Analysing intergenerational transmissions: From social mobility to social reproduction

Steffen Hillmert

Abstract

Social mobility research starts conventionally from the children's generation and looks at group-specific individual life chances. However, an immediate interpretation of these results as measures of social reproduction is often misleading. This paper demonstrates the usefulness of a related but alternative approach which looks at intergenerational links from the perspective of the parents' generation. It asks about the consequences of social inequality in this generation for the following generation(s). This includes questions of how the parental 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 attaining particular social positions. As an empirical example, the paper describes patterns of educational reproduction in (West) Germany during the mid- and late 20th century. Simulations allow assessing the relative importance of various partial processes of social reproduction. A large proportion of the observed levels of educational reproduction can be attributed to family-related processes such as union formation. Drawing together analyses from various areas, the paper combines questions of social mobility research with a demographic perspective and broadens the analytical basis of inequality research for systematic comparative research.

Keywords: Social reproduction; social inequality; social mobility; education; intergenerational transmission; simulation

Analysing intergenerational transmissions: From social mobility to social reproduction

Sociological analyses of intergenerational social mobility and reproduction have always stressed the importance of the family of origin for the creation and transmission of social inequality. For example, educational and occupational opportunities of children decisively depend on family background and the social situation of the parents. In this context, one often speaks of a social "inheritance" of status. Characteristics relevant for social inequality are transmitted from parents to children. This happens through biological (genetic) as well as social processes, in particular, learning within the family environment. In addition, the social situation of the family and its economic, cultural and social "capital" (Bourdieu, 1986a) define specific chances for the children – regarding in particular institutionalised forms of education, learning and development. Moreover, there is the direct transfer of resources by donations or inheritance, particularly in the case of economic capital. Conceptually, it is important that both parents are involved in the transfer of characteristics relevant for social inequality. Hence, the *composition* of the parental context becomes crucially important for the situation of the children. While the biological definition of the two parents is unequivocal, there is much greater variation in social terms – especially along the life course.

While intergenerational social transmission takes considerable time and may stretch across a number of generations, conventional studies of social reproduction are often rather historical snapshots and characterised by typical restrictions. They mostly focus on estimating the *effects* of social origin characteristics on the attainment of the children. Such investigations yield important insights into the process of intergenerational status transmission; however, other, chronologically preceding aspects which are conditions for this transmission often remain out of sight. This applies to the actual distribution of the social origin indicators at the level of families and to the *causes* of this distribution. If one is interested from a social-structural perspective in the active *reproduction* of education or social status across generations, additional questions arise: Who of a generation of (potential) parents does actually have children at all, how many children do parents have and when do they have them? This also depends on social conditions. One may ask whether

and how these additional processes are associated with well-known inequalities like social inequality in education or, in other words, how these inequalities are related to family structures and the population development.

This paper looks at the role of the family in the process of the intergenerational transmission of social inequality. It follows previous studies when describing origin-related social inequalities, but also accounts for the mentioned restrictions by investigating central family-related aspects in intergenerational social reproduction. Apart from presenting selected empirical results the aim is to demonstrate the broader conceptual possibilities of an inequality-related research that incorporates family dynamics. Such an approach may provide the basis for comparative research which builds upon, but also reaches beyond conventional social mobility research. After outlining the fundamental conceptual issues, the theoretical foundations of the basic mechanisms of intergenerational social reproduction are concisely reviewed. The following section discusses analytical options of the social reproduction approach. These steps are empirically illustrated using intergenerational *educational* reproduction in (West) Germany as an example. The paper concludes with a brief discussion of implications for comparative research.

Conceptual perspectives

Questions of social mobility and social reproduction have always been in the centre of sociological analyses. According to Sorokin (1959), *social mobility* can be defined as the movement of individuals or social units among the social positions in a society which form structures of social inequality. Social mobility is seen as a consequence of both individual efforts and structural change; it is also regarded as an indicator of the individual or group-related stability of social advantage and disadvantage. An underlying assumption of mobility research is that the permanence or transience in holding social positions also influences the social definition of identities and interests. In this sense social mobility can be understood as a process mediating between social structure, individual action and motivation. Social mobility has also important effects on social integration in a society. From a liberal perspective, social mobility helps to stabilise the political order. It can legitimise social class and status inequalities, in particular, if it

is associated with meritocratic principles. On the other hand, however, it can also reduce social class identification and the potential of collective class action. In view of the possibility of (upward) mobility, collective action tends to be given up in favour of individual solutions (Blau and Duncan, 1967; Erikson and Goldthorpe, 1992).

Along with theoretical considerations, there is a long tradition of mainly descriptive research looking at the actual levels and patterns of mobility. Research of this kind looks at both *intra-generational* mobility, i.e. social mobility within individual life courses, and *inter-generational* mobility, i.e. social mobility between the different generations of a family. In most cases this means that socio-economic positions are compared between parents and their children. According to the systematisation by Ganzeboom, Treiman and Ultee (1991), thematically broadly defined socio-structural studies were succeeded by more specific analyses estimating the role of social background in the process of status attainment, before models of intergenerational mobility tables dominated the scene (see also Treiman and Ganzeboom, 2000). Given the temporal distance between the generations, the analysis of intergenerational mobility is necessarily associated with a long-term perspective. Social mobility has been analysed with regard to both historical trends and international comparisons (e.g., Featherman and Hauser, 1978; Erikson and Goldthorpe, 1992; Breen, 2004).

In probably most studies on the intergenerational transmission of social inequality, the term *social reproduction* is used to denote a strong association between the social positions of different generations – in a way as a counter-concept to social mobility. Alternatively, however, two paradigms of intergenerational inequality research can be distinguished; in one of these the term gets a specific meaning. They could be labelled as (1) "origin-specific chances" and (2) "total social reproduction".

(1) Analyses of origin-specific chances take the *children's generation* as a starting point. For example, occupational attainment is compared among persons with regard to their *social background*, i.e. to the status of their parents. Regarding the individuals in the analysis, the question asked is essentially: "Where do they come from?" This is by far the more frequent

analytical approach. It also corresponds to the modern idea of individual life courses. It puts life chances of the children into the centre of attention and it can be related to individual rights; if necessary, it can also be used to discuss possible policy interventions. However, this analytical approach is essentially concerned with *conditional* origin-specific chances. They are conditional on the formation of the origin context as well as on the very existence of the children whose life situation is analysed. If one is interested in the analytical questions of intergenerational *social reproduction* in societies, it appears that an immediate interpretation of the conventional results as the overall extent of such reproduction is often misleading (Duncan, 1966; Sakamoto and Powers, 2005).

