International Symposium

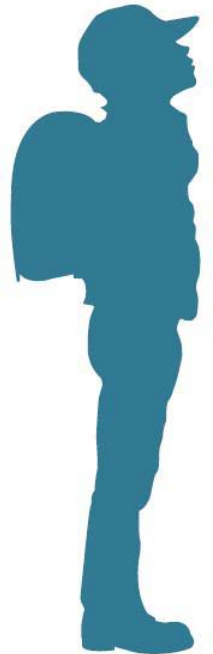*November 6th and 7th, 2008 at the Center for the Advancement of Working Women (CAWW)*

Fertility and Social Stratification Germany and Japan in Comparison

Thursday, November 6th, 2008
Section 1: Social Class, Social Reproduction and Fertility

"Links between Natural and Social Reproduction in Germany"

Paper by **Steffen Hillmert** (University of Tübingen)

Links between Natural and
# Social Reproduction in Germany

Abstract

This paper proposes an analysis of links between natural and social reproduction in West Germany during the second half of the 20th century, focusing on the inter-generational reproduction of educational groups. Starting with an overview over major trends in stratification, education and family formation, its special intention is to have a closer look at the micro-level processes of inter-generational social reproduction. Describing the cycle of social reproduction across cohorts acknowledges that demographic life events (union formation, fertility) are necessary complements of individual educational and status attainment. The empirical results indicate a rather stable pattern of social reproduction in the late 20th century, but they also illuminate the important role of the demographic aspects for the development of inter-generational reproduction.

1. Introduction: Social inequality and social reproduction

Societies can be characterized by specific structures of social inequality. Following a macro-level perspective, analyses of social structures are primarily concerned with the distribution of advantage and disadvantage and their development over time. There are different dimensions, levels and forms of inequality. A special case is social stratification, i.e. the hierarchical arrangement of social classes or strata within a society. A fundamental conceptual decision in inequality research is whether to distinguish meaningful social categories ("social classes" etc.) or whether to use continuous dimensions of inequality which can be applied to any individual. A simple but very prominent example for a continuous measure is income, and there have been numerous studies on income

distributions. As just one example, Figure 1 presents some recent trends in income inequality in Germany. On can see an increasing polarization of the income distribution over the recent years, which has been subject of controversy in the recent political debate.

Figure 1: Income inequality in Germany: Proportions of income categories defined relative to the median income, 1986-2006
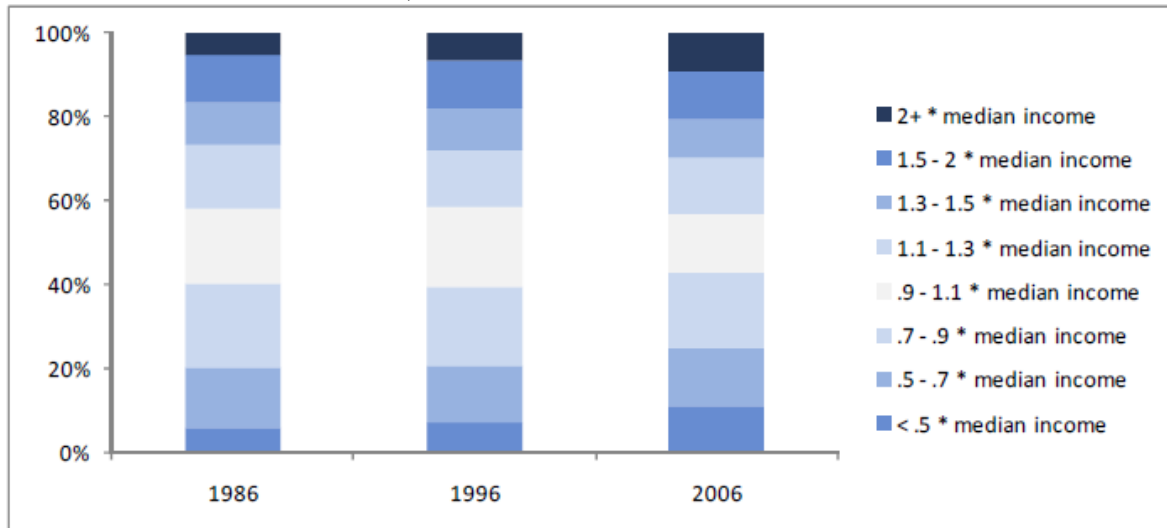
Data: GSOEP data on weighted net household income; 1986: West Germany only
Grabka/Frick 2008: 103

More complex continuous or discrete measures are an aggregation of different dimensions of inequality. For example, socioeconomic status (SES) is commonly used as a combined measure of an individual's or family's economic and social position relative to others, based on income, education and occupation.

A decisive question, however, is not only how unequal societies are at any given point in time, but also how dynamic, i.e. how stable or volatile social inequalities are. *Social mobility* can be regarded to be an indicator of the individual- or group-level persistence of social advantage and disadvantage. Social mobility is defined as the movement of individuals (or social units) among social positions within a society, which form a structure of social inequality (Sorokin 1959). An underlying assumption is that the permanence or transience of attachment to certain social positions and the rates and patterns of movement are likely to affect characteristics like identity and interests. In this sense, social mobility is

seen as a mediating process between social structure and individual action. In addition to changes in individual life conditions, social mobility may also have important implications for social integration. From a liberal perspective, mobility helps to stabilize the social order. It may legitimate prevailing inequalities of social class and status, especially if it can be related to meritocratic principles. It also may reduce class identification and the potential for collective action of a class-based kind. In the face of promises of (upward) mobility, attempts of collective action tend to be abandoned in favor of individual solutions (Blau & Duncan 1967; Erikson & Goldthorpe 1992). This is the reason why from a class-oriented perspective, mobility has often been viewed more critically, the argument being that individual mobility may weaken the collective position of (lower) classes as especially their 'elite' gets regularly absorbed by higher classes.

There has been a large strand of primarily descriptive research which has been interested in the actual levels and patterns of mobility. Studies of this kind have looked at both *intra-generational* mobility, i.e. social mobility within individual life courses, and *inter-generational* mobility, i.e. social mobility between various generations and (normally) within families. In most cases, this has meant that socio-economic positions of parents and their children have been compared. Intergenerational mobility is necessarily associated with a longer-term perspective and has been analyzed with regard to historical trends as well as in the form of international comparisons (e.g., Featherman & Hauser 1978; Erikson & Goldthorpe 1992; Breen 2004).

An even more advanced question asks about the mechanisms of how patterns of stability and fluidity of social positions between generations come about. This question is closely connected to the question of how inequality is generated. There are various sources on inequality in society, most prominently the labor market. Yet, the labor market is not independent of other institutions and their effects on inequality. For example, what is essential for any labor market in modern societies is the provision of skills, represented by formal qualifications. In modern societies formal education has probably become the most important mechanism of status transmission between the generations as well as a central

dimension of inequality in itself. Hence, *intergenerational educational mobility* as such has become a relevant topic. A micro perspective of analysis focuses on levels and relative chances of individual mobility. Again, there have been historical and international comparisons (e.g., Shavit & Blossfeld 1993), and this paper also puts some emphasis on this aspect. Finally, demographic processes may also be sources of inequality, most prominently selective partnership formation and marriage and fertility, though there is not always a clear direction of effects. For example, children may be both a source of power and a source of poverty, depending on the circumstances. There are mutual and complex relationships between all these dimensions.

Combinations of macro-level and micro-level research on social reproduction have been relatively rare. In large-scale social mobility research, structural change – concerning occupational positions and other structural elements – is often regarded as exogenous to the mobility process, which is at least in part seen as an adaptation to it. In this sense, the term 'social reproduction' is often used as a mere description of close empirical associations between the social positions of various generations. In the research strategy proposed in this paper, however, inter-generational *reproduction* of social inequality is regarded as a process which is being brought about by individuals and within and through families. As it necessarily bases upon natural reproduction, research on social reproduction needs to be complemented with a demographic perspective, and there is a close connection between questions of *social reproduction* and *natural reproduction*.

