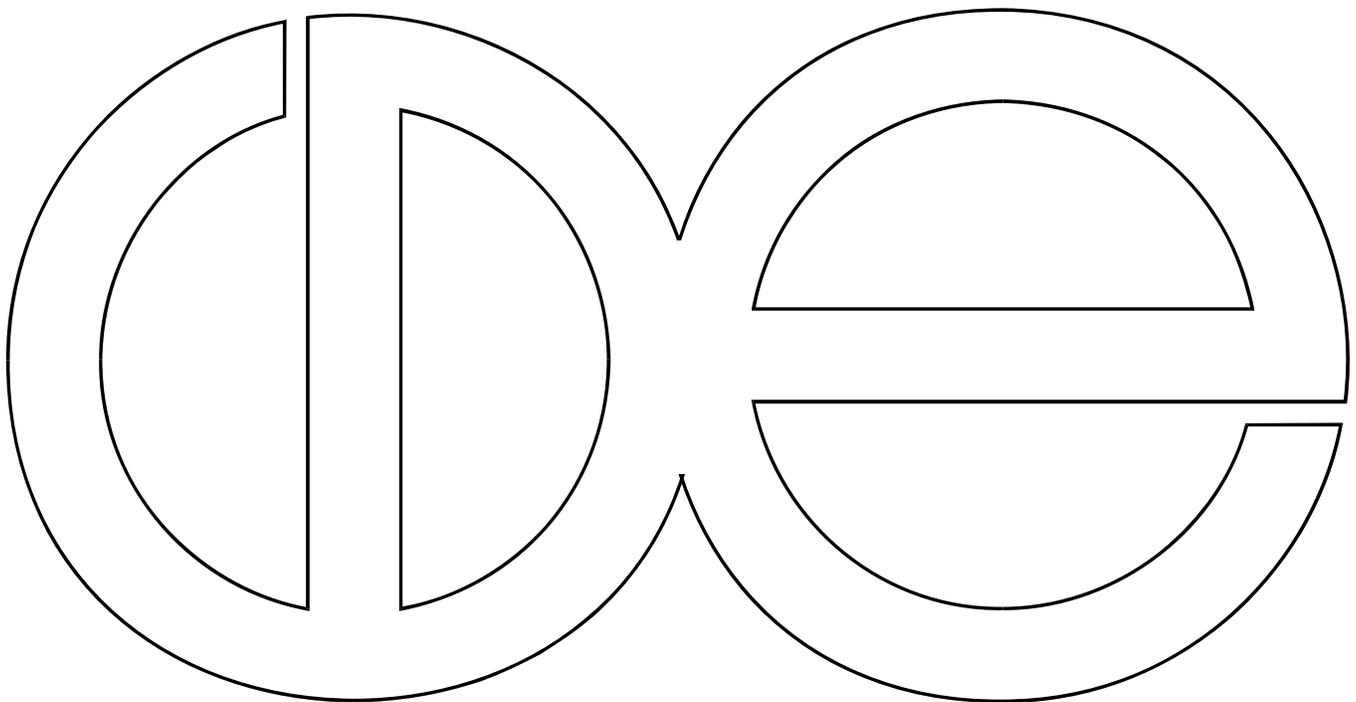


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**Intergenerational Educational Mobility in Comparative
Perspective: Persistent Inequality in Educational
Attainment and its Institutional Context**

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Intergenerational Educational Mobility in Comparative Perspective.

Persistent inequality in educational attainment and its institutional context

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Abstract

The provision of equal educational opportunities is a central political goal in all modern societies. Yet research repeatedly shows that educational opportunities continue to be distributed very unevenly in all countries. Therefore, the question is not *whether* family background and educational outcomes are related but to *what degree* they are. This latter question then invites a comparative perspective. That is, does social inequality in education differ across time, sex, or countries? If yes, which institutional and macro-structural characteristics can explain differences in educational inequality?

I conceptualize educational inequality as the association between individuals' and their parents' highest educational level attained. The cross-classification of these two attributes builds the basis for log-linear and log-multiplicative models of intergenerational mobility in educational attainment. Drawing on data from the "International Adult Literacy Survey" (IALS), I compare educational mobility processes across twenty industrialized nations.

The results show that educational mobility has remained stable across the 20th century and is largely sex-blind in virtually all countries. However, nations differ widely in the extent to which parents' education influences their children's educational attainment. One central contribution of this paper, then, is the ranking of nations along their degree of educational mobility. This measure of inequality in educational attainment is then shown to be associated with the institutional structure of the education system: Rigid systems with dead-end educational pathways are a hindrance to the equalization of educational opportunities, especially if the sorting of students occurs early in the educational career. Other institutional characteristics, like the degree of standardization, the prevalence of private schools, and the openness of the post-secondary sector do not appear to exert notable influences on educational mobility.

Introduction. Educational inequality in comparative perspective

The most basic and consistent finding in the stratification and education literature is the existence of strong social inequalities in educational outcomes. It is uncontroversial that individual ability is not the only determinant of children's educational success but that instead a multitude of social background characteristics affect children's educational careers. Sociologists typically study the effects of parental education, class, or socio-economic status on children's educational achievement (e.g., grade point averages, standardized test results, etc.) or attainment (e.g., completion of high school, college, or post-graduate educational degrees). In whichever way the influence of parental characteristics on educational success is conceptualized, it shows to be a strong and significant one. Thus, the question is not whether parental characteristics influence students' educational success but to what degree they do. This latter question then invites a comparative perspective: do social inequalities in education differ across time? Is the association between social background and educational success different for women and men? Does it differ across nations, and if yes, which nations are most successful in reducing the influence of family background on educational attainment? This paper addresses all of these questions. It thus ties in with major sociological comparative projects that compare educational attainment across a reasonably large number of countries (Treiman and Yip 1989; Shavit and Blossfeld 1993; Müller and Karle 1993; Erikson and Jonsson 1996a; Shavit, Arum and Gamoran 2007).

The starting point for this project is best described by Breen and Jonsson who in their review of the current state of the field conclude that "unambiguous conclusions about trends and ranking of countries have proven elusive. In addition, no strong evidence exists that explains intercountry differences." (2005: 223). I address exactly these deficits, first through a comprehensive description and comparison of inequality in educational attainment across twenty nations and the construction of the demanded ranking of nations, and second by relating the national degree of educational inequality to selected institutional and macro-structural characteristics. These efforts distinguish themselves from existing work in the following important ways:

I focus exclusively on the association between individuals' education and the education of their parents while disregarding further parental characteristics like

occupational status (available for some but not all countries in the data source used) or family income. Of course, the latter characteristics have been shown to exert an independent influence on individuals' educational attainment. As a matter of fact, an entire generation of stratification research, the status attainment research following Blau and Duncan's influential work (1967), has entertained this point. The approach taken here instead assesses the gross effect of parental education on their offspring's educational success.¹ The common empirical finding that among all other social background characteristics parental education normally also exerts the strongest direct effects on individuals' educational attainment should further underline the meaningfulness of this approach.

I assess educational inequality at a more comprehensive level than most existing comparative studies do. Instead of focusing on one or several single educational transition steps, the comprehensive view on educational attainment suggested here will capture a broad picture that takes inequalities at all educational levels into account. Ultimately, it also produces a global measure of national educational inequality that can serve as a meaningful dependent variable in the explanatory part of this analysis. Such broad look at educational inequality is accomplished by drawing on potent statistical methods for the cross-classification of parents' and their offspring's educational status (cf. methods section).

This paper draws on the "International Adult Literacy Survey" (IALS), a rich data set that pools data from twenty countries where identical surveys have been administered explicitly for comparative purposes. Despite its potential for comparative analyses the IALS has so far been underused in stratification research (but see Esping-Andersen 2004; Chevalier, Denny and McMahon 2003; Carbonaro 2000). The opportunity to include a variety of countries that so far have been excluded from the kind of systematic comparative work cited above is one of the major advantages in using this data set.

¹ Similarly, researchers have investigated the gross effects of parents' social class position on their offspring's educational attainment (cf. citations in footnote 4). However, when investigating gross effects of parental education, one could also interpret them as total or zero-order effects to the degree that other background characteristics like social class are temporally subsequent to and correlated with parental education.

Lastly, an integral part of this paper moves beyond the description of educational inequality and tries to explain its cross-national variance. It aims for a systematic empirical assessment of the effects of institutional features of the national education system as well as broad macro-structural characteristics of the larger social context. In the past such enterprise has been accomplished by the collaborative-comparative methodology exemplified in Shavit and Blossfeld's influential volume "Persistent Inequality" (see e.g. Shavit and Müller 1998; Arum and Müller 2004; Breen 2004; Shavit, Arum and Gamoran 2007). Combining in-depth assessments of the idiosyncratic history and context of single nations with a disciplined statistical and generalizing analysis across these nations holds great potential for bridging the commonly noted tension between variable-oriented and case-oriented comparative approaches (for a good overview of the competing paradigms and their defenders see the 1997 volume of *Comparative Social Research*). While this project inescapably leans towards the variable-oriented approach to compare as many as twenty nations it also capitalizes on some existing collaborative projects by drawing on the detailed narrative accounts supplied in single country chapters as well as the summarizing classifications provided by the respective editors. By virtue of addressing the question of how educational inequality is affected by institutional arrangements this project forms part of the most current "fourth generation" of comparative stratification research (Treiman and Ganzeboom 2000).

Theoretical background

For the theoretical explanation of the intergenerational association of educational status I focus on only those mechanisms that relate to the *direct* effects of parental education rather than its indirect effects through related social background characteristics. This section then provides the background for understanding the *causal* part of the intergenerational association in educational status. Despite this necessary narrowing of an extremely wide field of sociological explanations there remains a fair amount of different proposals as to how parents' education affects their children's educational outcomes. I hold the different mechanisms to be complementary rather than competing and therefore present them in form of an inventory list that I can later freely draw on for explaining cross-national variations in educational inequality. Based on Bidwell and Friedkin (1988)

I divide them into three broad categories: an organizational perspective, a resource perspective, and individual perspectives. Explanations that belong to the former two perspectives chiefly focus on characteristics of parents that directly impact their children's educational prospects. Explanations belonging to the individual perspective either stress individual decision-making of children and their parents or individual characteristics that are inherited from parents to children and influence children's chances of educational success.

Organizational perspective. Parents' own educational experience equips them with a certain degree of strategic knowledge about the determinants of success in school and the consequences of educational decisions for later educational outcomes. Such knowledge determines parents' ability to help their children successfully navigate through their educational careers. School systems leave many decisions which affect the odds of transferring to the next higher educational level to students and their parents, such as which courses to enroll in, whether to take qualifying examinations, or sometimes simply whether or what kind of education to enroll in at a given level (e.g., pre-school or vocational education). These educational decisions are likely to be made chiefly by parents at early stages of the schooling process and at least jointly by students and parents at later stages. But even then parents' own educational experience continues to be influential. A US study by Baker and Stevenson (1986) for example investigates the strategies used by mothers to manage their children's educational careers. They find that mothers who have completed post-secondary education are four times more likely than less-educated mothers to enroll their children in college-preparatory classes regardless of their child's prior achievement. Also, as illustrated for example by Deil-Amen and Rosenbaum (2003), the need for guidance through the educational maze is by no means restricted to early stages of schooling but also pertains to higher education where 'social know-how requirements' are an essential condition for student success.

Resource perspective. Parents not only differ in their knowledge of the organizational details of schooling but also in their knowledge of educational contents. Out-of-school learning being a substantial part of the learning process, higher educated parents may be able to offer practical help in school work to a greater degree than lower educated parents can. In this regard, the education of parents represents a genuine

educational resource for children. Other more tangible resources in addition to parental tutoring and homework assistance are educative or education-relevant materials like encyclopedias, quality newspapers, or simply books (see e.g. Teachman 1987). Those resources are also likely to be more readily available in higher educated households. A supportive and stimulating learning environment at home therefore should be expected to exert large effects on students' academic performance and ultimate educational attainment. Some support for this claim comes from a seasonal perspective on learning (Heyns 1978; Entwisle, Alexander and Olson 1997; Downey, Hippel and Broh 2004; Alexander, Entwisle and Olson 2007). This body of research has shown that growth in students' academic achievement is largely independent from social background while school is in session. Yet, the academic performance of advantaged and disadvantaged children sharply diverges when school is not in progress, for instance over the summer months. While disadvantaged children seem to lose ground in that period, children from more advantaged backgrounds in fact continue their academic growth even in subjects like mathematics. Such growth is likely due to the existence of educational resources at home (more than stimulating recreational summer activities) that highly educated parents are more likely to provide to their children.

Individual perspectives. Rational-choice theory proposes a model of individual action that follows the rational consideration of costs, utilities, and probabilities of action alternatives. The concept of rational educational choices is not new to the sociology of education (see Boudon 1974; Gambetta 1987) but it has recently regained some momentum thanks to new and more formal propositions (Erikson and Jonsson 1996b; Goldthorpe 1996; Breen and Goldthorpe 1997; Esser 1999). The basic idea however remains the same: children and parents make rational educational decisions based on the costs, utility, and success probability of educational alternatives. Social differentials can arise in any of these components, especially if we assume differential perceptions of each component. Breen and Goldthorpe (1997) additionally propose a specific maximization rule under which parents' aim is to ensure that their children attain at least the same status as they themselves hold. Such maximization strategy would directly explain the intergenerational correlation of educational status. It also follows that parents'

educational goals for their children are likely to translate into differences in the degree to which parents motivate, sustain, or restrain their children's educational ambitions.