(2) An alternative approach – rooted in traditional concepts of demography (Mackenroth, 1953; Matras, 1967) and in recent years mainly inspired by the work of Mare (1997) and colleagues – looks at intergenerational associations from the *perspective of the parental generation* and asks about the consequences for the following generation(s): "Where do they go?" This includes questions of how the origin context *originates*, whether there are *at all* children descending from a particular relationship, *how many* children and *when* they are born. Finally there is the important aspect of the relative social chances of these children. While the parents of a certain cohort of children will represent a wide spectrum of birth cohorts, an analysis from the parental perspective will normally start with a particular cohort of individuals and then look at the social positions of their descendants in the following generations. When the natural population process is included, conceptual limitations of social mobility analyses which result from the conventional conditioning on the children can be overcome. In order to adequately describe the path of social status transmission from one generation to the next, it should be distinguished between at least three *partial processes* in the process of intergenerational social reproduction (cf. Maralani and Mare, 2005): socially selective partner choice, socially selective fertility, and socially selective status attainment. In both conceptual and empirical regards, it is suitable to start from individuals and to model their partner choices and fertility behaviour.

An analytical view on intergenerational social reproduction follows a number of steps:
● Individuals in the (potential) parents' generation need to be located within a *space of social*

inequality, defined by, e.g., occupational status or education (the *social origin* from the perspective of the next generation)

● On the basis of this classification, socially *selective partner choice* and the formation of households and parental contexts can be studied. This includes essentially two questions: Who has a partner at all? And who marries whom?

● Conditional on – among other factors – the results of this union formation, socially *selective fertility* can be observed.

● Conditional on these mechanisms is finally socially *selective status attainment* of the members of the children's generation. From the point of view of the parents' generation this result can be called *social destination*. Again, individuals are positioned within a common space of social inequality.

In reality, the process of intergenerational social reproduction is more complicated. In particular, the part of the individual status acquisition can be further differentiated. First, there is the acquisition of qualifications, and second, there are returns in the labour market from these qualifications. Again, educational attainment plays the dominant role. Nevertheless, the three steps form the simplest model connecting individuals of two successive generations, thus describing an entire cycle of intergenerational reproduction. This cycle can be seamlessly extended across more than two generations, accounting for the fact that the social reproduction between two generations is embedded in a long-term "stream of reproduction" which has no definite beginning or end. In our simplified version, effects of mortality are neglected. The model serves first of all as a specification of phenomena that are appropriate for explanatory models, not as a causal model of explanation itself.

Such an analytical approach is based conceptually on ideas of life course research. Areas of life are inter-dependent and life courses are embedded in longer-term generational relations and a number of relevant institutional contexts (Elder, 1985; Mayer, 2009). A comprehensive approach therefore needs to draw upon research from a number of research fields; given the restricted scope of this paper, such a summary has to be selective. Moreover, the following empirical analyses simplify the life-course dimension considerably by neglecting information on the timing

of life events (marriages, births, attainment of qualifications, etc.) and sequential information (e.g., the sequence of successive partners).[1] Even in such a simplified form, however, the social reproduction approach is able to cover much broader range of selective social mechanisms than conventional studies that analyse origin-specific chances. Figure 1 illustrates this fact.

- Fig. 1 here -

While conventional approaches start from individual children and look for their social origin, i.e. their parents' (or parent's) social status, as a determinant of individual life chances, the social reproduction approach starts from individual (potential) parents and looks at both their union formation and fertility before turning to the life chances of their children. This means that there is relevant variation among origin contexts as well as among offspring; in particular, persons who remain childless are represented in the sample. This is obviously not the case if information about the parental generation is collected indirectly from the children's generation. The intention of the social reproduction approach is to study how children with certain levels of attainment are "generated" from one generation to another. Rates of intergenerational reproduction in this sense are relevant for a better historical understanding of social dynamics in general and the stability of social collectivities in society in particular.

Theoretical background

While a large part of the more recent research on social mobility is descriptive, there has also been a long-term tradition of explanatory approaches focusing on individual mobility and collective mobility patterns. Social mobility research has concentrated on two central subjects, occupational and marriage mobility, whereby marriage mobility has been traditionally seen as a possible strategy for women to compensate for missing opportunities for occupational upward moves (Geißler, 2002). An important conceptual differentiation is between *absolute* and *relative* mobility. Absolute mobility rates, looking at instances of mobility in general, can be strongly influenced by structural change as expressed by the "marginal distributions" of social positions at any point in time. As a result of this development, often a majority of individuals are socially

mobile. This kind of mobility is often regarded as involuntary, or an action-based theoretical explanation of it is skipped altogether. Relative mobility rates – also called *social fluidity* – describe the relative chances to which people with particular origin positions reach particular destinations. Comparing different groups in this regard, they represent the degree of "social openness" within a society. In action-based theoretical explanations for intergenerational mobility or its absence, the dominant assumption is the motive of intergenerational status preservation – in particular with regard to *counter mobility* found in transient situations of intergenerational status inconsistency (Goldthorpe, Llewellyn and Payne, 1987). However, there are also typical intentions of upward social mobility. In regard to the relevant mechanisms, social mobility must be understood as being accomplished by intervening processes. Again, this applies in particular to educational attainment.

The theoretical basis of *social reproduction* is even more diverse. This is not least due to its mediating position between sociological and demographic perspectives; so far they have not led to specific hypotheses about the internal structure of social reproductive processes. In a broad sense, a similar emphasis on absolute quantities in selective reproduction can be found in biological theories of evolutionary optimisation which relate parental investments and reproductive success not only to the immediate descendants, but also to relatives ("inclusive fitness"; cf. Hamilton, 1964). In social science, materialist approaches construct a close connection between the relations of social inequality in a society and the degree of intergenerational transmission of resources within families (Bowles and Gintis, 2002). In an ethnological perspective (Bourdieu, 1976) it becomes clear that marriage strategies can be explicitly aimed at the reproduction of social structures, and also for modern societies, adequate marriage and occupational investments can be regarded as compensatory strategies of status preservation that actors are more or less conscious about (cf. Bourdieu, 1986b). As a contrast, one could follow Lipset and Zetterberg's (1959) thesis of the similar and generally increasing social openness of modern societies which expresses itself in both social heterogamy, i.e. diverse marriage patterns, and increasing levels of intergenerational social mobility. Apart from that, inherent statistical connections between mobility patterns and opportunity structures of partner choice have repeatedly been pointed out (Collins, 1986).

