Institutional Change and Inequalities of Access in German Higher Education

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Introduction

This chapter is concerned with the growth, the internal differentiation and the inequalities of access in the German system of tertiary education. German higher education has been the topic of an almost constant debate and subject to major institutional reforms at least since the 1960s. Three aspects dominated these debates and reforms which were especially pronounced between 1965 and 1975 and between 1993 and the present. The first aspect was growth and adaptation to changing demand. Here economic and demographic arguments were most salient. The second aspect focused on the cultural goals and institutional forms of the university. The third aspect related to inequalities of access and the role of higher education for a democratic society.

In the German context the growth and organizational forms of higher education are of special comparative interest. On the one hand, Germany belongs to among the few (mostly German-speaking or -influenced) countries which have developed an extensive system of vocational training between general schooling and higher education. Apprenticeships can be followed by advanced *Meister* (master) or equivalent qualifications which do not only enhance skills, but also permit to train apprentices. Therefore, there are political options as to which proportion of given birth cohorts should enter and finish higher education as well as which parts of vocational and professional training should be located in the tertiary viz. post-secondary sector. On the other hand, Germany is special in the sense that higher education is a responsibility of the different federal states and that the federal government has only limited influence through its right to issue a "framing law" for higher education and through its joint financing of buildings and investments. This federal context clearly limits institutional change and institutional differentiation, since differentiation has to occur almost exclusively within rather than between federal states. Finally, German higher education is traditionally closely related to the requirements of the civil service (Müller 1990) and therefore, its potential expansion and reforms are intertwined with the growth and organization of the public sector.

Growth in enrollment in higher education should lead to a pressure towards internal differentiation for at least two reasons. Former elite sectors of the system will try to maintain their

relative status and cost pressures will favor cheaper solutions for parts of the expanded system. It is also easy to imagine the internal dynamics of a differentiated system. The less privileged parts of the system will continuously strive to catch up with the status and resources of the more privileged. These dynamics will be partially carried by the students who wish to maximize their expected incomes on the labor market and their access to the upper tiers of the civil service, but their limited tenure at the institution will limit their momentum. More push can be expected to come from the instructors and professors of the less privileged system because they are engaged throughout their working lives. At the end of the twentieth century Germany has developed a binary system of higher education with universities on the one hand and *Fachhochschulen* (universities of applied learning) on the other hand. In addition, however, a variety of smaller institutional forms has maintained themselves like art colleges and divinity schools or have been newly developed like business schools or the *Berufsakademien (colleges for advanced vocational training)*, the latter being formally outside the system of tertiary education.

What is less clear is whether institutional differentiation will be internal or external, i.e. either in the direction of comprehensive institutions of higher learning which comprise courses of different rank or in the direction of a binary or even three-tier system of higher education where courses are segregated by duration, content or subject. Germany has within the last thirty years tried the road of both internal and external differentiation. In the seventies some states governed by Social-Democrats introduced so-called *Gesamthochschulen*, comprehensive institutions of higher learning, which comprised both university and *Fachochschul* components. By now almost all Gesamthochschulen have become universities by formal status.

What are the expected relationships between expansion, institutional differentiation and inequalities of access? Growth periods should favor the inclusion of social groups which did not at all or hardly ever participated in higher education and therefore should decrease inequalities of opportunities. Externally, but more so internally differentiated systems should create barriers of access in the sense that lower tier parts of higher education should be more open to groups which have been excluded before than the higher ranking institutions. Cultural distance, duration, expected success and returns as well as real and opportunity costs would all be factors pushing in that direction.

This chapter is comprised of two main parts. In the first part we will describe the institutional development of German higher education from the early seventies until the present. In the second part we will analyze over time changes in inequalities of access to higher education.

The first part "Expansion and Institutional Differentiation of German Higher Education" starts with a section on the current debate on higher education reforms. In the next two sections, quantitative developments will be reported. The following (second) section reports trends in the numbers of participants in higher education – school leavers qualified to enter higher education, new students and graduates, faculty and other staff – and developments in resources expended. The third section discusses quantitative developments in the HEIs as organizational units – in the number and diversification of the institutions, for example. Brief reference will be made to institutional developments in the former GDR (hereafter referred to as the new *Länder*) and to the restructuring and renewal there since reunification. The fourth section covers developments in teaching and learning: the development of particular disciplines and study programs, evaluation of teaching quality, and student learning behavior. The fifth section is concerned with the internal structures and external relations of the HEIs, with particular focus on management and personnel structures, and relations to the state and the economy. Finally, in a short closing section, remaining problems and prospects for the future development of the German higher education system will be summarized.

The second part of the chapter "Class Patterns in Post-Secondary and Tertiary Education" is focused on developments in inequalities of access. It is restricted to West Germany due to availability of data. It starts with a discussion of the systematic place of higher education within the overall system of German education and particularly focuses on the way to the "Abitur" as the main qualifying examination for access to higher education. In the second section the institutional options and educational choices beyond the Abitur are analyzed and hypotheses are derived for the change in inequalities of access. The third section describes the declining inequalities at the full secondary and tertiary educational level. The fourth section answers the question of the transition after the full qualifying exam and section five the option between *Fachhochschule* and university. The last section summarizes and interprets the empirical findings.

PART I: Expansion and Institutional Differentiation of German Higher Education

1. The Current Debate on Higher Education Reforms in the 1990s

The guiding principles that at least in part, still influence self-concept and development of the German higher education institutions (HEIs) are inspired by the Humboldtian reform of the University of Berlin in 1810. These guiding principles include the unity of research and teaching for faculty and students, free access to higher education, the ideal of institutions offering the full range of subjects, and cooperative self-governance by professors with civil servant status. Furthermore, HEIs are government financed, the autonomy of their research and teaching programs is guaranteed, and they enjoy a monopoly on the education of professionals.

The recent efforts of the *Fachhochschulen* (which now describe themselves as "universities of applied sciences," see section 3 below) to mimic the university model and to become part of it testify to the continuing force of these guiding principles. On the same lines, there is a growing tendency for school leavers intending to enter occupations that previously entailed vocational sector training (particularly the dual system of apprenticeship education) to opt for a college education. The remarkable resistance to change that is characteristic of the traditional German university system was also apparent during the process of German unification. Despite its blatant and largely undisputed structural shortcomings, the West German model was essentially transferred to the former Eastern states in its entirety. In the GDR, research had primarily been placed in specialist institutions such as the various branches of academies of sciences, where staff had no teaching commitments. Following reunification, universities regained their research function. The institutions were largely freed from state control to become self-governing bodies where both academic and political pluralism are guaranteed. Access to higher education was liberalized, and the allocation of places in restricted-entry programs was delegated like in West Germany to the Central Applications Office (ZVS).

New Reform Efforts

The following five developments have exposed the German HEIs to such intense pressure to reform that, by the start of the new millennium, far-reaching legal and institutional changes – the implementation of which is already ongoing or foreseeable – had become inevitable:

1. Constantly high student enrollment, even now that the baby boom generation born around 1964 has passed through the education system.
2. A strained public purse and resultant cuts in allocated basic funding.
3. An upward shift in the qualification structure of the workforce and changing economic and social expectations as regards graduate qualifications.
4. Changes in student behavior and expectations.
5. Increasing Europeanization and internationalization.

As a result of these developments, public debate on the need for reform in higher education intensified noticeably in the 1990s. Concrete outcomes of this process include the "Ten Theses on Higher Education Policy" drawn up by the *Wissenschaftsrat* (Science Council) in 1993 and the amendment of the Framework Law for Higher Education and the higher education laws of the individual states. These amendments have already been adopted or are pending. Note that, in contrast to the reforms of the 1960s and 1970s, these reforms were not initiated by either professors, mid-level academic staff, or students. Rather, they might be described as top-down initiatives imposed by outside forces: the Association of Universities and other Higher Education Institutions in Germany (*Hochschulrektorenkonferenz*, HRK), the *Wissenschaftsrat*, politics and the private sector (Turner 2001). The Center for Higher Education (CHE), sponsored by the Bertelsmann Foundation and the HRK, played a central role as a source of ideas and driving force (Müller-Böling 2000).

The difficulties facing the German system of higher education are reflected in a broad variety of symptoms. Developments such as the establishment of alternative private and state institutions of tertiary education (e.g., vocational colleges, private business schools, private universities), increasing

emigration of young academics to the USA, as well as recent problems in recruiting academics for top-level positions in certain disciplines, have all pointed to deficits in the existing system.

The following seven structural shortcomings can be identified as the main reasons for the weaknesses of the German system of higher education:

1. The lack of interdisciplinary collaboration in programs of study and fields of research.
2. The lack of competition between the HEIs and inadequate differentiation of research and teaching profiles.
3. Organizational shortcomings and lack of quality assessment in teaching, resulting in a lack of staff commitment to this domain and declines in student motivation. This, in turn, is thought to explain the high rates of student transfer and dropout, and the excessive degree completion periods.
4. Poor research conditions (growing imbalance between the allocated basic budget and solicited external grants [*Drittmittel*]; "emigration" of research to non-university institutions).
5. Shortcomings in the internal and external management of the HEIs.
6. Shortcomings in the advancement of up-and-coming young academics and in the recruitment of professors (lack of mentoring, prolonged period of dependence, long run up to the full-fledged professoriate, very low proportion of women professors).
7. The diminishing appeal of the German higher education system for international students, particularly in the technical disciplines, and a lack of real efforts to attract (paying) students from other countries.

Although the assertion that the German university system is "rotten to the core" was vehemently contradicted in public, behind closed doors many were – and are – of the same opinion. Toward the end of the 1990s, an abundance of structural committees, reform proposals, and memoranda resulted in a broad consensus on a range of institutional solutions to the problems of the higher education system. These measures met with the stiff resistance of those affected, however, particularly university professors and students.

The recommendations forming the common core of the reform proposals are dominated by economic criteria, categories, and approaches. Competition for both funding and students is to be increased. Incentives and evaluation are to replace legal provisions and administrative regulations. Research and teaching profiles are to be differentiated by means of specialization and cooperation in selected areas, thus affording individual institutions advantages on the market. The mobility of individuals and resources is to be increased to an extent unprecedented in the history of the German universities, thus opening the German system to the European and global academic markets. Study programs are to be more strongly geared to the needs of the labor market, and efforts made to ensure the compatibility of German qualifications with those conferred in the internationally predominant Anglo-American model. Against this background, the first part of this chapter describes developments in the German higher education system in more detail.

2. New Wine in Old Bottles – Quantitative Developments Since the Late 1960s

In recent decades, developments in the German higher education system have largely been characterized by quantitative changes. The system was expanded in the 1960s and 1970s, primarily to train teachers for the baby boom generation. The baby boomers themselves then surged into the *Fachhochschulen* and universities. Yet even irrespective of these demographic developments, the relative demand for higher education has continued to increase – i.e., the proportion of school leavers opting to enter higher education has risen each year. The term "mass university" reflects the ambivalent and to some extent helpless reaction to these developments. Social and political perceptions of the state of the universities have also undergone rapid change. Whereas the predominant issue in the 1960s was meeting the social and economic "demand" for graduates, by the 1980s and 1990s it was more a question of how best to cope with a graduate glut. In recent years, the circle has been completed, and against the background of a new "brain drain," there is a growing consensus that the number of graduates is too low rather than too high.

Students

In the winter semester of 2000/2001, about 1.8 million students were enrolled at German HEIs: 830,000 (46%) of them were women, and 187,000 (10%) were of non-German nationality. Approximately 1.15 million students were enrolled at universities; 139,000 at comprehensive universities; 15,000 at colleges of education; 2,500 at theological seminaries; 30,000 at art colleges; a further 33,000 at *Fachhochschulen* for public administration; and 426,000 at *Fachhochschulen*. The student enrollment figures for the winter semester of 2000/2001 were only slightly below the record high of 1.87 million in 1994. The number of students enrolled at West German HEIs had increased more than tenfold between 1950 and 1989, climbing from 117,000 to some 1.5 million. The most rapid period of growth was the 1970s, when the number of students doubled from 422,000 to 972,000, and the upward trend continued in the years that followed. The 1990s marked a turning point in three respects. Firstly, some 134,000 students from East Germany were absorbed into the united system of higher education in 1990. Secondly, the number of students in HEIs has since clearly exceeded the number of trainees in vocational education. Thirdly, the phase of rapid growth was followed by a period of stagnation and a slight reduction in the number of students (Figures I.1, I.2 and I.3).

These quantitative developments in the number of students can be attributed to four very different factors. The first, and at times major factor behind the expansion of the tertiary education system was the increasing birth rate. The number of live births rose from about 800,000 in 1954 to a peak of over a million in 1964, before dropping back to less than 600,000 per year in 1978 and 1984. The baby boom generation "passed through" the higher education system between the mid-1970s and mid-1990s. Secondly, access to higher education was determined by a growing demand for higher levels of qualification, which led to a steady increase in the yearly proportion of school leavers qualified to enter the HEIs. The third factor behind the expansion of the higher education system is the propensity to study (measured in terms of the proportion of qualified school leavers actually enrolling in HEIs), which was high in the 1970s, went into decline in the 1980s, and recovered in the 1990s. Fourthly, student numbers are strongly influenced by the average degree completion period which, until a few years ago, was on the increase.

The percentage of school leavers qualified to enter higher education – as a proportion of the corresponding age group – rose from 16% in 1972 to 37% in the year 2000. The number of new entrants to higher education in West Germany increased from around 170,000 in 1972 to 291,000 in 1992; in the years that followed, the number of new students in the reunited Germany climbed to between 262,000 and 315,000. In the old *Länder*, these figures correspond to an increase of 8 percentage points in the proportion of an age cohort entering higher education: from 18% in 1972 to 26% in the late-1980s. The quota of new entrants to higher education increased most rapidly in the early 1970s, then stagnated until about 1985 before beginning to rise again. In the reunited Germany of the 1990s, the proportion ranged between 28% and 31%, and has been creeping upward since 1992 (Figures I.4 and I.5). There was a steady increase in the number of degrees awarded in the old *Länder* – rising from 62,000 in 1970 to 217,000 in 1997 (1980: 124,000) – and this trend has continued in the reunited Germany, with an increase from 202,000 in 1993 to 237,000 in 1997 in the number of degrees conferred (2000: 214,000) (Statistisches Bundesamt 2000; Klemm/Weegen 2000:129-150). This corresponds to about 16% (1970: 8.5%) of the corresponding age cohort (OECD 2000; Klemm/Weegen 2000:135).

With their so-called "opening decree" of 1977, the premiers of the West *Länder* basically resolved to respond to demographic growth by neither limiting access to higher education nor substantially expanding the system's capacity (Baumert/Benkmann et al. 1994: 669-675; Turner 2001). This "tunneling" strategy was linked to the misplaced belief that declining birth rates would lead to a sharp drop in the number of students. Considering the sizable increases in the numbers of students and new entrants to higher education, but the comparatively small increase in the number of graduates, the question arises of whether this apparent inefficiency of the German higher education system can be attributed to underfunding in structural, staff, and financial matters. One indication for underfunding emerges from the comparison of the number of students, some 1.8 million, with the number of places officially available at German HEIs – a mere 1 million (Wissenschaftsrat 1999a).

Personnel

Between 1972 and 1991, staff figures for HEIs in West Germany increased by a total of 43% from 218,000 to 383,000. In Germany as a whole, staff numbers increased from 493,000 in 1992 to 522,000 in 1995, before dropping back to 481,000 in 1997. In 2000, the German HEIs employed a total staff of 489,000. There was a particularly notable increase of 94% in the number of academic and creative arts staff (from 88,000 in 1972 to 171,000 in 1991 in West Germany). This figure increased by a further 10% in the reunited Germany (from 199,000 in 1992 to 219,000 in 2000).

The proportion of students to academic staff deteriorated in the 1980s – from 7.5 (1972) and 8.5 (1979) to 9.7 (1990) – and did not improve again until after reunification – from 9.2 in 1992 to 8.2 in 2000. As student-staff ratios vary considerably depending on the faculty and discipline, however, figures based on the proportion of academic staff to the total student population should be interpreted with caution.

The number of professorial positions increased from 23,000 in 1972 to 38,000 in 1991 in West Germany, and from 36,000 in 1992 to 40,000 in the year 2000 across Germany as a whole. When the student-staff ratio is calculated in terms of the number of students to professors, a deterioration can again be observed – from 28.6 in 1972 to 43.1 in 1991 (West Germany). In Germany as a whole, the ratio has recovered slightly since reunification – from a low of 51.6 students per professor in 1992 to 45.2 in 2000. If the student-staff ratio is measured in terms of the number of degree candidates supervised rather than in terms of the absolute number of students, however, improvements can be observed. Whereas in 1973 each professor supervised 7 first degree candidates per year, the figures for 1992 and 1998 had decreased to 5.0 and 5.6 respectively. Because numerous chairs have already been defined as *"künftig wegfallend"* ("to be abolished"), however, a downward trend in the number of positions for professors and academic staff can be expected in the years to come, meaning that the student-academic staff ratio might deteriorate once more (Figure I.6).

Expenditure

Expenditure for higher education increased from DM 17.8 billion in 1980 to DM 31.6 billion in 1991 in West Germany, and from DM 41.1 billion in 1992 to DM 50 billion in 1998 for Germany as a

whole. At constant 1980 prices, this implies a real growth of almost one-third in the West prior to reunification, and a real growth of 8% in the 1990s. The proportion of external funding (*Drittmittel*) increased from 7% in the 1980s to 13% in 1996. At constant 1995 prices, expenditure per student increased from DM 25,800 in 1980 to DM 26,600 in 1998. Measured in terms of the number of graduates, however, expenditure fell from DM 238,000 per graduate in 1980 to DM 224,000 in 1998. Compared with other OECD countries, expenditure per student in Germany is about average (OECD 2000: 94). This must mean that, despite the very high proportion of lengthy study programs (diplomas, state examinations) in Germany, no more is spent per student than in countries with a large share of shorter programs.

