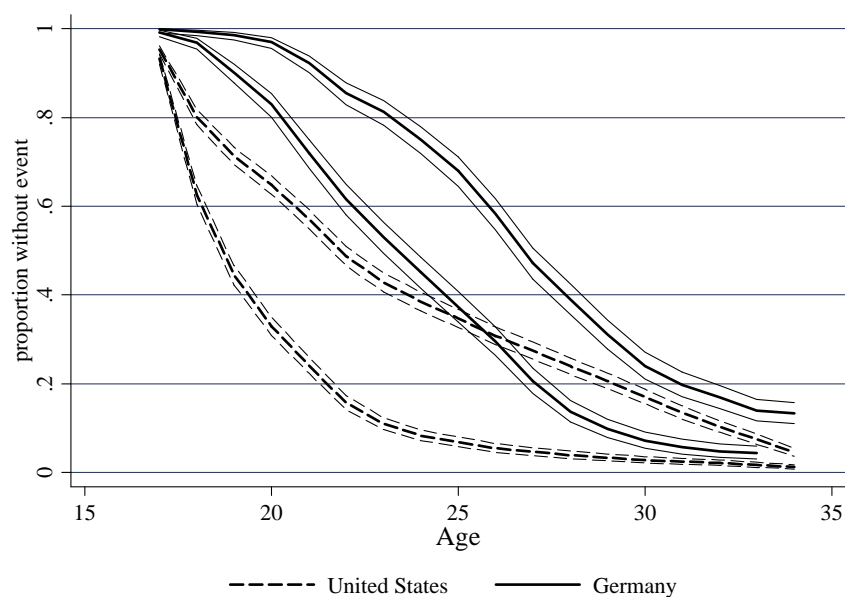
Source: GLHS 64/71, NLSY79, own calculations

As we have seen in Table 2, both the first and the last exit from education in Germany are in general later than in the US – and this is a stable trend over the observation period until age 34, with the important exception of a slightly higher proportion of US respondents leaving education for the last time in their late twenties or early thirties. For both countries, the curve for the first exit is rather steep,

which means that many cohort members leave the educational system at the same time. However, the line showing the last exit from the educational system before the age of 34 is steeper for German than for US students. This indicates that age at the final entry into the labor market is less standardized in the US than in Germany. There are more very early exits, which is not surprising as many more high-school leavers in the US directly enter the labor market without any further vocational or academic education. But there are also more very late transitions, and it is hard to determine a typical age for leaving the educational system in the US.

We now turn to labor-market entry, i.e. the transition to the first job and the last transition to work after having finally left the education system. Looking at the survivor functions for these two events, we find a smaller gap between first and last entry into the labor market for Germany than for the US, even though on average study programs in Germany take longer than in the US. The slope of both curves is steeper in Germany, and in general transitions occur later than in the US. But in the US we find more very late transitions. Hence, leaving education late and re-entering the labor market is a much more common phenomenon in the US than in Germany, thus supporting our hypotheses on prolonged transitions from school to work in the US caused by recurrent phases of education.

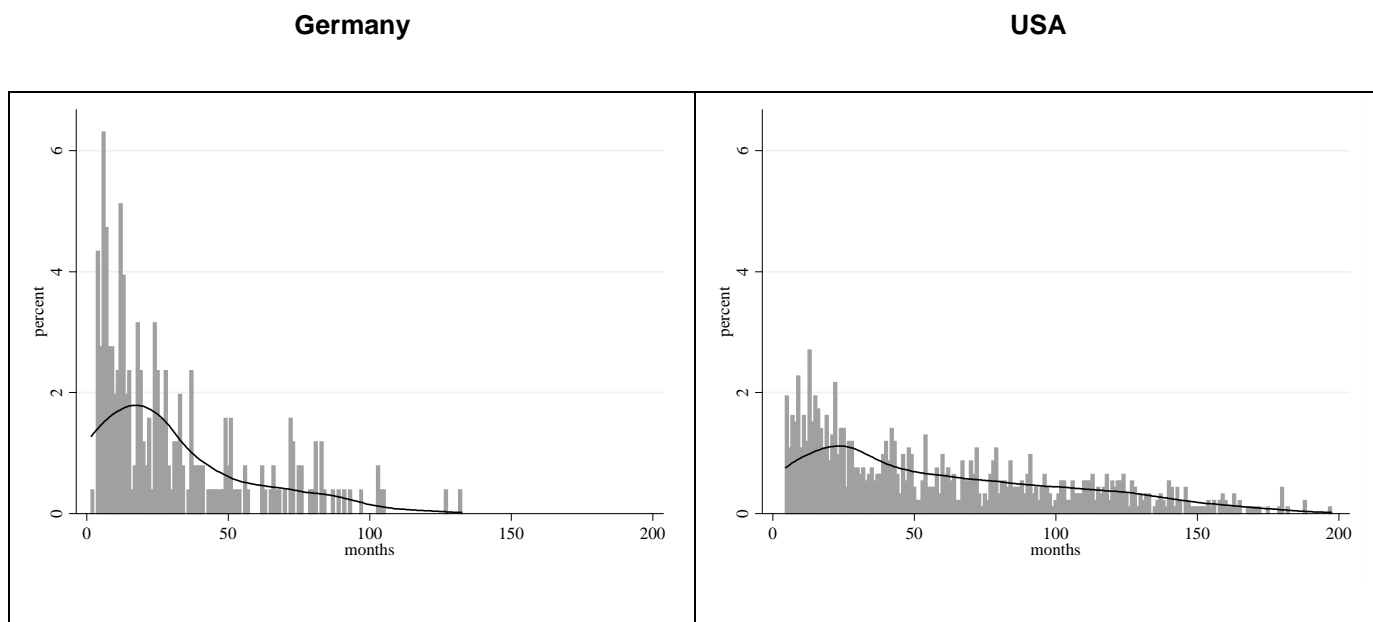
Figure 3. First and last transition from school to work in the US and Germany (survivor curves and 95%-confidence intervals)