A very different explanatory scheme that can also be counted as an individual perspective is cultural capital theory. Developed by Bourdieu (1973; 1996), it argues that highly educated parents equip their children with an understanding of the dominant culture and an ability to act within it (cultural capital) as well as a corresponding set of dispositions and perceptions (*habitus*). Both are rewarded in the school context and ultimately translate into educational success. Cultural capital explanations run the risk of being circular insofar as educational attainment is used as a proxy for cultural capital. Furthermore, when cultural capital is measured by indicators like the number of books at home, I believe that the less abstract concept of education-relevant resources presented above is more attractive. Nevertheless, cultural capital theory has inspired original findings of hitherto undetected mechanisms through which high status parents condition their children to a certain cultural behavior that facilitates their interactions in school (see Lareau 2003).

Lastly, and most contentious, it has been argued that differences in intellectual ability account for the intergenerational correlation of educational status. In its most radical form (Herrnstein and Murray 1994), this argument amounts to the claim that educational attainment is an accurate reflection of individual ability levels which are genetically transmitted from one generation to the next. While this argument has forcefully been contested elsewhere (e.g., Fischer et al. 1996; Hauser and Huang 1997), the cross-national analysis of educational inequality also yields some counterevidence to the radical form of this claim. With genetic mechanisms operating in the same way in all countries one would expect cross-national constancy in the intergenerational association of educational status if these were the only mechanisms at work. To the degree that we find significant variation across nations, it cannot be claimed that only individual ability differences would account for educational inequality.

Unlike the ability argument, all other proposed mechanisms allow cross-national variation of educational inequality. The importance of parents' knowledge of the organization of schooling (organizational perspective), the effects of educational resources at home (resource perspective), perceived probabilities of and costs of

education (rational choice perspective), and even the significance of cultural capital can be expected to depend on the institutional structure of education. The explanatory part of this paper will detail how the proposed mechanisms interact with specific institutional characteristics of national education systems.

Educational mobility defined. Methods, data, and measurement

The study of educational attainment has typically been entertained in a regression framework, specifically since Mare (1981), in the form of logistic models of educational transitions. This model replaced the linear ‘years of education’ approach thanks to two central methodological advances. Unlike OLS regressions of years of education it distinguishes temporal changes in the association between social background and school continuation probabilities from changes in the marginal distribution of schooling. As education has drastically expanded in virtually all nations throughout the 20th century (see e.g. Meyer et al. 1977) it is crucial to empirically account for these shifts when investigating social background effects. Second, the Mare model allows the assessment of background effects for each transition step separately. Doing this typically yields the finding of declining background effects across transitions (Mare 1981; Shavit and Blossfeld 1993). The model also corrects the erroneous linearity assumption of the year of education approach where, for instance, the completion of 12 instead of 11 years is assumed to have the same effect as the completion of 11 as compared to 10 years. Of course, graduation from high school as opposed to drop out from high school (in most countries equivalent to the further case) is much different from dropping out after 11th or 10th grade instead. So far largely unaffected by recent fundamental methodological critique,² the Mare model is a widely used tool for studying inequality in educational attainment and continues to be refined and modified (see Breen and Jonsson 2000; Hauser and Andrew 2006). In particular it seems that the Mare model has so far not been exposed to the kind of paradigmatic competition that Ganzeboom et al. (1991) note for

² Cameron and Heckman (1998) critique it for implying a myopic behavioral model (which should not disturb sociologists who believe in individual uncertainties about future returns to education), for arbitrary distributional assumptions, and the inability to solve unmeasured heterogeneity problems. Ordered logistic regression models which they propose as an adequate alternative to the Mare model have recently been applied by Hout (2007).

the general field of comparative studies of stratification, i.e., the competition between a status attainment versus a mobility table approach. This is especially astonishing as the mobility table approach to the intergenerational transmission of status has brought forward very potent comparative methods. As Erikson and Goldthorpe put it, they allow us to express “hypotheses on relative [mobility] rates - for example, concerning temporal stability or cross-national similarity - in a form in which they both have precise meaning and are readily available for empirical test” (1992: 54). I build on these central advantages by applying log-linear models to a cross-tabulation of respondents’ and their parents’ highest attained educational status.³ I thus re-conceptualize social inequality in education as processes of intergenerational mobility in educational attainment. High educational mobility corresponds to a low association between the educational status of parents and their offspring and accordingly to a low level of educational inequality. To my knowledge the literature counts only two examples where this approach has been applied before (Mare 1997; Vallet 2004).⁴ It offers the following methodological benefits.

Log-linear models control for changes in the marginal distribution of schooling, or what in mobility analyses is often called the separation of *relative* mobility from *structural* mobility (Hout 1983). This method thus also successfully accounts for the radical changes in the aggregate educational distribution across generations. Second, the focus on the final highest educational degree circumvents a problematic assumption of the Mare model: by modeling the odds of transfer dependent on the completion of the preceding educational level, the model presupposes a nested structure of educational transitions, i.e., one educational level has to be successfully completed before transition to the next level can take place. Reality can be much more complicated: some open education systems allow transfers to the next education level without completion of the

³ Parents’ highest educational level is determined by the highest educational degree of either the respondents’ father or mother. This decision is justified by the fact that the presented mechanisms underlying the transmission of parental status plausibly depend on the highest status of either parent. In 26% of the cases the highest status is held by the father, in 15% by the mother, and in 59% both parents possess the same educational degree - an impressive manifestation of educational homogeneity.

⁴ Mobility-table approaches that use cross-tabulations of father’s social class and offspring’s educational level attained, on the other hand, have been applied by a number of researchers affiliated with the CASMIN project (Müller and Karle 1993; Ishida, Müller and Ridge 1995; Marshall, Swift and Roberts 1997; some contributions to Erikson and Jonsson 1996a; Breen et al. 2005).

preceding level. For instance, England and Wales have traditionally provided ample opportunities to enter post-secondary secondary education for persons who did not complete secondary school but acquired qualifications while working (Kerckhoff and Trott 1993). Third, the log-linear approach allows a very comprehensive assessment of educational inequality in that it does not necessarily look at associations at selected levels of education (though this can be done through topological modeling, see Hauser 1978) but produces global measures of association across all categories of parental and offspring's status. Researchers who try to construct such aggregate measure of social inequality from transition models normally oppose the transition probabilities of a disadvantaged group of students with those of the most advantaged group. This is of course only a very partial picture of the associations between parental status and educational outcomes.

To sum up, like the logistic transition model, this approach successfully controls for cross-temporal changes in the marginal distribution of education; unlike the logistic transition model it does not discriminate between the different influences of a variety of social background factors at each transition step but instead aims at assessing the overall, aggregate structure of status transmission in education. We are able to take a look at the 'bigger picture' that the focus on single educational transitions might have concealed so far and also relate a global measure that adequately reflects this bigger picture to institutional and macro-structural features of the nations studied.

On the one hand, the data requirements for the sketched project are relatively mild: apart from standard demographic information like sex and age, there are only two pieces of information needed from respondents of a nationally representative sample of reasonable size: their highest educational degree and the highest educational degree attained by their parents. With enough effort one could gather such data from different existing national data sets. On the other hand, however, the cross-national comparison of this information is facilitated if the data stems from a one cooperative project in which national data are collected under common guidelines that ensure comparable data and measurement quality. The International Adult Literacy Survey (IALS) is one such project that fulfills this latter requirement. Under the leadership of the Organization for

Economic Co-operation and Development (OECD) twenty nations assessed adult literacy and its relationship to a number of social background and demographic characteristics. Each country that participated in this study applied a common set of survey questions to a large, nationally representative sample (ranging in size between 1,500 and 6,000) of its adult population (in most countries aged 16-65). Generally high data quality across all IALS countries has been ensured by common data collection and processing guidelines, for instance regarding necessary follow-up efforts to avoid non-response bias. The data collection took place between 1994 and 1998 with countries participating in different collection cycles: in 1994 Canada (English and French-speaking populations), Germany, Ireland, the Netherlands, Poland, Sweden, Switzerland (German and French-speaking populations), and the US; in 1996 Australia, Belgium (Flemish community), Great Britain, Northern Ireland, and New Zealand; and finally in 1998 Chile, the Czech Republic, Denmark, Finland, Hungary, Italy, Norway, Slovenia, and the Italian-speaking part of Switzerland.⁵

The analyses include individuals with complete information on their own and their parents' educational attainment.⁶ I further restrict the analyses to respondents aged

⁵ Some notes on the individual countries. *Australia*: data are not available to the broader research community and therefore not part of this analysis. *United Kingdom*: I pool the data from England and Wales but due to the low number of cases I have to exclude Scotland which would otherwise surely constitute an interesting comparative case on its own (see Raffe et al. 1999). Northern Ireland on the other hand can be analyzed separately as a different education system with a sufficient number of cases. *Switzerland*: the analyses presented apply only to the German-speaking part which constitutes more than 60% of the total Swiss population. A replication of the national analyses for the French- and Italian-speaking parts show no exception to the general patterns reported (results not shown, see also note to table 6). *Germany*: German respondents could have received their education in either the Federal Republic of Germany or the German Democratic Republic. The two states were obviously quite different in terms of their macroeconomic structure. Apart from some basic similarities, their education systems also differed in important aspects (see Below 2002). A rough but the only available proxy for identifying individuals who might have completed their education in the former German Democratic Republic is the information whether the respondent lived in the Eastern part of Germany at the time of the interview (1994). I exclude East Germans (23% of the total German sample) who - due to modest inner-German migration rates at that time - are most likely to have grown up in the German Democratic Republic. Including these cases nevertheless leaves my findings unaffected (results not reported).

⁶ Only in the case of New Zealand does this result in the exclusion of a large proportion of individuals (35%) who did not report their parents' educational status. This is because New Zealand was the only country that allowed respondents to answer the IALS questionnaire but not the additional background questionnaire. While New Zealand's data therefore have to be

26 to 65 at the time of the interview. The upper boundary is predetermined in most IALS countries and it is additionally imposed for some countries who have also interviewed older respondents in order to circumvent selection problems produced by differential mortality. The lower boundary ensures that individuals have attained their highest level of education.⁷ Lastly, I exclude immigrants who have acquired their highest educational degree before immigration.

For the reasons outlined above, ‘years of education’ has largely fallen into disgrace as a measure of educational attainment and been replaced by categorical classifications of educational degrees. Comparative research needs to rely on broad typologies of educational levels that meet the challenge of combining a diverse and nationally specific array of educational degrees into meaningful and cross-nationally equivalent educational categories. The most widely used educational typology for this purpose is the “International Standard Classification of Education” (ISCED) which was originally developed and has subsequently been updated by the UNESCO (1976; 1997). This scheme identifies three broad educational levels (see table 1): primary, secondary, and tertiary and within the latter two further distinguishes various stages.

[Table 1 about here]

The lower secondary level most often ends after grade eight or nine and in many nations coincides with the end of compulsory education. Only after its completion can students progress to the upper secondary level whose completion in turn is often required to access tertiary education. Tertiary level education that does not lead to a university degree

interpreted with some caution, they do not produce any kind of exceptional results that could be ascribed to the larger amount of missing information.

⁷ In only a very few cases this might still fail to capture the highest educational degree of individuals who are in the process of obtaining a post-secondary degree at the time of the interview. When asked about their current working situation, on average 1% of the respondents identified themselves as being a student or being in a work program (unfortunately, the survey did not distinguish between these two categories). The potential bias can therefore be expected to be very small. What is more, it would produce conservative estimates of the degree of intergenerational status transmission in education: the attainment of individuals who ultimately reach the highest possible educational status is (at best slightly) underestimated. As intergenerational status association is highest at the extremes of the status hierarchy (U-shape) we would thus underestimate the intergenerational persistence of educational status.

normally lasts at least two years and can either precede university education or be an alternative to it (which would again produce problems for a sequential transition model of educational attainment). For this analysis I merge ISCED categories 6 and 7 into one category of ‘university education’ as well as categories 0 and 1 into ‘education preceding the secondary level’. This decision is dictated by the structure of the Canadian data (where the categories are already collapsed in this way) but would also have been necessary due to cell scarcity in the cross-classifications of educational levels.

It should be apparent that the educational levels specified in the ISCED scheme are clearly hierarchically ordered. We should understand them as an “ordered series of categories broadly corresponding to the overall knowledge, skills and capabilities required of participants if they are to have a reasonable expectation of successfully completing the programs in these categories” (UNESCO 1997: p. 10). This hierarchy of “educational experiences” is one foundation for my assessment of inequality in educational opportunity. The question is whether individuals have equal opportunities to receive education of a certain degree of complexity. The ISCED scheme seems to be the best available measure to address this question for the IALS countries. Nevertheless, two important considerations have to be added.

First, educational inequality can manifest itself not only in regards to the level but also the kind of education, as for example the academically versus vocationally oriented education on the upper secondary level as well as the tertiary level. The updated version of the ISCED scheme which was not available at the time of the first two IALS data collection cycles incorporates this distinction. Another classification scheme that was developed in direct response to ISCED’s earlier failure to capture horizontal differences within educational levels is the CASMIN educational classification (König, Lüttinger and Müller 1988; Müller et al. 1989). So far, the CASMIN scheme has been applied to only a limited number of countries and many projects drawing on it were forced to collapse its horizontal distinctions due to sample size restrictions. Nevertheless, the CASMIN scheme and its updated versions (see Brauns, Scherer and Steinmann 2003; Kerckhoff, Ezell and Brown 2002) hold promise for future research. Whether the consideration of horizontal differences in education alters the results presented here is a question of substantive interest as it has been argued that privileged groups rely upon horizontally differentiated

educational degrees to ensure the perpetuation of their relative advantage in spite of the massive growth in educational participation (see e.g. Blossfeld and Shavit 1993; Lucas 2001). While the replication of the presented analyses with the latest CASMIN data (Breen 2004) is worthwhile and welcome, the focus of this paper lies exclusively on the vertical dimension of the educational status hierarchy.