Judging by the number of students, then, there are indications that the German system of higher education is underfinanced. These suspicions are confirmed when investments in construction and equipment are taken into account (Wissenschaftsrat 1999a). Admittedly, the criticisms of the HRK and the *Wissenschaftsrat* in this respect are qualified somewhat if the number of new entrants to higher education, the number of students who have not exceeded the standard course duration, or the number of graduates are taken as reference values. Furthermore, the considerable differences in the resources allocated to the federal states in general and the old and new *Länder* in particular should not be underestimated (Wissenschaftsrat 2000c).

To sum up, the following quantitative structural changes are to be expected in the medium term:

- It can be expected that one-third of an age cohort will enter higher education in the foreseeable future, but that only one-fifth will complete their studies with the qualification they originally intended.
- After a period of divergence in the 1980s, the quota of new entrants to higher education has again approached the proportion of qualified school leavers. This indicates that perceived labor market fluctuations have a marked impact on the demand for university and college places.
- The number of new entrants to higher education has more or less doubled since the 1970s, as has the number of first degrees awarded. The number of students, in contrast, has almost

quadrupled. The German HEIs, and particularly the universities, appear to be rather inefficient.

- There is a growing gap between the numbers of students, new entrants to higher education, and graduates on the one hand, and allocated basic funding on the other.

3. Institutional Growth and Diversification

Institutions of Higher Education

In the year 2000, there were a total of 349 state-recognized HEIs (Figure I.7) in the Federal Republic of Germany, catering to a population of 82 million. In comparison, there were 278 HEIs in Great Britain, which has a population of 59 million, and around 3,600 HEIs (including approximately 700 universities, some 200 of them offering PhD programs) in the USA, where the population amounts to 272 million (UCAS 1999; Clark 1997). In making such comparisons, however, it is important to bear in mind that neither of the latter two countries has a fully developed system of vocational education.

In the former West *Länder* (hereafter referred to as the old *Länder*), the number of HEIs climbed from 146 in the early 1950s to 213 in the mid-1970s, reaching 349 by the year 1998. The main period of institutional expansion occurred in the 1960s and 1970s, with the establishment of new universities such as Bochum, Constance, and Bayreuth, the upgrading of teacher-training colleges such as Wuppertal, Hildesheim, and Vechta to university status, and the establishment of comprehensive universities in North Rhein-Westphalia. In other words, with a few exceptions such as the Technical University of Hamburg-Harburg, the establishment of new institutions was brought to a halt long before the student population stopped expanding. From 1970 onwards, the educational landscape was broadened by the establishment of the *Fachhochschulen*; by 1991, there were 123 of these in the old *Länder*. Upon reunification, 66 East German HEIs, including 18 universities and 27 *Fachhochschulen*, were absorbed into the higher education system. For the most part, these were existing institutions; few new HEIs were established. In accordance with the terms of the 1990 Unification Treaty, 54 of the GDR's HEIs were to be taken over or restructured.

In the winter semester of 1999/2000, the 49 art colleges in Germany catered to 1.7% of the country's student body. The vast majority of teacher-training colleges (once exceeding 75 in number), have either been upgraded to university status or merged with comprehensive universities: there now remain only 6 colleges of education, all of them in Baden-Württemberg. There are 16 independent church-funded theological seminaries. The number of *Fachhochschulen* has risen to 152, and a further 28 *Fachhochschulen* for public administration have been established by the federal government and the *Länder*. Most of these are under the control of the Ministry of the Interior; their mandate is to prepare officials for the professional and executive levels of the civil service (in public administration, the police force, tax department, careers service, etc.). Students at these institutions are paid a civil service salary from the outset. Prior to the reform of the Federal Law on Financial Support for Education and Training (BAFöG) in 2001, the total sum of these trainee salaries was approximately equivalent to the federal government's entire BAFöG-related expenditure. In line with recommendations made by the *Wissenschaftsrat* (1996c), isolated efforts have been made to open the *Fachhochschulen* for public administration to candidates without civil servant status ("externalization") and to integrate these institutions into the general system of higher education (Bischoff 2000).

For the most part, the German system of higher education is government financed. There has traditionally been a non-state sector in the field of tertiary education, however, consisting almost exclusively of the theological seminaries and church-funded *Fachhochschulen* (primarily for social work). In 2000, there were a total of 79 private HEIs (16 theological seminaries, 51 *Fachhochschulen*, 2 art colleges, and 10 universities), and some 40,000 students (2.2% of the student body) were enrolled in these private institutions (BMBF Grund- und Strukturdaten 2000/2001).

A number of new institutions are planned or in the process of being established; for example, the International University Bremen, the International School of Management Dortmund, the Bucerius Law School in Hamburg, and the International Business School of Munich-Berlin. The majority of the "new" private HEIs are business schools geared to management training, as well as offering courses in subjects such as information technology, for which it is easier to obtain financial support from the private sector. Only two of the private universities offer a broader range of subjects: Witten-Herdecke

and the International University Bremen. However, not even these would be able to survive without considerable state subsidies, e.g., from the support program for HEI construction. "Privatization tendencies" are now also becoming apparent in the formal structures of the state HEIs. For example, Lower Saxony is planning to convert some of its universities into foundations, and some medical schools such as Leipzig and Mainz have been converted to private institutions (Wissenschaftsrat 2000b).

How has the institutional system of higher education reacted to the increase in the numbers of new entrants to higher education and the growth of the student population as a whole? Possible responses include expansion of existing HEIs, establishment of new institutions with traditional structures, and diversification of the higher education system as a whole.

For the German system of higher education, and for the universities in particular, the rapid growth in the student population presented an almost inescapable dilemma. On the one hand, there were and still are voices, particularly among the professorial staff, that have persistently opposed the opening of the universities to what they perceive as the non-academic "masses." They see this as representing the intellectual downfall of the institution, and thus wish to limit access to higher education. On the other hand, the resources allocated to the individual HEIs and disciplines, and hence the power and influence they wield, are dependent on the number of students enrolled. In its "Ten Theses on Higher Education Policy" of 1993, the *Wissenschaftsrat* recommended that, in order to resolve the dilemma between "mass and class," the influx of new students should be redirected away from the universities and toward the *Fachhochschulen*.

The 349 German HEIs are dominated by the 97 universities. With enrollments amounting to over 70% of the student population, the universities cater to the large majority of students, and are consequently authorized the most staff positions and allocated the most funding. *De jure*, all German universities are equal – for example, they all have the right to confer doctorates and habilitations (post-doctoral lecturing qualifications) – and all provide students with a homogeneous education geared to academic research. *De facto*, however, the universities differ in many respects. In terms of their historical development and, to a certain extent, in the range of subjects offered, it is possible to differentiate between the "traditional" universities and, for example, the technical colleges that were

not officially recognized as universities until the 1970s; universities such as Cologne, Frankfurt, and Mannheim that were originally set up as commercial colleges; the seven comprehensive universities; and the Universities of the Federal Armed Forces in Hamburg and Munich. In terms of the range of subjects, the universities differ not only in whether they boast fully equipped departments of technology and the natural sciences, but also in whether they have medical faculties.

The student populations of the universities also differ in size. Student numbers range from some 60,000 at the University of Cologne, to more than 40,000 students at the Universities of Münster, München and the Free University of Berlin, and up to 2,000 students at the International Graduate School Zittau. Among the private HEIs, Oestrich-Winkel and Witten-Herdecke have the highest number of students with over 900 and Bierbronnen having the lowest number of students at below 50.

Differences in the quality of research and teaching at individual HEIs are more difficult to gauge in objective terms and thus rather contentious. Nevertheless, the difficulty in establishing reliable evaluation criteria cannot detract from the fact that real differences in quality do exist. For some time now, there have been moves to publish information on the relative performance of the HEIs, following the example of countries such as the USA (e.g., the league tables published by the weekly news magazine "Spiegel" and the consumer goods testing foundation "Stiftung Warentest"). Faculty reputation ratings and student satisfaction ratings are often poles apart (Daniel 1998). These kinds of rankings will probably gain in importance in periods of stagnation and decline in new enrollments, when competition between the HEIs becomes more overt.

The German higher education landscape is already characterized by more or less open competition between the universities on the one hand and the general *Fachhochschulen* on the other, and by the contrasting nature of the two types. As a rule, it takes three-and-a-half-years (often including a one-semester industrial placement) to complete a *Fachhochschule* degree program. The *Fachhochschulen* offer academically based programs with a practical orientation. This institutional type experienced the largest growth in the 1980s and 1990s, in both the number and the proportion of students. The number of *Fachhochschulen* rose from some 90 in 1971, when they were first established, to 99 in West Germany. In the year 2000, there were 153 general *Fachhochschulen* across

Germany as a whole. Because many of the *Fachhochschulen* also have regional departments, the number of facilities is in fact substantially higher, underlining their regional significance. Although the *Wissenschaftsrat* defines a *Fachhochschule* as having at least 1,000 students and two to three programs of study, many *Fachhochschulen* have a student body of less than 1,000. While most have between 100 and 3,000 students, there are also a number of large-scale establishments such as the *Fachhochschule* in Cologne, which boasts some 15,000 students. Despite their rapid growth, however, the *Fachhochschulen* are still far from reaching the 40% of the student population recommended by the *Wissenschaftsrat*: they currently cater to 25% of the student population (and confer 35% of first degrees). Attempts to redirect the influx of new students toward the *Fachhochschulen* were undermined by a) political delays in establishing new *Fachhochschulen*, b) the unwillingness to re-allocate resources from the university sector, and c) the limited and highly gender-specific range of subjects offered at the *Fachhochschulen*, where programs are largely restricted to engineering, economics and – to a far lesser degree – educational social work. Restrictions on admission to *Fachhochschulen* are much more widespread than at the universities, however. As such, it is not the students who are to blame for the fact that more of them do not enroll in the *Fachhochschulen* with their shorter courses and higher levels of practical relevance.

The relationship between the *Fachhochschulen* and the universities is characterized by keen competition of the *Fachhochschulen* to gain equal status to the universities. The *Fachhochschulen* aim to match their formal equivalence to the universities with equality in material matters; for example, in the salaries and teaching hours of their professors, the numbers of academic staff they are allocated, their access to research and – not least – in the same access to civil service grades of their graduates as the ones for university graduates. On the basis of a resolution passed by the HRK, the *Fachhochschulen* have already begun using the English designation "Universities of Applied Sciences" in their letterheads. One of the avenues which have become recently open to the *Fachhochschulen* is to introduce master's programs, thus ensuring that their students' qualifications are equivalent to those of university graduates. In the past, they could achieve this only by cooperating with HEIs abroad. Individual *Fachhochschulen* such as Reutlingen have acquired excellent reputations, partly on the basis of such international study programs. The most recent reform of the

Federal law for higher education (HRG) had initially planned equal entry level salaries for university and *Fachhochschul*-professors but that has not been put into effect. Thus, the salaries of *Fachhochschule* and university professors will continue to differ significantly. In a somewhat longer historical perspective, however, will it only be a matter of time until the *Fachhochschulen*, like the technical colleges, colleges of education, and commercial colleges before them, are upgraded to university status – in formal terms, at least. Germany would thus complete a similar development to that concluded in Great Britain in 1992, when the binary system of universities and polytechnics was collapsed into a single structure (Neave 2000).

A further development in the diversification of the higher education sector has been largely overlooked in both the public debate and the relevant statistics. *Berufsakademien* or "colleges of advanced vocational studies" – which, though part of the tertiary education sector, are not recognized as HEIs – have entered the educational landscape alongside the universities and *Fachhochschulen*. Two different types of institutions operate under the designation *Berufsakademie*. The first type comprises colleges that were established in Baden-Württemberg in the early 1970s, and in Berlin and Saxony in the 1990s. These institutions were set up as dual establishments combining vocational education in the private sector with a state college education. In the winter semester of 2000/2001, a total of 16,499 students were enrolled in the ten colleges of advanced vocational studies (independent units, two regional departments) in Baden-Württemberg. These colleges now confer more than one-tenth of the degrees awarded in the state. A further 1,367 places in Berlin and 4,131 in Saxony should also be added to this number. The second type of *Berufsakademie* are state-recognized dual educational establishments that are financed by the private sector and offer three-year training programs. A number of new colleges of this type were established in the 1990s, primarily in northern Germany. Further institutions are currently being established, most of them geared to information technology programs (in Dortmund, for example). There are currently around 20 such institutions. Both types of *Berufsakademie* generally offer three-year programs that combine on-the-job training with college attendance. It is interesting to note that the banks have now also institutionalized this kind of dual *Akademie* training in Frankfurt am Main, although they long relied on the internal training and continuing education of their staff. The *Berufsakademien* have introduced a dual form of higher

education allowing well-qualified school leavers to be committed to companies at an early stage (Wissenschaftsrat 1994, 1996a; Zabeck/Zimmermann 1995). Like the *Fachhochschulen*, the *Berufsakademien* are largely limited to programs in the fields of engineering and economics. In Baden-Württemberg, about 35% of all business administration students are now enrolled in these colleges. In the 1990s, however, high levels of cyclicality became apparent in the technical subjects, revealing a clear drawback to this model. In times of stagnating economic development, new graduates are not necessarily hired by the firms that trained them; nevertheless, they do seem able to find employment elsewhere.

Both the *Fachhochschulen* for public administration and the *Berufsakademien* thus represent further demarcation of the tertiary education sector. Together with an increasing number of general *Fachhochschulen*, they offer a dual form of education integrating academic studies with on-the-job training. As a rule, students spend alternate three-month blocks studying at college and gaining work experience at their training company or department. These institutions thus represent a cross between the traditional forms of vocational training in the dual system or at full-time vocational schools on the one hand and higher education on the other. Not only do the employers and the government share the responsibility for program content – often an arduous process – students are integrated into working life from the very start of their studies, and are remunerated accordingly (Wissenschaftsrat 1996a).

A marked increase in the diversification of the universities is to be expected. This is not only because the HRK and the *Wissenschaftsrat* have been advising the universities to differentiate and build profiles for over a decade now, but primarily because austerity measures implemented by the individual *Länder* and nationwide evaluations have led to demands for more clearly defined profiles and the establishment of regional centers of competence. Paradoxically, this means that the guiding principle of the unity of the sciences, and hence of "full universities" offering a broad subject spectrum, is being abandoned at the very moment that the fragmentation of the humanities, the social, natural, and technological sciences, and medicine is increasingly regarded as outdated in today's interdisciplinary "knowledge society".

Any discussion of the diversification of the German higher education system needs to address the question of whether the post-reunification reform of the East German HEIs has led to new

institutional configurations. Inasmuch as the malaise affecting the West German HEIs had been diagnosed long before the beginning of the 1990s, when the reform process began, it would have made sense to take a different approach in the new *Länder*. Some organizational structures characteristic of the GDR universities were identified as well worth maintaining; for example, the strong teaching profiles of the mid-level staff (who, contrary to their counterparts in the West, were on permanent contracts), the tight course structure, and the much shorter degree completion periods. In retrospect, however, it is clear that the ten-year period of transformation has not produced enhanced institutional configurations. On the contrary, the reformed East German HEIs are faithful models of the corresponding institutions in the West German partner *Länder*. This was facilitated by widespread "imports" from the West – of professors, for example, as well as staff for the higher education departments of the ministries of science. The only innovative approaches to reform were taken in the Faculty of Cultural Studies and cross-border Collegium Polonicum of the European University Viadrina in Frankfurt (Oder) and in the establishment of the Max Weber graduate school at the University of Erfurt.

The notion that all German universities compared to each other and also *Fachhochschulen* compared to each other are equal is an erroneous one, but this has not yet been expressed in greater diversification of the higher education system. This means that new entrants to higher education, in particular, have great difficulty in finding their way around the higher education landscape. The pretence of homogeneity is upheld by the facts that a general certificate of aptitude provides access to higher education, that the universities have very little scope for selective intake, and that a Central Applications Office (ZVS) is responsible for allocating applicants to restricted-entry courses. The continuing absence of the long awaited specialized research universities cannot be attributed exclusively to parity norms, however, but also to the fact that the individual *Länder* are responsible for the universities. This makes the development of top national universities almost impossible.

4. Developments in Teaching and Learning

Of all their functions, the contribution that the HEIs make to teaching is most controversial. There is general consensus that the institutions' responses to the needs of their students are alarming in many respects, and can best be characterized as "structural neglect." This is despite the strong commitment to teaching displayed by individual faculty members, teaching assistants, and academic staff. There are startling contrasts between professors' complacency over the standard of their teaching and levels of student satisfaction. Paradoxically, the more strongly the students' rights of co-determination have been anchored in the respective constitutions, the further the quality of teaching has deteriorated. The student is the weakest player in the complicated structure of power and interests that is higher education (Ortmann/Squire 2000).

Surveys have confirmed that the self-image of German faculty members is defined more by research than by teaching (Enders/Teichler 1995:27/28; Schimank 1995:97). For the most part, the supervision of undergraduate students is delegated to pre- and post-doctoral staff. At *Fachhochschulen*, a major share of teaching is done by external part-time lecturers. This partly makes good sense in order to ensure the intended close connection to practitioners. However, it has of course consequences for the degree of supervision. In law schools, most students have to rely on private coaches ("Repetitoren"). Within the individual faculties and departments, there is a general lack of collective responsibility for the quality of teaching. Student evaluations of teaching quality are not conducted systematically. Student surveys conducted in the context of HEI rankings have pointed to considerable differences in the quality of teaching, course organization, and supervision across institutions, disciplines, and types of study program (diploma, master's, and teacher-training programs). Conditions in the "mass subjects" of the humanities, economics, and social sciences are far worse than in the natural sciences and engineering. Over the past decade, an intense debate on quality assurance in teaching has been initiated – prompted by factors such as HRK initiatives and league tables published in the media. Increasingly, instruments such as teaching reports and external or student evaluations of teaching quality are being implemented, but the coverage of these measures is by no means complete (Wissenschaftsrat 1996b).