Source: GLHS 64/71, NLSY79, own calculations

To shed more light on the phase between the first job and final labor market integration we now look at the amount of interim work experience. Figure 4 shows the number of months that are spent in full-time work before re-entering education for the last time.

Figure 4: Number of months of full-time labor-force experience before re-entering education (plus 12-months-smoothed kernel density estimator)



Source: GLHS 64/71, NLSY79, own calculations

In Germany, most students spend less than three years working, with only a minority working more than six years. Labor-force experience in the US is much more widespread and working for more than 8 years is not exceptional. Some students even gain more than ten years labor-market experience before re-entering education. This is one of most striking outcomes of our analyses. Whereas in Germany participation in the labor market is of rather short duration, in the US labor-market experience is quite common. We interpret these findings as indicating that the incentives to re-enter higher education in Germany are much lower, whereas in the US even long periods of work are no disincentive to re-entering education.

4.2 Effects of the differentiation of tertiary education in Germany and the US

In the following we describe the transition patterns for different types of educational institutions separately. We expected the lower-tier institutions in the US (the community colleges¹⁰) to be particularly attractive to students leaving and re-entering education, resulting in intertwined educational and labor-force careers. For our comparison of patterns displayed by students in different institutions we have defined our units of analysis accordingly. In other words, by using *students-in-institutions* one single person can be used in the analyses more than once if s/he has attended both lower and higher tertiary education.

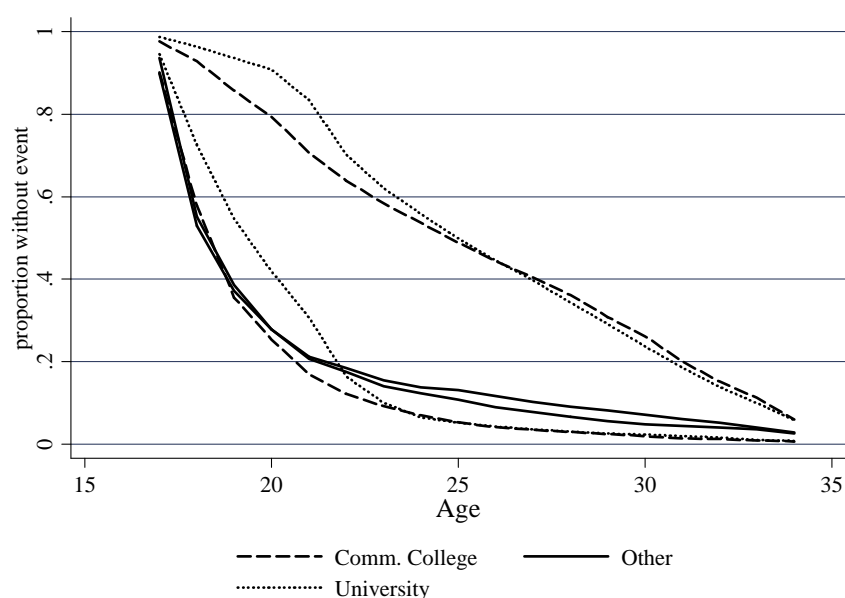
For the US, we distinguish between students enrolled at university, students enrolled at a community college, and all others as a third category. For Germany, we distinguish between university students,

¹⁰ By community colleges we mean all 2-year colleges.

students enrolled at a *Fachhochschule*, and all others who have not attended tertiary education up to the age of 34. First we look at the proportion of individuals who actually re-enter education. 64 percent of students enrolled in a community college at least once re-enter higher education, whereas this applies to 67 percent of students attending university in the US. In Germany the share of students returning to education differs markedly. 47 percent of the students who attended a *Fachhochschule* and only 35 of university students interrupted their educational careers.