Second, educational content is only *one* possible criterion for judging the value of different educational levels. A genuine stratification perspective on educational opportunities suggests another one, namely the labor-market consequences associated with different educational degrees. Different levels of educational attainment correlate with different labor market outcomes such as income or occupational prestige.⁸ If the labor market returns to specific educational levels differ across nations or across time it can be argued that, in order to ensure true comparability, comparative studies of educational attainment should ‘scale’ educational categories according to the relative returns they yield (Hoffmeyer-Zlotnik 2003). The question whether we should expect such cross-national or cross-temporal variation in the returns to specific educational levels cannot be answered from a theoretical perspective. If we believe - along the lines of human capital theory - that educational credentials reflect labor-market relevant skills and also see it as probable that the education-skill link differs across place and time, we do expect such variation. If we are convinced - like screening or queuing theorists are - that the labor market value of an educational degree is chiefly determined by its relative prevalence, i.e., if we see education as a positional good (Hirsch 1976), variation in returns to education can simply be accounted for by the aggregate distribution of educational levels (and therefore taken care of in the statistical model rather than the measurement). A valid empirical answer to the question of whether varying returns to education complicate comparative analyses goes beyond the scope of this paper. As outlined above, the labor market returns to education are only one component of my understanding of educational opportunities. Again, inequalities in the opportunity to

⁸ The size of these correlations has been shown to depend on the choice of the measure of educational categories (Braun and Müller 1997). There is evidence that in this regard the CASMIN classification is more accurate for some European nations but inferior to the ISCED scheme for the US (Kerckhoff, Ezell and Brown 2002). Evidence for a larger number of countries is lacking.

attain a given level of education are per se inequalities in opportunity irrespective of the role of education in conferring labor market advantage or disadvantage.

Stability of educational mobility across time

Shavit and Blossfeld's book *Persistent Inequality* (1993) concludes, as the title suggests, that the association between family background and educational attainment has remained stable over the 20th century for all countries included in their analysis except for Sweden and the Netherlands. Shavit/Arum/Gamoran's comparative study (2007) generally mirrors this finding for the case of post-secondary education. However, the finding of persistent inequality has also been contested and a decreasing effect of social class background on educational attainment has recently been reported for various countries (Breen et al. 2005). It should be noted, however, that this is only at first sight a real controversy. While Shavit and Blossfeld look at inequalities in transition rates by parental education and parental occupational status, Breen et al. assess educational inequality in a log-linear framework with one background characteristic only: social class. By studying social class differences in education, their findings cannot be taken to support the idea that educational opportunities have been equalized in a broad sense. Shavit and Blossfeld correctly argue that we should interpret inequality of educational opportunity to be declining only where *both* parental occupation and parental education show declining effects (see their table 1.2, p. 16). As long as Breen et al's findings are not complemented by a documentation of declining effects of parental education, we shall refrain from claiming an equalization of educational opportunities in the broad meaning of the term (see also Shavit, Yaish and Eyal 2006).

A comparison of educational mobility across age groups addresses this latter point. The analyses presented here and in the following sections rely on the cross-classification of respondents' and their parents' educational level which is reported in Appendix I.⁹ An inspection of the marginal distributions yields an insight into the radical changes in the distribution of educational degrees over time (while it has to be kept in

⁹ The data are not weighted to account for the complex survey designs that vary for each IALS country since no information on primary sampling units is provided. The model choices in the analyses to come, however, would not be altered by applying an overall design weight of a reasonable (yet arbitrary) size.

mind that the parent population is very age-heterogeneous and cannot be conceived as an actual cohort or generation but rather as a background characteristic of respondents, see Duncan 1966). For the assessment of time trends in educational mobility, cross-tabulations of parental education (commonly called ‘origin’ in mobility tables) and respondents’ education (‘destination’) are constructed for four age cohorts: respondents aged 26-35, 36-45, 46-55, and 56-65 at the time of the interview.¹⁰ The loglinear analyses of these tables test whether educational mobility has changed over time or not. Specifically, I test whether a model that assumes the origin-destination association to be constant across all age groups (“Constant Association”, *ConstAssoc*) yields a satisfactory fit in each nation. This model can be written in multiplicative terms to predict the cell frequencies of the mobility table,

$$(1) \quad F_{ijk} = \tau \cdot \tau_i^O \cdot \tau_j^D \cdot \tau_k^C \cdot \tau_{ik}^{OC} \cdot \tau_{jk}^{DC} \cdot \tau_{ij}^{OD} \quad [\text{short form: } F = OC, DC, OD]$$

with τ as the grand-mean, τ_i^O , τ_j^D , and τ_k^C respectively as marginal effects of parental education (O), respondent’s education (D) and cohort (C), τ_{ik}^{OC} and τ_{jk}^{DC} as interactions between education status and cohort (this part of the model controls for the change in the educational distribution over time), and finally τ_{ij}^{OD} as the cohort-constant association between parents’ and respondents’ education.

I then compare this model to one that allows the origin-destination association to vary over age groups by a multiplicative scaling factor (Φ); this is the “Uniform Difference” (*UniDiff*) or “log-multiplicative layer effects” model proposed by Erikson and Goldthorpe (1992) and Xie (1992) and written as

$$(2) \quad F_{ijk} = \tau \cdot \tau_i^O \cdot \tau_j^D \cdot \tau_k^C \cdot \tau_{ik}^{OC} \cdot \tau_{jk}^{DC} \cdot \exp(\Psi_{ij}^{OD} \Phi_k^C) \quad [F = OC, DC, OD\Phi^C]$$

with Ψ_{ij}^{OD} as the pattern of the intergenerational association in education and Φ_k^C as the cohort-specific strength of this association. Table 2 reports the results for these two models and the baseline model of “Conditional Independence” (*CondIndep*) which

¹⁰ Since IALS countries assembled their data in different years (1994-1998), these age cohorts do not exactly correspond to the same birth cohorts in all countries.

assumes the independence of origin and destination while allowing the margins to vary across age groups:

$$(3) \quad F_{ijk} = \tau \cdot \tau_i^O \cdot \tau_j^D \cdot \tau_k^C \cdot \tau_{ik}^{OC} \cdot \tau_{jk}^{DC} \quad [F = OC, DC]$$

[Table 2 about here]

In all countries the preferred model (highlighted in bold in table 2) is the “Constant Association” model. Judging by the BIC criterion (Raftery 1986), ConstAssoc is clearly preferable over the UniDiff model which reflects the fact that the likelihood ratio (L^2) of the latter is only moderately lower than the likelihood ratio of the ConstAssoc model. In all cases the UniDiff model also fails to reduce the number of misclassified cases (Δ) by a considerable portion. The preferred model, CommAssoc, yields a satisfactory fit: it misclassifies on average 4.2% of the cases (Δ) and is highly ‘significant’ in nearly all countries (with the exception of Belgium and Denmark). In five countries (Czech Republic, Finland, Hungary, Northern Ireland, and Norway) UniDiff does yield a significant improvement in model fit (L^2-L^3) but this improvement has to be judged insufficient compared to the loss of model parsimony as indicated by BIC (Raftery in addition cautions us that the commonly used significance levels are inadequate in log-linear analyses of this kind). Despite the fact that these results lead us to argue for constancy in educational mobility rates it might still be interesting to look at the log-multiplicative scaling parameters (Φ) estimated under the UniDiff model for each age group. They are reported in table 3 and illustrated in figure 1 and 2. With the oldest age group serving as the reference group, the parameters indicate a lower origin-destination association, i.e., higher mobility rates, if $\Phi < 1$, and conversely lower mobility rates if $\Phi > 1$ for the remaining age groups. The general picture reconfirms that ‘Constant Association’ can be taken as an accurate description of the trends in most countries: the parameters show some ‘trendless fluctuation’ around 1, i.e., mobility remains largely unchanged across age groups. Figure 1 illustrates that in some nations one single cohort shows an irregular degree of educational mobility as compared to the remaining cohorts (the oldest cohort in Denmark, the second oldest in Sweden, and the second youngest in

Germany). Figure 2 singles out those nations where the UniDiff model provides a statistical improvement in fit although - just to remind - it still cannot be chosen over the Common Association model.

[Table 3, Figure 1, Figure 2 about here]

A decreasing association could at best be noted for Norway and Sweden, but there again only for the youngest cohort. Northern Ireland shows an irregular pattern with a decrease from the oldest to the second oldest cohort but then again an increase. The Czech Republic and Hungary, on the other hand, show some indication of an increasing association for the youngest two cohorts. While the increase for the youngest cohort coincides with the transition from socialism to capitalism (the cohort members were aged 8 to 17 in 1990) the next older cohort already had a similar level of educational mobility in Hungary and showed a similar trend towards an increasing association in the Czech Republic. It would thus be unwarranted to claim that the economic transition accounts for these changes - which, to start with, are empirically questionable.

In conclusion, the degree of association between parental education and individual educational attainment has remained constant over time in most countries. An uncertain trend towards less educational mobility could at best be observed for the Czech Republic and Hungary; a tendency for an increase in educational mobility for Norway and Finland. The adequate description for the overall trends in educational mobility is nevertheless that of “persistent inequality” and the claim of a significant equalization of educational opportunities over the last century is unwarranted.

Male and female educational mobility

Next, I assess whether there are significant differences in the level of educational mobility for men and women. Accordingly, the “Common Association” model (CommAssoc) now tests whether educational mobility is the same for men and women, while the “UniDiff” model examines whether the degree of educational mobility differs by a log-multiplicative factor across sex (cf. equations 1-3 now with S=sex instead of C=cohort). Table 4 reports the model statistics for each country.

[Table 4 about here]

A first observation is that both CommAssoc and UniDiff yield a good fit to the data and are significant in all cases except for New Zealand and the US. In all countries they misclassify less than 4% of the cases, in some less than 2%. This already suggests that the educational mobility rates of men and women have to be considered very similar. Allowing the degree of association to differ across sex (UniDiff) neither significantly improves model fit nor does it appreciably decrease the number of misclassified cases for the large majority of countries. The resulting rejection of UniDiff in favor of CommAssoc is in most cases supported by BIC differences above 5 points (which are often conceived as the threshold for strong evidence, see Wong 1994). BIC has been criticized to favor simpler models (Weakliem 1999) and in this regard it acts like what statisticians call “Occam’s Razor”: if two models both fit the data reasonably well, the simpler model is considered to be the better one. Nevertheless, in this case BIC yields the same conclusions as an assessment based on the dissimilarity index Δ and statistical significance.¹¹ There is only one country for which we have evidence in favor of the UniDiff model. In Chile only UniDiff but not CommAssoc yields an acceptable model fit. Here, UniDiff also reduces the number of misclassified cases by more than 1%. The significant UniDiff parameter - somewhat surprisingly - indicates that the origin-destination association is weaker for women than for men (reference category), or in other words: Chilean women show higher rates of educational mobility. In countries where the UniDiff parameter is also significant (but UniDiff still not the preferred model, see Czech Republic, New Zealand, and Slovenia) it points towards lower female educational mobility rates. The fact that neither CommAssoc nor UniDiff yield a satisfactory fit in New Zealand and the US could point to sex differences in mobility *patterns* rather than mobility *levels* that are not dealt with in these models.¹²

¹¹ It might be worth noting that subjecting the log-likelihood ratio difference between CommAssoc and UniDiff to a significance test here amounts to a significance test of the UniDiff Φ parameter.

¹² As already mentioned, an interesting extension of these models is a topological approach that models the cell frequencies of the mobility table separately (Hauser 1978). As also noted, this paper deliberately focuses on the aggregate or total level of educational mobility.

The overall picture then suggests that educational mobility processes are sex-blind in most countries. Where there are weak indications of differences, they are mostly in the direction of lower mobility rates for women - but not so in the case of Chile where female mobility rates are higher than those of males. While the preceding section proposes that educational mobility has remained relatively stable over time, this section asserts that it is also relatively equal for both sexes.¹³ Educational mobility thus appears to be an enduring and pervasive feature of each nation, in brief a *fait social*. This immediately poses the question whether the consistency of educational mobility processes also extends across nations.

Cross-national variation in educational mobility

A loglinear analysis that compares educational mobility across nations¹⁴ again relies on the following three models. As a baseline, “Conditional Independence” suggests that the distribution of educational levels in the respondent and parent generation differs by country (ON, DN) but that there is no intergenerational association in education. The “Common Association” model allows for this association (OD) but assumes that it is the same across countries. Finally, the “UniDiff” model assumes that the pattern of this association is constant across nations but its *strength*, i.e., the *degree of educational mobility*, differs across nations. The results presented in table 5 clearly show that UniDiff is the preferred model judging by BIC and the dissimilarity index. It reduces the log-likelihood of the independence model by 92.5% (denoted by rL^2) or, in other words, explains 92.5% of the association between origin and destination. The drop in the likelihood ratio statistic from 788 in the CommAssoc model to 561 in the UniDiff model is highly significant and ‘worth’ the loss of 18 degrees of freedom. It should not be seen as troubling that UniDiff does not yield a satisfactory overall fit when judging by model significance (p) because of the exceedingly large sample size of 38,189. With a sample this large, we can expect all models to predict cell frequencies that significantly diverge

¹³ These two findings taken together also make it rather uninteresting to test models that include interactions between time and sex (based on four-dimensional mobility tables by cohort and sex)

¹⁴ Unfortunately, the Netherlands have to be excluded from the cross-national comparison because of coding irregularities in the ISCED scheme. The Dutch IALS team failed to single out educational degrees that should fall into the ISCED5 category.

from the observed ones. In sum we can then conclude that nations differ significantly in their degree of educational mobility.