Following theories of action, two essential questions which go beyond the single partial processes are: First, are the relevant decisions primarily a result of personal criteria or do they represent more or less specifically defined collectivities ("classes for itself")? Second, do the relevant partial processes interact "behind the backs" of individuals and families[2] or is there a general logic of action for social *reproduction* in the sense of a conscious combination of several partial processes? These questions have hardly been solved yet. In theoretical regards it is far from clear whether the relevant decisions are made separately for the different domains of life and with specific rationalities or whether there is a general logic of action in social and educational reproduction, which could also provide the basis for actor-related explanations. At the moment, it is often even difficult to find clear explananda of social reproduction. Each of the specified partial processes – partner choice, fertility, and educational or status attainment – has been documented in detail, but the interaction of these processes has so far only insufficiently been analysed.

(1) Status attainment, educational inequality and family structures: The analysis of occupational status acquisition as a function of parental status and educational attainment (cf. Blau and Duncan, 1967) has developed into a prominent field of inequality research. In modern societies formal education has become the most important mechanism of the (conditional) status transmission between the generations. There is a close connection between, on the one hand, unequal access to education and educational attainment and, on the other hand, educational consequences in the labour market and in other areas of life. The German labour market in particular is structured by formal educational qualifications, and this includes high risks of exclusion for the unqualified. Returns to education and training regarding positions in the labour market have been remarkably stable during the last decades. In spite of educational expansion this applies in particular to academic training (Müller, 1998; Hillmert, 2002; Becker and Hadjar, 2009). The degree of the structuration of life courses by social origin and education has rather increased in the post-war period (Mayer and Blossfeld, 1990). Intergenerational educational mobility has therefore itself become a relevant topic for social mobility research, and in the following, we concentrate on educational reproduction. Research on selective educational

opportunities in connection with social background – education, income, occupational status of the parents – forms the core of educational sociology. Educational opportunities are measured by competence acquisition as well as educational participation, and, above all, as attainment of certain educational qualifications. For (West) Germany as well as for many other industrial countries empirical studies have found reduced inequalities in the long run, but they have remained on a high level (Breen and Jonsson, 2005; Pfeffer, 2008; Breen, Luijkx, Müller and Pollak, 2010). Such origin-related inequalities can be attributed to a number of factors. An important conceptual distinction for a life-course oriented analysis is between primary and secondary effects with regard to transitions in educational careers (Boudon, 1974). While primary effects refer to the conditions acquired up to certain transitions – in particular cognitive abilities and competencies – secondary effects refer to selective decisions associated with these transitions. In theoretical terms, this reflects the socialisation function of the family including its cultural resources (De Graaf, De Graaf and Kraaykamp, 2000) as well as family decisions concerning important educational transitions. Action-theoretical models of decisions have once again stressed the motive of labour-market returns to education and intergenerational status preservation (cf. Breen and Goldthorpe, 1997; Hillmert and Jacob, 2003; Stocké, 2007). Educational decisions must be related to specific institutional contexts which define the respective times and alternatives of decision (Hillmert, 2007). "Discriminating" institutional selection processes may also play a role (Bourdieu and Passeron, 1977). Gender differences in educational behaviour form another important dimension of inequality. Traditional educational disadvantages of girls have turned into relative advantages since the 1980s – at least with regard to school education. This development is valid for most modern societies; the causes for this development, however, are not entirely clear (Buchmann, DiPrete and McDaniel, 2008). In the 20th century, effects of social background have developed for both genders in a similar manner (Breen et al., 2010). Incomplete families – in the sense of an at least temporary absence of one or both parents – are another aspect of the role of social origin and family structures for educational attainment. Studies have repeatedly shown better educational opportunities for children who grow up with both (natural) parents. This is also true in comparison with step families. A large part of the effects can obviously be attributed to a lack of resources; however, the problems of causal conclusions are increasingly stressed (Francesconi, Jenkins and Siedler, 2010). The role of

siblings in educational attainment has also been thoroughly analysed. Sibling effects on education show up with regard to the number, the age and the gender of siblings and a child's own position in the order of birth. Typical explanations for (negative) sibling effects either point to cognitive influences or to family resources and their sharing among more or less children. Again, however, there is increasing doubt about the causality of the described effects (Steelman, Powell, Werum, and Carter, 2002; Jæger, 2009).

(2) Formation of the parental context: The formation of parental contexts can also be described with reference to socio-structural characteristics like education. An important type of structural effects concerns the "marriage market" and the group-specific formation of marriages and partnerships. This includes questions of whether persons marry at all, and if so, who marries whom. The cultural capital of the family of origin influences not only educational attainment, but also marital success. Just like educational decisions, marriage behaviour can be interpreted as an expression of strategies of status preservation (DiMaggio and Mohr, 1985). Relevant is in particular the phenomenon of *social homogamy*, i.e. the fact that individuals with similar educational or status background tend to join as (marriage) partners. For social inequality this means that the individual-level distribution of resources is reproduced on the level of families and households. Relative social advantage and disadvantage concentrate there even stronger. In statistical terms, education has gained importance as a means of homogamy during the 20th century, and this is probably also true for education as a criterion of individual partner choices. Patterns of homogamy can be explained by typical preferences, opportunity structures created by the educational system and the growing labour-market integration of women, which has been accompanied by parallel changes in education and social roles (Blossfeld, 2009). However, the exact historical trends during the last decades are not exactly clear and also depend on the actual operationalisation (Blossfeld and Timm, 2003).

(3) Selective fertility: Particularly relevant for the aspect of social *reproduction* is the fact of socially selective fertility. A negative association between education and fertility can be seen in West Germany (Kreyenfeld and Konietzka, 2008) and many other countries (Martin, 1995). In contrast to classical assumptions of Human Capital Theory (Becker, 1973), however, this is to a

large extent the effect of a procrastination of family formation during times of vocational training or higher education (cf. Blossfeld and Huinink, 1991). It can also be expected that the relative instrumental "value of children" for achieving valued goals – in emotional, economic, and normative respect – is different for various socio-economic groups (Hoffman and Hoffman, 1973). The analysis of education-specific fertility requires again that both partners are considered. Bargaining approaches highlight the fact that family decisions are not necessarily approached consensually (Corijn, Liefbroer and De Jong Gierveld, 1996). While parental status is an important determinant of fertility behaviour, this is also increasingly influenced by the specific family tradition net of their socio-economic position (Murphy and Wang, 2001).