This paper focuses on links between natural and social reproduction in order to get better insights into the historical dynamics of the structures of social inequality. It investigates empirical links between life events and the development of social collectivities inequality, i.e. between micro and macro levels of society. The paper proposes a conceptualization of the micro-level process of inter-generational social reproduction that distinguishes between various partial processes, thereby linking the research areas of social mobility research and demographic research. In its empirical part, the paper describes selected historical

developments concerning social reproduction and their links to institutions in (West) Germany during the mid- and late 20th century.

2. Long-term trends in factors affecting natural and social reproduction

2.1 Fertility

The trend in the number of births in Germany since World War II has been characterized by considerable fluctuations, most prominently represented by the 'baby boom' of the 1960s (cf. Figure 2). These fluctuations have, however, to a large extent been due not to behavioral, but structural changes. An important determinant of the number of births in society is its age structure, as it defines the size of potential parental cohorts. The behavioral component is better represented by the Total Fertility Rate (TFR), i.e. the expected (average) number of children per women during their lifetime.

Figure 2: Number of births and TFR in West Germany, by year
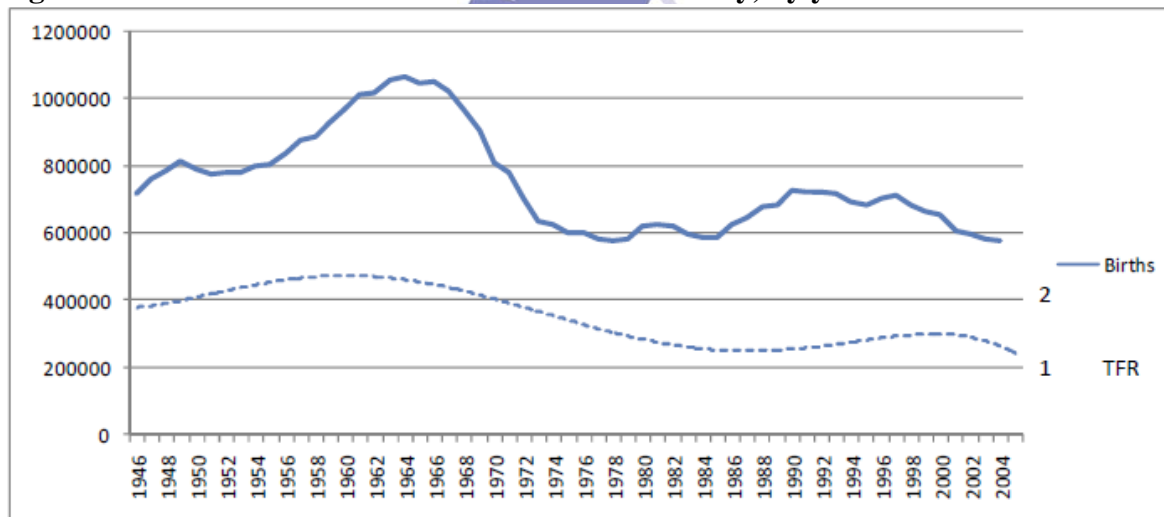

Dotted line: TFR = Total fertility rate (period), smoothed curve
Statistisches Bundesamt (2005)

However, when calculated in the conventional (period-specific) form, the TFR is only an analytical entity as it summarizes the number of births in any given year across women from a whole range of cohorts, who may be very different in their fertility behavior. To get

a more realistic account of fertility, it is therefore preferable to sum up the number of children along a single cohort's life course. When calculated in such a cohort perspective (Figure 3), one can see that there were only small fluctuations in the historical trend, which was a slow, but steady decrease in the number of children from one birth cohort to the next.

Figure 3: Average number of children born (cohort TFR), mean age at birth and median age at first birth, by women's birth cohort
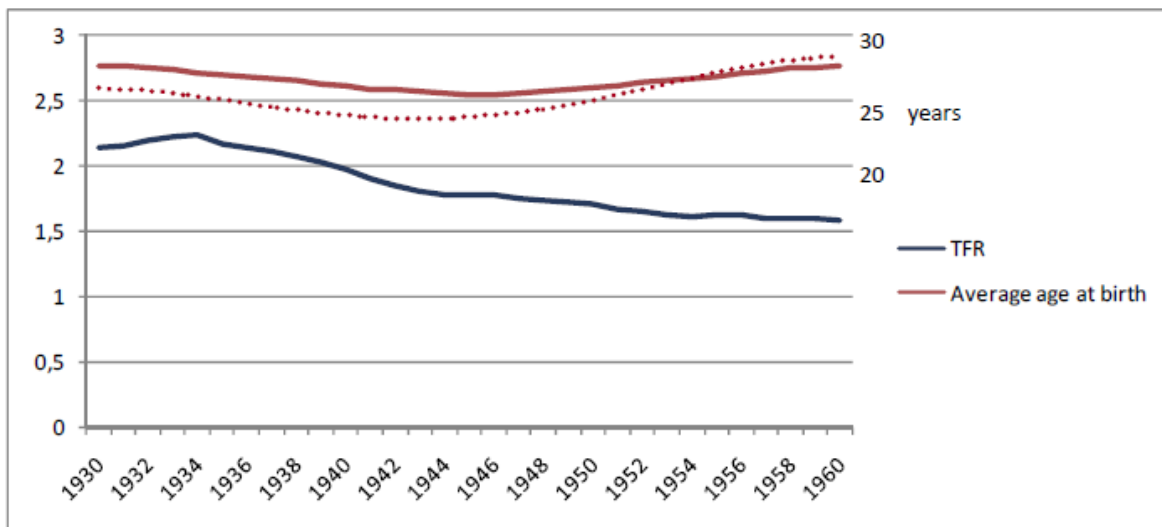
Dotted line: median age at first birth (smoothed line)
Statistisches Bundesamt (1999), German Life History Study; own calculations

Presented in Figure 3 is also the non-monotonic trend in the women's average age when giving birth; all children who were born are included in this analysis. Another important development is the increasing proportion of women who remain childless. This is one of the factors behind the growing median age at first birth, i.e. the age when 50 percent of the women of the particular cohort have given birth to their first child.

2.2 Marriage and assortative mating

Union formation and social status or education is linked. These links concern both the likelihood of forming unions or marriages and the phenomenon of *assortative mating*, which means the patterns in which particular types of individuals get together as partners

and spouses. There has always been a tendency of *social homogamy* within a society, i.e. that unions and marriages have been formed by partners with similar sociological characteristics. However, these links have changed over time with education becoming a more relevant element of social homogamy (Klein 1998; Wirth 2000; Blossfeld & Timm 2003).

What has clearly lost importance is a direct link or motive for (female) education, namely to enter a 'proper marriage'. This is again an aspect of an increasing 'individualization' of education. On the other hand, the indirect consequences of changing 'opportunity structures' that make particular educational constellations within unions more likely have become more important. These opportunity structures show up as both macro and micro level effects. On the macro level, opportunity structures are defined by the aggregate ('marginal') educational distributions of men and women as potential partners. Even if partners were assigned randomly to each other, these distributions would determine some combinations to be more likely than others[1]. With an increasing equalization of male and female educational attainment after World War II (see also the next section), the theoretical likelihood of education-related homogamy has (statistically) increased. The empirical development can be seen from Figure 4.

---

[1] Often the assumption of independence is made in order to derive some reference value for comparisons with the empirical degree of social homogamy within a society.