A first change in tertiary-sector teaching and learning has already become apparent in the process of transition from school to higher education. It can no longer be taken as read that young people with either a general certificate of aptitude for higher education (*Abitur*) or a certificate restricted to the *Fachhochschulen* (*Fachabitur*) will enter higher education directly after leaving school. Paths to higher education have become longer and more diverse. In 1970, 56% of those qualified to enter higher education did so within the first year of leaving school; by 1998 this figure had plummeted to just 30% (BMBF Grund- and Strukturdaten 2000/2001). In the following year, 15.8% of new entrants to vocational training programs were Abitur holders (BMBF Grund- and Strukturdaten 2000/2001). Moreover, 26% (1993: 38%) of new entrants to higher education in 1998 had already completed a vocational training program – 17% (1990: 27%) of those enrolling at universities and as many as 52% (1993: 70%) of those at *Fachhochschulen*. Indeed, 15% of first-year students had taken up and completed a vocational training program *after* acquiring their certificate of aptitude for higher education (12% of university and 22% of *Fachhochschule* students). These figures edged down again in the 1990s, however (BMBF Grund- and Strukturdaten 2000/2001). Although upper secondary schooling had been reformed with the aim of better preparing pupils for higher education, increasing numbers of young people are choosing to take a gap year (or more) before beginning their studies – quite apart from compulsory military or community service. These two developments – vocational training and/or gap years – have led to a steady increase in the average age of new entrants to higher education in Germany: from 21.4 in 1980 to 22.5 in 1995. In 2000, the average age of new students was 22.1 (Statistisches Bundesamt 2000). Because a higher proportion of *Fachhochschule* students complete a vocational training program before moving on to higher education, they are generally older than their counterparts at university. This, in combination with the extended degree completion periods, makes German students the oldest in Western Europe. Against this background, it might seem reasonable to expect that, having finally begun their higher education, German students would take a purposeful approach to their studies. Despite substantial improvements in the orientation period at the beginning of the first semester, however, this is clearly not the case. Transfers from one discipline to another are relatively common, with 15-20% of university students and 10% of *Fachhochschule* students changing study programs (Lewin et al., 1998: 220). This can be

attributed partly, but by no means exclusively, to the phenomenon of "parking," whereby students who have not been admitted to their chosen program start by studying another subject and change direction at a later stage.

Problems of access and admission, deficits in the quality of teaching, and above all organizational shortcomings have led to a steady increase in both overall degree completion periods and the time spent studying the subject in which the degree is ultimately obtained. Only when data from the new *Länder* are included in the equation does the overall degree completion period drop by about a year. This may be because students in the new *Länder* complete their studies in a more efficient manner, but may also be attributable to the fact that there are not yet as many "long-term" students in this part of the country. Excessive degree completion periods have become an established part of college life even though obligatory mid-course examinations were introduced with the stated aim of streamlining studies, and although transfers from one institution to another have become less common. In 1998, the average degree completion period was 6.7 years at the universities (1985: 7.5) and 5.3 years at the *Fachhochschulen* (1985: 4.6). The average graduation age was 28 at the universities and 28.6 at the *Fachhochschulen* (Wissenschaftsrat 2001a).

The extended degree completion period is frequently also ascribed to factors for which the HEIs themselves cannot be made responsible, however, but which are linked to changes in student orientations and behavior. For one thing, it has been noted that many students no longer perceive their time in higher education as a temporary stage of life to be dedicated entirely to study, with the aim of moving on to employment and material security as soon as possible. Rather, today's students tend to see their college years as an independent phase of life giving them the opportunity to develop their own identity. For another thing, cuts in student maintenance grants and loans, the high cost of living, and increased standards of living during college years mean that practically all students work to finance their studies and that many of them actually only study part-time. Some federal states have already responded to this development by amending their laws for higher education to include the formal status of "part-time student" (Wissenschaftsrat 1998). The proportion of the average student income represented by students' waged employment has increased steadily, reaching 28% in 1994 (14th social survey, BMBF, 1995). In 1997, 67% of students financed their studies partly or wholly by

working their way through college (15th social survey, BMBF, 1998; Statistisches Bundesamt, 1999: 55). For one-fifth of students in the old *Länder* and 12% in the former East, paid work predominated. Furthermore, the proportion of *de facto* part-time students increases from about one-tenth in the early semesters to over one-fifth after the tenth semester (Wissenschaftsrat 1998). Finally, extended course completion periods can also be ascribed to bleak labor market prospects. Students who perceive their labor market prospects as poor tend to protract their studies (Wissenschaftsrat 1999b). This has led to higher education being widely described as the "waiting room" of the nation.

However valid these observations may be, marked inter-institutional differences in course completion periods for the same qualifications and in the same disciplines suggest that the quality of teaching and organization and the relative allocation of resources also play an important role. For example, the median course duration (i.e., the number of semesters at which 50% of students had taken their final exams) for a master's degree in history ranges from less than 10 (Trier, Dresden) to more than 14 semesters (FU Berlin, Wuppertal, Darmstadt); for a diploma in psychology from 10 semesters (Leipzig) to almost 16 semesters (Oldenburg); and for a law degree from 8 semesters (e.g., Bayreuth, Cologne and Munich) to almost 12 semesters (Bremen) (Wissenschaftsrat 2001a). There is no evidence to show that a longer period of study is indicative of a superior level of education. Conversely, however, there is no empirical proof that graduates who take longer to complete their degrees are seriously disadvantaged on the labor market.

The proportion of students who leave the system without a degree qualification – frequently only after having studied for several years – indicates further serious shortcomings in the quality of college admission procedures, teaching, and organization. The dropout rate based on the graduation year 1999 is 30% in universities and 22% in *Fachhochschulen*. The dropout rate of men is with 28% higher than that of women at 26%. If one considers only the German students, then the dropout rate drops to 24%. Aside from registration problems, this could also be attributed to possible study difficulties of foreign students.

According to the rougher calculations of the OECD, dropout rate in Germany lay between 28% and 30% and was therefore, with the exception of Japan (11%), the lowest among the bigger OECD countries (in comparison for example, France 45% and Italy 75%) (OECD 2000).

Aside from the dropout rate, the so-called decline rate is also meaningful for the assessment of the efficiency of the higher education system. Besides student dropouts, students who did not earn a degree in the academic course for which they are registered in the first semester but who switched subjects are included in the decline rate. These quotas could be interpreted as the most adequate success indicators of the quality of academic training. Among universities and *Fachhochschulen*, the decline rate lies at 45% and 28% respectively (Heublein et al. 2002).

The main change in tertiary-sector teaching and learning is currently taking place in two interlinking domains: the internationalization of study programs and the alignment of degrees awarded to the Anglo-American model.

In recent years, both *Fachhochschulen* and universities have begun to offer a wide range of "international" courses; these now number more than 600 (Hochschulkompass HRK). "International" have various meanings in this context. It may refer to the content of the course (e.g., European Administration at Chemnitz; law degrees focusing on European law), to programs where the language of instruction is English, or degrees offered in cooperation with one or more partner institutions abroad. Moreover, the proportion of German students spending part of their degree programs abroad has soared. Some 10% of students have attended HEIs outside Germany, and more than a further 10% have other related experiences abroad (internships, language courses, etc.) (Lewin et al. 1998: 298).

Furthermore, after more than 30 years of planning and discussion, potentially far-reaching changes in the structure of the German higher education system are imminent, with the introduction of consecutive bachelor's (3-4 years) and master's courses (1-2 years). Following the amendment of the Framework Act for Higher Education (1998, §19 HRG) and recommendations made by the Standing Conference of the Federal Ministers of Education (KMK) (resolution of 24 Okt. 1997), the HRK (resolution of 10 Nov. 1997), and the *Wissenschaftsrat* (Wissenschaftsrat 2000a), applications for a total of 219 BA courses and 136 MA courses have now been submitted and approved. The decisive impulse for the introduction of these short and consecutive courses was provided by the debate on the German system's apparent lack of appeal for international students. It has frequently been overlooked that similar moves toward the formal unification of degree structures have been made on the European

level – at the same time and with the same objectives (Bologna declaration of the EU Ministers of Education, June 1999).

What remains to be seen, however, is whether the new consecutive courses will develop parallel to the established diploma, state examination, and master's courses or whether – as recommended by the *Wissenschaftsrat* – they will in fact replace the traditional structure. It also remains unclear what proportion of BA graduates will leave higher education – temporarily at least – to join the labor force, and whether the new first degrees will be interpreted as certificates of qualification for particular occupations, or rather as indications of "employability," providing non-job-specific access to the labor market at large. The development of new kinds of accreditation authorities for these new programs is also likely to be very arduous. As yet, few courses have been subjected to accreditation procedures. The great majority were approved in the conventional way – by the higher education departments of the ministries of science.

Expectations of the new consecutive courses are high. Provided that it is not simply a matter of re-labeling intermediate stages of the existing structure (e.g., the *Vordiplom*), the restructuring process affords great opportunities for the reform of course content and for the introduction of an organizational structure that is not only more efficient and flexible, but that could also help overcome the current deficits in interdisciplinary collaboration. The introduction of a points system (where achievement is assessed on a cumulative rather than a sporadic basis) and of more compact, modular units of study may play an important role in this context. There is a good chance that dividing programs of study into two parts will lead to fiercer competition for students between the universities and *Fachhochschulen* on the one hand, and between individual institutions on the other. Finally, the universities hope that the more select groups of students enrolled in MA courses will allow them to return to a more intensive, research-oriented form of academic training.

5. Autonomy and Control: Internal Structures and External Relations

This section focuses on the relationships between autonomy, dependence, and control in the internal structures of the HEIs and in their external relations to the state, society, and economy. In the past decade, the existing organizational forms of the HEIs have increasingly been perceived as flawed: not only are effective control mechanisms lacking, but the institutions are neither rewarded nor penalized for their performance (Buttler 1998:233). Recent developments pertain to the autonomy of the individual faculty members vs. the autonomy of the institutions, to the extent of self-regulation and the mechanisms involved.

Traditionally, the German universities are institutions of the individual *Länder*, but ones that enjoy considerable rights of self-governance in their function as public bodies. On the one hand, they are subject to state education policy and function as training establishments for the public services of administration, law, education, and (to a certain extent) the church. On the other hand, the academic freedom anchored in Germany's Basic Law guarantees the university as an institution, and its faculty as a profession, a great deal of room for maneuver. This dual control of the state on the one hand and the university boards on the other is reflected in the top level of the institutional management structure, consisting of an elected president or rector on the one hand, and an independent (in budgetary matters, at least) bursar on the other. State control extends to the allocation and control of resources, the appointment of professors, the inspection and approval of course content, and the legal position and remuneration of professors as civil servants.

The autonomy of the HEIs stems more from the far-reaching autonomy of individual professors than from the autonomy of the institutions as organizational units. Although the higher education laws of the 1970s extended the co-determination rights of academic staff and assistants, non-academic staff, and students, following judicial review by the federal constitutional court, the laws in fact shored up the rights of the professors. In the final analysis, the new co-determination regulations actually strengthened the role of the state and, to a certain extent, the central university management structures, because the board mechanism was no substitute for professorial autonomy. In contrast to the universities, the *Fachhochschulen* are subject to comparatively close state control.

This traditional pattern of internal structure and external control is currently undergoing fundamental change. Firstly, actors in the political and state spheres are increasingly coming to realize that, despite their far-reaching rights, neither the higher education departments of the ministries nor the parliaments are in a position to control the intellectual content of the HEIs, and that more general control procedures would perhaps be more effective. Secondly, there have been numerous efforts to improve not only the quality of research and teaching, but self-regulation, motivation, and commitment by offering stronger performance incentives. The first steps in this direction have already been taken in a number of *Länder*, where lump-sum budgets have taken the place of approved staffing schedules and line-item budgets linked to agreed targets and performance indicators. In a few isolated cases, boards of trustees have been established and conferred with powers previously granted to either the state or the professorial boards (e.g., decisions on program contents, participation in the election of a president or rector, etc.). This paves the way for the state and other social groups, particularly the business community, to increase the influence they exert on higher education. This does justice to the fact that the private sector is now the most important "consumer" of new graduates and that a variety of new sources of finance are gaining in significance alongside direct state funding.

The internal structure of the HEIs is also undergoing change in this context. Rectors are increasingly being replaced by presidents with longer terms of office and, in some cases, full-time vice-presidents. Despite the continued existence of the elected academic senate as the most important decision-making body, this has strengthened the position of the central university management structures. The reorganization of the faculties and departments is perhaps even more far-reaching in its effects. Following a phase of increasing differentiation, the number of faculties and departments at many universities has now been slimmed down again. At the same time, the position of dean has been strengthened and the term of office extended. In the future, decisions on the allocation of an increasing proportion of resources will not be made either centrally for the institutions as a whole or by individual academics. Rather, these decisions will be made on the faculty and department level, and on the basis of performance indicators. It is thought that this will create decision-making structures that guarantee the clear assignment of decision-making power and responsibility for outcomes.

Admittedly, the increased autonomy of institutions and departments has been bought at the price of reduced autonomy and responsibility on the part of the individual professors, who are now subject to increased performance control. The danger of this is that professorial commitment may decrease, or that their efforts to achieve defined and quantifiable performance indicators may remain superficial.

Despite these developments, however, the organizational fragmentation of universities on the principle of "chair institutes" is not yet at all widespread in Germany. The internal structures of the German universities are still far removed from the professionalized management structures of the American model, and from the strong positions held by provosts, deans, and department chairs in that system.

Apart from their formal decision-making and power structures, the organizational form of the HEIs is determined by their staffing structures. In 1999, there were almost half a million authorized staff positions in the German higher education system, 43% of which were occupied by academic staff. Of these, 6% were C4 professors, 18% were C3 and C2 professors, and the rest were other academic staff. As a rule, C4 professors hold university chairs or positions as institute directors, with resources allocated for staff and equipment. If they receive a "call" from another university, they are able to negotiate considerable salary supplements. The salaries of C3 professors are lower and, with the exception of seniority allowances, are fixed. If at all, they are granted only insignificant resources for staff and material. There are few C2 positions at universities (primarily as transitional posts for those who have recently completed their habilitation thesis), but most *Fachhochschule* professors are in this category. There are, however, marked differences between the individual universities and the *Länder*, particularly with respect to the allocation of resources and the distribution of C4 and C3 positions. In the 1980s, criticism of the staffing structure in the German HEIs focused on the extreme pyramid structure (the higher in the hierarchy, the fewer positions) and the poor career prospects for junior academics. However, empirical studies have shown that most former members of the middle-level teaching and research staff who decided to leave higher education retrospectively perceive this stage of their career as a productive one, and as beneficial for their labor market prospects (Bochow/Joas 1987; Enders 1996). The "restructuring" of the East German HEIs provided new

chances for junior academics from the West and helped to resolve the dead-end career situation with which they were confronted prior to reunification. In the 1990s, criticism focused on the mature age at which German academics are first appointed to professorships, the long period of dependence as research fellows or assistants preceding this "call," and the lengthy habilitation process, which was identified as one of the reasons behind these shortcomings. This is backed up by the fact that, even for those academics with a habilitation who do succeed in obtaining a professorship, the transitional period between handing in the habilitation thesis and being appointed professor is often fraught with problems. Almost 40% were not in regular employment when they completed their habilitation thesis, and it is far from rare for a professorial appointment to be made only after several stints as substitute lecturers, DFG grants, project-related posts, or even periods of unemployment. There are now plans to introduce a six-year junior professorship (following a doctoral and post-doctoral stage lasting up to four years) and to either abolish the habilitation or reduce its value. Furthermore, a new professorial salary scale is to include performance-related elements (W1, W2, and W3 professorships). The planned reforms aim to allow for earlier access to the professoriate on the one hand, and to increase competition between academics on the other. Junior professors will differ from the conventional research fellows, etc., in that they will not be "assigned" to a professor, and will be allocated their own financial resources (Wissenschaftsrat 2001b). The scheduled reforms are rather half-hearted in three respects, however. Firstly, the fact that no provision has been made for new junior professors to move directly to positions leading to permanent, full professorships (i.e., a "tenure-track" procedure on the American model) means that it is by no means certain that junior professors will be spared an additional probationary period on a shaky academic labor market, or that their status will be preferable to that of newly habilitated academics in the present structure. The age at which academics finally achieve a full professorship (6-year doctoral and post-doctoral period + 6 years as junior professor + transitional period) could in fact increase, exacerbating even the current unsatisfactory situation. Secondly, the fact that the "traditional" structures are being retained might mean that the habilitation will continue to exist alongside the junior professorship as a second qualifying credential for professors-to-be. Thirdly, there are fears that junior professors will either be denied full rights of participation in the self-governance of the HEIs – i.e., that their status will differ little from that of the

"traditional" academic support staff – or, conversely, that they will be weighed down with administrative tasks and examination commitments, thus preventing them from making the necessary academic progress in the time available to them.

6. Future Prospects

As yet, it remains unclear about precisely what institutional form the German system of higher education will take following the current period of reform. Future developments may take one of two possible paths: institutional stagnation in combination with further expansion and largely superficial concessions to the rhetoric of profile building and efficiency on the one hand, or functional differentiation, increased autonomy, and productive competition on the other. The changes described in the following are already foreseeable.

The regulations and mechanisms of control on both the institutional and the *Länder* level will differ fundamentally from the traditional HEI constitutions. State control of the HEIs and state authority in budgetary matters will be replaced or repressed by less direct means of intervention such as global budgets, contracts with agreed targets, and boards of trustees. At the same time, research and teaching will be subject to increased evaluation, the results of which will determine the allocation of state resources. The autonomy of the HEIs will be expressed more in the university management's room for maneuver and in its obligation to act than in the autonomy of individual academics.

It is probable that the HEIs will be able to make their own decisions on the appointment of professors, though the financial conditions will be more difficult than before and there will be increased pressure for profile building.