Analysing social reproduction

If the process of social reproduction is conceptualised as the sum of partner choice, fertility and individual attainment, three analytical perspectives are of particular interest:

First, one can look for similarities or analogies in the determinants and the consequences of the different partial processes. Here previous research has shown that educational attainment – parental education and own education – has a determining influence on these partial processes. The social reproduction approach allows estimating combined or *total effects* of social origin that are mediated by the three partial processes. Adequate *dependent variables* for such effects are *relative chances* of attainment or *absolute levels* of group-specific reproduction.[3] Most studies restrict themselves to studying associations between two family generations, but empirical evidence on the long-term effects of (grand-)parental status suggests that it would be more adequate to include at least three generations (cf. Mare, 2011).[4] It also reminds of the fact that these social processes happen within a continuous stream of reproduction where children at some point tend to become parents.

Second, in the sense of a *decomposition* one can ask how important the different partial processes are for the overall result of social reproduction across generations and how this relative importance differs among various social contexts.

Third, there are possible connections or exchange relations ("trade-offs") between the partial relations (cf. Mare, 1997), which may also be used for an evaluation of the (net) effects of political interventions. Trade-offs between partial processes – e.g., "the lower fertility of a particular social category, the higher their educational investments in their (smaller number of) children" as predicted by economic theories of the family – can be expected to exist not only on the level of whole societies, but on various analytical levels. On the level of social groups, we compare the behaviour of educational and status groups in a number of dimensions. Such exchange relationships can also be expected on the micro level of individuals and families, as even within particular groups, specific trade-offs may be a result of individual choice. An action-based explanation of such trade-offs between partial processes implies an assumption of common goals or strategies like status preservation.

Comparative analyses do not really add another perspective, but they can rather use these three perspectives for a further extension. For example, the relative importance of the various partial processes may differ between countries even if overall results of social reproduction are similar, and it would be highly interesting to relate such differences to specific institutional configurations or welfare regimes. The analysis of trade-offs between various forms of social selectivity is by definition comparative. On the macro level of societies, we may observe such trade-offs in international and historical comparisons.

Previous empirical findings that follow a similar approach are mixed with regard to mutual relationships between the processes. Analyses on the United States have shown, for example, that the effects of differential fertility on educational mobility are relatively small (cf. Mare, 1997), while they have had a larger impact in rapidly changing developing countries (Mare and Maralani, 2006). In general, the role which the partial processes play for the whole process of status reproduction in a certain society depends on how significantly they vary among social groups, on how fast they change and how closely they are connected with each other. Given the likely inter-national variations in these features, the model provides a reasonable analytical basis for comparative research.

Some empirical illustrations

In the following, selected aspects of the social reproduction approach are illustrated by empirical evidence from (West) Germany. Questions of intergenerational *educational* reproduction during times of educational expansion are used as an example. Educational expansion in Germany during the 20th century was by no means a linear process (Mayer, Schnettler and Aisenbrey, 2009), but historical conditions that were full of change have been accompanied by a relatively high level of institutional stability. Since the Weimar Republic, the German education system or rather the education systems of the federal states have been characterised by structural characteristics like a universal elementary school, an essentially three-tier secondary school system, a broadly developed vocational training system and a system of higher education which has been differentiated only in the last decades (cf. also Cortina, Baumert, Leschinsky, Mayer and Trommer, 2008).

There is no comprehensive data source that contains all the information needed to analyse our specific research questions in quantitative terms. The empirical basis for the following analyses is therefore provided by a combined dataset created out of 14 different surveys conducted in West Germany between 1970 and 2008 (e.g., Buis, Mönkediek and Hillmert, 2011).[5] They include census and microcensus data and together cover most of the 20th century, represented by the cohorts born between 1895 and 1978. For the parental birth cohorts that were included in the following analyses (i.e., 1925 to 1950), the sample size is between 55,000 and 200,000 per annual cohort. The collected information was harmonised among all of the original data sources and combined into a unique dataset. The typical design of most surveys in Germany (as elsewhere) has been to take a cohort of children and collect information on the education of their parents, while a social reproduction approach would rather require data on parental cohorts and the education of their offspring. Therefore, our analysis follows a multi-stage procedure: In a first step, the partial processes are estimated separately. In a second step, these results are combined using a simulation technique in order to get an estimate of the overall process. In a third step, this combination is modified using 'counter-factual' assumptions to assess the relative importance of

the partial processes.

As socially selective partial processes we estimate from the empirical data: the distribution of education in a particular cohort of women; marriage and cohabitation rates; assortative mating of women with regard to education; fertility patterns of women conditional on partner choice; and educational attainment of the offspring conditional on the parental education and family size. Table A1 in the appendix gives an overview over the different statistical procedures that are used for estimating these conditional probabilities. The statistical combination of the estimated partial processes is achieved by a simulation. 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 – with various levels of educational attainment – of the 1925+ birth cohorts; it assigns to the individuals their most likely marital status, educational level of their partners, number, years of birth, gender and educational attainment of their children (if they have any children). The process of natural reproduction works in this model only through the population of women. The reason for this conceptual choice is that reliable data on fertility is normally only available for women. Men do, however, show up as spouses of the women and (married) fathers.

Our analyses abstract from the complexity of empirical life courses in a number of ways: We only consider (a maximum of) one partner per women, not a possible sequence of partners.[6] Deliberately only few grouping variables are used for all generations, in particular educational attainment. For the purposes of a "sophisticated description" (Goldthorpe 2007) the goal is the systematic description of social inheritance across generations and the identification of multiple effects and possible explananda, not the causal explanation of individual educational behaviour or the explanation of a maximum of variance. The central indicator of educational attainment refers to attained educational qualifications. Compared to occupational careers, these characteristics can be determined relatively early in the life course. This makes it easier to find longitudinal data with a sufficiently large observation window.