Figure 4: (Education-specific) homogamous and heterogamous marriages, by birth cohort
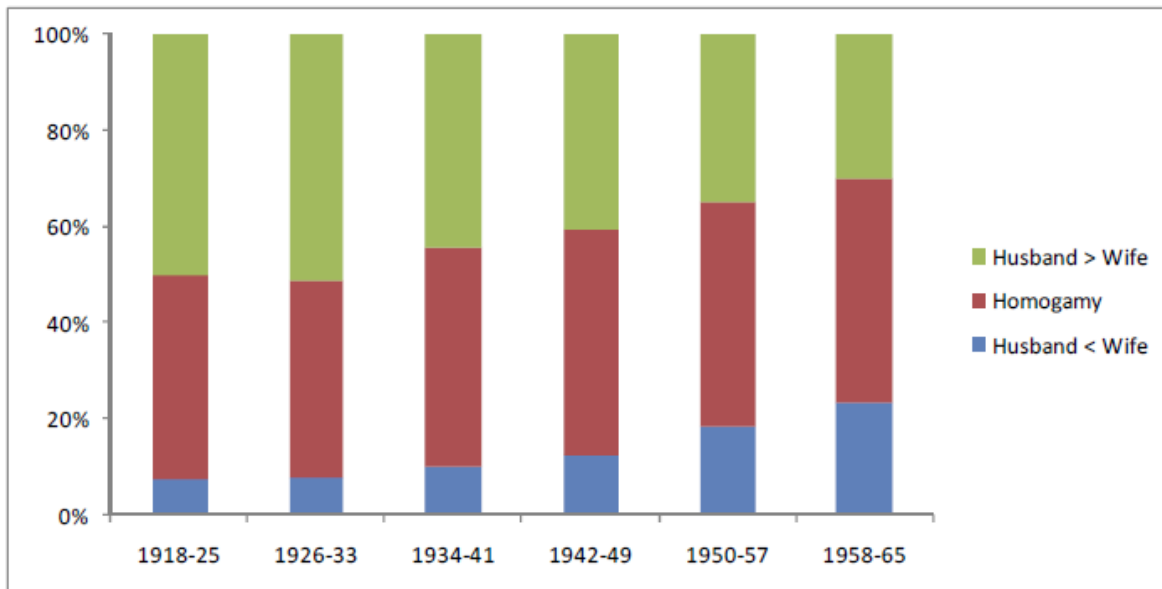
Wirth 2000: 141; 6 cat. according to CASMIN
Data: Microcensus 1993

On the micro-level, educational institutions influence union formation as a means of bringing particular individuals into contact with each other (moderated by factors like gender segregation in educational tracks) but also by shaping individual preferences. Co-education in schools became almost universal by the 1970s, but there has remained a relatively high degree of gender segregation among training occupations. Empirically, homogamy tends to increase for potential partners with longer duration within the educational system, as this population becomes increasingly homogenous. Given the close connections between education and cultural preferences or styles of life, an early selection into different educational tracks is likely to increase the degree of educational homogamy.

Social homogamy has been associated with social differences in marriage rates. Particularly high 'risks' of remaining unmarried are found among the groups of low skilled men and highly qualified women (cf. Blossfeld & Timm 2003). In an economic perspective, this has been interpreted as a non-clearing marriage market in a situation where there is a continuing preference for a hierarchy between spouses concerning educational status while

at the same time the marginal distributions of male and female education equalize. This explanation seems to be adequate especially in case of low-skilled men. There has also been a declining trend in overall marriage rates since the 1960s. Again, there have been demographic influences of varying cohort sizes which may have led to 'marriage squeezes' even in the absence of historical events like wars and gender-specific migration[2].

2.3 Education and inter-generational educational transmission

As most other industrial countries, Germany has experienced a marked educational expansion regarding average attainment since the 1950s. Often attributed to the public debate and various institutional reforms in the 1960s, expansion had in fact begun already before. By the early 1980s, however, this expansion had slowed down considerably, and in comparative terms, especially the expansion of higher education remained limited in Germany. In general, educational expansion was more marked with regard to young women than with regard to young men, so that the distributions of male and female educational attainment converged (cf. Figure 5). This was associated with a change in attitudes towards female education on the side of parents – not only due to the fact that, with smaller family sizes, fewer families actually had sons. In general, parents' attitudes and their educational decisions for their sons as well as daughters became more 'individualized' rather than dependent on the (male) siblings' situation. While being visible in all parts of the educational system, the expansion of female educational attainment applies especially to vocational training. Immediately after the war, only a minority of women entered vocational training, but this applied to a majority at the end of the century. Structural changes in educational distributions are important determinants of group-specific levels of educational reproduction.

---

[2] For example, given a rather stable age difference of 2 to 3 years between spouses, the steadily growing birth cohorts until mid-1960s meant a relative 'over-supply' of women, while the rapid decline in cohort size after that meant an 'over-supply' of men in these cohorts.

Figure 5: Level of educational attainment (percentages), by birth cohort and gender
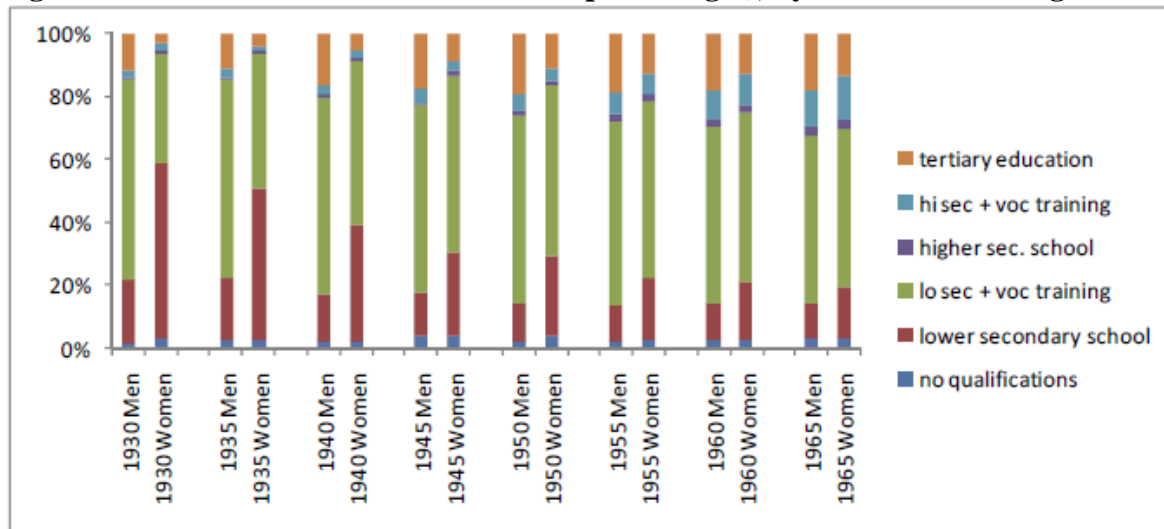

Data: Microcensus 2000 (West Germany), own calculations

There is a long literature on social selectivity in education in general and differences in educational attainment by social background in particular. In most countries educational inequalities with regard to social background (parents' socio-economic status and education) have been much more persistent than differences with regard to gender, religion or region. In theory, social selectivity in education has been explained, in particular, by selective rational decisions by parents (Boudon 1974, Breen & Goldthorpe 1997) and class-specific socialization and discriminatory standards set by dominant classes (following e.g., Bourdieu & Passeron 1971). In spite of this long-established research tradition in sociology, social differences in educational attainment have received special public attention in recent years (especially in the debates following comparative school achievement studies like PISA 2000).