[Table 5 about here]

Breen and Jonsson state that “there is only scattered knowledge about how different contemporary countries 'rank' in terms of inequality of educational attainment” (2005: 227). Certainly, any ranking of nations along one single dimension of educational disadvantage is a strong simplification of what in reality are complex social processes. Yet, the preceding analyses give some support to the claim that such an undertaking is feasible: with educational mobility being stable across time and the same for both sexes, a national ranking along the degree of educational mobility is probably as meaningful as one could wish for. A convenient way to rank order the included nations in this regard is again to report the estimated Φ parameters of the UniDiff model (see table 6). For easier interpretation these parameters are now mean-centered - so that the average degree of educational mobility across all nations equals zero - and multiplied by minus 1 - so that a positive number indicates higher than average mobility rates.

[Table 6 about here]

Table 6 once again shows that educational mobility rates vary widely across nations. To give a better sense of the absolute range of the degree to which parental education affects individuals' educational attainment we can take a closer look at the extreme cases of the ranking: Even in Finland - the most 'open' society in regards to educational attainment - the average odds of attaining the same educational level as one's parents (when controlling for shifts in the marginal distribution) are about 3 : 1. In Slovenia they are more than twice as large, i.e., around 7 : 1.¹⁵ The apparent cross-national variation in educational mobility builds the basis for the following section. There, I attempt a macro-sociological explanation of national educational mobility rates. Comments on the rank of specific nations shall therefore be withheld at this point.

¹⁵ Calculations not presented here; one arrives at these figures by averaging the main diagonal log-odds predicted under the saturated model.

Institutional and macro-structural effects on educational mobility

I expect specific institutional features of the education system to play a crucial role in attenuating or intensifying intergenerational associations of educational status. The institutional set-up of the education system is an integral part of the opportunity structure that individuals face when making educational decisions. Therefore, the individual-level mechanisms described earlier are dependent on - yet not fully determined by - institutional structures. I will try to link institutional effects to individual-level processes by freely drawing on the different mechanisms described earlier. A pluralistic view on the mechanisms behind educational mobility processes seems more fruitful than a self-imposed restriction to one unitary explanatory approach.

Institutional characteristics of the education system are potentially not the only supra-individual factors that impact educational mobility. An adequate macro-sociological analysis should also formulate expectations as to which central features of society as a whole may impact the phenomenon under investigation. The main existing sociological hypotheses that link broad societal characteristics to educational inequality will be reviewed and assessed.

Studying the impact of institutional arrangements and macro-sociological forces is an inherently comparative undertaking (Kerckhoff 1995). As a matter of fact, comparing a fairly large number of countries might be the only way to identify the relative influence of different and potentially competing macro-effects. Yet, the consideration of a range of specific institutional characteristics that reflect the many dimensions on which education systems differ from one country to the next encounters methodological as well as practical challenges. The structure of a nation's education system is often complex and despite similar basic organizational ideologies (Meyer and Rowan 1978) to a large degree idiosyncratic. The indicators of institutional structure used here are necessarily crude and therefore miss important national peculiarities that could only be captured in an in-depth national study. Ideally, this paper should motivate such studies and guide their search for important institutional details. Despite the simplicity of the indicators used, the allocation of a large number of nations along various institutional dimensions still represents a practical challenge. The required knowledge of the formal structure as well as informal functioning of national systems of education is of course

best obtained through collaboration with national specialists (cf. above). One prominent contribution that has taken this path is Shavit and Müller's edited volume on school-to-work transitions (1998). For the classification of some institutional features I draw on their labor as well as that of Buchmann and collaborators (Buchmann and Dalton 2002; Buchmann and Park 2005). For countries not included in those classifications, I consult various narrative descriptions of national education systems (Postlethwaite 1995; Robitaille 1997; Eurydice 2006; OECD 1996). Appendix II provides a very brief description of each national education system that should serve to illustrate the arguments behind my classificatory decisions. Finally, another practical problem that pertains to cross-national comparisons of this kind is temporal change in institutional characteristics. I argue that most of the institutional features I investigate are so fundamental to the substance of national education systems that a great degree of path-dependence can be observed (see also Appendix II). My failure to account for historical changes in the structure of national education systems might nevertheless lead some to the suspicion that the presented classifications are illegitimately biased towards present conditions. It is in this regard reassuring that the identified effects also hold (and are even more pronounced) when the analyses are replicated for only the youngest cohort of respondents (results not shown).

In their 2005 review, Breen and Jonsson also note that “research on inequality of opportunity has been overwhelmingly oriented toward empirical description, with the consequence that convincing explanations of, for example, cross-national variation in the origin-education [...] association are lacking. A first step toward explanation is to use our existing knowledge to produce an exhaustive list of the [...] institutional factors that impinge on the opportunities of children, and to measure their relative importance in particular societies” (p. 236). Here I present such a list of institutional features which I hypothesize to affect educational mobility rates.

i) ***Stratification*** of the education system: Extending earlier ideas by Hopper (1968), Allmendinger (1989) proposes to distinguish education systems according to the degree to which they differentiate educational opportunities between and within educational levels. This dimension therefore captures the form of educational tracking or

streaming and largely depends on the selection procedures applied at the secondary level. As Allmendinger notes, “cross-national differences in the selection procedure are most remarkable in regard to the timing of the selection, the finality of the selection [rigidity], and the consequences of the selection” (p. 50). In line with Müller and Shavit (1998), I thus hold systems to be *lowly stratified* where most students attend either untracked or tracked comprehensive schools, where between-track mobility is existent even if not necessarily to a great degree, and where access to post-secondary education is not formally predetermined by the choice of one track; *highly stratified systems*, in contrast, usually divide students into separate schools of which only one or some types prepare for post-secondary education and others are ‘dead-end’ pathways that preclude the attainment of higher levels of education, mobility between these schools is very limited; *very highly stratified systems* follow the same pattern as highly stratified systems but select students for different types of secondary institutions at a comparatively early grade level (typically grade 4 to 5) and these selection decisions are basically irrevocable as mobility between school types is minimal.

If, as suggested earlier, parents’ educational status is related to the ability to decide about or have influence on their children’s placement into different tracks or schools, we would expect that the effects of parental education are high in highly stratified education systems where educational choices are particularly consequential. In very highly stratified systems this effect will be even stronger because parental guidance is especially crucial at earlier ages and becomes essentially irreversible due to the static nature of these systems. In essence, the argument is that the importance of organizational knowledge and guidance by parents critically depends on the degree to which educational opportunities are stratified (see also Oswald, Baker and Stevenson 1988; Erikson and Jonsson 1996b). Hypothesis 1 thus assumes:

(H1) The more stratified an education system, the lower the degree of educational mobility.

Table 7 locates the countries included in this analysis on the stratification dimension (and others described below). As we can see, Anglo-Saxon countries (CAN,

GB, IRE, NZL, USA) as well as Scandinavian countries (FIN, NOR, SWE, DEN) in general score low on this dimension. Most Continental European countries (GER, CH) with their intense differentiation at the secondary level (e.g., into ‘Hauptschule’, ‘Realschule’, and ‘Gymnasium’ in the German case) are on the other extreme.¹⁶ The middle position of all former socialist countries (CZE, HUN, POL, SVN) presumably arises from the contradictory socialist objectives of “meeting the manpower goals dictated by central planning and expanding access to education for the working class and for farmers” (Heyns and Bialecki 1993).

[Table 7 about here]

ii) **Standardization** of the education system. This dimension, also proposed by Allmendinger (1989), reflects the degree to which the quality of education meets the same standards nationwide. The classification of a system as standardized or unstandardized depends on the focus of political control over, e.g., examinations, curriculum, and educational financing.

By definition, standardized systems should show fewer local disparities in terms of content and quality of education (cf. Stevenson and Baker 1991). The choice of a specific school location therefore should not impact the chances of later educational transitions to a great degree. In the unstandardized case, on the other hand, local disparities can exist and they should be most apparent to highly educated parents. Essentially, higher educated parents have an information advantage as compared to lower educated parents when it comes to the choice of a school of higher quality. Therefore,

(H2) Educational mobility is higher in standardized than in unstandardized systems.

The U.S. is a prime example of an unstandardized system in which most decisions are taken at the local level and financing of education is to a large degree determined by

¹⁶ To preclude the misunderstanding that the US should be regarded as a highly stratified education system even in comparison to European system, the reader can be directed to Rubinson (1986: 520-523) who not only provides a concise description but also a careful theoretical explanation of the main differences between these systems.

local property taxes. The German case, once again serving as the opposite pole, is characterized by central coordination of curricula and national examinations that - despite the legislative power of federal states in education policy - guarantees uniformity of educational institutions and curricula across the nation.¹⁷ There is some discussion about classifying Britain as an unstandardized system (cf. Müller and Shavit 1998: p. 12) and one might also question my decision to classify the formerly socialist Slovenian territory as unstandardized (based on the notion of the ‘soft socialism’ of the former Yugoslavian state which never exerted the kind of centralized control known to most other socialist countries). Reclassifying these cases as standardized nevertheless does not affect my results.

iii) *Prevalence of private education*: the market-structure of education differs widely in the countries analyzed here, on the secondary as well as on the post-secondary level. While the two preceding very central institutional features show strong path-dependency for the great majority of nations, the issue of temporal change becomes more salient for the dimension of privatization of education (note for instance the radical privatization policies of Chile in the 1980s). We should therefore resist the temptation to use detailed cross-sectional educational statistics from one year to represent the degree of privatization of the education system for the entire time covered in this analysis. International education statistics like those from the OECD supply information on the number of students enrolled in private institutions as a percentage of the total number of students for various but in most cases relatively recent years. Instead of taking such numbers from one year (e.g., 1990) as a strict and exclusive indicator for classifying education systems, they are taken as a supplement to information derived from narrative accounts of those systems. At the same time, it should be noted that the quantitative differences in the share of private enrollment from the early 1990s are clear-cut. In most nations the private sector is basically nonexistent at the secondary level (often below 5%) and at best small at the tertiary level, while in other countries private enrollment sometimes by far exceeds 10% at the secondary and 20% at the tertiary level. The

¹⁷ The same argument - although in attenuated form - applies to the German speaking part of Switzerland (personal communication with Marlis Buchmann).

classification scheme applied here distinguishes high private sector prevalence from low private sector prevalence.

Regarding the expected effect of the market-structure of education on the degree of educational mobility, two mechanisms have been proposed (Arum, Gamoran and Shavit 2007): As “client-seekers”, private institutions (especially at the post-secondary level) aim at increasing enrollment and - driven by economic interest - exert efforts to include and support students that otherwise might encounter fewer opportunities in the public sector. The effect of social background characteristics would be expected to be reduced by such efforts. Students who miss educational resources at home are more likely to find them in well-equipped and supportive private schools. On the other hand, private educational institutions are “status-seekers” in that they compete for prestige with other private and public institutions. One status-seeking strategy is the exclusion of otherwise able students by increasing admissions standards or other more subtle forms of student selection (see Karabel 2005). Such strategies potentially increase the influence of parental education on access to and subsequently completion of a specific educational level. For instance, the preparation for an entrance exam might be more effective in households with appropriate educational resources. If acceptance decisions are additionally based on what is often called ‘soft-skills’, the door is also potentially wide open to the influence of cultural capital. Based on the contravening effects of status- and prestige-seeking of private institutions, I argue - in line with Shavit et al. - that

(H3) The direction of the relationship between educational mobility and the prevalence of private education cannot be known a priori.

iv) ***Openness of the post-secondary sector.*** It might appear just natural to assume that educational inequality should be less severe in countries where the post-secondary sector serves a large percentage of the population as opposed to a small elite. Such intuition, however, stands in opposition to the reported finding that increasing educational participation on all educational levels coincides with persistent overall levels of educational inequality. Educational mobility was found to be stable even in times of radical educational expansion and also in those systems that have expanded their post-secondary sector furthest. In addition, a positive overall equality-effect of strong

educational participation on the post-secondary level is also doubtful from a theoretical perspective. Hout has recently made a case for a negative relationship between the size of a nation's post-secondary sector and the overall degree of educational inequality (Hout 2007). His argument is “a rough corollary - not strictly a derivation” from the Maximally Maintained Inequality (MMI) hypothesis. MMI has originally been developed by Raftery and Hout (Raftery and Hout 1993) and since then served as a guide to study the relationship between educational expansion and the level of educational inequality. Its basic argument is that expansion only reduces inequality at those educational levels where the participation of privileged groups has already been saturated (i.e., close to 100% participation) - in other circumstances their educational advantage is maintained. For the cross-national comparison, the assumption is that in countries with a large post-secondary sector, lower levels of education are most likely to be saturated for privileged groups and, consequently, inequality *on those levels* has to be lower. However, and this is where Hout's reasoning is incomplete, social inequality on the *post-secondary level* can be expected to be higher due to the greater heterogeneity of the student population at that level. Or, less technically, in systems with a large post-secondary sector social selection is simply postponed to the post-secondary level. Therefore, based on both the empirical evidence and the theoretical rationale I assume that

(H4) Educational mobility is not related to the relative size of the post-secondary educational sector.

Given that the IALS data set is composed of nationally representative samples, a convenient way to measure the inclusiveness of the post-secondary sector is to compute the population share of post-secondary degree holders directly from these data. This dimension is consequently indicated by a continuous measure of the percentage of tertiary degree holders (ISCED6/7) in the total population (aged 25-65) which ranges from 8.7% in Chile to 31.2% in the US (see table 8).¹⁸

[Table 8 about here]

¹⁸ A replication of my analyses with the same measure from independent education statistics (OECD 2005; OECD 2006) does not alter my results (not shown).