Figure 2 presents the distribution of educational attainment across birth cohorts since 1925. In this figure, five levels of educational attainment are distinguished: *Basic*: This category contains persons with lower or intermediate general secondary education (i.e., 'Volks-/Hauptschule' or 'Realschule' school leaving certificates) and no formal vocational training; *Lower vocational* consists of persons with lower-level general secondary education and non-academic vocational training; *Medium vocational* denotes a combination of intermediate general secondary qualifications and non-academic vocational training; *Upper secondary* includes both persons with only upper general secondary school qualifications ('Abitur') and persons with a combination of upper general secondary schooling and non-academic vocational training; *Higher* contains all persons who have attained a tertiary degree.

Consistent with previous research (cf. Cortina et al., 2008), a first historical phase was characterised by the expansion of vocational training – especially among females – while the proportions of the higher qualified ('upper secondary' and 'higher') grew significantly in the later cohorts. Educational expansion has in general been more distinctive for young women than young men. Females had much lower average levels of educational attainment than males in the older cohorts but improved their attainment within a short time. In the youngest birth cohorts, educational attainment of males and female has been nearly equal.

- Fig. 2 here -

Also in these data, educational attainment depends strongly on social (educational) background. We use odds ratios to describe the relative differences in children's educational attainment, depending on the mothers' level of education. For the sake of simplicity, only two educational categories – individuals with and without higher (i.e., tertiary) education – are distinguished. To evaluate the effects of differential fertility as well as educational inequality, we compare simulated distributions of education in different scenarios. The simulation based on the observed associations in the different model parts is used as the reference. In figure 3, social inequality in the empirical educational distributions of children is compared with suitable counterfactual distributions. These are calculated as the distributions that would, for example, result if the

partners met not according to the empirical patterns, but – at least with regard to education – by chance. Assuming statistical independence, these distributions are generated by multiplying the marginal distributions of the cohort-specific marriage contingency tables. Holding everything else constant, which educational attainment would then result for the children of a mother with a particular level of schooling, and how would inequality between groups change?

- Fig. 3 here -

The empirical development regarding origin-related inequality in the attainment of higher education – indicated by the solid line – follows a slightly downward trend when we compare among the offspring of mothers who were born between 1925 and 1950. However, inequality has remained on a high level. Comparisons with the counterfactual trends indicate that the level of inequality would have been much lower, if marital unions had been formed randomly with regard to education and not along educational boundaries. The values for the counterfactual educational distributions are clearly lower; they fluctuate, but on average they are about half as large as the corresponding empirical values. To express it differently: In these cases, approximately half of the empirically observed inequality between children of parents from two different educational groups can be attributed to the fact that these parents have chosen their partners not randomly, but that they chose *specific* (types of) partners who – according to their social position – have themselves typical influences on the education of the children. On the other hand, the level of inequality would have been much higher, if marriage patterns had been strictly oriented at the order of the partners' educational level. Hence, the empirical level of assortative mating has been between these two extremes. For the *relative chances* of education, fertility (timing) differences between educational groups have obviously had no large effect.

This leads to the final analyses of absolute intergenerational educational reproduction. The empirical level of this reproduction depends strongly on the specific measures that are used. An important alternative is, for example, whether reproduction is brought about by all children of a parent or whether reproduction is secured only by children of the same sex as the parent. The latter rates are necessarily much lower, but they can be informative about intergenerational

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continuities particularly in times with a high level of inequality between genders.

Additional analyses show that in all cohorts the low educated and particularly the higher educated had relatively high social reproduction rates, while the inter-mediate groups had much lower rates (numerical results not presented). Note that such differences between educational levels are not necessarily an indicator of social inequality between these groups. Given their different sizes, it is statistically more likely for some groups to have higher reproduction rates than for others, even if there is no relationship between origins and destinations. In fact, a number of statistical measures use this assumption of independence to derive a standard against which the empirical values can be assessed. When comparing these reference values with the empirical results, it becomes clear that all educational groups have a higher than random reproduction rate; but again, this applies in particular to the higher educated.

In figure 4, we select a specific rate of reproduction for a more detailed analysis. The example is the reproduction among the high qualified, i.e. we look at (all of) the children of mothers who have attained a higher level of education. The lines represent the degree to which the number of women with higher education is replaced in the next generation by their own children who attain themselves higher education. For the youngest parental cohorts, this information is probably 'right censored', as these cohorts had not completely finished their fertility period when the data was collected. This might explain the significant drop in the educational reproduction rates. More important than a thorough interpretation of this trend, however, is that we can use this example to look once again at the effect of counterfactual changes in family formation processes. It turns out that while random partnership formation tends to reduce educational reproduction rates, equal fertility has a counter-acting effect. This means that in real life – which is characterised by both social homogamy and selective fertility – the high reproduction rates of the high qualified are partly due to their specific marriage patterns, but are also limited by the relatively low fertility of this group. "Net educational reproduction rates" – i.e. the proportions to which a cohort of mothers is replaced by *daughters* with the same level of education – are approximately 50 percent of the respective proportions that include *all* children[7], and all trends across cohorts are very similar.

- Fig. 4 here -

Substantive interpretations of such counter-factual scenarios imply another type of assumptions. These additional assumptions concern the "demand side" of educational opportunities and the allocation process that determines which children attain which level of education. This is especially obvious if the counterfactual scenarios predict a change in the overall number of children, but it is already relevant if empirical and counterfactual situations differ with regard to the number of children from any specific background. In this case it is unlikely that the final counterfactual distribution will remain exactly the same as the empirical educational distribution, given the fact that quantities in various school tracks are normally not fixed and that allocation is (legally) supposed to be based on the ability and achievement of the actual population of students. But – given other well-known facts, competition and non-meritocratic inequality – how exactly does the allocation process work? In our example, we have used the simple assumption that also under counterfactual conditions the proportions of attainment in any of the groups remain constant. Alternative scenarios might assume, for example, that the school system expands or contracts completely exogenously and disproportionately on different levels. A thorough discussion of these scenarios, their theoretical foundations and their interactions with the scenarios of family formation mentioned above would be beyond the scope of this paper. It may be sufficient to state that both "demand side" and allocation can be modelled on the basis of plausible assumptions. Moreover, systematic considerations about these issues are important also for the interpretation of results from conventional mobility research, which all too often takes "structural change" as completely exogenous. At least in the context of education, this is a very strong assumption.

Summary and outlook

This paper has focused on historical trends in a single country, but it also proposes a research perspective that can serve as a promising basis for systematic (international) comparative research. The specific results serve as examples for the broad applications of such an approach.