With its early selection into hierarchical tracks, the German school system is prone to a comparatively high degree of social selectivity (Müller & Karle 1993). Later transitions in the life course do normally not compensate for this (Hillmert & Jacob 2005). Since the 1960s, there have been a number of developments in favor of declining social selectivity, at least in parts of the German educational system. Among them are (Müller & Haun 1994): the lowering of direct costs of education (abolishing of schooling fees, generally increasing

affluence) and also of opportunity costs (extension of the duration of lower-level secondary education, thereby closing the gap towards higher tracks); a lowering of the threshold for entering higher education by introducing a lower tier of higher education; and a more comprehensive regional supply of upper secondary and higher education. Most studies have found a long-term decline in social background effects on educational attainment (Henz & Maas 1995, Schimpl-Neimanns 2000) after 1945, but these leveled off after the late 1970s. A similar trend can be seen in Figure 6.

Figure 6: Relative (background-specific) chances of attaining upper secondary school / University degree, by birth cohort
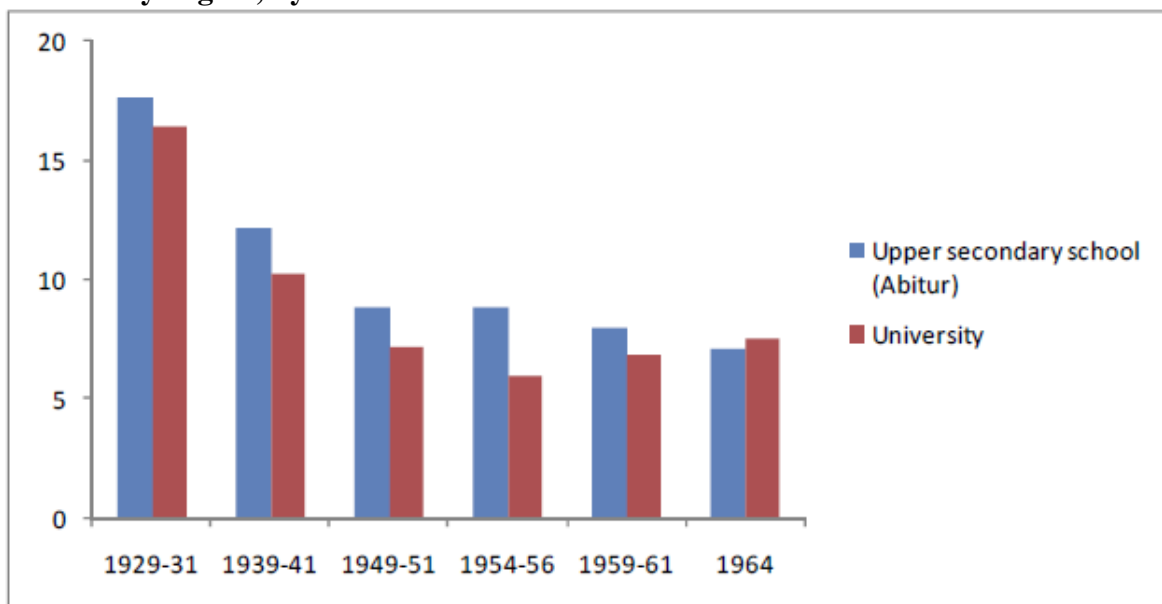
Reported are relative chances of attaining this particular level of education vs. not attaining it by educational background (odds ratio). Educational background: Parents' education (Upper secondary education vs. below). Data: West German Life History Study, own calculations

The broad system of vocational education and training has clearly helped to integrate young people from lower educational backgrounds, but there are also indicators that it has distracted them from entering higher education (Shavit & Müller 2000; Hillmert & Jacob 2003; Becker & Hecken 2008). Again, chances of access have also been affected by rather short term macro-level demographic and also by macro-economic influences, especially in sectors of the educational system that follow economic cycles more closely and that are subject to competition.

On the other side, qualification-specific chances of employment and returns to education in the labor market have been remarkably stable, particularly with regard to high-level qualifications (Müller 1998; Becker & Hadjar 2006). In combination with the background-specific social selectivity of educational attainment, this means that a considerable amount of social inequality is transferred across generations through the educational system.

To sum up, all three partial processes of inter-generational reproduction have been prominently (though not exclusively) influenced by the institutional structures and the development of the educational system after 1945. Without being able to go into detail, the following sections provide an aggregate empirical description of the interaction between these partial processes.

3. Towards an integrative analysis of social reproduction

3.1 Conceptual considerations

Conventional research on inequalities has been focused on very specific aspects. For example, studies on educational inequality have normally been set up as comparisons between children's education and their social origin, i.e. the parents' situation (e.g., education or other socioeconomic characteristics), analyzing relative chances of education among children from different social backgrounds[3]. In conceptual terms, the analyses start from *the children's generation* and they are conditional on both the formation of the origin context and existence of the children. This perspective is well compatible with references to individual life chances and rights of education (and possible means of intervention) for children that have already been born. If one is interested in the more analytical questions of inter-generational *social reproduction* or social mobility, however, the situation is different and an immediate interpretation of these results is often misleading (Duncan 1966;

---

[3] In these studies – as well as in this paper – the term 'chances' is used descriptively to denote relative frequencies of actual educational attainment. This does not necessarily imply assumptions about individual motives, activities or alternative possibilities.

Sakamoto & Powers 2005). In these cases, one looks at intergenerational links from the *perspective of the parents' generation* and asks about the consequences for the following generation(s). This includes questions of how the origin context is formed, whether there are any children at all and when they were born as well as the aspect of these children's relative chances of education. As a particular generation of children may have parents from a wide range of birth cohorts, an analysis from the perspective of the parents' generation would normally start with a particular cohort of individuals and look at their social relations to individuals of following generations. A reference to the (natural) population process may help to overcome the conceptual limitations of conventional research (cf. Mackenroth 1953).

The basic unit in the following representation of the population process is the individual life course as it is defined by the events of birth and death (cf. Figure 7). In a demographic perspective, natural reproduction can be conceptualized as two individuals of particular birth cohorts (in this example t1 and t2) finding together and having (first) offspring at a particular point in time t3 (fertility event). In this model, this is represented by the new existence of (normally) one other life course of the birth cohort t3, which may itself later on contribute to reproduction.

The sociological perspective, on the other hand, starts from the basic assumption that social contexts have a decisive influence on individual behavior. In particular, differences in behavior may be the results of the exposure to particular forms of education during the individuals' life time. Moreover, the likelihood of attending these forms of education tends to be transmitted across generations by mechanisms like unequally distributed resources and educational decisions made by the parents. In the context of this paper, it is important that educational differences may also affect demographic behavior like union formation and fertility.

Figure 7: Basic representation of the micro-level process of demographic reproduction in time
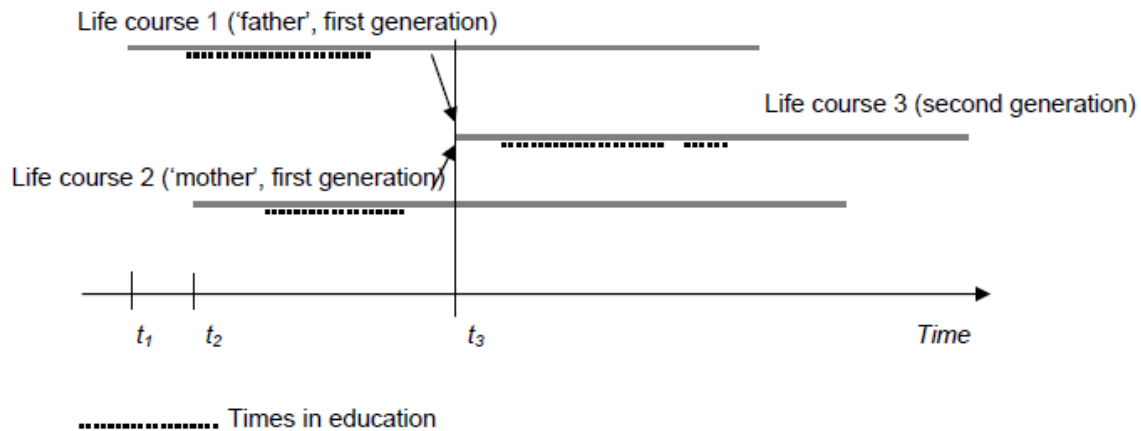
In order to adequately reconstruct the pathway of educational transmission from one generation to another, one has therefore to distinguish between *partial processes* in the overall micro-level process of inter-generational reproduction and mobility (see also Maralani & Mare 2005). There are at least three of them: (1) Socially selective union formation, i.e. the process by which particular individuals are matched with particular other individuals (if any); (2) Socially selective fertility, i.e. the process by which parents of this generation may have a certain number of children (conditional on (1)); and (3) Socially selective educational and status attainment, i.e. the process by which children from a particular family background tend to attain particular levels of education or social status (conditional on (1) and (2)).