Educational processes do not occur in isolation from the broader structure of society. Sociology has brought forward several conjectures about the relationship of education and society as a whole. Here, I want to direct my attention to two theories that specifically claim an association between educational inequality and a macro-structural characteristic of society. The modernization or *industrialism thesis* (see Treiman 1970) is a hypothesis that has received a fair share of attention in stratification research (e.g., Erikson and Goldthorpe 1992). It states that economic development goes hand in hand with increasingly meritocratic allocation processes, i.e., “the more industrialized a society, the smaller the influence of parental status on educational attainment.” (Treiman 1970: p. 221). Two processes are seen to produce this effect. First, industrialized nations broaden access to education and especially do so for individuals from disadvantaged backgrounds. Second, increasing national economic well-being decreases societal inequalities and thus indirectly lowers the influence of social background on educational attainment. Of course, these are not genuine explanations of the ‘industrialization effect’ but merely further speculations that - based on what we have for instance seen so far in this paper - are highly questionable. The industrialism thesis has been discredited by most empirical research (Hout and DiPrete 2006) and even the sparse evidence in favor it presented by Treiman and Yip (1989) has been shown to be weak and unstable under closer scrutiny (Müller and Karle 1993, p. 2 & fn.1). Hence, in the expectation of rejecting the industrialism hypothesis, I propose that

(H5) Educational mobility and national economic well-being are unrelated.

Empirical tests of the industrialism thesis have typically relied on macroeconomic measures of national wealth like the Gross National Product per capita (GDP). This seems justified because the hypothesis boils down to the claim that wealthier nations present more equal opportunities to their citizens. Even for a widely available measure as the GDP it is difficult to obtain information that covers 19 countries for nearly an entire century. In this unfortunate situation one is forced to retreat to less than ideal measures and potentially problematic assumptions. In my case, I assume constancy in the *relative economic differences* between countries and take the GDP per capita from 1990 that is available in all nations to indicate the relative position of each country for the entire time

period. If industrialization results in economic growth, the 1990 measure should then be seen as the final result of an industrialization process in which the relative position of each country remained fairly stable. To address the concern of the critical reader that this measure could at best reflect the relative economic standing of a nation for the youngest cohort included (which entered school between the late 1960s and the early 1980s) I replicate my analyses for only this age group and do not find different effects (not reported). Additionally, to make the empirical test of this hypothesis as fair as possible I reconstruct the industrialization index used by Treiman and Yip that they hold to be a more adequate representation of industrial development (see also table 8).¹⁹

From an ideologically much different perspective scholars such as Jencks et al. (1972) or Bowles and Gintis (1976) draw a connection between the degree of educational inequality and the general level of societal inequality. They argue that a significant reduction in social inequality in education is only achievable by redistributing economic resources: equality of condition is a ‘sine qua non’ of equality of opportunity. Blossfeld and Shavit similarly conclude in light of their evidence from Sweden and the Netherlands that "long-term commitments to socioeconomic equality may lead to an equalization of educational opportunities" (1993: 19). Based on this perspective, we would expect a negative association between the extent of educational inequality and the degree of inequality at the society level. Or, conversely,

(H6) Educational mobility is higher in more equal societies.

An attractive measure of the degree of inequality at the society level is the Gini coefficient which expresses the overall extent of income inequality in a single number ranging from 0 (perfect equality) to 1 (perfect inequality). For our purposes, this measure is of course plagued by the same practical problems as discussed in the preceding paragraph: limitations in data coverage again force me to use the Gini coefficient (of disposable household income) from the mid 1990s as a representation of the relative position of nations on this scale for the entire period under investigation. Again, the

¹⁹ The index is the mean of the percentage of the population that does not work in agriculture and the per capita energy consumption for the 1970s, both mean-standardized (cf. Treiman and Yip 1989: p.383; source: Taylor and Jodice 1983).

degree of social inequality does change across time (see e.g. the increases since the 1980s in the US, since the 1990s in former socialist countries, etc.) but - conceivably even more than in the case of GDP - the relative position among countries remains relatively stable. Nevertheless, I again rerun the analysis for the youngest cohort only and do not find any different results.

[Table 9 about here]

Findings of the macro-analysis of educational mobility

Table 9 reports the correlations between educational mobility and the institutional and macro-structural characteristics described above. In a conceptual essay, Kerckhoff reminds us that “since societies differ on all of the [institutional] characteristics [included here], some of the hypothesized effects may tend to cancel each other out.” (1995: 344). It is therefore necessary to include several institutional characteristics simultaneously in a multiple regression model. Of course, with 19 countries at hand the statistical power of such a model is severely limited. I therefore do not dare to include more than two institutional characteristics at once in a multiple regression and instead test all combinations of institutional effects to detect any possible mediation. I shall summarize the results from these regressions for each hypothesis (see table 10).

[Table 10 about here]

(H1) The effect of stratification is, as hypothesized, negative and strong. Highly stratified and more so very highly stratified education systems are associated with a significantly lower degree of educational mobility.²⁰ Figure 3 illustrates this point. Very highly stratified education systems (Germany and Switzerland) fare considerably worse than virtually any other country regarding their degree of educational mobility (with the exception of Slovenia). While most highly stratified education systems also show lower than average educational mobility rates there remains a good deal of variation within this category of countries: Northern Ireland and to some degree also the Czech Republic and

²⁰ In comparative analyses of this kind, the assessment of statistical significance does not aim at inferring the observed effects to a larger population of countries. But the relation of coefficients and their standard errors nevertheless indicates the degree of confidence we can hold in claiming these effects to be meaningful, i.e., not just due to random error (see also Kenworthy 2007).

Poland show comparatively high educational mobility despite their stratified education system. Educational mobility is clearly most marked in countries with a comparatively low degree of educational stratification (exceptions are Ireland and Norway). Overall, this yields strong support for the hypothesis that the effects of parental education on individual attainment are stronger the more significant and rigid the selection of students into different strata of the education system. That very early selection of students is especially detrimental to the equality of educational opportunities is amply documented by the German and the Swiss case.²¹ Also, stratification seems to be a very consequential institutional characteristic insofar as it alone explains nearly 40% of the cross-country variation in educational mobility rates.

[Figure 3 about here]

(H2) A consistent effect of the standardization of the education system cannot be detected. The standardization effect is very small, insignificant, and changes its sign across different regression models. Hypothesis 2 therefore has to be rejected. Apparently, parental education is just as influential in standardized as in un-standardized systems for individual educational success. Two explanations are possible: the degree of standardization might well translate into quality differences in instruction and other school resources but might not necessarily result in differential graduation rates. As a matter of fact, local power over educational standards could just enable otherwise disadvantaged communities to ensure adequate graduation rates through local adaptation of educational standards. Hence, ‘disadvantaged schools’ can graduate an equally large percentage of their students as any other school. Also, remember the common finding of no or only limited ‘school effects’ on educational achievement in the US context (starting with the Coleman report in 1966). If no consistent school effects on achievement can be found in a school system like the US system that is marked by ‘savage inequalities’ between schools (Kozol 1991), it seems reasonable that there are only few or no school effects on educational attainment in the remaining countries studied here. An alternative

²¹ It might be worthwhile to point out that the negative effect of *very high* institutional stratification does not solely rely on these two cases. In the regression analysis, they are separated from countries with *high* stratification for which a clear negative could also be confirmed.

explanation could be that in some countries local control of educational institutions might not necessarily translate into inequality between schools. Where the social segregation of communities is low, un-standardized school systems will not necessarily show more variable school environments across communities. Speculatively, this might be true for Canada. In any case, we have to conclude that the locus of political control over educational standards and resources does not seem to predetermine the capacity of an education system to mitigate or aggravate educational inequality.

(H3) The market structure of education also does not appear to affect educational mobility significantly. While the simple correlation shows a moderate but clearly positive association, based on the regression results we cannot confidently assert that a strong private educational sector would have positive equality effects (the standard errors are as large as the coefficients). It is therefore possible that the described contravening mechanisms through which the market structure of education affects educational mobility indeed cancel each other out. Client-seeking and status-seeking strategies of private schools taken together leave the degree of educational mobility unaffected. Pertinent concerns from either side of the fierce debate about the market structure of education (anti-state vs. anti-market) are unsupported by this analysis.

(H4) There is a moderate positive correlation between educational mobility and the size of the post-secondary sector. Yet, again, the regression models show that the effect of the openness of post-secondary education is non-significant. As illustrated in figure 4, for each level of inclusiveness of the post-secondary sector we can find countries with a high as well as countries with a low degree of educational mobility.

[Figure 4 about here]

Among countries with a small post-secondary sector Poland shows high mobility and Slovenia the lowest degree of mobility. For countries with a middle sized post-secondary sector, compare Finland and Germany. Finally, of the two countries with an exceptionally open post-secondary sector one shows relatively high (US) and one low mobility rates (Norway). This gives support to hypothesis 4 which argued that there is no relation between the prevalence of post-secondary degrees and the overall intensity of educational inequality. This does at least not reject the idea that educational inequality is located at

higher educational levels when lower levels are saturated and that the total degree of inequality is therefore unaffected by the relative size of different levels. A proper test of this supposition should be entertained in future research within the framework of the Mare model which allows the proper assessment of varying background effects across educational levels.²²

Effects of economic development and social inequality on educational mobility cannot be detected.²³ As is already apparent from the correlations in table 9, there is virtually no association between these broad macro-structural characteristics and the degree of educational mobility (although the industrialization index does show a moderately sized positive correlation). This is further illustrated in figure 5 and 6 which plot the degree of educational mobility against GDP and the Gini index.

[Figure 5, figure 6, and table 11 about here]

Regression coefficients are close to zero and insignificant (see table 11). This finding first supports hypothesis 5, i.e., it serves to reject the industrialism thesis: economically higher developed countries do not provide a notably higher degree of equality of opportunity. As a matter of fact the richest country in this sample, Switzerland, is also among the countries with the lowest degree of educational mobility.

²² It should be noted, however, that topological models of the mobility table also allow the examination of cell-specific associations (see Hauser 1978). Although this paper focuses on the total amount of educational mobility across all levels instead of the varying degree of inequality at different educational levels, I shall provide a brief suggestive examination of inequality at the post-secondary level only: A saturated model of the mobility table perfectly predicts the odds of attaining a certain level of education given a certain level of parental education. A look at the cell at the upper extreme of the mobility table (f_{55}) thus reveals the odds of attaining ISCED6/7 if one's parents also have attained this level. This partial measure of inequality in the attainment of a post-secondary degree is negatively correlated with the size of the post-secondary sector at $-.36$. That is, inclusive tertiary education appears to be associated with lower origin-destination associations at the post-secondary level. This sheds some doubt on the argument outlined above and poses an interesting paradox to be investigated by future research. However, this exercise mainly serves to again stress the point that it is vital to account for inequality at all educational levels when assessing the total degree of educational inequality.

²³ Northern Ireland has to be excluded for this part of the analysis because the necessary macroeconomic statistics are not available.

Second, the non-effect of economic inequality leads to the rejection of hypothesis 6. More unequal societies appear to be just as successful or unsuccessful in reducing educational inequality as more equal societies are. To moderate educational inequality, more unequal societies surely need to overcome more obstacles, such as possible social segregation, differential socialization, and the like. On the other hand, the political efforts of these nations to surmount these obstacles might also be more ambitious - corresponding to a political focus on the provision of equal opportunities at the expense of redistributive policies. In a comparative study of 18 nations (to a large degree the same ones as included in this analysis), Hega and Hokenmaier (2002) provide some empirical evidence for a tradeoff between public educational investment and welfare spending. In addition, they also identify 'distinctive educational policy profiles' that match the welfare regime typology proposed by Esping-Andersen (1990). Although Esping-Andersen did not pay any attention to the education sector in the construction of his typology, the authors find that each welfare state type is associated with a specific pattern of public spending on education. A like-minded look at the clustering of different welfare regimes along the educational mobility ranking reveals that Liberal (Anglo) countries - with the exception of Ireland - fall into the top third of the ranking and Conservative (Continental European) nations consistently into the bottom third. The picture is less clear for Social-democratic (Nordic) nations: Finland and Denmark lie in the top third, Sweden in the middle,²⁴ and Norway in the bottom third. Former socialist (Eastern European) countries are spread out between the middle and bottom.

Instead of assessing whether there are certain 'education regimes' which map onto existing welfare state typologies, it seems more fruitful to construct an independent typology of education systems based on the institutional analysis presented here. Future research could group education systems sharing a similar pattern in their institutional set-up into a specific education type or model. As a result, one might need to assert the highly unequal outcomes of the '*Germanic model of education*' rather than the

²⁴ That Sweden does not stand out as an exceptionally positive case is in line with earlier research that considers Sweden to rank in a 'middle position' regarding the overall degree of educational inequality (Müller 1996).

‘Continental-European education regime’.²⁵ The quest for specific *models of education* could particularly be inspired by the demonstrated importance of the stratification of a nation’s education system.

Conclusions

This paper approaches the study of educational inequality in a new way. By using log-linear models of educational mobility tables it examines the global degree of intergenerational status transmission across all educational levels. It does so for as many as twenty nations, some of which have not been included in prior comparative research. A strong association between parental education and the educational outcomes of their children - as proposed by a variety of theoretical approaches - is detected in all nations studied. It is shown that this association has been largely stable across the 20th century in virtually all countries. In this sense, I find ‘persistent inequality’ in educational opportunities. Further, possible sex-differences in educational mobility are assessed in each country and in the great majority of cases determined to be non-existent.

Educational mobility processes appear to be in principle sex-blind. This paper also addresses the grievance that so far there is only “scattered knowledge” about the ranking of nations in terms of educational inequality. The educational mobility ranking presented here partly alleviates this unfortunate situation. The conceptual validity of this ranking profits from the preceding finding of temporal stability and similarity across sex. Educational mobility patterns and rates can be perceived as steady and pervasive characteristics of nations.