The introduction of shorter degree courses will diversify the range of study programs on offer and afford a welcome opportunity for the long overdue reform of course contents and methods. Shorter programs will also increase permeability between the *Fachhochschulen* and the universities and will increase the competition between the two types of establishments. Admittedly, it is rather improbable that there will be any change in study programs being oriented to particular disciplines and

final qualifications being aimed at particular occupations. Furthermore, it remains to be seen how many students will actually leave higher education after a three-year course of study, and whether the state and private labor market will provide these graduates with attractive job opportunities.

Increasingly, the HEIs will not only provide initial education and training for school leavers, but will offer continuing education and advanced training for those already in working life. The HEIs will have to compete with a broad spectrum of other suppliers in these domains.

There is little doubt that the digital media will revolutionize student life – internet searches will replace trips to the library, multimedia technologies will create new teaching and learning opportunities, HEIs will offer internet-based seminars and supervision, and there will even be a few "e-universities."

German HEIs of the 21st century will continue to be primarily state organized and government financed. Nevertheless, there will be a marked increase in the number and relative proportion of private HEIs characterized by selective intakes and high tuition fees. Newly established private institutions will have a certain model character, even for the state institutions.

University and college life will become more international; periods of study abroad and programs conducted in foreign languages (especially English) will become integral parts of the standard educational career. The barriers discouraging non-German-speaking academics from working in Germany will be lowered; in the medium term this will lead to the internationalization of academic staff in the humanities and the social sciences. Similar trends have been apparent in medicine and the natural sciences for some time now. Admittedly, it is currently a moot question as to whether the German institutions will ever manage to rank among the leaders in the competition for international students.

Within the universities and the *Fachhochschulen*, there will not only be increased competition for academic staff, students, and funding, but increased differentiation and profile building, particularly within the *Länder* and in regional associations of HEIs. Increasingly, this de-standardization and qualitative differentiation will render the central allocation of study places obsolete.

The labor market demand for graduates will continue to increase and, in the future, the

majority of graduates will work in the private, rather than state sector. Programs of study will be more strongly geared to the demands of the economy. Where vocational education is concerned, university training will gain in importance over vocational apprenticeship training.

The German HEIs will increasingly approach the form of what Clark Kerr has long described as a "multiversity," open to the diverse needs of society and the economy. There is little doubt that the ongoing and planned reforms will lead to institutions being "unleashed" in this sense (Müller-Böling 2000). As such, they will have less and less in common – assuming that this ever was the case – with the Humboldtian principle of the university as a way of life in which teachers and students research together in "solitude and freedom," discovering the world on a step-by-step basis and, in so doing, contributing to the common good (Schelsky 1971). Paradoxically, however, the HEIs still live by these ideals, at least where the rationale and motivation of their members is concerned.

PART II: Class Patterns in Post-Secondary and Tertiary Education

1. Higher Education in the Context of the German Educational System: The Ways to the Abitur

As the future perspectives for higher education have shown, further growth of the system can be expected. Even though an academic degree has lost its social exclusivity and social prestige attached to it, it remains the most significant step in the educational system for securing access to advantageous class positions and to high incomes. For increasing proportions of people it is in access to and success in the tertiary system of education where it is decided how favourable the opportunities in the further course of life will be. As described above, expansion has lead to the differentiation of institutions catering tertiary education and to an increase in the number of different kinds of study programmes and diplomas offered. For the study of stratification it is thus of eminent interest, how inequalities by social class in tertiary education participation and in attainment of tertiary degrees have evolved in this process of tertiary education expansion and differentiation. While our main focus is on tertiary

education, we must, however, locate tertiary education more broadly within the German system of education and its relation to social stratification. Otherwise, we would miss important elements needed to understand the German case in comparative perspective.

The bottleneck to tertiary education in Germany is the Abitur. Those who have obtained the Abitur, in principle have free choice of a tertiary course of study.[1] The Abitur can be obtained with different specialization in classical or modern languages, mathematics or sciences, social, economic or cultural courses, but all of these are general in nature. There is not yet a direct access to tertiary education from the vocational training system without passing additional exams corresponding more or less to the Abitur requirements. Whether the significance of social class or other characteristics of social origin is changing over time thus to a large extent depends on two processes: First, the social selectivity up on the way to the Abitur, and secondly, the social selectivity in the kind of further study taken up or not taken up and successfully completed or not completed after the Abitur. If we want to assess changes in social inequality concerning tertiary education we need to consider changes in both processes. How does social selectivity change up to the Abitur, and how in the succeeding educational course?

We will very briefly review the literature on access to the Abitur. In the results section we will present a summarizing logistic regression that allows a general assessment of the developments over a large part of the last century. For the main part, we will focus in greater detail on the second process. We will describe the options young people with Abitur have in the tertiary system of education and outside of that system. We will derive hypotheses how social class should affect the choice of options and their outcomes and we will test these hypotheses with multinomial regressions for men and women.

Educational inequality among children of different social background is known to be high in Germany. Comparative studies have consistently shown that class differences in educational participation and level of education achieved is higher in Germany than in many other advanced societies. (Müller/Karle 1993, Jonsson/Mills/Müller 1996). Even though results of several recent studies are not in complete accord, there is now convincing evidence from several studies – using

[1] There are some restrictions (detailed below), but they do not invalidate the core role of the Abitur as entrance prerequisite to tertiary education.

different sets of data and different analytic methods – that class inequality has declined in recent decades (Müller/Haun 1994; Henz/Maas 1995; Jonsson/Mills/Müller 1996; Schimpl-Neimanns 2000). The decline is substantial, but because it started from a rather high level it is likely that compared to other countries Germany still holds a position at the upper end of the distribution of countries ranked according to some aggregate measure of the degree of educational inequality. However, results may vary depending on the specific aspect of inequality examined. Low degrees of class inequality in the risks of early dropout or obtaining only substandard education may be combined with very high inequality in obtaining tertiary degrees.

It is less clear, exactly why Germany should have this high degree of inequality. There is little ground to assume that the basic individual abilities affecting success in schools (such as general cognitive abilities) should per se work differently in Germany or that the distribution of these abilities by social class should be substantially different in Germany than in other countries. Also the social mechanisms of educational choice should operate in similar ways in Germany as in other countries. Also Germany has neither particularly high levels of income inequality nor poverty, that could be responsible for particularly high levels of educational inequality. Most plausible are explanations in terms of particular institutional settings in the educational system that condition educational choices by social class in Germany. Basically there are two such explanations. They are partially related but the emphasis and the theoretical mechanisms assumed are clearly different.

The first of these explanations refers to the early selection of children into different tracks of education in the still mostly tripartite system of education in Germany. The three different tracks, into which selection is often made already after four years of schooling, considerably differ in their curricula, require different levels of academic ability and provide different opportunities in educational progression. The main arguments here are: First, the earlier selection takes place, the more the social conditions in the parental home ponder. Secondly, the different curricula, school requirements, and the learning conditions in the different tracks lead to a consistently growing accumulation of differences in cognitive development and academic knowledge of the pupils in the different tracks. This creates largely different opportunities for further progression on the educational ladder. Perhaps the most clear evidence (in cross-country comparative perspective) here comes from the recent PISA-study results,

which show that class inequality in academic performance of students is higher in Germany than in other countries and that this is related to the educational tracking (Baumert/Klieme et al. 2001).

The second explanation refers to the strong vocational component in the German system of education and the relatively good returns vocational education provides on the labour market. Vocational training in Germany provides an attractive 'safety net' for children of the lower class background (in the sense of protecting against unemployment and unskilled jobs), but at the same time it diverts them from more promising routes of academic learning. Avoiding risks and yet having the prospects of a decent job makes children of working class background preferably choose the vocational route. This then produces high levels of class inequality in participation in academic education. To our knowledge there has hardly been a direct test of the mechanism[2], but indirect evidence shows that in countries, in which vocational education is made available and provides positive returns on the labour market, larger cohort proportions obtain vocational qualifications at the expense of general qualifications at the secondary level and smaller proportions enter into tertiary education (Müller/Wolbers 1999; Shavit/Müller 2000). Further below, we will show that this diversion and safety net mechanism not only operates at the secondary level of education, but also on the tertiary level.

As to the decline in class inequality in educational participation in Germany, the driving element of it has been found in earlier research to occur in the very crucial decision most of the children in the German school system still face at about age eleven, when they have to choose between one of three tracks in which to continue education.[3] Over the decades the proportion of those entering the dead-end Hauptschule-track has substantially declined. At the same time, social selectivity among the children who enter into one of the two more demanding tracks (Realschule or Gymnasium) has also substantially declined. As further progression up to the Abitur is much more likely in these tracks (in particular in the Gymnasium) than in the Hauptschule, social selectivity among those who progress

[2] See however the case of Sweden, where it has been shown that following the introduction of opportunities of vocational qualifications at the secondary level, the proportions of students in general tracks declined in socially selective ways. Relatively more students with working class than with service class parents opted for the vocational route (Murray 1988)

[3] The age at which this choice has to be made varies between the federal states. For the largest proportion of children the age is 10-11. In some of the states the bifurcation takes place 2-3 years later (for details see von Below 2002). The criteria of access to the various tracks also vary. To a large extent the choice is constraint by school grades obtained.

up to the Abitur has also declined; mainly as a consequence of the decline in the first step, and less as a consequence of declining social selectivity in the transitions following the first step. The decline mainly occurred among the cohorts who made the transitions up to the early seventies, and it levelled off since then (Müller/Haun 1994; Henz/Maas 1995; Schimpl-Neimanns 2000)[4]. While the evidence concerning the fact of declining social inequality on the way up to the Abitur appears compelling, it is not clearly established which are the main factors responsible for it. One interesting explanation is related to the logic of the German vocational training system. It has been suggested that for promising apprenticeship places in the German vocational training system, employers increasingly required at least intermediary secondary general education (obtainable at Realschule and Gymnasium) or full secondary general education (Abitur, obtainable mainly at the Gymnasium). Even for conserving their parental status it became increasingly essential for working class children to enter either the Realschule or Gymnasium track. This leads to declining class inequalities in the very first crucial transition. Once on the track the biggest step on the way up to the Abitur was made and social inequalities in reaching the Abitur declined as well.

2. Institutional options and educational choices beyond the Abitur

Once the Abitur is obtained, the graduates basically have four options in the German system. They may immediately enter the labour force (without further education and training),[5] they may continue education and training in a non-tertiary institution, or they may begin studies in one of two tracks of tertiary education (*Fachhochschule* or university). Most graduates from the Abitur enter tertiary education, but a substantial number of them also continue in a non-tertiary (mainly vocationally oriented) path of training. Very few directly enter the labour market. It is important to distinguish these options, because they can be assumed to be differently attractive to Abitur-graduates of different social background.

[4] For arguments and results claiming persistent inequality see Mayer/Henz/Maas 1991, Meulemann 1992; Blossfeld 1993).
[5] We do not restrict our data to people in the labour force. So this group also includes people who decided not to be part of the active labour force.

Those people who do not earn an additional educational degree constitute a rather heterogeneous group (like failed students, housewives and -husbands, successfully employed and the like). Entry into a non-tertiary path of training in the German context mainly means entry into apprenticeship, but there are also various other vocational training colleges (e.g. in health care) that take Abitur-graduates on board. Most of these training options do not formally require the Abitur as entrance prerequisite. Indeed they usually are entered with general qualifications below the Abitur level. Being equipped with the Abitur often reduces the time required for the training compared to students without the Abitur. Growing number of students with the Abitur use this option. Often it represents a low-risk educational investment strategy. In relatively short time (two to three years at most) it leads to a credential recognized on the German labour market. And having obtained the Abitur may further help to advance later in the job career. A considerable number of Abitur graduates who intend to enter tertiary education later, deliberately acquire these qualifications in a first step as a sort of basic insurance qualification on which they can fall back should they fail in the much more risky studies for a tertiary degree (Büchel/Helberger 1995). Following the logic of mobility strategies from below (Goldthorpe 2000), we should expect that working class children are more likely to opt for this low risk - low investment strategy than children with service class background. The availability of this option diverts them from more demanding studies and their better returns on the labour market.

Concerning entry into tertiary qualifications we should first mention that in contrast to other countries the expansion at the tertiary level of education has been rather limited in Germany. To a large extent this is due to the fact that education and training for many kinds of semi-professional work in technology or in the services such as for the various kinds of nursing are not part of tertiary education in Germany, but located in the dual system or offered in secondary level vocational schools. The fact that they appear to be attractive even for Abitur graduates kept the expansion of tertiary education in limits.

Several differences in the characteristics of the study programmes of the *Fachhochschule* and of the universities suggest that that they should be differentially attractive to students of working classes and service class origin. The shorter duration, the lower failure rates and the more practical orientation and job-relatedness should all contribute to a higher attractiveness of study programmes at

the *Fachhochschule* to students of working class background and to students from families with low parental education. They can be expected to trade lower investments and risks against somewhat reduced returns on the labour market. Students from service class and high education parental home on the other side should be expected to prefer the university.

The fact that academic standards at the *Fachhochschule* became higher, its reputation has grown and the returns on the labour market increased might have reduced the aversion of the higher social classes against the *Fachhochschule* and contributed to a decline in the social gradient in the choice between *Fachhochschule* and university. On the other side, several of the more general developments described (decline in the generosity of study grants, increased sceptical perception of labour market prospects of university graduates; *numerus clausus* in various attractive disciplines) should have reduced the propensity and likelihood of working class children to enter university education. This should contribute to an increasing class gradient in the choice of *Fachhochschule* vs. university tertiary education. These two processes point in opposite direction and may compensate each other.

We have pointed out that Abitur graduates also have other options than obtaining degrees from university or Fachhochschule. Going for a non-tertiary vocational qualification should be more likely among children from working class and low education families than among those of service class and high education origin. In response to the general developments described for tertiary education, the social gradient in this respect could be expected to increase rather than decline.

Whatever change has occurred in the social selectivity in educational participation and success among those who have reached a full secondary education at the Abitur level, it is important to place these changes in context with the evolution of social inequality at the secondary level of education. In the analyses that follow, we will therefore begin with a brief assessment of educational inequality among the population at large. After some descriptive results, we will present unconditional logistic regressions first of the odds of reaching at least the level of the Abitur or more and second of reaching a tertiary degree. Then we will use multinomial logistic regression to study the further (conditional) educational attainment of those who have reached the Abitur.

3. Declining inequalities at the full secondary and tertiary educational level

Our results are based on a pooled data set using four different data sources: 1) the German general social survey (*ALLBUS)* 1980-2000, 2) the *ZUMA-Standarddemographie* 1976-1982, 3) the German socio-economic panel (*GSOEP*) 1986, 1999, and 2000[6] and 4) the *West German Life History Studies* (conducted in the 1980s). We restrict our data to West German citizens born 1910 and later. Altogether, the data set comprises 65,797 observations. Our dependent variables are measured with the revised CASMIN educational classification scheme (Müller 2000). As independent variables, we use two measures of social origin. We construct an 8-class-version of Goldthorpe's class schema relying on information about father's employment, and we use a dummy variable for father's education (a degree of full general secondary qualification or more is coded "1").[7] Unfortunately, information on father's education is missing in some surveys, so we include a missing variable, too, in order to keep these cases in the analysis. To capture change over time, we use quasi-birth cohorts in 10-year categories.

Figure II.1 and Table II.1 give information on the proportion of the population with an educational degree below full general secondary qualification (less than Abitur) and with Abitur degree or higher, separated for men and for women who are at least 30 years old. The white area in Figure II.1 indicates a degree less than Abitur, the shaded areas indicate at least an Abitur level degree. The shaded areas are divided into proportion of people with tertiary degrees (light shade) and into people who reached the Abitur level, but did not earn a tertiary degree (dark shade). The bars clearly indicate that Abitur used to be a very exclusive degree in older cohorts. Some 82.4 percent of all men and 92 percent of all women did not reach this level of education in the oldest cohort. But even in the youngest cohorts, about 2/3 of the population do not graduate with Abitur (64.9% for men and 71% for women). Overall, more students earn an Abitur degree in younger cohorts, and therefore, it became less exclusive. But the proportion of students holding such a degree only grew moderately.[8]

[6] From the GSOEP, we use sample A+B for 1986, sample E for 1999, and a preliminary version of sample F for 2000/2001. For various reasons we decided to use no weights.
[7] Unfortunately, most of the data do not include information on mother's individual class position or mother's education. We are therefore forced to rely on father's information only.
[8] For trends in even younger cohorts (e.g. younger than 30 years old), see page XXX above.

The bars also show a fast growing proportion of women having Abitur. Between cohorts 1938-1947 and cohorts 1958-1972, the share of women without Abitur declined rapidly from 87.8% to 71%. This growing proportion has led to a marked decline in gender differences at the Abitur level. In fact, the differences at the given level are about to diminish.[9] Looking at tertiary degrees, one can also find a decreasing gender gap. But this decline is less pronounced. There are still more men than women who obtain tertiary degrees, so gender inequalities can still be found at this level of education.

How about class inequalities for students who earn an Abitur degree. Who benefits from the growing proportion of people holding this degree? In order to assess the influence of social origin, we use logistic regression models of the outcome of having at least an Abitur degree vs. having no full general secondary education. Hereby we include people who are at least 22 years old, proposing that the vast majority of those who have an Abitur degree will have earned it at that age. We test for the influence of social class and of father's education, controlling for cohort. The upper service class (class I) is the reference category. We also include interaction effects of class by cohort and of father's education by cohort in order to capture changing effects of social origin over time (see Table II.2). It turned out that some class effects do not change relative to the reference class (upper service class), so we dropped these interaction effects. In order to keep the model more parsimoniously, we include one common interaction effect for the three working classes (V-VIIab).[10] For women, the effect of father's education turns out to be more or less time invariant, so cohort times father's education-interaction is not included in the model for women.