In reality, the process of the inter-general transmission of education may be more complex, but these three steps form the simplest model that connects individuals of two successive generations, thereby describing one 'complete cycle' of inter-generational educational reproduction. This specification may be useful not only for the issues analyzed in this paper, but for any research that includes inter-generational relations, like the transmission of social (dis)advantage among various ethnic groups. Also in this case, processes of inner-ethnic and inter-ethnic union formation may be a central mechanism for the final outcomes. Note that the model resembles a 'statistical de-composition', which allows specifying more

adequate *explananda*, rather than a causal model of explanation for any of the partial processes.

Previous work on the U.S. has indicated that, for example, particular effects of differential fertility on educational mobility have been relatively small (cf. Mare 1997), while there has been a larger impact in rapidly changing developing countries (Mare & Maralani 2006). In general, the impact that partial processes have on the overall process of status transmission in a particular society always depends on how large social differences in behavior are, how fast historical changes occur and how closely the partial processes are connected. In order to assess their overall impact on social reproduction, it is necessary to analyze and to combine them in a quantitative manner.

Now let us turn again to a macro-level perspective where the level of group-specific reproduction can be regarded as the combined result of the aggregated effects of inter-marriage, fertility and attainment. Important here are not only the frequencies of life events, but also their timing, since the speed of its reproduction is important for the absolute size of a group. Such an approach also allows addressing questions of historical timing more systematically than conventional approaches, which start from the children generation. It reveals the considerable temporal extension of processes of social reproduction: For example, parental cohorts born in the 1930s will have the period of their family formation mainly in the 1950s (though in some cases, as late as the 1970s), and their children's final educational attainment cannot be evaluated before the 1980s (or later).

This paper intends to sort out the relative importance of the partial processes in the overall process of inter-generational educational reproduction and mobility in Germany. It also looks at their combined effects and gives an account of the historical changes in these processes. Being mainly concerned with describing these trends, it is rather brief with regard to explaining these changes. In fact, various contexts are likely to influence these processes, not least particular institutions. However, the major systematic point to recognize is that, in principle, *any* of the partial processes may be influenced by a particular institution.

3.2 Data sources and estimations

As there is no comprehensive data source that contains all the information needed to analyze our research questions in quantitative terms, the analysis follows a multi-stage procedure (Hillmert 2008): (1) In a first step, the partial processes are estimated separately using different data sources; (2) In a second step, these results are combined using a simulation technique in order to get an estimate of the overall process; (3) In a third step, this combination is modified using 'counter-factual' assumptions to assess the relative importance of the partial processes. Not least because of the necessity to have long-term comparable historical data, the analyses in this paper are confined to West Germany and the period between World War II and the end of the 20th century.

The 1930 birth cohort is the oldest cohort for which comprehensive data is available. Together, the data sources cover the years 1930 to 2000 and they allow conducting historical comparisons through the second half of the 20th century. However, the analyses need to concentrate on West Germany. The data sources consist of the records of registered births from official statistics (Statistisches Bundesamt 1999; various years) and individual-level data from the West German Life History Study (GLHS) (Mayer & Brückner 1989; Brückner & Mayer 1995; Hillmert et al. 2004). The GLHS is a series of representative, retrospective surveys of selected birth cohorts.

To get a condensed representation of empirical developments, the variables that represent the partial processes are linked to a set of covariates. If possible, actual figures were used for each year. However, in most instances trends had to be estimated, i.e. interpolated and in some cases also extrapolated. Depending on the data and the complexity necessary to represent the empirical trends, different estimation models were used.

In recent decades, structural changes in education have been particularly significant for women. This paper therefore concentrates of the educational reproduction of women. In order to keep the analyses relatively simple, in this paper only three (ordered) categories of educational attainment are distinguished: *low* education, i.e. having attained neither

vocational training nor an upper secondary school degree; *medium* education, i.e. having attained either vocational training or an upper secondary school degree or both; and *high* education, i.e. having attained a higher education degree (from universities or polytechnics).

Note that educational attainment refers to the level of the finally (highest) attained level of education, not to the transitions on the way to get there. If, for example, attainment of higher education turns out to be socially selective, this does not necessarily mean that the institutions of higher education as such are socially selective. It may also be that the main source of this selectivity is the selectivity of the secondary school tracks that lead to higher education.

Estimation models and detailed results are reported in Hillmert (2008).

A statistical combination of the estimated partial processes is achieved by using a Monte-Carlo type micro simulation approach. This means that the individual life events and (yearly) values for particular variables are assigned at random to a given population on the basis of the group specific probabilities defined by the empirically estimated parameters. The basic algorithm starts with initial populations of women (of various educational levels) of the 1930+ birth cohorts; it assigns to the individuals the most likely marital status, educational level of their partners, number, years of birth, gender and educational attainment of their children (if any), and finally, does the same for these children and further generations.

Note that the process of natural reproduction works in this model only through the population of women. The reason is that reliable data on fertility is normally only available for women. Men do, however, show up as spouses of the women and hence as (married) fathers. While there are single mothers in the model, the only aspect that is not represented by the model is the existence of single fathers[4].

---

[4] Beyond that, there are a number of assumptions: The partial processes are independent, given the common parameters, i.e., there are no unmeasured common background factors influencing them, and they only connect two generations. For example, the grandparents' (educational) situation does not affect their

The aspect of inter-national migration as another major demographic process requires also some special attention. The simulation looks at the offspring of starting populations which may well include immigrants of the second generation, but migration is not explicitly modeled. Still there is the assumption that immigrants, once they lived in the country and when controlling for the specified characteristics (cohort, education, marital status), did not differ from native Germans.

The reason is that some of the data sources do not distinguish between migrants and natives[5]. Moreover, some of the data is retrospective, so that only the 'survivors' of out-migration are in the sample.

The starting populations born in 1930+ are stratified in the sense that in any of these populations there are three educational groups (of women) of equal size. Together they do not form a 'representative' population, and this applies also to their joint population of descendants. In the following, analyses will therefore be confined to developments within or comparisons between cohorts or educational groups.

---

grandchildren's situation, except through the parents' situation. In this sense, the model can be regarded to represent a 'Markov process'. Fertility distributions are homogeneous among the members of the (female) population. In order to be able to combine aggregate fertility data with individual-level data, the registered natality figures (the no. of births by women of a certain age / population of women of that age; these figures are all well below 1) are interpreted as birth rates (probabilities). Having a child is not affected by already having a child. However, the maximum number of children is limited to five. There is no (selective) mortality until the end of the reproductive phase, which is limited to the ages 15 to 45. There are only heterosexual unions and no adoptions. There are no systematic effects of union dissolutions and partner changes. Also, the age of (highest) educational attainment is neglected, i.e. children are immediately assigned to the category they eventually attain.

[5] In fact, in the present model these groups are not completely missing, but they are not distinguished. The simulation model uses the same parameter structures as the empirical estimations, which are based on data from heterogeneous populations. Given constant group composition, these effects are reproduced in the simulation.