In an effort to explain the cross-national variation in educational mobility, one central institutional characteristic of the education system has been shown to be influential. The extent to which educational opportunities are stratified on the secondary level is negatively and strongly associated with educational mobility. Rigid systems with dead-end educational pathways are a hindrance to the equalization of educational opportunities, especially if the sorting of students occurs early in the educational career. Other institutional characteristics of the education system do not appear to exert notable

²⁵ Among the countries included in this analysis, the Germanic model would comprise countries who have modeled their education system along that of Germany (Switzerland) or historically been influenced by it (Hungary and former Yugoslavia/Slovenia).

influences on educational mobility. The non-effect of the degree of standardization of the education system, the prevalence of private schools, and the openness of the post-secondary sector are findings in their own right. Various hypotheses that relate these institutional features to educational inequality do not find support. Additionally, two classical sociological hypotheses about the impact of industrial development and the level of general social inequality have to be rejected. They are probably too simplistic to produce defensible predictions about the global degree of educational inequality.

Some researchers might prefer to think of education systems as ‘wholes’ rather than arrangements of particular institutional characteristics. They might then prefer a typology of ‘education models’ to investigate the relationship between educational inequality and its institutional context. It is indeed a promising avenue for future research to revive earlier rather simplistic attempts in building such typology (Turner 1960; Hopper 1968).²⁶ The presented analysis of specific institutional effects provides a starting point to identify an attribute space of educational institutions that could be reduced to a “system of types” (Lazarsfeld 1972). The institutional stratification of education which has been shown to be highly influential should build the basis for a classification of different education models.

At various points I have alluded to the strong path-dependency of educational institutions. In many countries the general organization of education has remained practically unchanged throughout the 20th century. Nevertheless, one should not jump to the conclusion that the findings of this paper would be irrelevant to policy-making. It is not true that fundamental changes of the institutional structure of education are impossible or even unthinkable - and that in this sense education systems would be unalterable ‘wholes’ with fixed basic parameters. Regarding the stratification of educational opportunities we can for instance cite the Swedish case where the successful transformation of a highly selective system into a comprehensive one has been explicitly

²⁶ Turner’s distinction between systems of ‘sponsored mobility’ and ‘contest mobility’ has been developed ad-hoc for two nations (Great Britain and the US) and is arguably outdated. Hopper’s efforts are also restricted to only a few nations but he already refers to the stratification of educational opportunities as the central dimension of a typology of education systems. One more recent classificatory attempt which remains within the borders of one country is Below’s (2002) typology of state education systems that appears to have great empirical validity for Eastern German federal states.

based on the desire to reduce educational inequality. The abolishment of extreme institutional stratification has also recurrently and increasingly been subject to political and public debate in countries like Germany where there seems to be the most need for it.

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Tables**Table 1: The ISCED educational classification**

ISCED 0	Education preceding the first level
ISCED 1	Education at the first level
ISCED 2	Education at the second level, first stage
ISCED 3	Education at the second level, second stage
ISCED 5	Education at the third level, first stage, of the type that leads to an award not equivalent to a first university degree
ISCED 6	Education at the third level, first stage, of the type that leads to a first university degree or equivalent
ISCED 7	Education at the third level, second stage, of the type that leads to a postgraduate university degree or equivalent

Table 2: Educational mobility across cohorts

Model	L^2	df	p	Δ	BIC	$L^2_2-L^2_3$
BEL (N=1,375)						
(1) CondIndep	448.5	64	.000	20.8	- 14	
(2) ConstAssoc	69.8	48	.022	6.3	- 277	
(3) UniDiff	66.7	45	.020	6.3	- 259	.373
CAN (N=1,789)						
(1) CondIndep	366.7	64	.000	15.8	- 113	
(2) ConstAssoc	43.2	48	.670	4.6	- 316	
(3) UniDiff	40.9	45	.648	4.5	- 296	.507
CHL (N=2,420)						
(1) CondIndep	663.5	64	.000	18.2	165	
(2) ConstAssoc	50.5	48	.375	3.6	- 323	
(3) UniDiff	49.8	45	.289	3.6	- 301	.881
CZE (N=2,488)						
(1) CondIndep	483.7	64	.000	15.5	- 17	
(2) ConstAssoc	51.9	48	.324	4.4	- 323	
(3) UniDiff	39.6	45	.698	3.5	- 312	.006
DNK (N=2,374)						
(1) CondIndep	340.3	64	.000	12.6	- 157	
(2) ConstAssoc	74.1	48	.009	5.2	- 299	
(3) UniDiff	68.1	45	.015	4.8	- 282	.111
FIN (N=2,256)						
(1) CondIndep	246.4	64	.000	10.0	- 248	
(2) ConstAssoc	51.5	48	.339	4.1	- 319	
(3) UniDiff	37.8	45	.767	3.5	- 310	.003
GER (N=1,029)						
(1) CondIndep	296.0	64	.000	16.5	- 148	
(2) ConstAssoc	40.1	48	.785	3.9	- 293	
(3) UniDiff	34.8	45	.865	3.5	- 277	.151
GB (N=2,212)						
(1) CondIndep	275.2	64	.000	10.9	- 218	
(2) ConstAssoc	57.3	48	.167	3.7	- 312	
(3) UniDiff	56.1	45	.124	3.6	- 290	.750
HUN (N=1,934)						
(1) CondIndep	406.2	64	.000	14.1	- 78	
(2) ConstAssoc	42.5	48	.697	4.0	- 321	
(3) UniDiff	30.8	45	.948	2.7	- 310	.008
IRE (N=1,590)						
(1) CondIndep	440.1	64	.000	19.5	- 32	
(2) ConstAssoc	37.7	48	.858	3.1	- 316	
(3) UniDiff	36.3	45	.819	2.9	- 295	.714

ITA (N=2,382)						
(1) CondIndep	661.3	64	.000	17.9	164	
(2) ConstAssoc	58.3	48	.147	3.2	- 315	
(3) UniDiff	54.7	45	.151	3.3	- 295	.316
NL ^{a)} (N=2,261)						
(1) CondIndep	463.4	36	.000	16.0	185	
(2) ConstAssoc	33.2	27	.190	3.3	- 175	
(3) UniDiff	31.8	24	.132	3.5	- 154	.698
NZL (N=2,062)						
(1) CondIndep	280.6	64	.000	14.2	- 208	
(2) ConstAssoc	42.1	48	.711	4.2	- 324	
(3) UniDiff	40.3	45	.671	3.9	- 303	.607
NIR (N=2,043)						
(1) CondIndep	238.0	64	.000	9.3	- 250	
(2) ConstAssoc	49.7	48	.407	4.0	- 316	
(3) UniDiff	38.3	45	.750	3.1	- 305	.010
NOR (N=2,384)						
(1) CondIndep	418.3	64	.000	15.8	- 79	
(2) ConstAssoc	51.6	48	.335	3.8	- 322	
(3) UniDiff	42.0	45	.598	3.2	- 308	.023
POL (N=2,254)						
(1) CondIndep	472.3	64	.000	15.7	- 22	
(2) ConstAssoc	58.3	48	.146	4.5	- 312	
(3) UniDiff	55.9	45	.128	4.4	- 292	.490
SVN (N=2,024)						
(1) CondIndep	581.3	64	.000	18.3	94	
(2) ConstAssoc	50.7	48	.366	4.3	- 315	
(3) UniDiff	49.7	45	.293	4.3	- 293	.778
SWE (N=1,822)						
(1) CondIndep	326	64	.000	13.8	- 155	
(2) ConstAssoc	35.2	48	.915	3.5	- 325	
(3) UniDiff	31.6	45	.935	3.1	- 306	.304
CH (N=946)						
(1) CondIndep	167.2	64	.000	10.9	- 271	
(2) ConstAssoc	45.3	48	.585	4.6	- 284	
(3) UniDiff	45.0	45	.473	4.5	- 263	.955
USA (N=1,851)						
(1) CondIndep	445.1	64	.000	18.1	- 36	
(2) ConstAssoc	42.7	48	.688	4.7	- 318	
(3) UniDiff	40.9	45	.644	4.7	- 298	.621

Models: CondIndep: OC, DC; ConstAssoc: OC, DC, OD; UniDiff: OC, DC, OD Φ_C
with O - origin; D - destination; C - age cohort (26-35, 36-45, 46-55, 56-65 in year of interview)

Table 3: UniDiff parameters (Φ) for each age group

Country	46-55	36-45	26-35
Belgium	1.18	1.04	.85
Canada	1.12	.89	.89
Chile	1.03	.95	1.04
Czech Republic	.87	1.24	1.46
Denmark	1.61	1.49	1.59
Finland	1.12	.96	.42
Germany	1.22	1.52	1.01
Great Britain	.82	.85	.99
Hungary	.94	1.50	1.52
Ireland	.84	.89	.84
Italy	.94	1.13	1.22
Netherlands	.94	.87	.83
New Zealand	.91	1.14	1.17
Northern Ireland	.38	.63	.85
Norway	.74	.80	.59
Poland	.99	1.00	1.21
Slovenia	1.17	1.10	1.06
Sweden	.71	.99	.88
Switzerland	.94	1.09	.96
United States	1.24	1.11	1.15

Reference: age cohort 56-65 (in year of interview)

Bold letters indicate that UniDiff yields a significant improvement in model fit (though is still not the preferred model)

Table 4: Educational mobility and sex

Model	L ²	df	p	Δ	BIC	p(L ₂ -L ₃)	Φ
BEL (N=1,375)							
(1) CondIndep	488.3	32	.000	23.4	257		
(2) CommAssoc	11.6	16	.769	3.6	- 104		
(3) UniDiff	9.6	15	.842	3.2	- 99	.158	1.19
CAN (N=1,789)							
(1) CondIndep	412.4	32	.000	18.1	173		
(2) CommAssoc	21.4	16	.165	4.0	- 98		
(3) UniDiff	20.1	15	.168	3.7	- 92	.261	1.14
CHL (N=2,420)							
(1) CondIndep	701.9	32	.000	19.3	453		
(2) CommAssoc	28.5	16	.028	3.1	- 96		
(3) UniDiff	17.0	15	.321	1.8	- 100	.001	.73
CZE (N=2,488)							
(1) CondIndep	522.8	32	.000	16.3	273		
(2) CommAssoc	26.3	16	.050	2.8	- 99		
(3) UniDiff	20.2	15	.164	2.2	- 97	.013	1.33
DNK (N=2,374)							
(1) CondIndep	334.4	32	.000	12.3	86		
(2) CommAssoc	20.8	16	.188	3.0	- 104		
(3) UniDiff	20.7	15	.148	3.0	- 96	.742	.96
FIN (N=2,256)							
(1) CondIndep	302.8	32	.000	11.6	56		
(2) CommAssoc	19.6	16	.241	3.1	- 104		
(3) UniDiff	17.6	15	.284	2.9	- 98	.163	1.23
GER (N=1,029)							
(1) CondIndep	269.1	32	.000	16.2	47		
(2) CommAssoc	6.4	16	.983	1.3	- 105		
(3) UniDiff	6.1	15	.977	1.0	- 98	.599	.92
GB (N=2,212)							
(1) CondIndep	263.9	32	.000	10.6	17		
(2) CommAssoc	6.9	16	.975	1.4	- 116		
(3) UniDiff	4.4	15	.996	.9	- 111	.115	.80
HUN (N=1,934)							
(1) CondIndep	464.3	32	.000	17.9	222		
(2) CommAssoc	10.9	16	.817	2.1	- 110		
(3) UniDiff	10.9	15	.760	2.1	- 103	1.000	1.00
IRE (N=1,590)							
(1) CondIndep	462.9	32	.000	20.9	227		
(2) CommAssoc	22.5	16	.128	2.7	- 95		
(3) UniDiff	22.5	15	.100	2.7	- 88	.844	1.02

ITA (N=2,382)							
(1) CondIndep	683.9	32	.000	19.8	435		
(2) CommAssoc	11.8	16	.759	1.6	- 113		
(3) UniDiff	11.3	15	.732	1.6	- 105	.482	1.08
NL (N=2,261)							
(1) CondIndep	530.3	32	.000	17.9	391		
(2) CommAssoc	8.0	16	.530	1.9	- 61		
(3) UniDiff	4.5	15	.809	1.5	- 57	.060	1.21
NZL (N=2,062)							
(1) CondIndep	314.8	32	.000	15.1	71		
(2) CommAssoc	37.6	16	.002	4.5	- 85		
(3) UniDiff	31.1	15	.009	3.4	- 83	.011	1.43
NIR (N=2,043)							
(1) CondIndep	242.6	32	.000	10.6	179		
(2) CommAssoc	7.6	16	.959	2.0	- 114		
(3) UniDiff	7.6	15	.940	2.0	- 107	.826	1.04
NOR (N=2,384)							
(1) CondIndep	436.9	32	.000	16.1	188		
(2) CommAssoc	19.9	16	.227	2.3	- 105		
(3) UniDiff	16.2	15	.372	2.3	- 100	.054	1.24
POL (N=2,254)							
(1) CondIndep	492.3	32	.000	16.8	245		
(2) CommAssoc	21.7	16	.154	2.6	- 102		
(3) UniDiff	21.7	15	.117	2.5	- 94	.892	.98
SVN (N=2,024)							
(1) CondIndep	637.3	32	.000	19.5	394		
(2) CommAssoc	22.8	16	.120	2.4	- 99		
(3) UniDiff	16.2	15	.367	1.6	- 98	.010	1.29
SWE (N=1,822)							
(1) CondIndep	361.4	32	.000	15.0	121		
(2) CommAssoc	7.1	16	.972	2.0	- 113		
(3) UniDiff	7.0	15	.957	2.0	- 106	.862	1.04
CH (N=946)							
(1) CondIndep	162.5	32	.000	12.0	- 57		
(2) CommAssoc	24.2	16	.085	2.8	- 85		
(3) UniDiff	24.2	15	.061	2.8	- 78	1.000	1.02
USA (N=1,851)							
(1) CondIndep	457.4	32	.000	18.4	217		
(2) CommAssoc	33.2	16	.007	3.9	- 87		
(3) UniDiff	32.8	15	.005	3.9	- 80	.509	1.07

Models: CondIndep: OS, DS; CommAssoc: OS, DS, OD; UniDiff: OC, DC, OD Φ_S
with O - origin; D - destination; S - sex (reference category: males)

Table 5: Cross-national comparison of educational mobility

Model (N= 38,189)	L^2	df	p	rL^2	Δ	BIC	$p(L_2-L_3)$
(1) CondIndep	7804.2	304	.000		16.0	4597	
(2) CommAssoc	788.3	288	.000	90.0	4.4	- 2250	
(3) UniDiff	561.4	270	.000	92.8	3.5	- 2287	.000

Models: CondIndep: ON, DN; CommAssoc: ON, DN, OD; UniDiff: ON, DN, OD Φ_N with N = nation
 rL^2 - percentage reduction in L^2 compared to baseline (independence)

Table 6: International ranking of educational mobility

Country	Φ *
Finland	.24
Northern Ireland	.22
New Zealand	.19
Denmark	.16
Great Britain	.14
United States	.14
Canada	.13
Czech Republic	.11
Sweden	.10
Poland	.08
Chile	- .03
Ireland	- .04
Italy	- .14
Norway	- .15
Hungary	- .15
Switzerland	- .17
Belgium	- .20
Germany	- .27
Slovenia	- .34

* UniDiff parameters: mean-centered (i.e., average across countries = 0) and multiplied by (-1).