The results of the models for men and women are displayed in Figures II.2a and II.2b. As a first result, the logit effects indicate distinct class differences in the odds of holding an Abitur degree or more. Upper service class children (class I) have the most favorable starting position to reach Abitur level, followed by lower service class children (class II) and children of routine non-manual employees (class IIIab). All three effects differ significantly from each other, but they do not change relative to each other over time. Sons of small proprietors (class IVab), working class elites (class V), farmers (IVc), skilled and unskilled workers (VI and VIIab), however, improve their chances of

[9] In fact, for even younger cohorts who are not represented in the data, the difference disappeared completely (Statistisches Bundesamt 2000).
[10] This does not worsen the model significantly compared to a model which includes interaction effects for each working class category.

earning the Abitur relative to the service class. The improvement is more or less of the same amount for all of these classes. So in general, lower classes catch up with their chances of earning an Abitur degree relative to the three non-manual classes. In addition to declining effects of class origin, the influence of father's education on having Abitur is also declining for men (from 1.76 for the oldest cohort to 0.66 for the youngest cohort). Figure II.2b reveals for women that the effect of class origin is somewhat more pronounced than for men.[11] Although class differences decline to a somewhat stronger extent for women than for men, women still experience a slightly stronger class based inequality than men. The invariant effect of father's education on Abitur is stronger for women than the average effect for men.

Bringing the results together, educational inequality at the full secondary level declined in West Germany in the course of the 20th century with respect to gender as well as with respect to social origin. According to the data, especially children of manual classes improve their chances of getting an Abitur degree relative to children of the upper service class. Since only very few students change tracks in the tripartite German school system, declining inequality most likely has its causes in the decision making process after forth grade.

But does declining educational inequality at the secondary level work all its way thru to the level of tertiary education? To test this, we run almost the same logistic regression models again, now using a dummy variable of tertiary degree (i.e. *Fachhochschule* or university degree) vs. no tertiary degree as our dependent variable. We restrict our sample to people who are at least 30 years old.[12] We also add interaction terms for cohort by class of non-manual employees (class IIIab), and we are able to exclude working class elites (class V) of the common working class interaction term, since the effects of this class will not vary across cohorts. The results of the models for men and women are reported in Table II.3 and visualized in Figures II.3a and II.3b. The overall picture is indeed very similar to the one we obtained when we looked at the Abitur level. Children from the two service classes maintain their favorable position in terms of earning a tertiary degree while children from

[11] As additional tests have shown, this is not independent of the exclusion of interaction effects of father's education by cohort.
[12] As shown above, the average age of graduates from higher education institutions is slightly above 28 years. Therefore, we set an age restriction to 30 years and older. Additional tests with higher age limits show basically the same results.

manual classes markedly improve their chances relative to the upper service class. Therefore, educational inequality has not only declined at the secondary level of education. The decline has also carried to the *Fachhochschule* and university level.

If we take a closer look at the numbers and graphs of tertiary education, we find some small differences between the different levels of education. For tertiary education, we observe a modest but steady improvement for children of routine non-manual employees. At the same time, children from working class elites do not manage to improve their prospects of earning a tertiary degree relative to the service classes. The effects for farm offsprings are similar to working class children for men, but quite erratic for women, which might be due to low frequencies in these cells. If we look at the effect of father's education, we observe a somewhat lower effect of it at the tertiary level. Combining men and women into one model with gender interaction effects (results not shown) reveals a strong decline of gender inequality in terms of holding a tertiary degree. Women still have lower chances to earn such a degree, but this gap is constantly decreasing.

Overall, educational inequality – as measured with unconditional odds of obtaining tertiary education – declines in terms of gender as well as in terms of class of origin. The amount of class inequality and the rates of inequality reduction are quite similar to the rates at the full secondary level. It therefore seems like the vast bulk of social selection takes place after fourth grade and up on the way towards the Abitur in the German educational system. However, as we have outlined above, there are reasons to believe that – holding an Abitur degree – class conditions do influence the transition decision to further education and that it might have become more difficult especially for children of lower classes to move on to higher educational institutions. We therefore turn our analysis to men and women who hold a full general educational qualification.

4. What to do with full general secondary education?

People with full general secondary education have four options to choose once they earned their Abitur degree: They can leave the educational system, they can move on to a non-tertiary vocational

training (mainly apprenticeships), they can enter lower tertiary institutions and they can go to university. The distribution of people with Abitur over these four outcomes is shown in Table II.4a and II.4b. The upper panel for cohorts (Table II.4a) shows non-uniform developments in the rates of degree holders for most of the outcomes. For men with Abitur, the proportion of those who successfully went on to university rose from 38.2 percent in the oldest cohort (1910-1927) up to 57.7% in the middle cohort 1938-1947, but then dropped in the youngest cohort to the initial level. The share of Abitur holders without tertiary education, on the other side, declined until the middle cohort, and then went back to the original numbers for the first cohort. In the youngest cohort about a quarter of the Abitur graduates obtain some form of certified vocational training while about 10% enter without additional credentials into the labour market. The proportion of men who earned a lower tertiary degree remained more or less stable.[13] For women the picture is somewhat similar. A university degree was more attractive in the middle cohorts than in the oldest and youngest cohorts. The reverse is true for a vocational training, with an exceptionally high value for the youngest cohort. For lower tertiary degrees, there is hardly any trend. Comparing men and women, we can see lower tertiary degrees to be more attractive to men than to women. At the same time, women leave the educational system relatively more often than men at the Abitur level.

The lower panel (Table II.4b) cross-tabulates class of origin by the four educational outcomes. The numbers reveal a very clear pattern. While there is no substantial class effect for leaving the educational system with full general secondary education, class of origin is markedly correlated with the other three outcomes. Children from the upper service class much more often have a university degree than working class children. On the other hand, many more working class children than service class children choose an apprenticeship after the Abitur. Lower tertiary degrees are also more popular among less advantaged classes.

The numbers of the lower panel suggest an additional social selection process once students have received their Abitur degree[14]. More formally we test this possibility with a conditional

[13] For the *Fachhochschulen* (lower tertiary degree) whose introduction affected the cohorts 1948-1957 onwards, one can find a very small increase in relative numbers.

[14] Since we are mainly interested in higher educational degrees, we also wanted to test if there are indeed any significant counter-effects of social origin at the transition to higher educational institutions given the generally declining educational inequality in tertiary education (see previous paragraph). Therefore, we again ran a logistic

multinomial logistic regression considering the four different educational outcomes Abitur graduates can reach. According to our hypotheses, we expect children from working class backgrounds to prefer increasingly non-tertiary vocational qualifications instead of university or *Fachhochschule* degrees. In addition, for these children, the *Fachhochschule* might have become more attractive for the reasons outlined above. In the model we use Abitur plus vocational training (CASMIN 2c_voc) as base category in the outcome variable, and we rely on the set of independent variables we were using in the previous models. For parsimony, we combine all working classes V-VIIab into one working class category and only include a cohort interaction term with this variable. More detailed class measures and additional cohort interactions did not improve the fit. The results are shown in Table II.5a for men and II.5b for women.

Let's turn first to the class effects for men on the different educational outcomes and consider the odds of dropping out of the educational system vs. earning an apprenticeship or some other form of non-academic vocational training. These odds tend to be lower for most of the classes compared to the upper service class, especially for the children of small proprietors and of working class families[15]. Working class children show some tendencies of reinforcing the general preference for vocational training. Comparing a lower tertiary degree (Fachhochschule) with non-tertiary vocational training, the class differences are less important for this alternative except for children of the self-employed. Sons of self-employed show a particular preference for vocational training. Working class children show a tendency into this direction among the three youngest cohorts, too. The most marked class effects are found in the contrast of academic tertiary education with vocational training. All other classes are

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regression model. Our dependent variable was still some sort of tertiary degree vs. no tertiary degree, but the data were restricted to those who have an Abitur degree. We were able to drop cohort interaction effects with classes III, IVa and IVc since they all turn out to be insignificant (results are not shown, but available upon request). For men, we did find significant lower class effects for most of the classes compared to the upper service class. This means that even after the completion of full general secondary education – when students are generally about 19 years old – effects of social origin are still at work. In addition, some of these origin effects varied across cohorts. The effect of having a working class background increasingly lowered the odds of moving on to higher educational institutions in younger cohorts. The effect of father's education, on the other hand, became smaller over time and actually disappeared for the youngest cohorts. So for men, the effect of father's education became increasingly obsolete for the transition decision to higher education. But at the same time, class origins became more and more important at this level. For women, however, we found an almost opposite pattern. Father's education markedly influenced women's decisions to enter tertiary education, and this effect was constant across cohorts. For class effects, on the other hand, we did not find significant differences among classes except for working class daughters. Their class effect did not show a clear trend over time, but altogether, working class origin lowered the odds of earning a tertiary degree significantly for women.

[15] If we drop the interaction terms from the model, the effect for working class children becomes highly significant and stronger than any other class effect.

relatively less likely to gain an academic degree than the upper service class. Children of petty bourgeoisie and of working class origin differ most from the upper service class. The interaction effects show that the relative risk of getting vocational training rather than academic education increase for the working classes (on top of an already strong and significant main effect).

Father's education affects educational outcomes somewhat differently. Sons of highly educated fathers favor a general educational degree (Abitur without apprenticeship or university), while they are indifferent with respect to the more vocationally oriented options between a degree from a *Fachhochschule* or from a non-tertiary vocational training.

To sum up, we observe growing preferences of working class sons for non-tertiary vocational training rather than going for a lower tertiary or university degree. But they also rather prefer non-academic vocational training than no additional degree. So there are two strategies for working class sons. Compared to all other classes they increasingly stay away from tertiary education, but they also avoid entering the labour market without additional qualification. They increasingly opt for vocational training. A very high preference for vocational training is also found for sons of petty bourgeoisie origin. Many of these children serve apprenticeships, most likely in order to prepare themselves for self-employment, either in their parents' businesses or in one obtained with parental support.

For women (see Table II.5b), the pattern of post-Abitur educational participation and success is less class structured than for men. The only clearly significant finding is, that working class daughters in all cohorts stay more often out of university education than daughters of other class background, and they also tend to avoid the lack of any post-secondary qualification. Working class daughters chances of university education also depend more on father's higher education than working class sons do. Effects neither of class nor of educational background significantly differ across cohorts. Women's post-secondary and tertiary education appears to be more cohort than class or education dependent. From cohort to cohort more women obtain the Abitur and then from cohort to cohort more women enter any form of post-secondary or tertiary education rather than discontinue education at the level of the Abitur.

In order to recapitulate these results in ways more easily perceptible we present estimated probabilities of holding one of the four educational outcomes. We contrasted sons and daughters from

the upper service class (given their father had Abitur) with sons and daughters from a working class background (whose fathers did not have Abitur).[16] The results are shown in Figures II.4a and II.4b. Upper service class sons of highly educated fathers most likely earn a university degree. Although there is some change in the estimated proportion, a university degree is always by far the most likely outcome. The probabilities for lower tertiary education are much lower and they hardly increase across cohorts. For the oldest and youngest cohorts, we also observe slightly higher probabilities to remain at the non-tertiary level. The picture for working class sons looks quite different. While very few of them remain without any further qualification added to the Abitur, the three remaining options available are used in similar magnitude. From the second cohort onwards the proportion with non-tertiary vocational qualification increases. In the youngest cohort this option is the most likely outcome. The contrast between the service class and the working class graph very clearly visualizes the fact that we indeed find marked effects of social selectivity in educational transitions after the end of secondary education. These class differences increase over time, as can be seen best in the faster growth of the proportions with a vocational training degree in the working class than in the service class.

For women, the class pattern is largely similar. But beside class, women in general still follow different path than men in Germany. They less often enter into and/or succeed in tertiary education than men (this was particularly true in the older cohorts, but holds also in the younger ones). But those women who enter tertiary education are relatively more likely to be found in study programs at the university rather than at the Fachhochschule. This is true for all classes, but most likely in the working classes where sons seem particularly attracted by the strong technology and engineering programs offered at the Fachhochschule.

5. *Fachhochschule* or university?

We have seen that – given the Abitur level – most of the increase in educational inequality results from the fact that working class children prefer more often vocational training degrees than higher

[16] About 2/3 of upper service class fathers hold an Abitur degree, whereas only 2-5 percent of working class fathers earned this degree.

educational degrees. As a concluding analysis, we now turn to those who decided to move on to tertiary education. These students have two options, namely opting for a university degree vs. opting for a lower tertiary degree from a Fachhochschule. We assume to still find some inequalities in these choices, mainly due to the different durations of enrollment at *Fachhochschule* and universities, the different job-relatedness and due to the different field of studies the two institutions offer. We run a simple logistic regression, using gender, class, father's education and cohort as independent variables. We have tested several interaction effects of class, gender, and father's education with cohort. None of them turned out to be significant. However, we did find a significant interaction effect for working class by gender. The results of the model are shown in Table II.6. Women have higher chances to earn a university degree than men. In addition, we also find significant class effects. Upper service class children have the highest chances to graduate from university, the chances for all other classes are significantly lower in order. For working class children, the odds of holding a university degree are about 2.5 times lower compared to the upper service class. However, this is only true for working class sons. The daughters have slightly higher chances of finishing a university degree. Last, there is again a significant effect of father's education on the educational degree earned. Children with high educated fathers have higher chances to graduate from university.

Overall, when it comes to the alternative between university and Fachhochschule, we find significant inequality effects in terms of both, gender and social origin. While gender inequality might be attributed to different study programs, class differences might be explained by more occupationally-oriented programs at the *Fachhochschule* and the shorter duration of the programs. The results are very much in line with the expectations we laid out in section 3. It would be nice to have information on fields of study for each respondent in order to test these arguments more carefully, but unfortunately, this is not possible with our current data set.

6. Conclusions

The results of the various analyses lead to several conclusions, which largely confirm the expectations formulated above, but also add some additional insights on the social selectivity operating at the post-secondary and tertiary level of education and its recent development.

Earlier findings, that in the long run social inequalities in obtaining tertiary education have declined, are confirmed with the present more recent data. It is also confirmed that the decline has leveled off with the cohorts which were born in the sixties and faced the crucial educational decisions after the mid-seventies, when the employment prospects of tertiary education leavers for some years worsened and received much attention in the public debate (even though tertiary education in fact continued to be by far the best investment for advantageous career prospects). The decline in overall educational inequality is mainly due to declining inequality in the early transitions in the tripartite German educational system.

The decline is substantial even if – as we find – large social inequalities in post-secondary and tertiary educational transitions persist and have partly increased (in particular class inequalities among men).

Social inequalities at the post-secondary and tertiary level of education are strongly patterned according to the educational choices made by children of different class and educational background among the different highly segmented options available in the German educational system. The choices made are strongly related to the relative costs and risks involved with the specific choices. In contrast to the upper service class children of all other class backgrounds – and most strongly so children of farm and working class origin – choose the less costly and less risky options. In particular, the availability of several options in non-tertiary vocational education and training (attractive apprenticeship places and others) let working class children increasingly avoid the more costly and risky alternatives at the *Fachhochschule* and more so at the university. The logic at the post-secondary and tertiary level very much corresponds to the logic at the secondary level, where the availability of a vocational alternative which is secure, inexpensive and well valued on the labor market diverts

working and lower class children from the more expensive, riskier but also more rewarding academic courses of study.

Even the unexpected result that children growing up in highly educated families of the upper service class are relatively more likely than children of any other background to enter the labor market without any post-secondary or tertiary credential is probably consistent with this general interpretation. The non-credential outcome, in fact, can turn up in two different ways, that cannot be distinguished in our data: first, from directly entering the labor market without further studies following the Abitur, and secondly from dropping out of one of the post-secondary and tertiary study options without successfully concluding it. As all education and class coefficients referring to this outcome are almost exactly the same as those referring to the university degree outcome we suspect that the unexpected high odds of the non-credential outcome among children of highly educated service class families mainly indicates that many of these children first enter the university, but then fail to conclude successfully or drop out when they find an attractive job, either with support through their parents´ social network or due to some extra-functional abilities they may have from their upbringing in a high class context.

Inequalities between men and women in obtaining tertiary qualifications have also substantially declined. They have declined on the way up to the Abitur, but also in educational participation follwing the Abitur. However, even in the youngest cohort still fewer women than men with an Abitur later graduate with a tertiary degree. Here again, the different attractivity of the options available is a useful way to make sense of the results. First, among those who opt for a tertiary qualification women are relatively more likely to study at the university than men, most likely because the courses of study offered at the *Fachhochschule* are heavily biased towards fields of study in technology and engineering that are generally preferred by men. Women are relatively more likely to enter the university because they are more likely to find there what they like. At the same time, they also seem to be diverted more from tertiary education than men because they have options in non-tertiary vocational education that seem especially attractive to women (such as in nursing and in many kind of programs for high level secretarial or assistance jobs). In the older cohorts, finally, the

marriage and family alternative was another option for women that seems to have diverted quite a number of them from more ambitious educational aims.

Unfortunately we are not able to distinguish in our data whether the outcomes we observe result from differential choice among available alternatives or from differential success on a chosen track. However, the constellation of results we have found suggests that differential (constrained based) choice among different institutionally shaped options is the main mechanism driving the process of class based social inequalities in tertiary education attainment.