4. Inter-generational social reproduction: Empirical results

4.1 Descendants of a single cohort

For social reproduction, not only selective fertility, but also forms of selective attainment are important determinants. This paper concentrates on the educational attainment of the descendants, and it is a well-known fact that there have been significant differences between their levels of attainment depending on their origin. Children with low education can mainly be found among the descendants of a low-educated first generation. The descendants of the women with medium education had, on average, significantly higher levels of educational attainment, and among the descendants of the highly educated women, the majority attained higher education themselves.

Taken together, demographic processes and educational attainment of children and grandchildren result in the (macro-level) reproduction of educational groups. In Figure 8, the level of this reproduction is displayed as a proportion of the original cohort size (whereby mortality in these comparatively young ages can be neglected).

Figure 8: Proportion of internal group reproduction (descendants of 1930 birth cohort), by group and (female) descendants' cohort
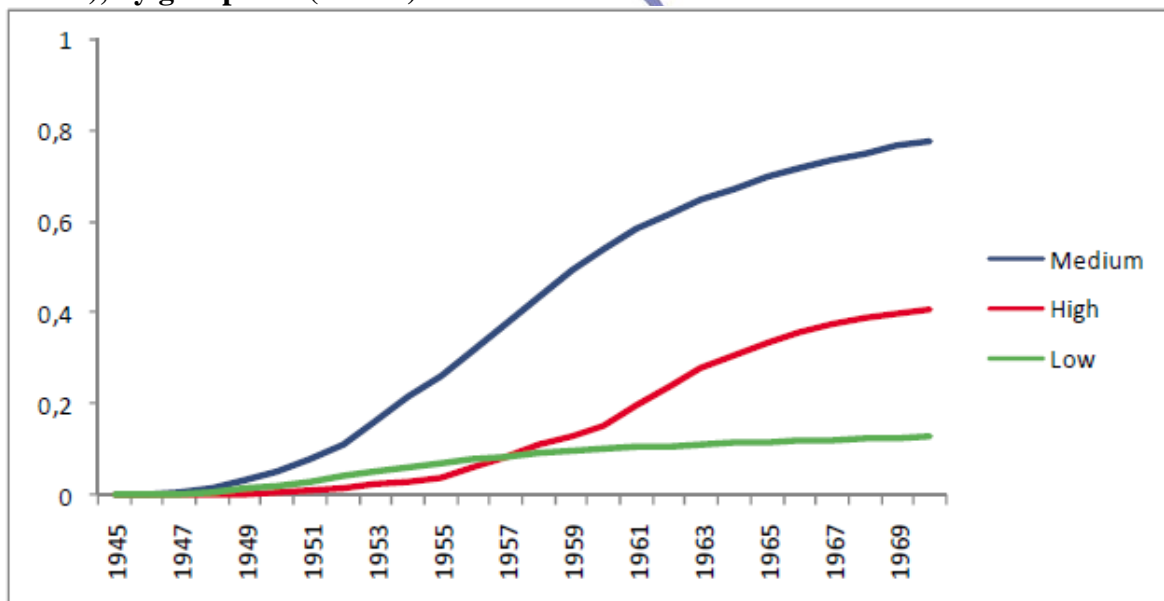
The low education group shows very low levels of reproduction. This is primarily a result of the (female) educational expansion since the 1950s that affected the members of these cohorts[6]. In spite of this expansion, however, also the high education group (i.e., higher educated women and their descendants) shows a relatively low degree of reproduction. This result is due to both low levels of fertility and the fact that even these children were far from attaining higher education to 100 per cent[7].

## 4.2 Historical trends in social reproduction across generations

Developments within a population of individuals, who are the descendants of a particular birth cohort, as they were presented in the preceding section, are only one aspect of historical trends. Probably more important is in what way *various* cohorts of parents have differed with regard to the transmission of their educational status to their descendants. The following analyses compare a whole number of birth cohorts in this regard.

However, the process of inter-generational reproduction extends considerably through time, in that sense linking various historical periods. For example, parents born around 1930 married normally not before the 1950s, their fertility patterns represent the conditions of the 1950s/60s, and most of their children left education not before the 1970s. As a result of this, the observation window for historical comparisons becomes rather small, even when long-term data – in this case, for the period between 1930 and 2000 – is available. For the same reason, the following analyses link only two generations, i.e. parents (mothers) and their children with regard to educational attainment. In Figure 9, the degree of group reproduction is presented for the three educational groups and a number of (parental) birth cohorts.

---

[6] In addition, the proportion of low-educated is probably under-estimated in our data (as in most surveys).
[7] Including the different timing of attainment would further lower this proportion.

Figure 9: Proportion of group reproduction by mother's education (=origin) and mother's birth cohort
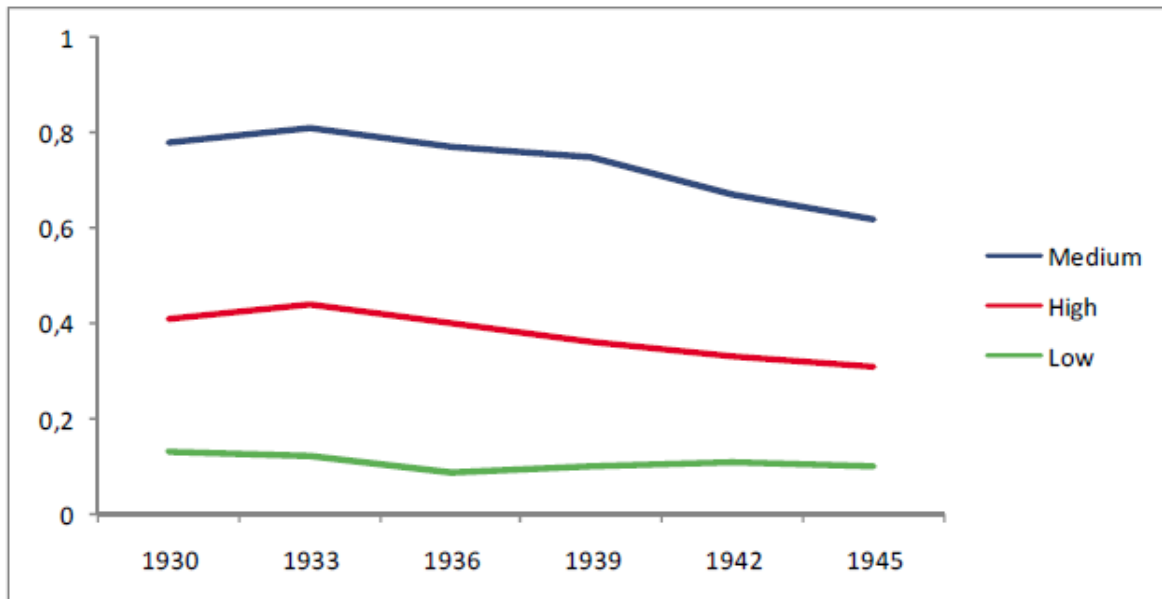
The empirical results indicate a comparatively high level of stability over time. There has been, however, a moderate long-term decline in the degree of social reproduction. Again, the low education group shows a very low degree of reproduction. Also the high education group remains on a level of reproduction which is significantly lower than in the intermediate group, and again this can be interpreted as a combination of low fertility, high ages of birth and – in spite of educational expansion – only moderate attainment rates.

## 4.3 Relative importance of demographic processes

Following these empirical results, this section presents some results that allow for a 'decomposition' of the effects of the three partial processes on overall reproduction. On the basis of the ratios between the proportions of children attaining higher education, they assess the importance of the various partial processes by calculating the results when imposing certain constraints on the existence and form of these processes.

Of course, in order to interpret the results as 'counterfactuals', the general assumption is that everything else would remain constant. In particular, this means that category-specific effects on attainment remain constant, independently of how many people these categories consist of. In some cases, this seems to be easily justifiable, as these conditions entail relatively minor changes in the overall distributions, in other cases this assumption seems to be rather strong.