Note: The Swiss data apply to the Swiss-German population only. If included, the Swiss-Italian educational mobility rates would be about average and the Swiss-French rates in between the two.

Table 7: Stratification, standardization, and privatization of education

		Stratification		
Standardization	0 (low)	1 (high)	2 (very high)	
0 (low)	CAN, GB, USA	BEL, NIR, SVN		
1 (high)	DEN, FIN, IRE, NZL, NOR, SWE	CHL, CZE, HUN, ITA, POL	GER, CH	

Bold letters indicate comparatively high prevalence of private education

Partly based on Müller/Shavit 1998, Buchmann/Dalton 2002

Table 8: Macro-structural variables: descriptive statistics

Country	Code	Stratif.	Stand.	Priv.Ed	PSE	GDP ^{a)}	Ind. ^{b)}	Gini ^{c)}
Belgium	BEL	high	low	high	17.0	18,496	.55	29.8
Canada	CAN	low	low	low	14.2	19,274	1.27	28.3
Chile	CHL	high	high	high	8.7	3,093	- 1.42	54.5
Czech Rep.	CZE	high	high	low	16.6	5,249	.32	25.7
Denmark	DNK	low	high	high	19.7	24,458	.18	21.3
Finland	FIN	low	high	low	13.2	19,970	- .24	22.8
Germany	GER	very high	high	low	13.6	19,430	.42	28.3
Great Britain	GB	low	low	high	16.9	19,671	.58	31.2
Hungary	HUN	high	high	low	13.3	4,139	- .81	29.4
Ireland	IRL	low	high	low	8.9	13,533	- 1.00	32.4
Italy	ITA	high	high	low	14.4	16,176	- .51	34.8
New Zealand	NZL	low	high	low	14.2	11,431	- .29	33.1
N. Ireland	NIR	high	low	high	13.7	n.a.	n.a.	n.a.
Norway	NOR	low	high	low	28.5	27,301	.19	25.6
Poland	POL	high	high	low	9.2	3,053	- 1.36	38.9
Slovenia	SVN	high	low	low	7.4	8,004	n.a.	26.4
Sweden	SWE	low	high	low	14.0	22,974	.46	21.1
Switzerland	CH	very high	high	low	9.8	33,030	- .03	26.7
USA	USA	low	low	high	31.2	28,263	1.69	36.1

^{a)} Gross Domestic Product per capita, 1990 (constant 2000 US\$); Worldbank Indicators

^{b)} Industrialization index (after Treiman/Yip 1989), mid 1970s; Source: Taylor/Jodice 1983

^{c)} Gini Coefficient, disposable household income, mid 1990s; OECD / UN-WIDER

Table 9: Correlations of educational mobility and macro-variables

	Mobility	Stratif.	Stand.	Private	% PSE	GDP	Indust.	Gini
Mobility	1.00							
Stratific.	-.61	1.00						
Standard.	-.05	.13	1.00					
Private	.28	-.13	-.51	1.00				
PSE	.21	-.43	-.20	.33	1.00			
GDP	.06	-.17	-.15	.16	.54	1.00		
Industr.	.18	-.25	-.69	.25	.67	.65	1.00	
Gini	-.04	.17	.00	.35	-.19	-.47	-.46	1.00

Table 10: The institutional context of educational mobility: regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Highly stratified	-.16 * (.08)	-.16 ** (.07)	-.17 * (.08)			
Very highly stratified	-.33 ** (.12)	-.30 ** (.12)	-.33 ** (.13)			
Standardized	.01 (.08)			.05 (.10)	-.005 (.09)	
Strong private sector		.08 (.08)		.13 (.10)		.09 (.09)
Relative size of PSE			-.002 (.007)		.006 (.007)	.004 (.007)
R-squared	.37	.41	.37	.09	.04	.09

* p<.1 ** p<.05 *** p<.01

Table 11: The macro-economic context of educational mobility: regressions

	(1)	(2)	(3)
GDP per capita (in 10,000 US\$)	.01 (.05)		
Industrialization index		.03 (.05)	
Gini index			-.0008 (.006)
R-squared	.004	.033	.001

* p<.1 ** p<.05 *** p<.01

Figure 1: UniDiff Parameters across age groups (no sign. model improvement by UniDiff)

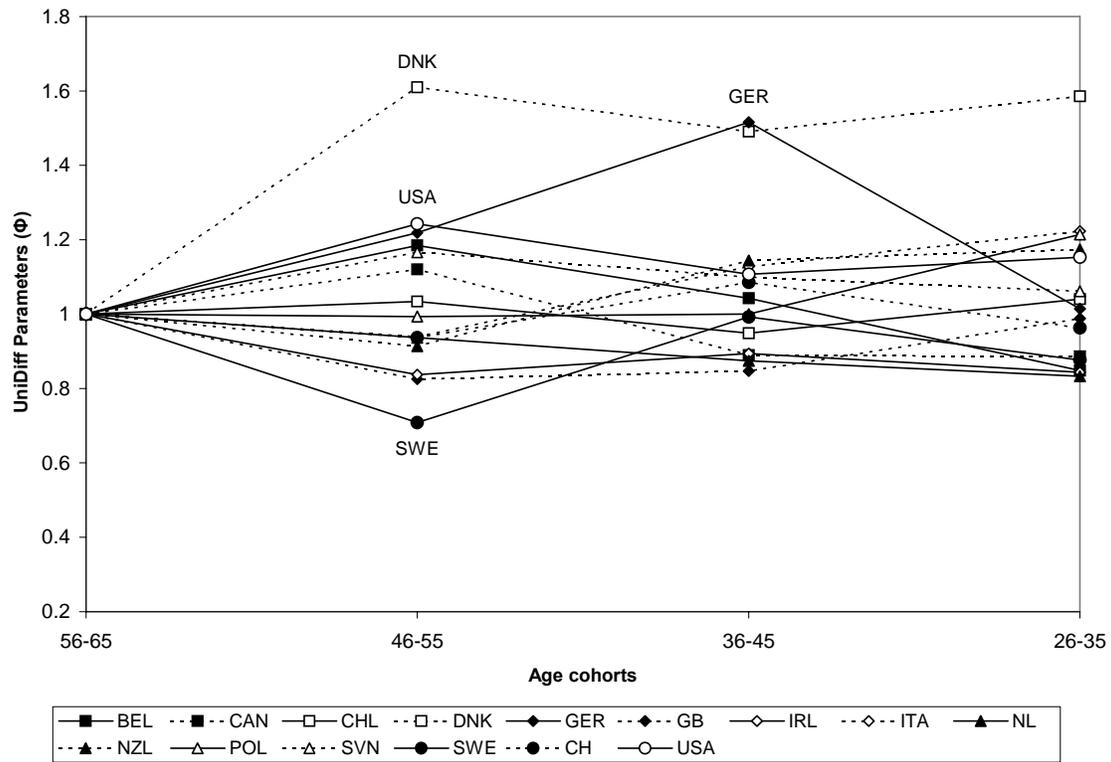


Figure 2: UniDiff Parameters across age groups (sign. model improvement by UniDiff)