We now turn to patterns of labor-market entry. Figures 5 and 6 show survivor curves for the first and last labor market entry as defined in Section 3 (see Figure 1) for both countries.

Figure 5. First and last labor market entry after education in the US by type of institution (survivor curves)



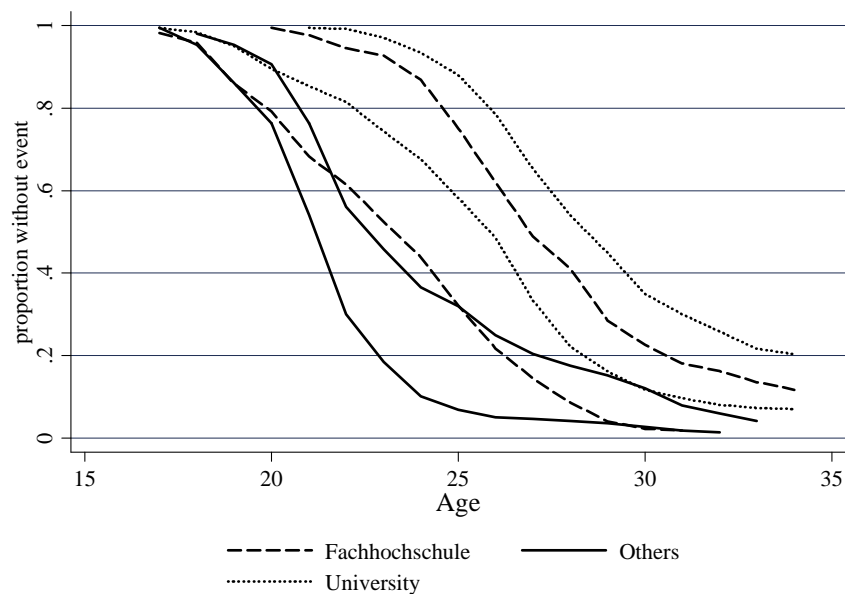
Note: Unit of analysis is students-in-institutions.

Source: NLSY79, own calculations

Contrary to our second hypothesis, the gap between first and last labor-market entry by US students who have been enrolled at a community college does not differ much from that of university students. Both first and last labor-market entries occur slightly later in the early twenties but converge for leavers of both institutions after age 25. Hence the most remarkable difference between labor-entry of university students and community-college students is to be found among the younger age-groups, while the curves for older students look very similar. However, in interpreting this result one has to take into account the fact that courses at colleges are shorter on average. Applying an individual perspective, and taking a separate look at those students who only attended university in the US, we find that there are fewer final entries into the labor market above 25 compared to students who have been enrolled in community colleges at least once (see Figure A1 in the appendix). On average, after their first labor-market entry, those students who have been enrolled at least once in a community

college enter the labor market later (albeit at about the same age) than their purely 'academic' peers. Therefore community colleges actually seem to account for de-standardized careers by providing either a bridge into higher tertiary education (if attending community college has been the first educational episode followed by university studies) or by offering attractive prospects of re-entry for older students who have interrupted their education. Calculating the amount of interim labor-force experience between educational careers supports the argument that those attending community colleges in the US display a different pattern. Students who have been enrolled in a community college at least once spend about six years in the labor market, whereas university students have accumulated only five years of work experience before finally entering the labor market.

Figure 6. First and last labor market entry after education in Germany by type of institution (survivor curves)



Note: Unit of analysis is students-in-institutions.

Source: GLHS 64/71, own calculations

In Germany, the gap for both tertiary tracks is significantly smaller than in the US, probably mainly due to apprenticeships. The shape of the curves is similar for all three tracks, but the higher the track, the older the students at their first and their final transition from school to work. There is also a larger gap between the first and the final transition from school to work for students of the *Fachhochschule*, suggesting that educational careers through the lower tertiary track are more likely to be interspersed with labor-force experience than the educational biographies of university students. In Germany, on the other hand, there are only small differences in the patterns displayed by students in the lower and higher tier of higher education with regard to the mean age at final entry into the labor market (27 years vs. 28 years), the months of labor-force experience before re-entry (29 months vs. 25 months), and in the variation of these values.