They are valid in their specific historical context and are subject to a number of restrictions. Especially if causal questions are of interest, having even more detailed data on educational success, family structure and possible transmission mechanisms would be desirable. This includes measures of individual achievement as well as attempts to control unmeasured factors (on the role of inherited endowments cf. Behrman, Rosenzweig and Taubman, 1994). However, the available analyses already prove that family-related analyses of social and educational inequality offer still considerably broader possibilities than "only" a description of origin-related educational opportunities for children from certain cohorts. In particular long-term processes of social reproduction in society can be studied by taking the partial processes of partnership formation and fertility into account. Obviously a large proportion of the observed educational reproduction can be attributed to these partial processes which are essentially located outside the educational system – and which are therefore sensitive to interventions of educational policy only to a rather small degree. Therefore international comparisons which refer not only to (conditional) educational opportunities but to *all* selective processes of social reproduction are a consistent application of such an approach. Empirical comparisons could refer in particular to the relative contribution of the specified partial processes for the progression and the results of intergenerational educational and social reproduction; international differences in these relative contributions would be significant explananda. Given a sufficiently long series of cohorts, trends in these contributions and associations between them can themselves be modelled.

While this paper has been mainly concerned with the demographic aspects of social reproduction, there is still a more general point regarding data collection. Most empirical studies of intergenerational mobility are based on surveys in which individuals provide detailed information about themselves and basic information on their parents. Hence, much more is normally known about the destination generation than the origin generation, while obviously the parents rather than the children drive the reproduction process from one generation to another. It is therefore essential in surveys to ask respondents about relevant characteristics (education, occupation, etc) not only of their parents but also of their children.[8]

Focussing on the parents' generation might prove to be difficult because potential children of

recent cohorts, e.g. of parents born around 1965, are often too young to have attained relevant social characteristics. Generally speaking, the process of inter-generational reproduction extends considerably through time, in that sense linking various historical periods. This applies already for the reproduction process of a single parental cohort, so that the observation window for historical comparisons between various parental cohorts may become rather small even when long-term historical data is available.

Despite such practical limitations, conceptualizing social transmission from the parents' generation can always be used as a heuristic tool for conventional social mobility analyses: It makes research sensitive to underlying assumptions like the causes of "structural" changes. In general, however, a number of important theoretical questions are still open. It is worth noting that the partial processes relevant for social reproduction are analysed in great detail in different fields of sociology. It is therefore important to interpret the available results in close connection with one another, and this does not necessarily require a common statistical model.

Appendix

- Table A1 here -

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Fig. 1: Comparing two analytical perspectives on inter-generational social transmission
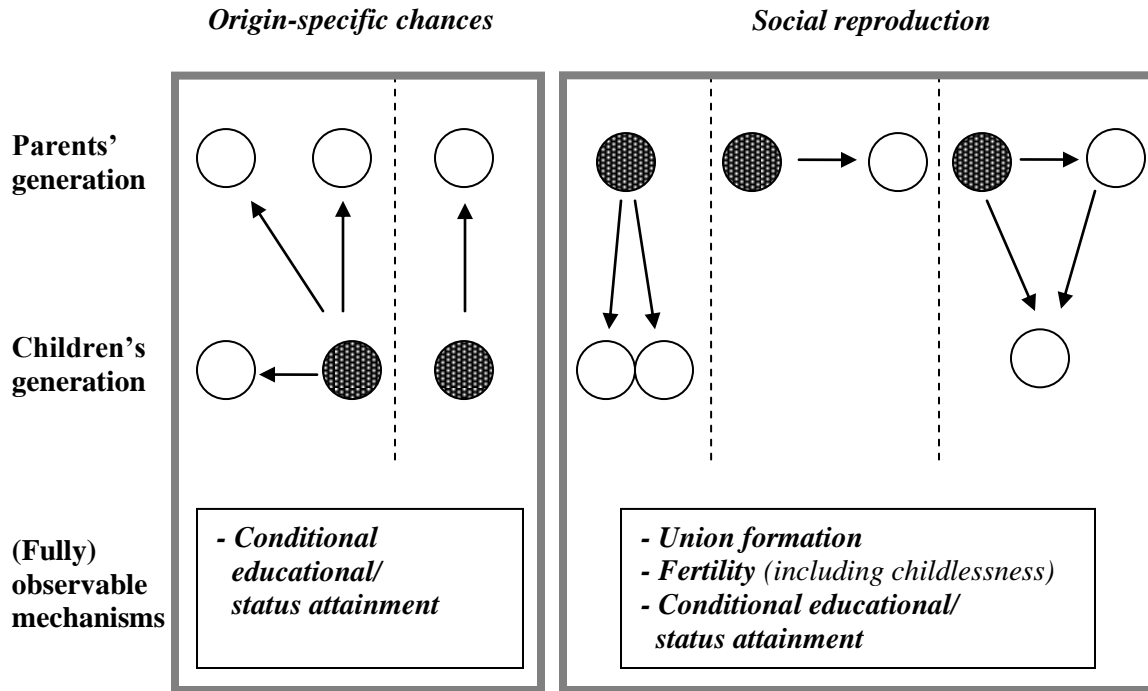

Displayed are examples of possible, typical family constellations. Individuals are represented by circles. Filled circles denote the primarily sampled individuals; arrows denote the direction of collecting information about family members.