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Figure I.1: Students in German Higher Education 1950 to 2000

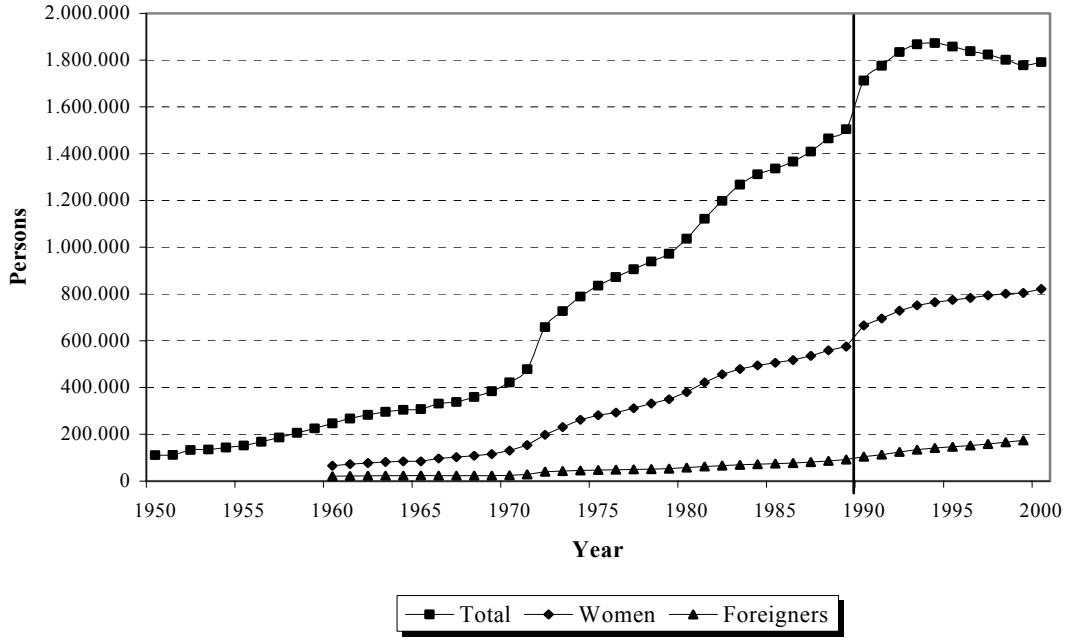


Figure I.2: Students at Universities and Universities of Applied Sciences 1972 to 1999

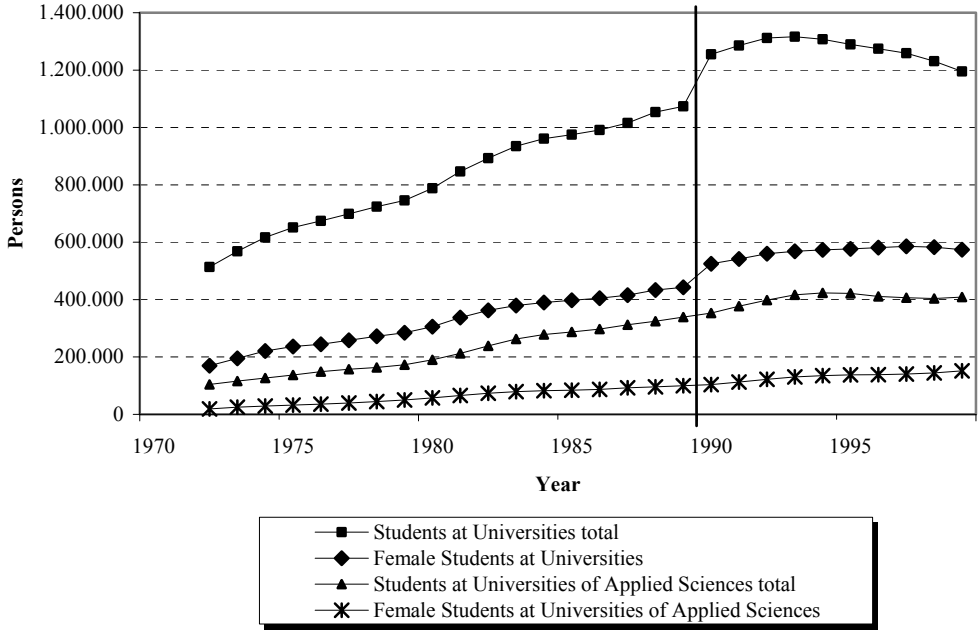


Figure I.3: Distribution of Students According to University Courses in the Winter Semester 1975/76 to 1999/00 (in Percent)

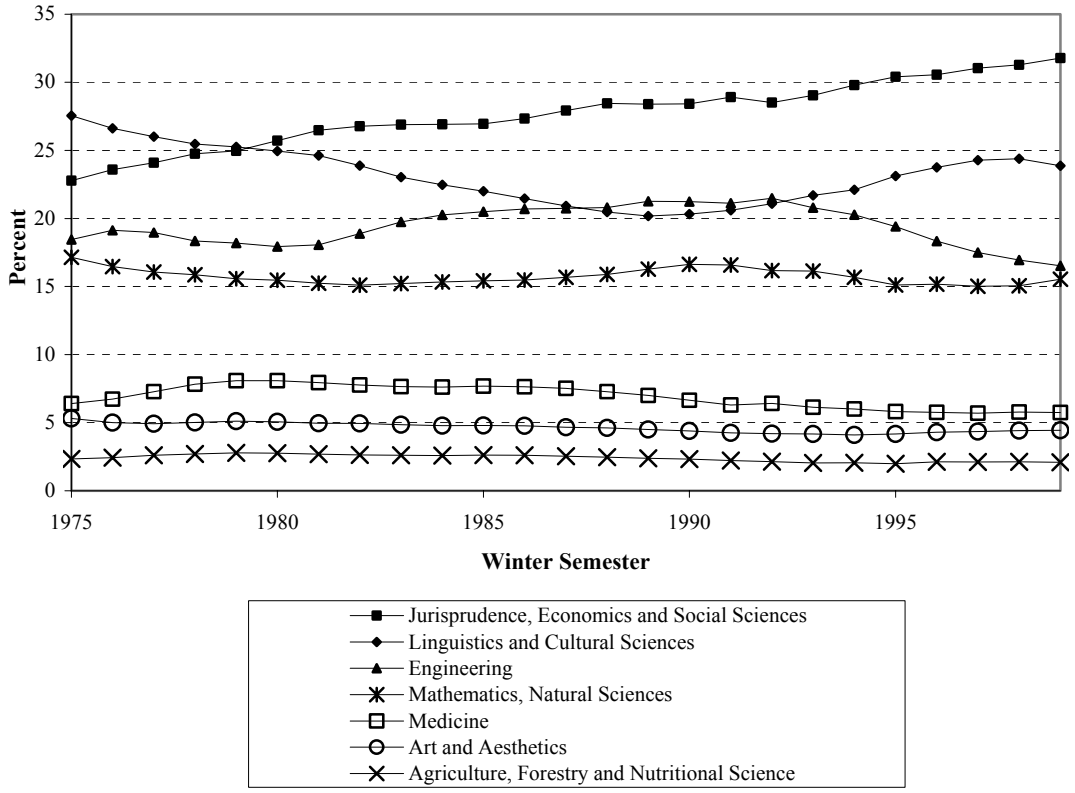


Figure I.4: Entrants and Graduates at Universities and Universities of Applied Sciences 1972 to 1999

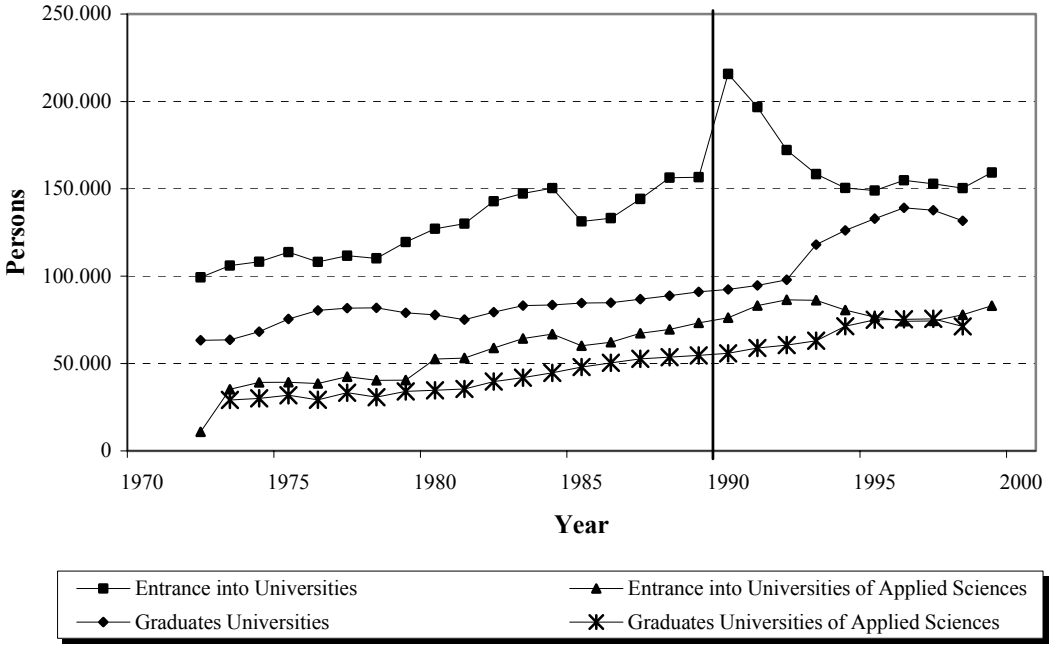


Figure I.5: Proportions of Abitur Students and First-Term Entrants 1972 to 1998 (in % of corresponding birth cohorts)

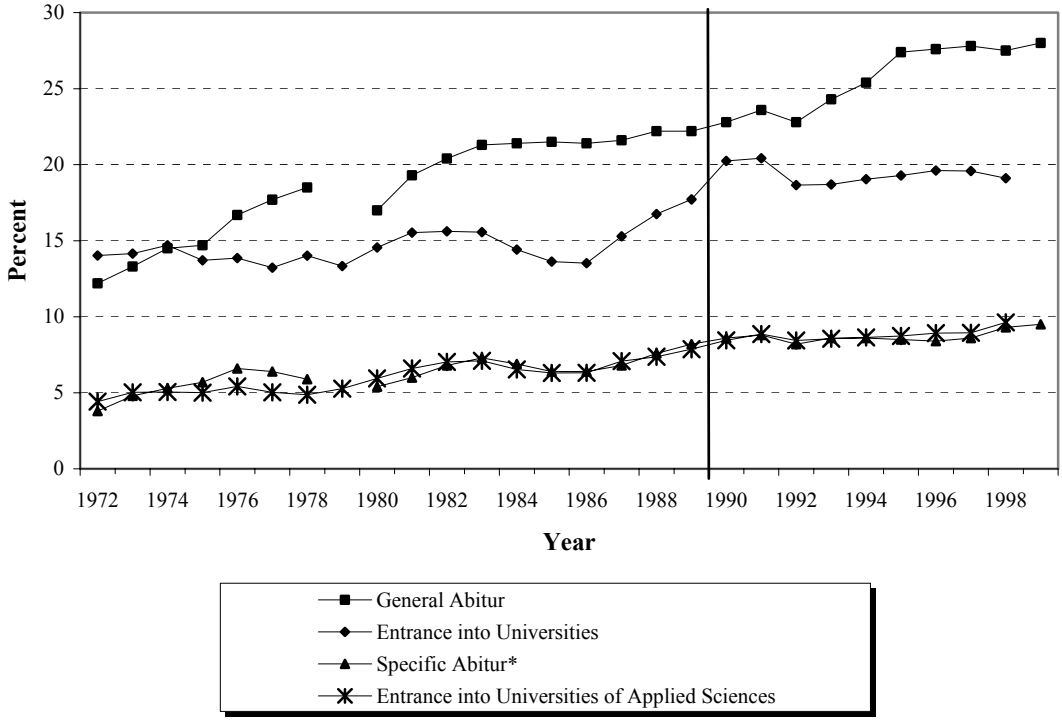


Figure I.6: Students per Teaching Staff 1973 to 1999

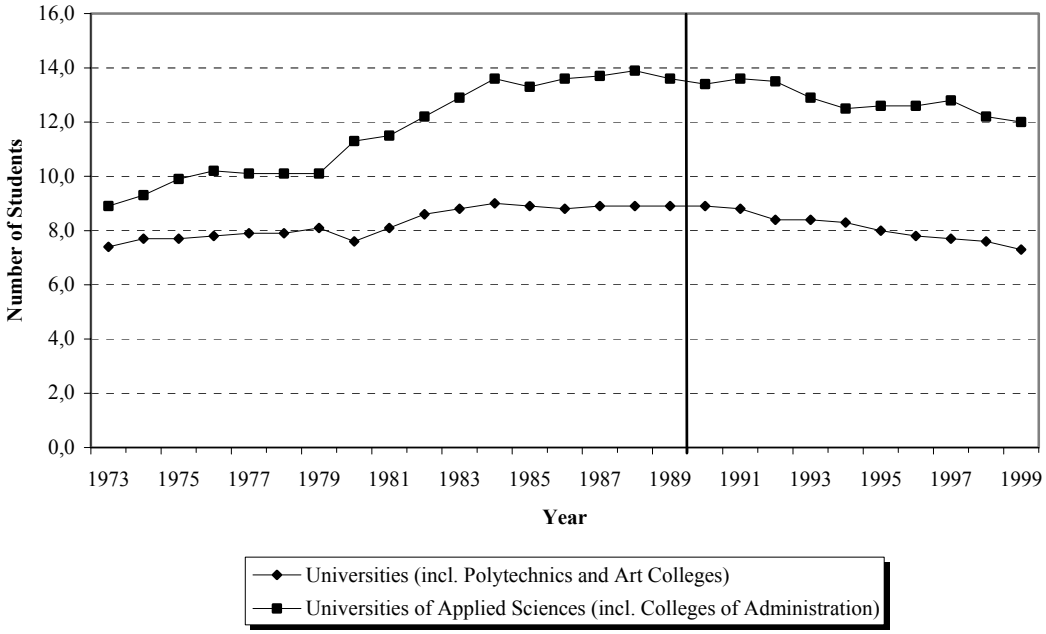


Figure I.7: Institutions of Higher Education in Germany

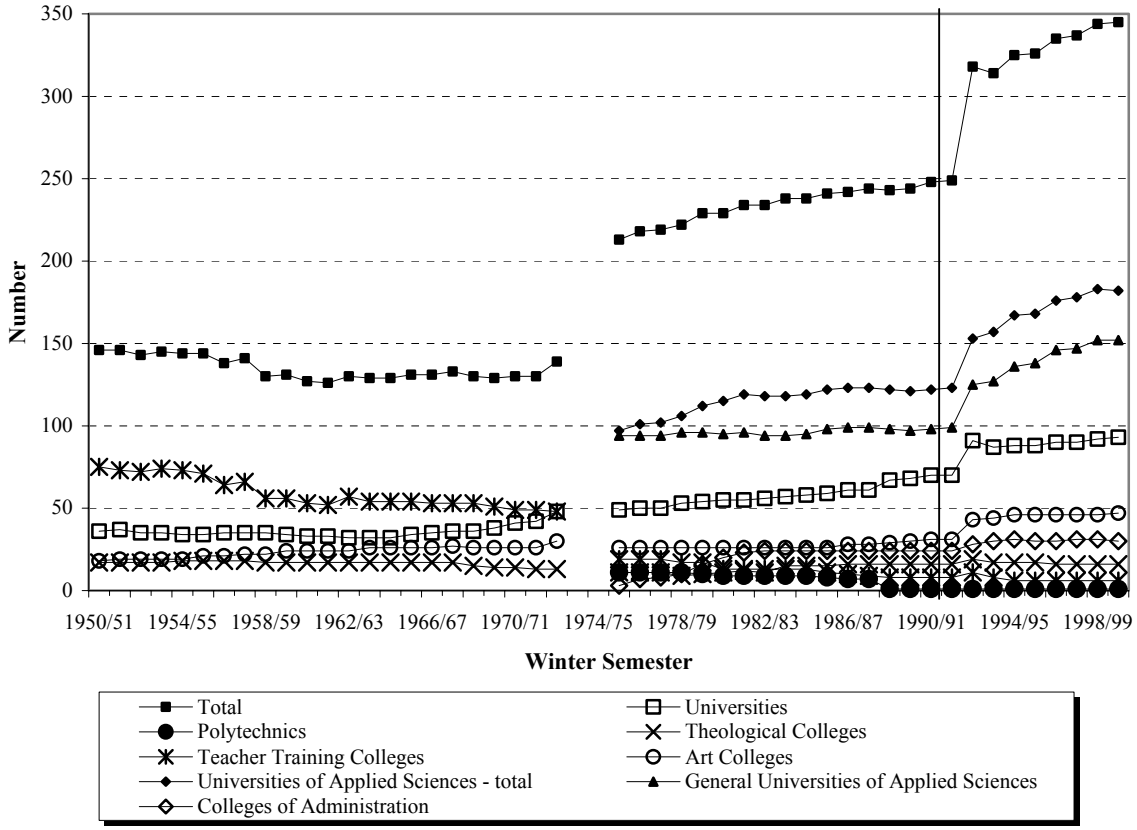


Figure II.1: Logistic regression of educational degree (at least full secondary general education vs. lower than full secondary general education) on social origin and cohort; for men and women in West Germany, age 22 and older and born after 1909;

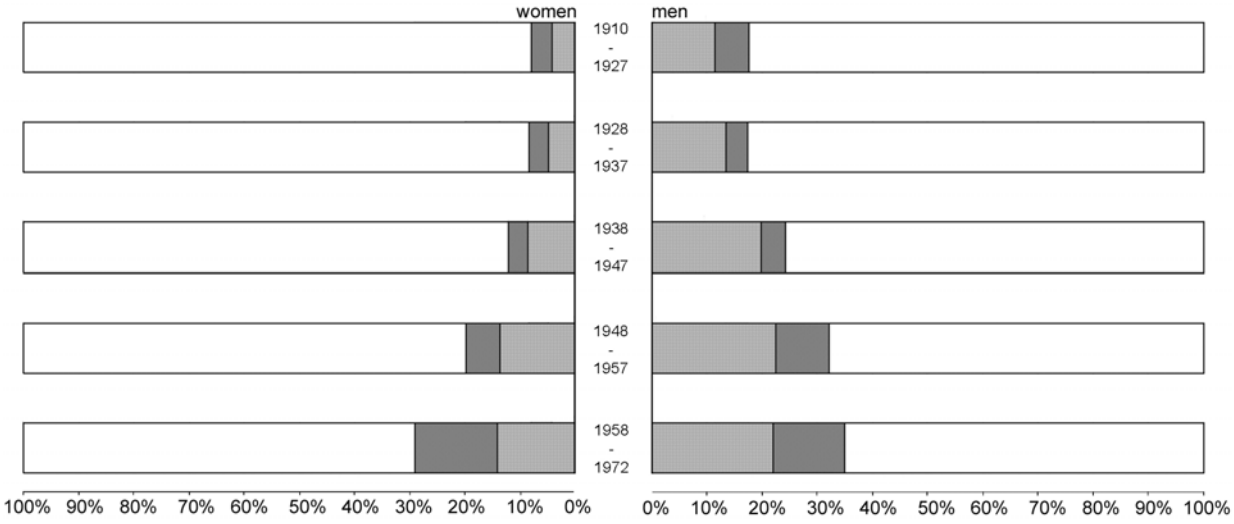


Figure II.2a: Logit effects of class of origin on higher secondary education; for men in West Germany, age 22 and older and born after 1909;