5 Summary and Conclusions

In our paper we have concentrated on school-leavers entitled to enroll in higher education and have compared specific events in the labor-market entry patterns between two societies. We expected that labor-market entry would be less standardized in the US than in Germany due to specific features of the US system of higher education, which offers more possibilities for interrupting one's educational career and re-entering education. This hypothesis is clearly substantiated by our findings. In our empirical analyses we find that the transition patterns from school to work actually differ to a great extent in Germany and the US, notably with regard to the sequence of leaving tertiary education for the first time, gaining (full-time) work experience, and re-entering education. Students in the US leave education earlier and enter the labor market at a younger age, even after an interruption of their educational careers. With regard to the core of our hypotheses on less standardized transition patterns in the US, we observe higher variation in age for almost all transitions we have examined. More students in the US re-enter higher education after having gained some labor-market experience. Although the gap between the first job after education and the last transition from school to work does not differ to a great extent, the interim activities are different: students in the US gain work experience, German students spend more time in education.

Our second hypothesis centered on the differentiation of the tertiary system. We expected the most marked difference for the lower tertiary tracks. However, in the US we did not find any difference in the transitions patterns for all students who have ever attended community colleges and/or universities. By contrast, if we restrict the comparison to students who have (only) attended universities, interruptions are much shorter than for those who have been enrolled in a community college at least once. Comparing Germany and the US, both tiers in the US seem to offer more flexibility than their German counterparts. Accordingly, the difference in the length and frequency of interruptions in educational is mainly attributable to the difference between the sequential and parallel stratification modes of the two systems.

At the outset of this paper we discussed the difficulties involved in defining labor-market entry accurately. Looking at the marked differences in age at the last transition into the labor market after an educational episode, our paper has shown that it can make a huge difference which educational episode one considers and which job one chooses as 'the' labor-market entry. In comparative research one has to be aware of different structures in educational systems facilitating re-entry into education, and it would often be beneficial to extend the phase from school to work. In some cases, students have still not finished their education at 34, particularly in the US, as there are quite a few re-entries into education in the late twenties and early thirties.

On the subject of policy implications for Germany, the recent introduction of a Bachelor/Master system in Germany makes interruptions of educational careers easier at all levels. It is an open question whether and to what extent the overall pattern of labor-market entry after tertiary education will converge with the American example, as other features in the educational system and in labor-market structures are still different. However, our results indicate that a sequential differentiation in higher

education might lead to more variance in educational participation in general. In particular, late entries and returns to higher education may increase in Germany with the new structure of tertiary education. Whether that in its turn will increase overall enrollment rates in Germany is another open question to be examined in future research.

Regarding the overall implications of our findings, one has to be aware that it is difficult to determine whether young employees in Germany miss out on opportunities for further qualification because they are less likely to return to the educational system than their US counterparts or whether the former are perhaps even better off because there is no surplus of returns to education. As we have not examined the characteristics of the jobs these young people hold, we can only speculate on the pay-off of re-entering education, which probably differs in the two countries. Also, the fact that German higher secondary education is more selective and fewer students are entitled to enroll could improve the chances of finding stable and appropriate employment for German tertiary graduates and thus reduce the demand for late schooling. The consequences of the different proportion and composition of a school-leaver cohort actually entitled to enroll will have to be enlarged upon in further research, taking into account the fact that the American sample may be much more heterogeneous in terms of unobserved factors like skills and competencies etc. than the German sample. If heterogeneity in the American sample of students entitled to enroll is actually higher than in Germany, this would also have an impact on the patterns of labor-market entry we observe.