Fig. 2: Educational attainment by sex and birth cohort (percentages), 1925-1975
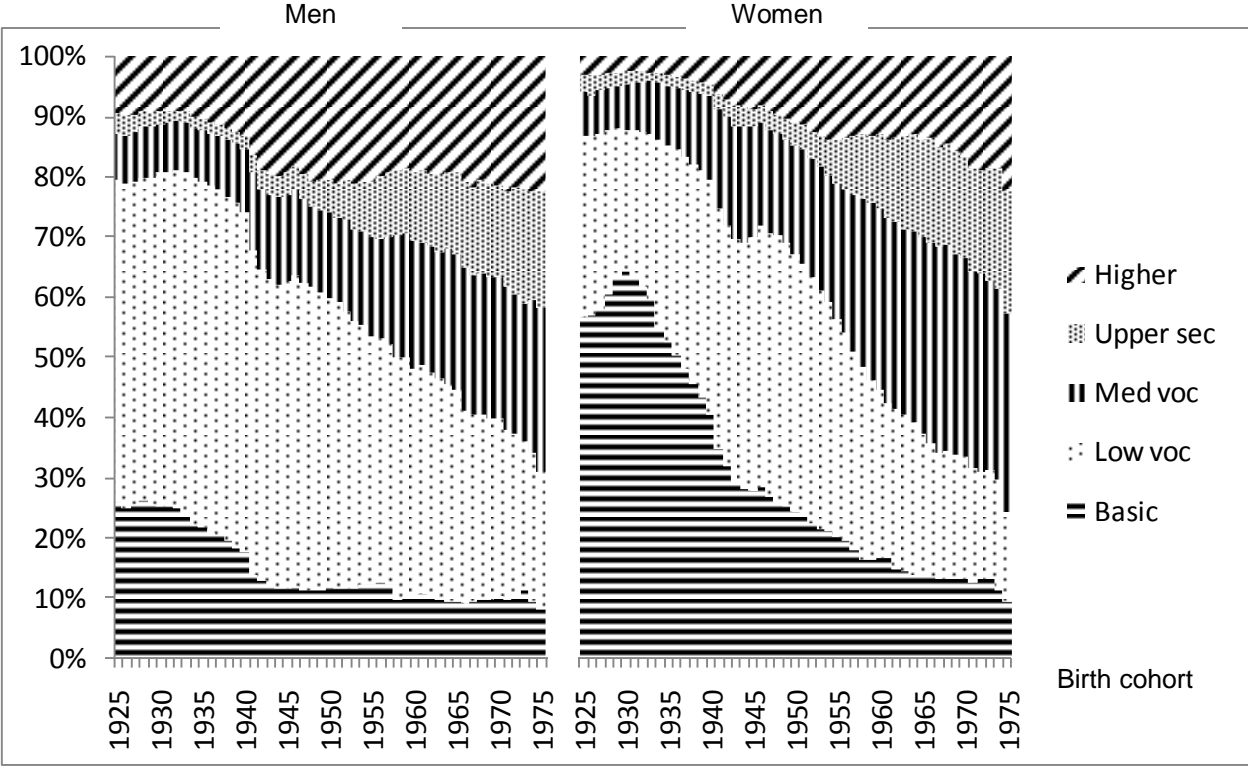
Data: Combined census and survey data, West Germany

Fig. 3: Trends in educational inequality (relative chances of attaining higher education) under different scenarios, by mother's birth cohort
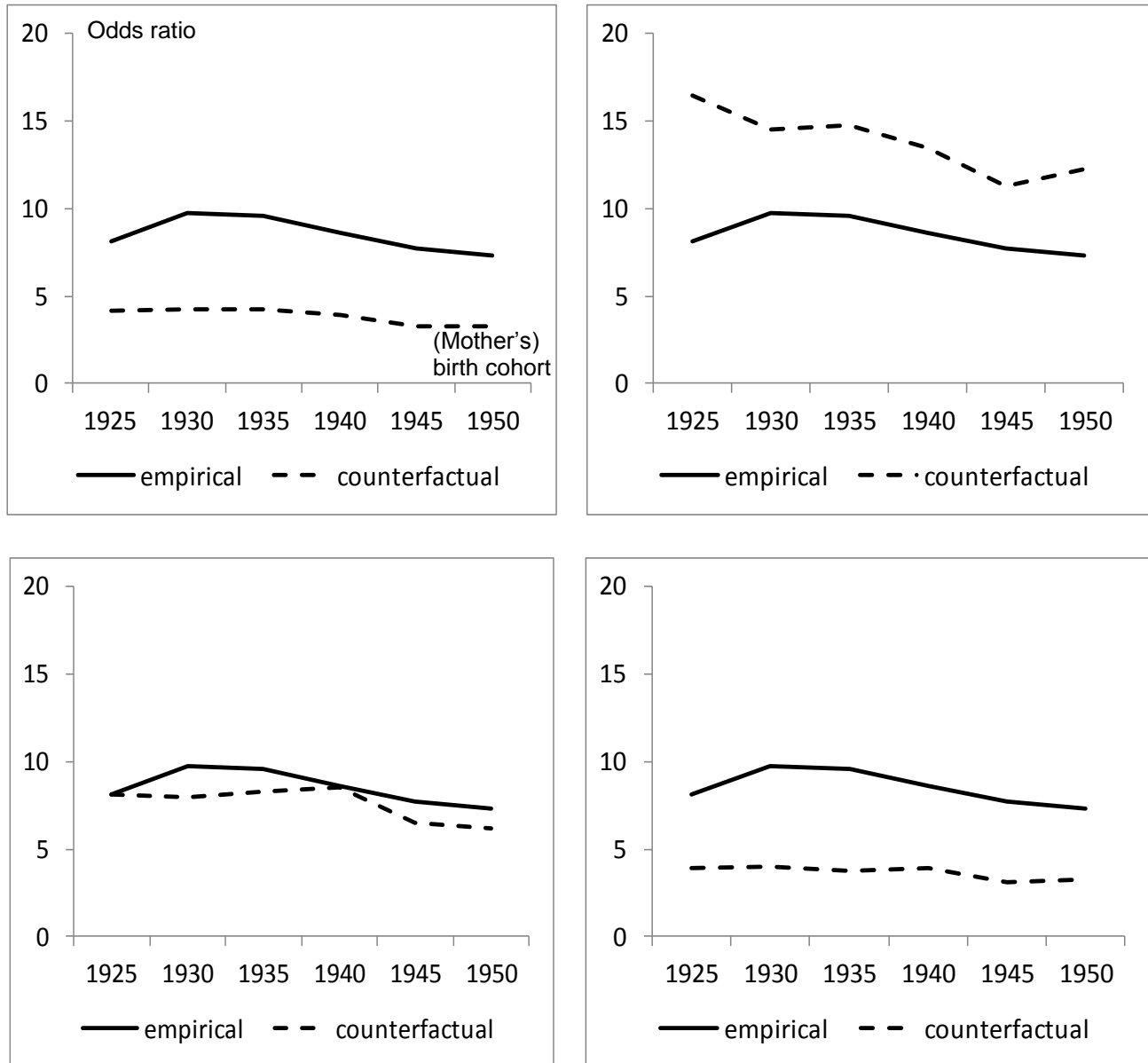

The lines represent relative chances (odds ratios) of attaining higher education vs. not attaining higher education. Compared are children of mothers with and without higher education.