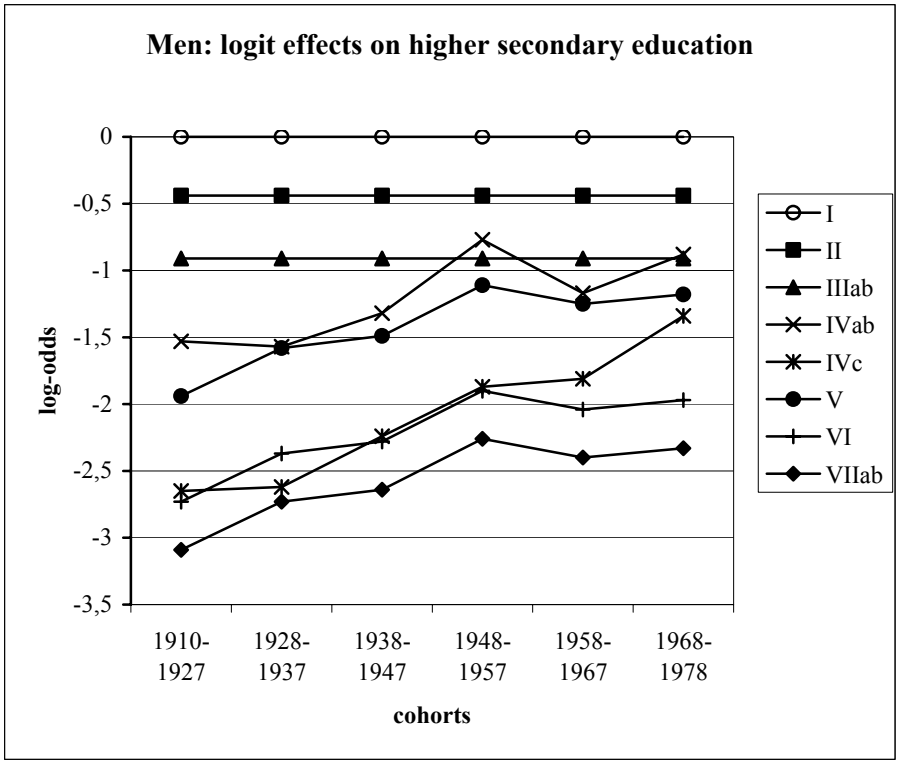


Figure II.2b: Logit effects of class of origin on higher secondary education; for women in West Germany, age 22 and older and born after 1909;

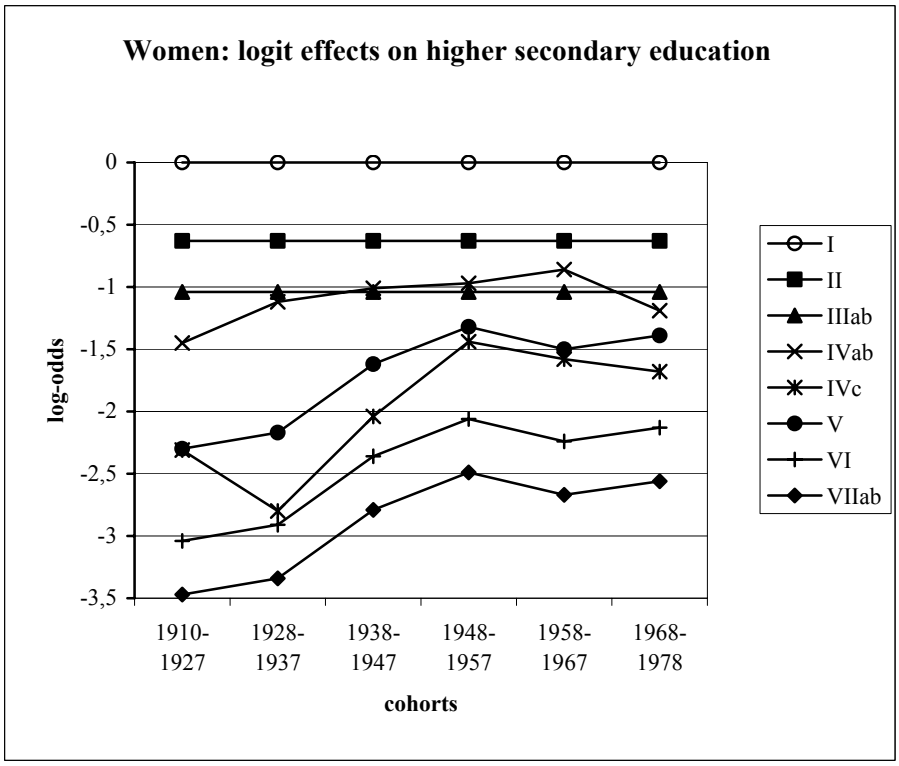


Figure II.3a: Logit effects of class of origin on tertiary education; for men in West Germany, age 30 and older and born after 1909;

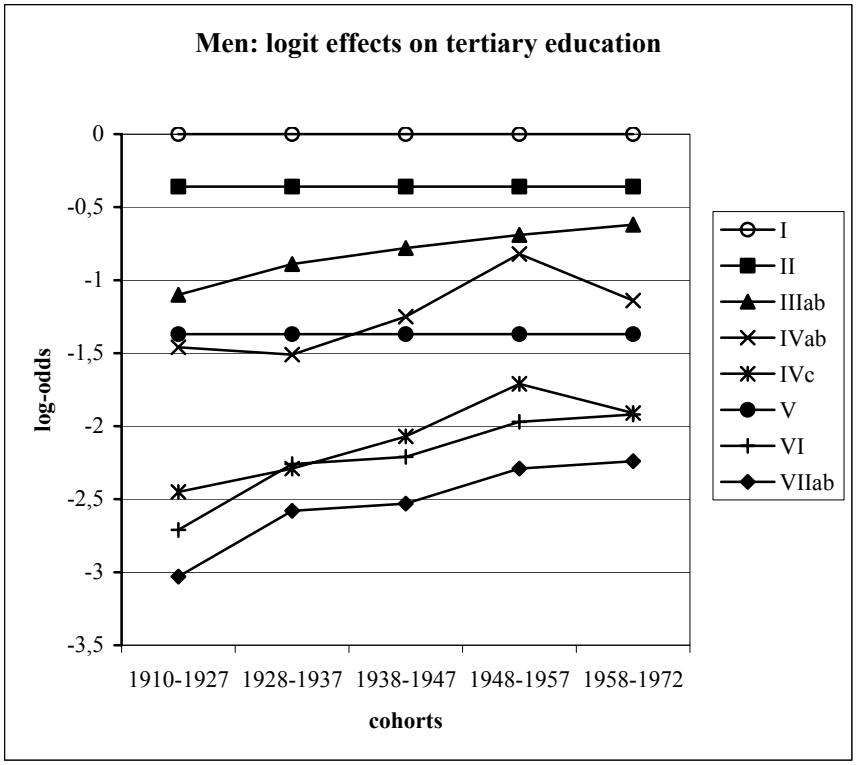


Figure II.3b: Logit effects of class of origin on tertiary education; for women in West Germany, age 30 and older and born after 1909;

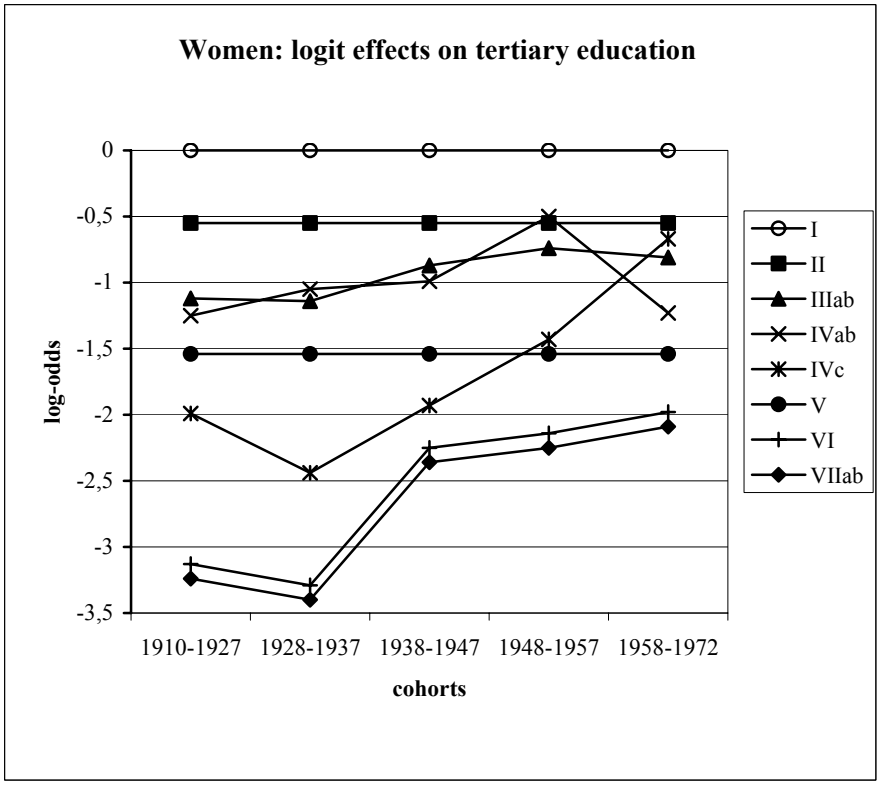
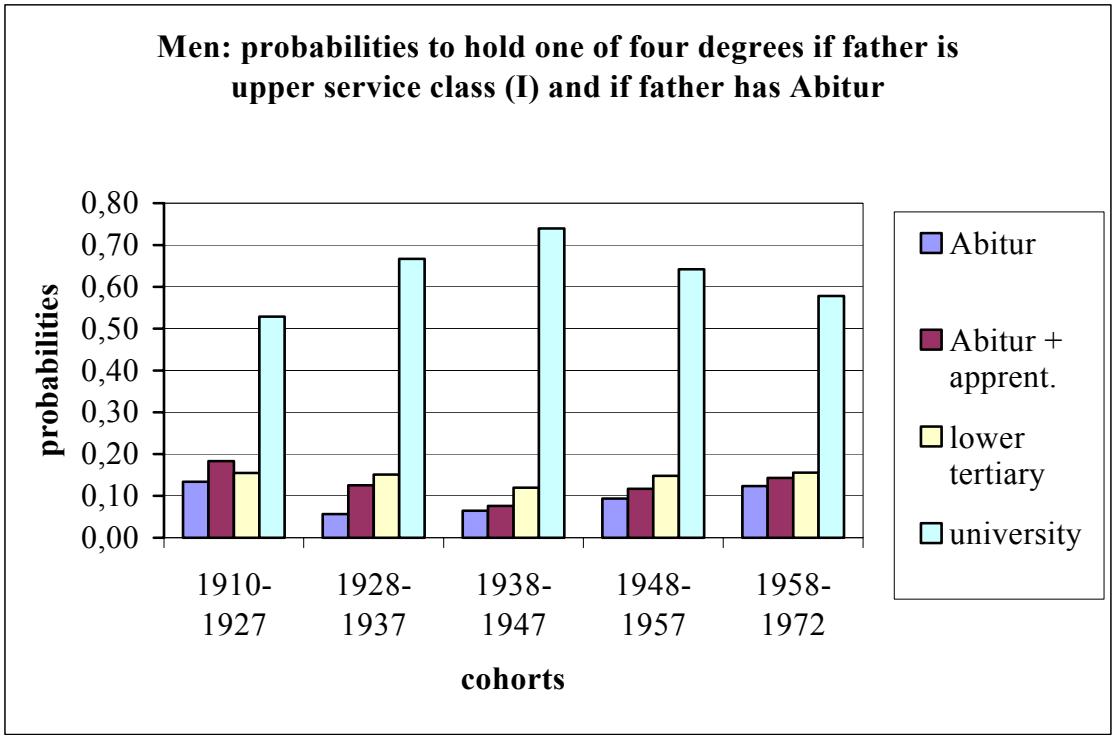


Figure II.4a: Probabilities of earning one of the four educational outcomes; for men in West Germany, age 30 and older and born after 1909;



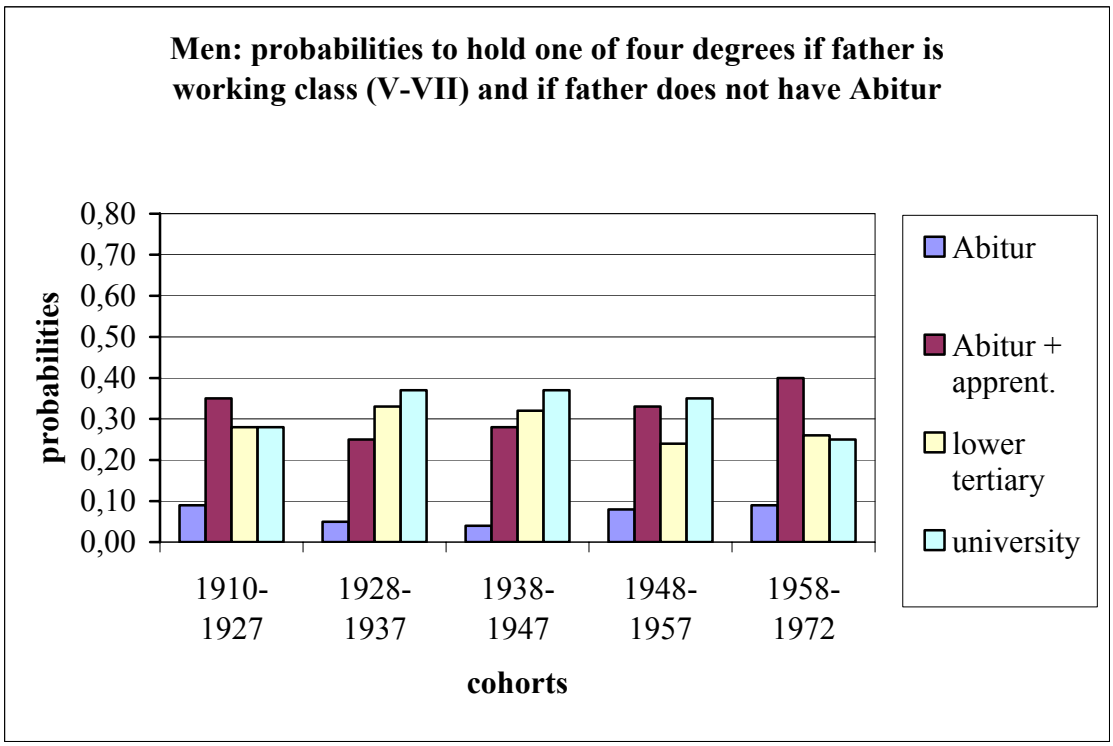
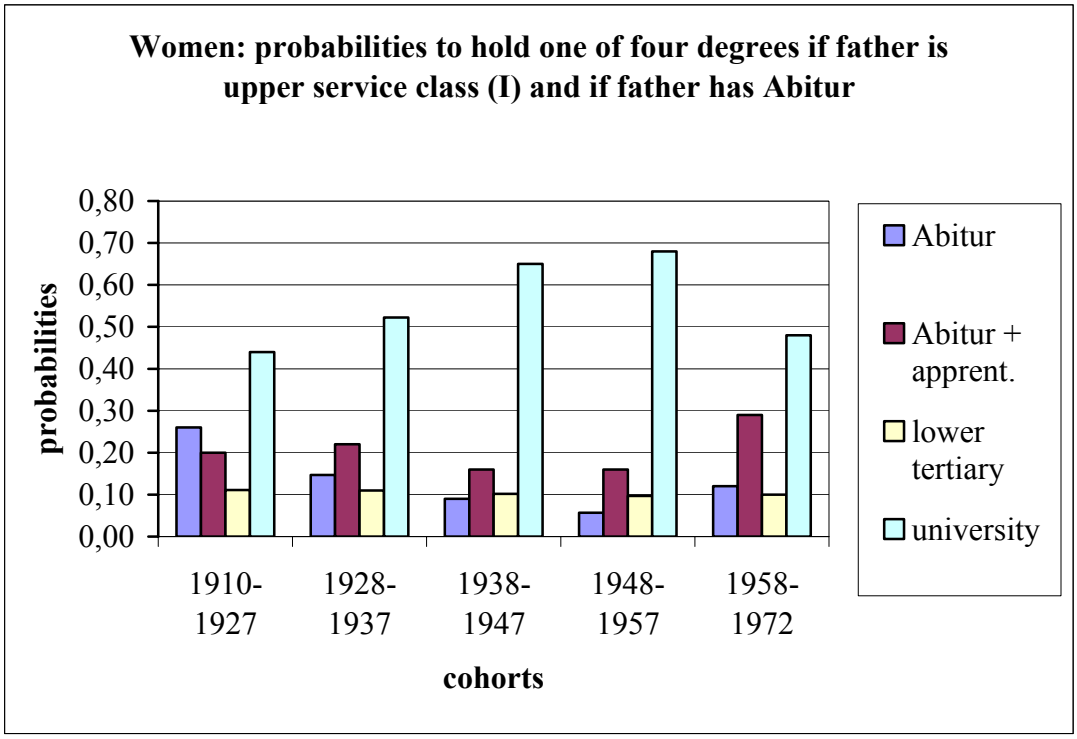