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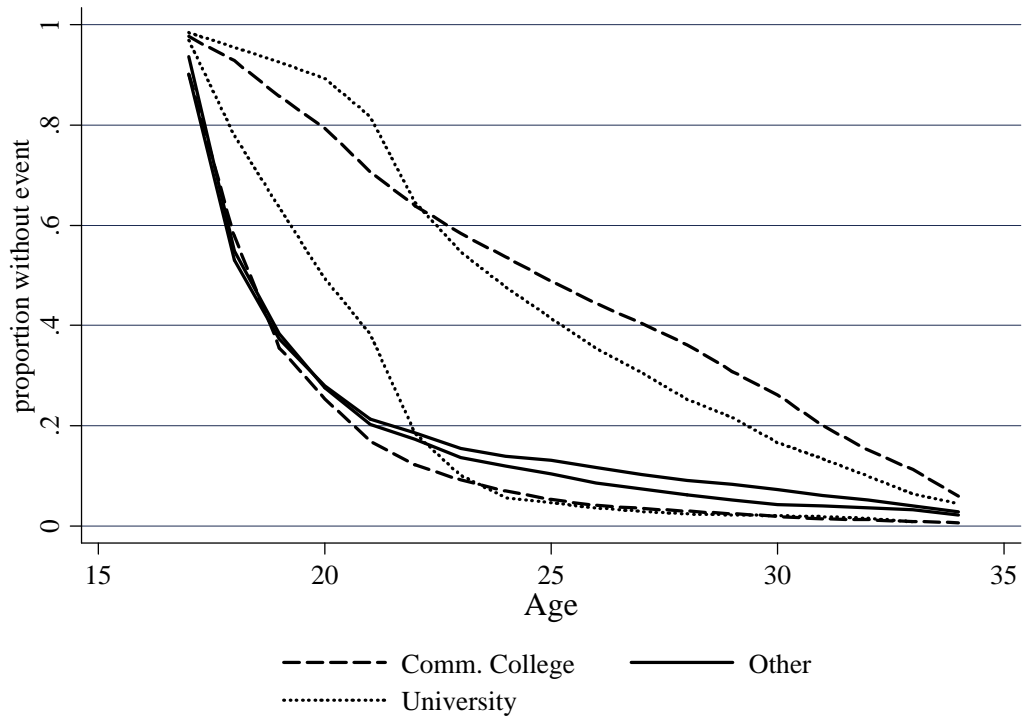
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Appendix

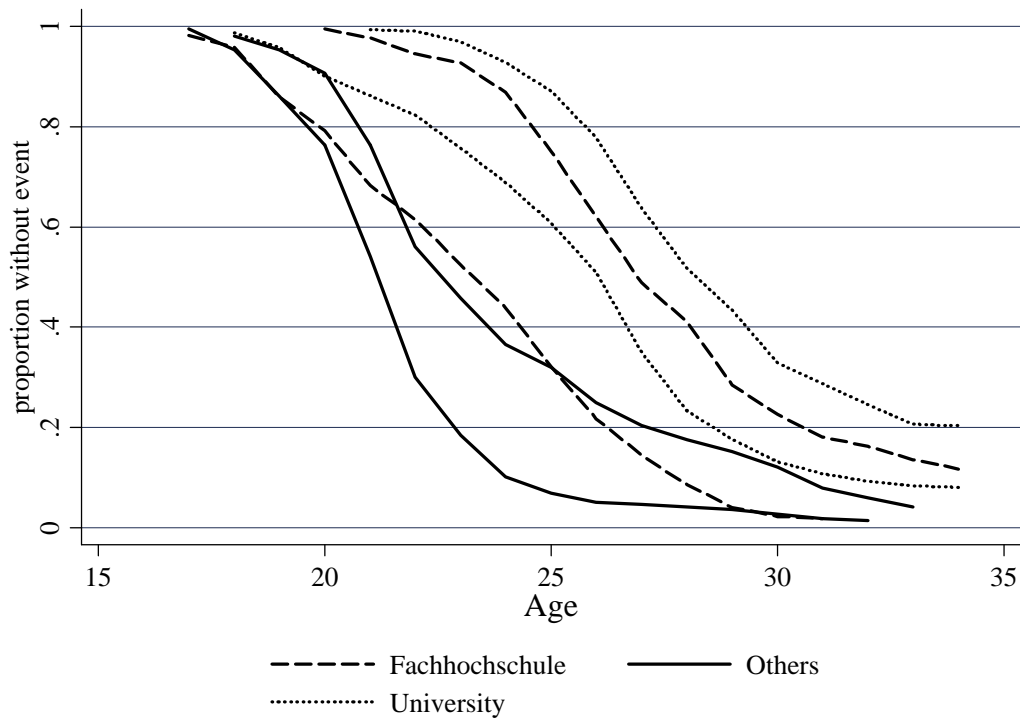
Figure A1. First and last transition from school to work in the US by type of institution (survivor curves)



Note: The 'community college' category contains students that have been enrolled in colleges at least once, regardless of their further or previous educational career. 'University' covers students who have only studied at universities and have never been enrolled at a community college.

Source: NLSY79, own calculations

Figure A2. First and last transition from school to work in Germany by type of institution (survivor curves)



Note: The 'Fachhochschule' category contains students that have been enrolled there at least once, regardless of their further or previous educational career. 'University' covers students who have only studied at universities and have never been enrolled at a Fachhochschule.

Source: GLHS 64/71, own calculations