Displayed are the empirical trend across birth cohorts and various counterfactual trends – clockwise starting with upper left diagram: marriage at random; marriages by educational rank order; equal fertility; both marriage at random and equal fertility.

Data: Combined census and survey data, West Germany

Fig. 4: Trends in absolute rates of educational reproduction among the higher educated under different scenarios, by mother's birth cohort
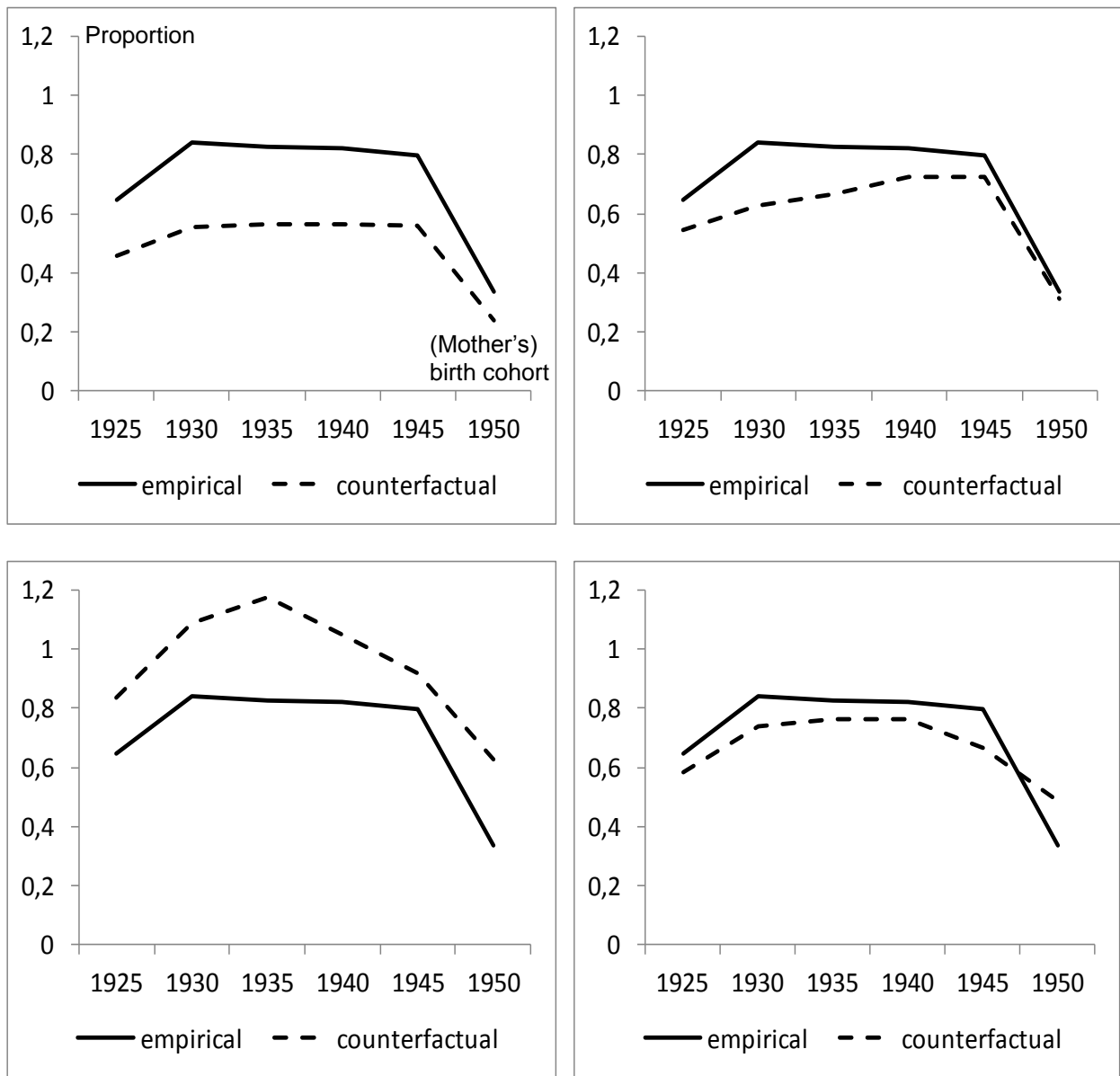
The lines represent the degree to which the number of women with higher education is replaced in the next generation by their own children who attain themselves higher education.

Displayed are the empirical trend across birth cohorts and various counterfactual trends – clockwise starting with upper left diagram: marriage at random; marriages by educational rank order; equal fertility; both marriage at random and equal fertility.

Data: Combined census and survey data, West Germany

Table A1: Summary of the statistical procedures applied in the example (estimation of the partial processes)

(Dependent) variable	Estimation method	Covariates
Respondent's (i.e., mother's) **education**	(Annual) row percentages of the conditional tables	Year of birth
Indicator of having a partner	(Annual) row percentages of the conditional tables	Year of birth, respondent's education
Partner's education	Multinomial logit model	Year of birth, respondent's education
Indicator of giving birth	Binary logit models	Respondent's age (15 to 49) and education, separately for each annual/biannual cohort
Children's education	Multinomial and binary logit models (sequential models)	Year of birth, respondent's education and (her) partner's education

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[1] In principle, it is not difficult to add this information to an analytical model of social reproduction, as it is based on individual information.

[2] In other words, this would mean that the social reproduction perspective is concerned (only) with a specific of *aggregation* of behaviour which is relevant for social reproduction but not necessarily intended to do so.

[3] When using information on the timing of the relevant life events, the *speed* of social reproduction may be an additional dependent variable.

[4] Including more than two generations opens up an additional perspective on the mechanisms of social reproduction with the question of how the inter-generational *transmission of (*demographic) *behaviour* – marriage patterns, fertility behaviour – contributes to social reproduction in the following generation.

[5] For an extended project description see http://www.socialreproduction.de

[6] Instability of marital unions is not necessarily a problem for this approach, if remarriages tend to happen along the same educational lines.

[7] This does not necessarily occur: The simulation model assumes equal probabilities for the birth of sons and daughters but educational opportunities may develop differently for young men and women.

[8] For a detailed consideration of parental characteristics in intergenerational transmission see the paper by Spenner (1981) who analyses the covariation between the requirements, routines and rewards of the occupations of both parents and children.