Figure II.4b: Probabilities of earning one of the four educational outcomes; for women in West Germany, age 30 and older and born after 1909;



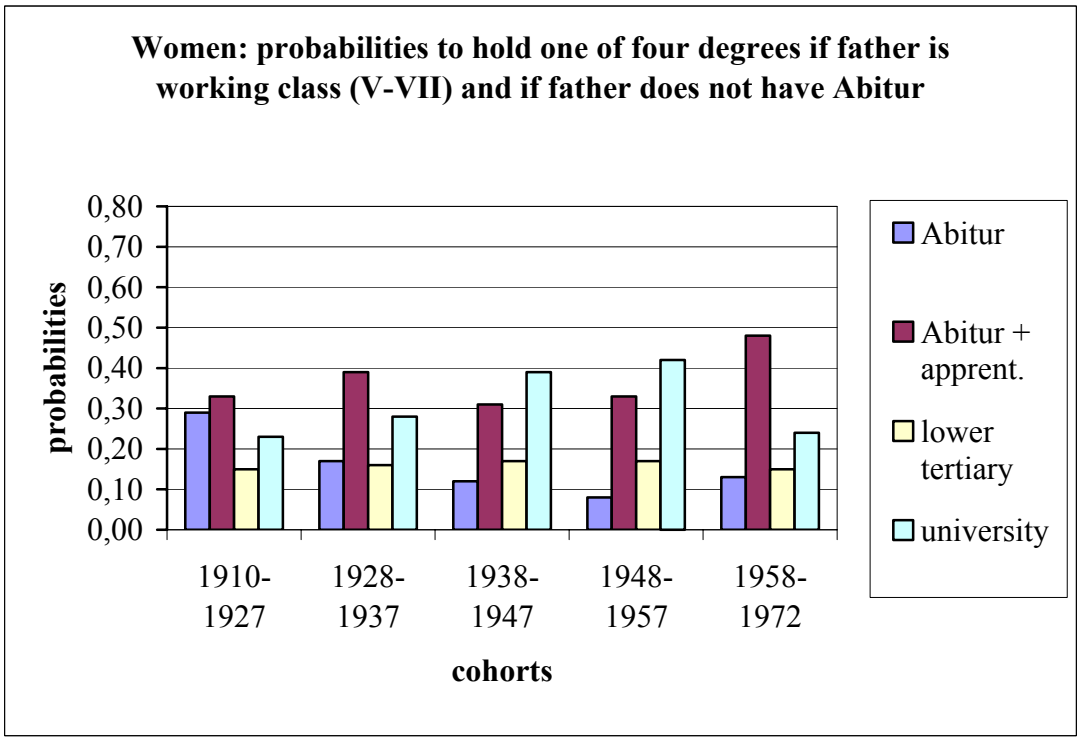


Table II.1: Row percentages for educational credential by cohorts; for men and women, 30 years or older and born in 1910 or later; N =

	Men			Women		
	less than 2c	**2c**	**3ab**	**less than 2c**	**2c**	**3ab**
1910-1927	82.4	6.1	11.4	92.0	3.9	4.2
1928-1937	82.6	3.9	13.5	91.5	3.6	4.9
1938-1947	75.6	4.5	19.8	87.8	3.6	8.6
1948-1957	67.8	9.7	22.5	80.2	6.1	13.7
1958-1972	64.9	13.1	22.0	71.0	14.9	14.1

Table II.2: Logistic regression of educational degree (at least full secondary general education vs. lower than full secondary general education) on social origin and cohort; for men and women in West Germany, age 22 and older and born after 1909;

	Men		WOMEN	
Main effects				
class: upper service class (I)				
lower service class (II)	-0.44	*(-6.71)*	-0.63	*(-9.79)*
routine non-manuals (IIIab)	-0.91	*(-12.67)*	-1.04	*(-13.77)*
small proprietors (IVab)	-1.53	*(-11.76)*	-1.45	*(-9.88)*
farmers (IVc)	-2.65	*(-16.36)*	-2.31	*(-12.90)*
working class elites (V)	-1.94	*(-16.28)*	-2.30	*(-14.64)*
skilled workers (VI)	-2.73	*(-23.16)*	-3.04	*(-19.48)*
unskilled workers (VIIab)	-3.09	*(-24.97)*	-3.47	*(-21.06)*
father's education (lower than Abitur)				
father's education (Abitur)	1.39	*(9.21)*	1.20	*(20.77)*
missing variable	-0.45	*(-4.05)*	-0.25	*(-2.07)*
cohorts: 1910-1927				
cohort 1928-1937	-0.13	*(-1.25)*	0.05	*(0.50)*
cohort 1938-1947	0.08	*(0.83)*	0.07	*(0.80)*
cohort 1948-1957	0.29	*(3.22)*	0.73	*(8.71)*
cohort 1958-1967	0.57	*(5.99)*	1.38	*(15.78)*
cohort 1968-1978	0.80	*(5.44)*	1.64	*(12.34)*
interaction effects with cohort				
IVab * cohort 1928-1937	-0.04	*(-0.22)*	0.33	*(1.47)*
IVab * cohort 1938-1947	0.21	*(1.23)*	0.44	*(2.15)*
IVab * cohort 1948-1957	0.76	*(4.54)*	0.48	*(2.61)*
IVab * cohort 1958-1967	0.36	*(1.95)*	0.59	*(3.06)*
IVab * cohort 1968-1978	0.65	*(2.06)*	0.26	*(0.78)*
IVc * cohort 1928-1937	0.03	*(0.11)*	-0.49	*(-1.41)*
IVc * cohort 1938-1947	0.41	*(1.74)*	0.27	*(0.96)*
IVc * cohort 1948-1957	0.78	*(3.71)*	0.87	*(3.86)*
IVc * cohort 1958-1967	0.84	*(3.45)*	0.73	*(3.02)*
IVc * cohort 1968-1978	1.31	*(3.48)*	0.63	*(1.54)*
V-VIIab * cohort 1928-1937	0.36	*(2.38)*	0.13	*(0.61)*
V-VIIab * cohort 1938-1947	0.45	*(3.25)*	0.68	*(3.66)*
V-VIIab * cohort 1948-1957	0.83	*(6.50)*	0.98	*(5.92)*
V-VIIab * cohort 1958-1967	0.69	*(5.12)*	0.8	*(4.74)*
V-VIIab * cohort 1968-1978	0.76	*(3.90)*	0.91	*(4.20)*
father (Abitur) * cohort 1928-1937	0.01	*(0.03)*	-	
father (Abitur) * cohort 1938-1947	-0.39	*(-2.06)*	-	
father (Abitur) * cohort 1948-1957	-0.29	*(-1.54)*	-	
father (Abitur) * cohort 1958-1967	-0.29	*(-1.44)*	-	
father (Abitur) * cohort 1968-1978	-0.73	*(-2.48)*	-	
Constant	0.06	*(0.77)*	-1.01	*(-12.85)*
	N = 23,983		N = 26,622	
	L_0 = -13,791		L_0 = -11,576	
	L_1 = -11,050		L_1 = -8,788	

Note: Reference categories are written in italic.

Table II.3: Logistic regression of educational degree (tertiary education vs. no tertiary education) on social origin and cohort; for men and women in West Germany, age 22 and older and born after 1909;

	MEN		WOMEN	
Main effects				
class: upper service class (I)				
lower service class (II)	-0.36	*(-4.99)*	-0.55	*(-6.84)*
routine non-manuals (IIIab)	-1.10	*(-6.49)*	-1.21	*(-4.96)*
small proprietors (IVab)	-1.46	*(-9.53)*	-1.33	*(-6.66)*
farmers (IVc)	-2.45	*(-12.53)*	-2.08	*(-8.63)*
working class elites (V)	-1.37	*(-15.98)*	-1.54	*(-13.37)*
skilled workers (VI)	-2.71	*(-16.70)*	-3.22	*(-11.38)*
unskilled workers (VIIab)	-3.03	*(-17.88)*	-3.34	*(-11.54)*
father's education (lower than Abitur)				
father's education (Abitur)	1.09	*(7.70)*	1.15	*(15.91)*
missing variable	-0.40	*(-2.72)*	-0.48	*(-2.30)*
cohorts: 1910-1927				
cohort 1928-1937	0.10	*(0.86)*	0.20	*(1.58)*
cohort 1938-1947	0.37	*(3.55)*	0.44	*(4.11)*
cohort 1948-1957	0.52	*(5.00)*	1.00	*(9.28)*
cohort 1958-1972	0.44	*(3.66)*	1.07	*(8.60)*
interaction effects with cohort				
IIIabc* cohort 1928-1937	0.21	*(0.90)*	0.03	*(0.08)*
IIIabc * cohort 1938-1947	0.32	*(1.53)*	0.31	*(1.06)*
IIIabc * cohort 1948-1957	0.41	*(2.00)*	0.52	*(1.84)*
IIIabc* cohort 1958-1972	0.48	*(1.91)*	0.41	*(1.30)*
IVab * cohort 1928-1937	-0.05	*(-0.22)*	0.25	*(0.84)*
IVab * cohort 1938-1947	0.21	*(1.07)*	0.31	*(1.16)*
IVab * cohort 1948-1957	0.64	*(3.20)*	0.89	*(3.66)*
IVab * cohort 1958-1972	0.32	*(1.13)*	0.11	*(0.34)*
IVc * cohort 1928-1937	0.16	*(0.56)*	-0.39	*(-0.90)*
IVc * cohort 1938-1947	0.38	*(1.43)*	0.11	*(0.32)*
IVc * cohort 1948-1957	0.73	*(2.83)*	0.72	*(2.32)*
IVc * cohort 1958-1972	0.53	*(1.40)*	1.43	*(4.07)*
VI-VIIab * cohort 1928-1937	0.45	*(2.19)*	-0.11	*(-0.26)*
VI-VIIab * cohort 1938-1947	0.50	*(2.65)*	0.94	*(2.96)*
VI-VIIab * cohort 1948-1957	0.73	*(4.01)*	1.16	*(3.89)*
VI-VIIab * cohort 1958-1972	0.79	*(3.76)*	1.27	*(3.98)*
father (Abitur) * cohort 1928-1937	0.11	*(0.51)*	-	
father (Abitur) * cohort 1938-1947	-0.18	*(-1.02)*	-	
father (Abitur) * cohort 1948-1957	-0.41	*(-2.20)*	-	
father (Abitur) * cohort 1958-1972	-0.50	*(-2.18)*	-	
Constant	-0.63	*(-6.75)*	-1.89	*(-18.89)*
	N = 19,929		N = 22,339	
	L_0 = -9,145		L_0 = -6,288	
	L_1 = -7,556		L_1 = -4,986	

Note: Reference categories are written in italic.

Table II.4a: Row percentages for educational credential by cohorts for those with Abitur; for men and women, 30 years or older and born in 1910 or later

	Men				Women			
	2c_gen	**2c_voc**	**3a**	**3b**	**2c_gen**	**2c_voc**	**3a**	**3b**
1910-1927	10.7	29.3	21.7	38.2	28.8	24.3	13.5	33.3
1928-1937	5.0	21.1	23.8	50.1	16.9	28.1	14.2	40.8
1938-1947	5.5	16.2	20.6	57.7	10.6	21.5	14.3	53.4
1948-1957	8.1	23.9	21.8	46.2	7.3	24.9	15.0	52.8
1958-1972	10.1	28.2	22.7	39.0	13.7	39.5	14.2	32.7

Table II.4b: Row percentages for educational credential by class for those with Abitur; for men and women, age 30 or older and born in 1910 or later

	full secondary education		**full secondary education plus vocational training**		**applied university**		**university**	
	Men	Women	Men	Women	Men	Women	Men	Women
I	8.9	14.1	14.0	22.5	15.9	11.8	61.2	51.6
II	7.4	16.3	19.8	24.5	20.8	13.6	52.0	45.6
IIIab	7.6	13.0	23.5	28.8	23.9	14.7	45.1	43.5
IVab	8.1	15.7	29.3	28.5	21.4	17.9	41.2	37.9
IVc	7.8	12.3	22.9	26.1	25.7	18.8	43.6	42.8
V-VIIab	7.4	12.8	32.9	37.9	27.2	15.7	32.6	33.7

Table II.5a: Multinomial logistic regression of educational degree on social origin and cohort; For men in West Germany, age 22 and older and born after 1909; N = 4300;

	full secondary vs. full secondary education plus vocational training		lower tertiary vs. full secondary education plus vocational training		university vs. full secondary education plus vocational training	
Main effects						
class of origin: upper service class (I)						
lower service class (II)	-0.41	*(-2.05)*	-0.07	*(-0.47)*	-0.41	*(-3.08)*
routine non-manuals (IIIab)	-0.45	*(-1.83)*	-0.11	*(-0.59)*	-0.64	*(-4.02)*
small proprietors (IVab)	-0.64	*(-2.57)*	-0.42	*(-2.24)*	-0.95	*(-5.95)*
farmers (IVc)	-0.38	*(-1.09)*	0.03	*(0.14)*	-0.57	*(-2.52)*
working classes (V-VIIab)	-0.60	*(-1.62)*	-0.03	*(-0.13)*	-0.91	*(-3.61)*
father's education (lower than Abitur)						
father's education (Abitur)	0.41	*(2.26)*	0.03	*(0.23)*	0.38	*(3.22)*
missing variable	0.05	*(0.11)*	-0.04	*(-0.14)*	-0.17	*(-0.61)*
cohorts: 1910-1927						
cohort 1928-1937	-0.48	*(-1.74)*	0.35	*(1.87)*	0.61	*(3.81)*
cohort 1938-1947	0.15	*(0.65)*	0.62	*(3.48)*	1.21	*(8.02)*
cohort 1948-1957	0.09	*(0.45)*	0.40	*(2.54)*	0.64	*(4.73)*
cohort 1958-1972	0.17	*(0.74)*	0.25	*(1.36)*	0.34	*(2.12)*
interaction effects with cohort						
V-VIIab * cohort 1928-1937	0.22	*(0.40)*	0.14	*(0.39)*	0.00	*(0.01)*
V-VIIab * cohort 1938-1947	-0.78	*(-1.49)*	-0.26	*(-0.81)*	-0.71	*(-2.30)*
V-VIIab * cohort 1948-1957	-0.20	*(-0.49)*	-0.51	*(-1.74)*	-0.36	*(-1.31)*
V-VIIab * cohort 1958-1972	-0.40	*(-0.68)*	-0.47	*(-1.44)*	-0.59	*(-1.91)*
Constant	-0.72	*(-3.41)*	-0.20	*(-1.17)*	0.67	*(4.68)*
	$L_0 = -5{,}284$; $L_1 = -5{,}085$					

Note: Reference categories are written in italic.

Table II.5b: Multinomial logistic regression of educational degree on social origin and cohort; For women in West Germany, age 22 and older and born after 1909; N = 2808;

	full secondary vs. full secondary education plus vocational training		lower tertiary vs. full secondary education plus vocational training		university vs. full secondary education plus vocational training	
Main effects						
class of origin: upper service class (I)						
lower service class (II)	0.13	*(0.70)*	0.12	*(0.61)*	-0.01	*(-0.05)*
routine non-manuals (IIIab)	-0.13	*(-0.54)*	0.05	*(0.21)*	-0.09	*(-0.49)*
small proprietors (IVab)	-0.06	*(-0.27)*	0.19	*(0.83)*	-0.26	*(-1.46)*
farmers (IVc)	-0.27	*(-0.81)*	0.32	*(1.09)*	0.01	*(0.03)*
working classes (V-VIIab)	-0.72	*(-1.75)*	-0.59	*(-1.14)*	-0.15	*(-0.43)*
father's education (< Abitur)						
father's education (Abitur)	0.04	*(0.25)*	-0.04	*(-0.24)*	0.58	*(4.71)*
missing variable	-0.37	*(-1.00)*	-1.72	*(-2.81)*	-0.84	*(-2.64)*
cohorts: 1910-1927						
cohort 1928-1937	-0.68	*(0.23)*	-0.02	*(-0.10)*	0.14	*(0.70)*
cohort 1938-1947	-0.96	*(0.22)*	0.06	*(0.25)*	0.56	*(3.15)*
cohort 1948-1957	-1.29	*(-5.80)*	0.12	*(0.56)*	0.76	*(4.57)*
cohort 1958-1972	-1.32	*(-6.33)*	-0.53	*(-2.35)*	-0.28	*(-1.59)*
Constant	0.27	*(1.40)*	-0.54	*(-2.50)*	0.17	*(1.00)*
			$L_0 = -3{,}575$; $L_1 = -3{,}416$			

Note: Reference categories are written in italic.

Table II.6: Logistic regression of educational degree (university degree vs. lower tertiary degree) on gender, social origin and cohort; for men and women in West Germany, age 22 and older and born after 1909; N = 5238

Main effects		
men		
women	0.27	*(3.66)*
class: upper service class (I)		
lower service class (II)	-0.24	*(-2.60)*
routine non-manuals (IIIab)	-0.34	*(-2.98)*
small proprietors (IVab)	-0.46	*(-3.93)*
farmers (IVc)	-0.54	*(-3.61)*
working class (V_VIIab)	-0.92	*(-8.75)*
father's education (lower than Abitur)		
father's education (Abitur)	0.50	*(6.11)*
missing variable	0.03	*(0.12)*
cohorts: 1910-1927		
cohort 1928-1937	0.26	*(2.45)*
cohort 1938-1947	0.43	*(4.65)*
cohort 1948-1957	0.63	*(6.91)*
cohort 1958-1972	0.42	*(3.95)*
interaction effects with cohort		
V-VIIab * women	0.32	*(2.13)*
Constant	0.35	*(3.39)*
	L_0 = -3,413	
	L_1 = -3,247	

Note: Reference categories are written in italic.