In the model represented in Figure 10 (dotted lines), the partial process of partner choice and marriage is constrained to be equal among all women of the particular cohort. Hence, marriage chances and the level of partner's education vary only by the common cohort trend. In other words, in each cohort partners are found at random – or at least irrespectively of their education. As a reference, the solid lines represent the empirical trends. When comparing empirical and counterfactual trends one can see that in the category of higher educated women, social reproduction would have been much smaller, while there are only small differences concerning the other groups.

Another possible extreme case would be a situation of strict homogamy (not presented), i.e. that every woman is matched to a partner with exactly the same level of education as this woman herself – assuming that this is not constrained by the men's educational distribution. Of course, this means an even greater concentration of advantage and disadvantage among couples than it is empirically observed. In this scenario, inequality in inter-generational educational mobility would even be much higher, so that the empirical situation has been somewhere in between these two extremes.

Figure 10: Proportion of group reproduction by mother's education and mother's birth cohort; Empirical and counterfactual trends assuming marriage at random (no social homogamy)
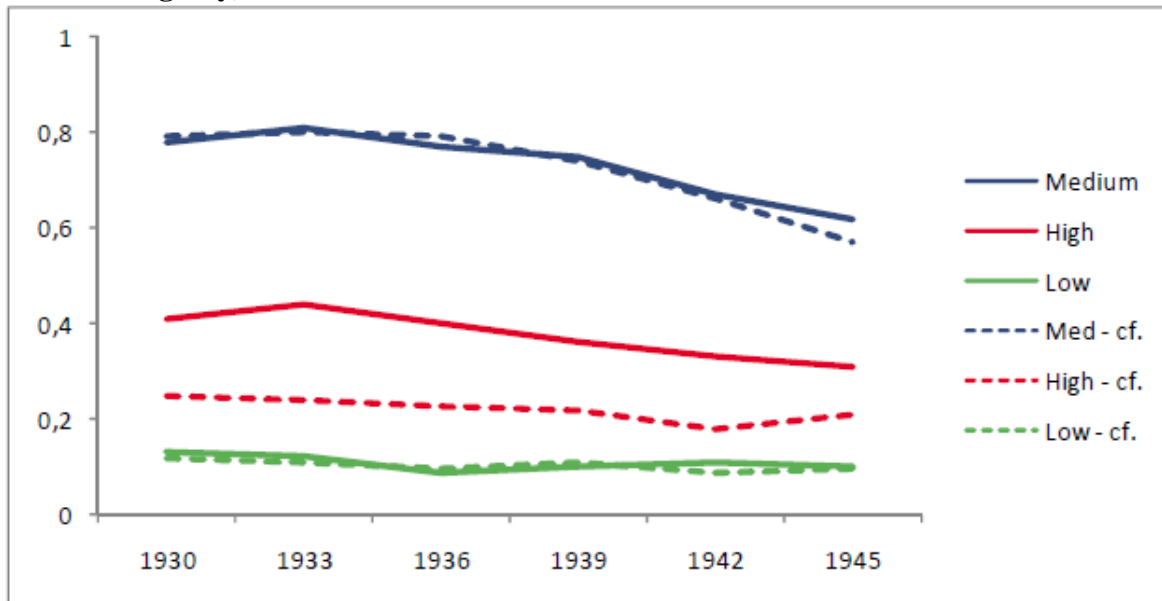
In the model represented in Figure 11, the partial process of selective fertility is constrained to be equal among all women of the particular cohort. Timing and level of fertility vary only in accordance with the common cohort-specific fertility distribution. Again, the counterfactual development differs significantly from the empirical development in the case of the group of higher educated women. The deviations one can see in the figure are due both to level and timing effects of differential fertility, including the phenomenon that children from different origin groups tend to grow up (on average) under different historical circumstances. Given equal fertility, there would not have been a decline in the degree of reproduction among the group of higher educated women.

Figure 11: Proportion of group reproduction by mother's education and mother's birth cohort; Empirical and counterfactual trends assuming equal fertility
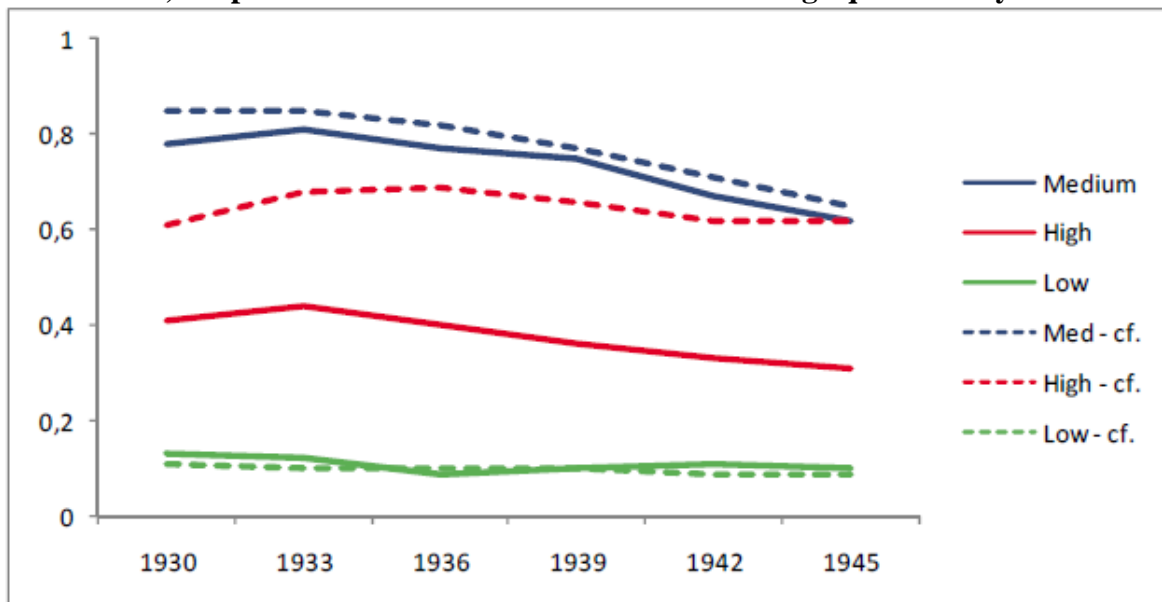
5. Summary and conclusions

The analyses of this paper indicate a relatively high degree of historical stability in intergenerational educational reproduction in West Germany towards the end of the 20th century. It has also become obvious that in-depth analyses pose high demands on data scope, differentiation, and quality. Moreover, given the considerable age variation with regard to education and parenthood, the process of inter-generational reproduction extends across time, so that even with long-term historical data, the actual observation window for making trend comparisons becomes rather small and consequences of present developments will be observable only in the further future.

There are mutual relationships between various mechanisms of generating social inequality in a society, so there is no simple answer to the question of how social and natural reproduction are linked. Still, there are a number of systematic conclusions that may be drawn from the results presented in this paper.

A general conclusion regarding the construction of explanations for changes in social reproduction is to think more carefully about possible relationships between institutions and a potentially wide range of social mechanisms. This seems to be in line with an increasing awareness in (comparative) research that there are no exclusive relationships between particular institutions and related social mechanisms (like: the educational system has a direct impact on educational behavior and only on that). Rather, it is their indirect connections and unintended consequences that are often not just more interesting, but also most relevant.

While background-specific chances of access to certain levels of education have been major determinants of the level of inter-generational educational and social reproduction, there have been important contributions also of other partial processes – namely demographic processes – to the final outcomes of social reproduction. In some of our examples, the observed degree of educational reproduction is to a significant proportion due to educational homogamy and fertility differences. The results therefore underline the need of specifying partial processes when looking at long-term social reproduction. This also means that the analysis of inter-generational transmission has to be careful about distinctions like individual and (household) union-related perspectives; gender-differences in the odds of social transmission; relative proportions and absolute quantities; and comparisons of two generations versus multi-generation comparisons.

References

Becker, Rolf & Hadjar, Andreas (eds.) (2006): *Die Bildungsexpansion: erwartete und unerwartete Folgen*. Wiesbaden: VS

Becker, Rolf & Hecken, Anna (2008): Warum werden Arbeiterkinder vom Studium an Universitäten abgelenkt? Eine empirische Überprüfung der „Ablenkungsthese" von Müller und Pollack (2007) und ihrer Erweiterung durch Hillmert und Jacob (2003). *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 60, 1/2008, 3-29

Blau, Peter M. & Duncan, Otis D. (1967): *The American occupational structure*. New York: Wiley

Blossfeld, Hans-Peter & Jaenichen, Ursula (1990): Bildungsexpansion und Familienbildung. Wie wirkt sich die Höherqualifizierung der Frauen auf ihre Neigung zu heiraten und Kinder zu bekommen aus? *Soziale Welt* 41, 454-476

Blossfeld, Hans-Peter & Timm, Andreas (2003): Who marries whom in West Germany? In: Blossfeld, Hans-Peter & Timm, Andreas (eds.): *Who marries whom? Educational systems as marriage markets in modern societies*. Boston: Kluwer Academic, 19-35

Boudon, Raymond (1974): *Education, opportunity, and social inequality. Changing prospects in Western society*. New York: Wiley

Bourdieu, Pierre & Passeron, Jean-Claude (1971): *Die Illusion der Chancengleichheit: Untersuchungen zur Soziologie des Bildungswesens am Beispiel Frankreichs*. Stuttgart: Klett

Breen, Richard (ed.) (2004): *Social mobility in Europe*. Oxford: Oxford University Press

Breen, Richard & Goldthorpe, John H. (1997): Explaining educational differentials. Towards a formal rational action theory. *Rationality and Society* 9, 275-305

Brückner, Hannah & Mayer, Karl Ulrich (1995): *Lebensverläufe und gesellschaftlicher Wandel: Konzeption, Design und Methodik der Erhebung von Lebensverläufen der Geburtsjahrgänge 1954-1956, 1959-1961*. Berlin: Max-Planck-Institut für Bildungs-forschung

Brüderl, Josef & Klein, Thomas (1991): Bildung und Familiengründung: Institutionen- vs. Niveaueffekt. *Zeitschrift für Bevölkerungswissenschaft* 17, 323-335

Cortina, Kai S. / Baumert, Jürgen / Leschinsky, Achim / Mayer, Karl Ulrich & Trommer, Luitgard (eds.) (2008): *Das Bildungswesen in der Bundesrepublik Deutschland. Strukturen und Entwicklungen im Überblick*. Reinbek: Rowohlt

Duncan, Otis D. (1966): Methodological issues in the analysis of social mobility. In: Smelser, Neil J. & Lipset, Seymour M. (eds.): *Social structure and mobility in economic development*. Chicago: Aldina, 51-97

Erikson, Robert & Goldthorpe, John H. (1992): *The constant flux: A study of class mobility in industrial societies*. Oxford: Clarendon Press

Featherman, David L. & Hauser, Robert M. (1978): *Opportunity and change*. New York: Academic Press

Grabka, Markus & Frick, Joachim (2008): Schrumpfende Mittelschicht: Anzeichen einer dauerhaften Polarisierung der verfügbaren Einkommen? *DIW Wochenbericht* 10/2008. Berlin

Henz, Ursula & Maas, Ineke (1995): Chancengleichheit durch die Bildungsexpansion? *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 47, 605-633

Hillmert, Steffen (2008): *Life Course Events and the Reproduction of Social Stratification: Germany in the 20th century*. Paper presented at the European Population Conference by the European Association for Population Studies (EAPS). Barcelona, July 2008

Hillmert, Steffen & Jacob, Marita (2003): Social inequality in higher education: is vocational training a pathway leading to or away from university? *European Sociological Review* 19, 319-334

Hillmert, Steffen & Jacob, Marita (2005): Institutionelle Strukturierung und inter-individuelle Variation: zur Entwicklung herkunftsbezogener Ungleichheiten im Bildungsverlauf. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 57, 414-442

Hillmert, Steffen / Künster, Ralf / Spengemann, Petra & Mayer, Karl Ulrich (2004): Projekt „Ausbildungs- und Berufsverläufe der Geburtskohorten 1964 und 1971 in Westdeutschland". Dokumentationshandbuch. *Materialien aus der Bildungsforschung* 78. Berlin: Max-Planck-Institut für Bildungsforschung

Klein, Thomas (1998): Entwicklung und Determinanten der bildungsbezogenen Partnerwahl. *Zeitschrift für Bevölkerungswissenschaft* 23, 123-149

Mackenroth, Gerhard (1953): *Bevölkerungslehre: Theorie, Soziologie und Statistik der Bevölkerung*. Berlin: Springer

Maralani, Vida & Mare, Robert D. (2005): *Demographic pathways of intergenerational effects: fertility, mortality, marriage and women's schooling in Indonesia*. CCPR Working paper 019-05. Los Angeles: UCLA

Mare, Robert D. (1997): Differential fertility, intergenerational mobility, and racial inequality. *Social Science Research* 26, 263-291

Mare, Robert D. & Maralani, Vida (2006): The intergenerational effects of changes in women's educational attainments. *American Sociological Review* 71, 542-64

Mayer, Karl Ulrich & Brückner, Erika (1989): *Lebensverläufe und Wohlfahrtsentwicklung. Konzeption, Design und Methodik der Erhebung von Lebensverläufen der Geburtsjahrgänge 1929-1931, 1939-1941, 1949-1951*. Berlin: Max-Planck-Institut für Bildungsforschung

Müller, Walter (1998): Erwartete und unerwartete Folgen der Bildungsexpansion. *Zeitschrift für Soziologie und Sozialpsychologie*, Sonderheft 38: Die Diagnosefähigkeit der Soziologie, 81-112

Müller, Walter & Haun, Dietmar (1994): Bildungsungleichheit im sozialen Wandel. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 46, 1-42

Müller, Walter & Karle, Wolfgang (1993): Social selection in educational systems in Europe. *European Sociological Review* 9, 1-23

Sakamoto, Arthur & Powers, Daniel A. (2005): Demography of social stratification. In: Poston, Dudley L. & Micklin, Michael (eds.): *Handbook of Population*. New York: Springer, 383-416

Schimpl-Neimanns, Bernhard (2000): Soziale Herkunft und Bildungsbeteiligung: empirische Analysen zu herkunftsspezifischen Bildungsungleichheiten zwischen 1950 und 1989. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 52, 636-669

Shavit, Yossi & Blossfeld, Hans-Peter (eds.) (1993): *Persistent inequality. Changing educational attainment in thirteen countries*. Boulder: Westview Press

Shavit, Yossi & Müller, Walter (2000): Vocational secondary education. Where diversion and where safety net? *European Societies* 2, 29-50

Sorokin, Pitirim A. (1959, orig. 1927): *Social and cultural mobility*. Glencoe: Free Press

Statistisches Bundesamt (1999): Fachserie 1: Bevölkerung und Erwerbstätigkeit. Reihe 1, *Gebiet und Bevölkerung*. Stuttgart: Metzler-Poeschel

Statistisches Bundesamt (various years): *Statistisches Jahrbuch für die Bundesrepublik Deutschland*. Stuttgart: Kohlhammer

Wirth, Heike (2000): *Bildung, Klassenlage und Partnerwahl. Eine empirische Analyse zum Wandel der bildungs- und klassenspezifischen Heiratsbeziehungen*. Opladen: Leske + Budrich