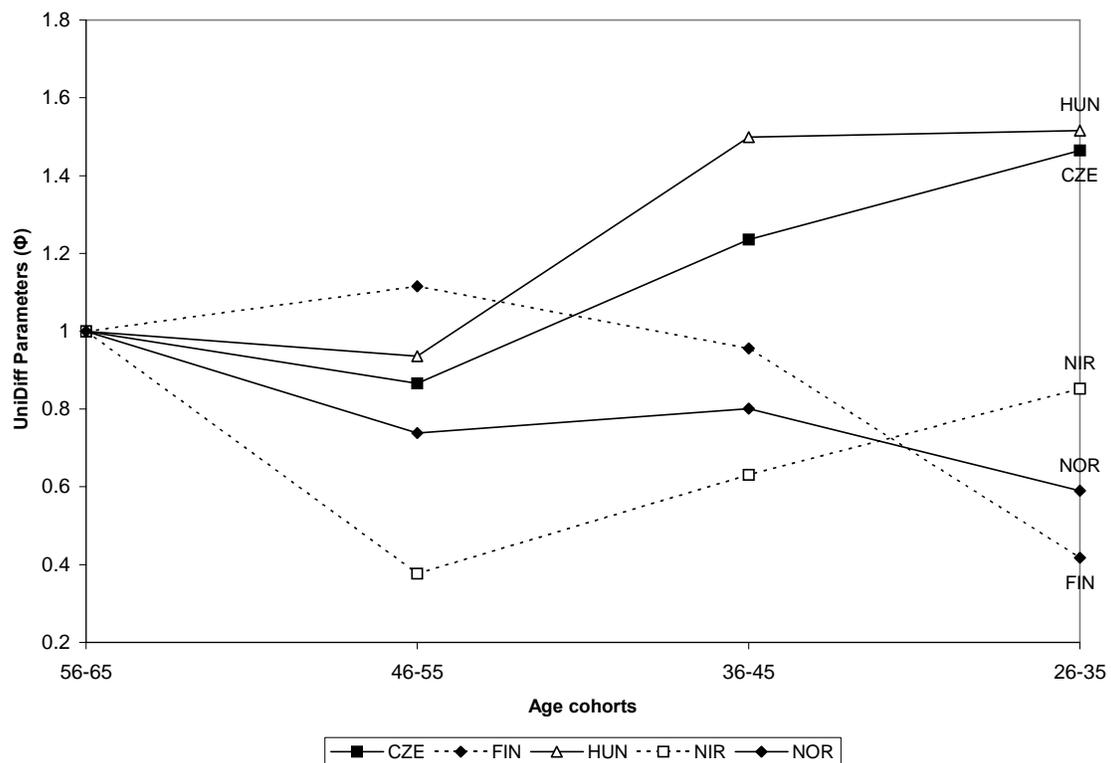


Figure 3: Educational mobility and stratification of the education system

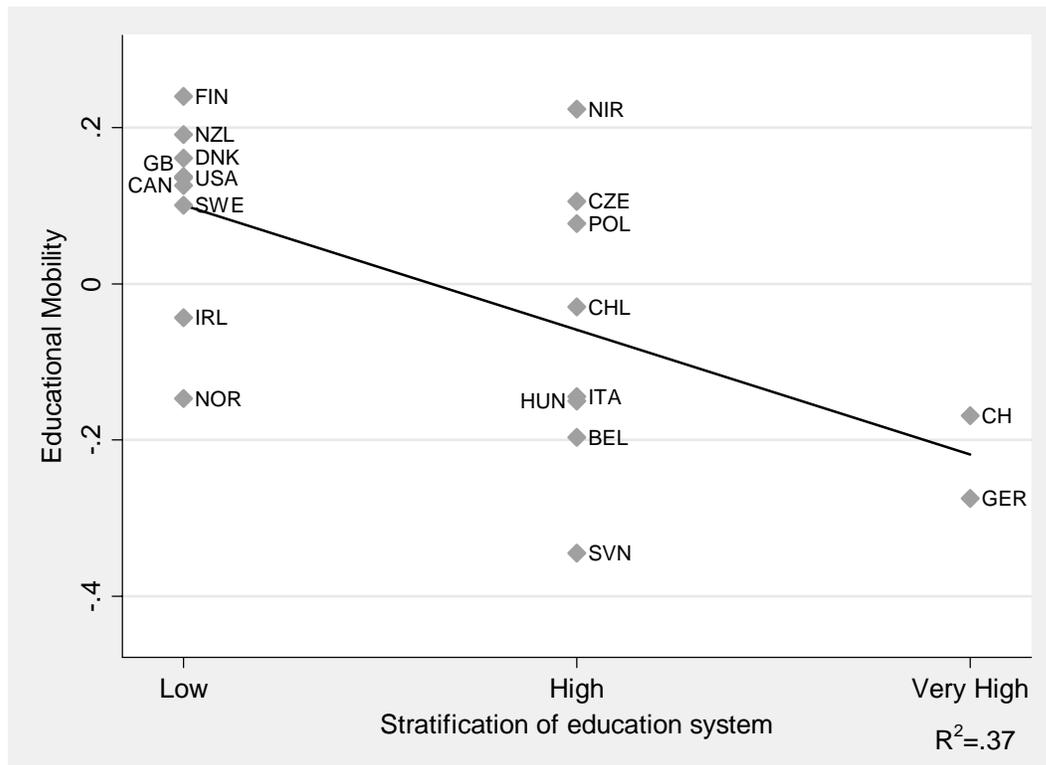


Figure 4: Educational mobility and size of the post-secondary sector

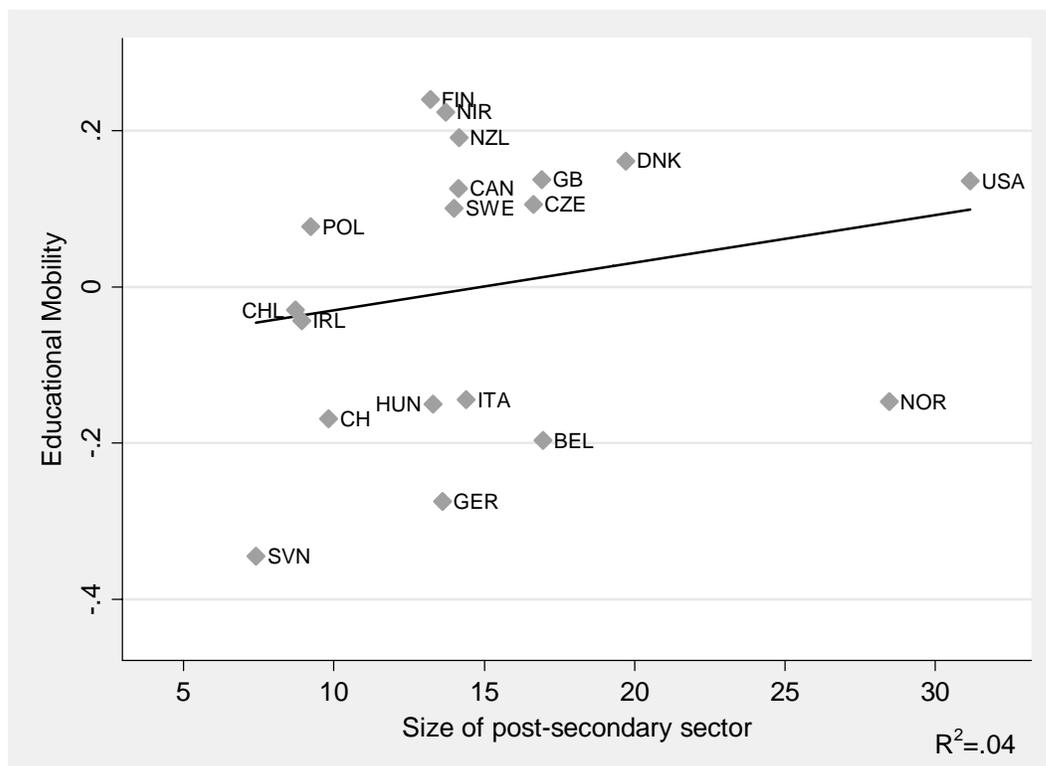


Figure 5: Educational mobility and national economic wealth

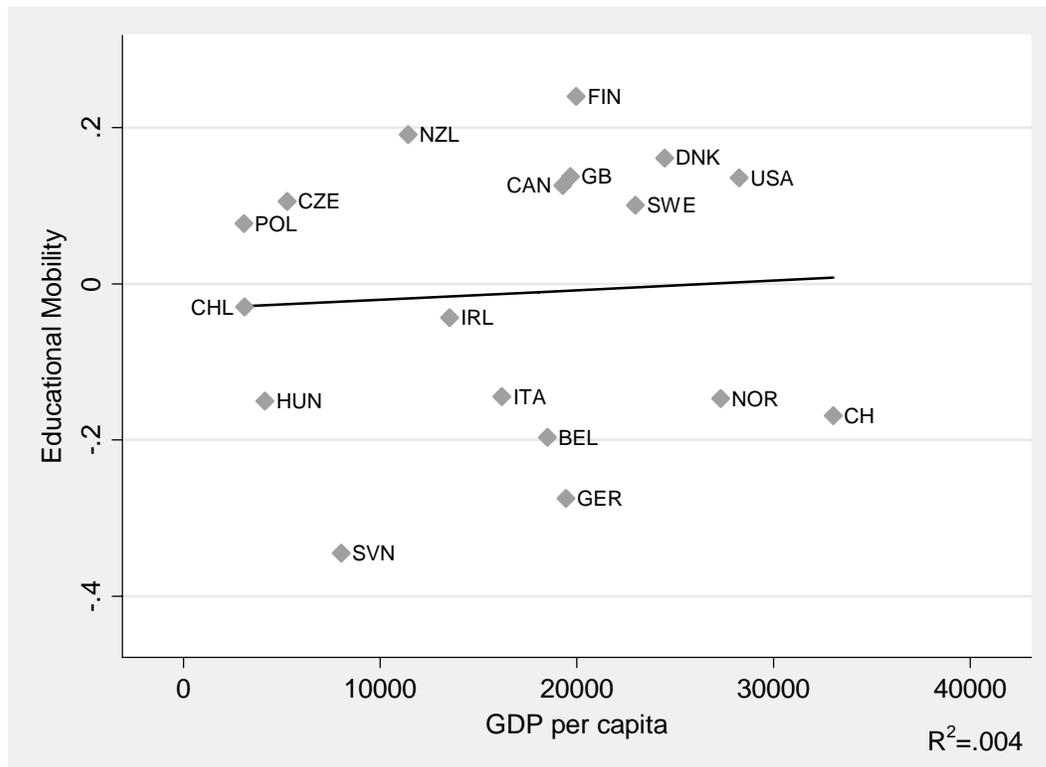
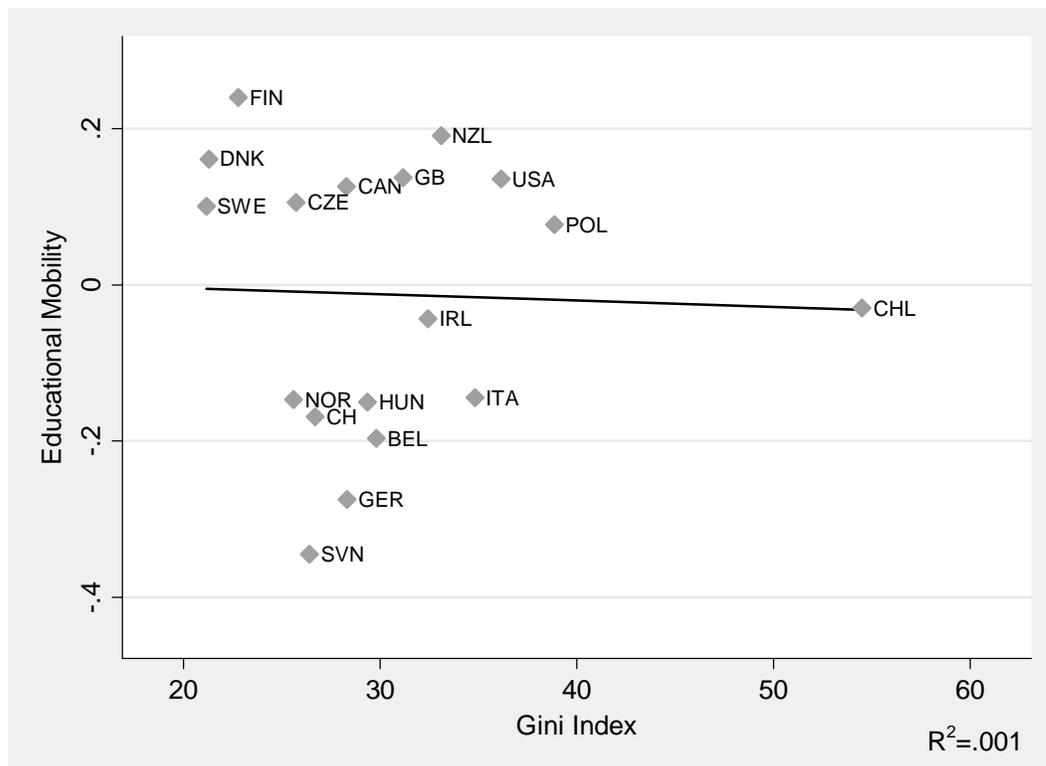


Figure 6: Educational mobility and social inequality



Appendix I: Cross-tabulations

Origin	Destination					N
	<i>ISCED0/1</i>	<i>ISCED 2</i>	<i>ISCED 3</i>	<i>ISCED 5</i>	<i>ISCED 6/7</i>	
BEL						
<i>ISCED0/1</i>	158	153	129	86	46	572
<i>ISCED2</i>	10	47	109	85	38	289
<i>ISCED3</i>	4	22	103	112	63	304
<i>ISCED5</i>	0	4	22	56	36	118
<i>ISCED6/7</i>	0	4	15	23	50	92
N	172	230	378	362	233	1,375
CAN						
<i>ISCED0/1</i>	323	336	285	156	61	1,161
<i>ISCED2</i>	41	133	209	139	69	591
<i>ISCED3</i>	31	79	209	145	115	579
<i>ISCED5</i>	6	29	70	59	61	225
<i>ISCED6/7</i>	5	14	34	52	82	187
N	406	591	807	551	388	2,743
CHL						
<i>ISCED0/1</i>	888	432	265	63	56	1,704
<i>ISCED2</i>	55	89	94	30	35	303
<i>ISCED3</i>	15	55	111	43	65	289
<i>ISCED5</i>	2	5	8	10	9	34
<i>ISCED6/7</i>	6	12	14	12	46	90
N	966	593	492	158	211	2,420
CZE						
<i>ISCED0/1</i>	119	224	145	1	43	532
<i>ISCED2</i>	107	433	339	10	86	975
<i>ISCED3</i>	23	192	329	16	171	731
<i>ISCED5</i>	0	5	12	3	12	32
<i>ISCED6/7</i>	2	20	85	9	102	218
N	251	874	910	39	414	2,488
DNK						
<i>ISCED0/1</i>	34	14	39	15	9	111
<i>ISCED2</i>	148	123	360	71	109	811
<i>ISCED3</i>	49	121	557	126	201	1,054
<i>ISCED5</i>	2	9	54	22	22	109
<i>ISCED6/7</i>	4	15	98	45	127	289
N	237	282	1,108	279	468	2,374

FIN						
<i>ISCED0/1</i>	141	317	562	106	87	1,213
<i>ISCED2</i>	0	35	99	23	27	184
<i>ISCED3</i>	15	86	271	78	79	529
<i>ISCED5</i>	1	19	101	32	64	217
<i>ISCED6/7</i>	1	8	51	12	41	113
N	158	465	1,084	251	298	2,256
GER						
<i>ISCED0/1</i>	4	3	1	0	0	8
<i>ISCED2</i>	3	574	160	24	75	836
<i>ISCED3</i>	0	18	58	6	17	99
<i>ISCED5</i>	0	4	4	0	11	19
<i>ISCED6/7</i>	0	8	17	5	37	67
N	7	607	240	35	140	1,029
GB						
<i>ISCED0/1</i>	10	108	18	12	14	162
<i>ISCED2</i>	75	899	304	198	209	1,685
<i>ISCED3</i>	0	44	20	20	43	127
<i>ISCED5</i>	2	24	19	24	42	111
<i>ISCED6/7</i>	1	20	23	17	66	127
N	88	1,095	384	271	374	2,212
HUN						
<i>ISCED0/1</i>	72	294	250	15	31	662
<i>ISCED2</i>	16	155	347	35	64	617
<i>ISCED3</i>	4	69	315	26	84	498
<i>ISCED5</i>	0	3	10	3	11	27
<i>ISCED6/7</i>	0	2	53	8	67	130
N	92	523	975	87	257	1,934
IRL						
<i>ISCED0/1</i>	401	349	175	47	41	1,013
<i>ISCED2</i>	20	96	114	30	24	284
<i>ISCED3</i>	16	27	74	29	36	182
<i>ISCED5</i>	1	5	13	11	10	40
<i>ISCED6/7</i>	3	8	17	12	31	71
N	441	485	393	129	142	1,590
ITA						
<i>ISCED0/1</i>	371	508	473	17	75	1,444
<i>ISCED2</i>	22	113	224	6	75	440
<i>ISCED3</i>	9	37	185	9	115	355
<i>ISCED5</i>	0	3	9	1	5	18
<i>ISCED6/7</i>	2	1	47	2	73	125
N	404	662	938	35	343	2,382

NL						
<i>ISCED0/1</i>	142	321	164	--	75	702
<i>ISCED2</i>	53	293	281	--	211	838
<i>ISCED3</i>	11	87	174	--	144	416
<i>ISCED5</i>	--	--	--	--	--	--
<i>ISCED6/7</i>	4	26	81	--	194	305
N	210	727	700	--	624	2,261
NZL						
<i>ISCED0/1</i>	17	184	46	39	23	309
<i>ISCED2</i>	9	474	197	156	84	920
<i>ISCED3</i>	3	99	103	61	41	307
<i>ISCED5</i>	0	94	83	95	79	351
<i>ISCED6/7</i>	1	27	41	41	65	175
N	30	878	470	392	292	2,062
NIR						
<i>ISCED0/1</i>	113	497	109	70	60	849
<i>ISCED2</i>	53	487	159	88	123	910
<i>ISCED3</i>	1	42	22	22	29	116
<i>ISCED5</i>	4	32	13	9	22	80
<i>ISCED6/7</i>	0	13	16	13	46	88
N	171	1,071	319	202	280	2,043
NOR						
<i>ISCED0/1</i>	0	13	25	3	3	44
<i>ISCED2</i>	0	205	473	85	152	915
<i>ISCED3</i>	0	84	399	189	262	934
<i>ISCED5</i>	0	7	57	39	82	185
<i>ISCED6/7</i>	0	11	47	68	180	306
N	0	320	1,001	384	679	2,384
POL						
<i>ISCED0/1</i>	555	510	286	68	68	1,487
<i>ISCED2</i>	43	152	114	24	35	368
<i>ISCED3</i>	25	56	99	34	52	266
<i>ISCED5</i>	1	8	14	4	7	34
<i>ISCED6/7</i>	2	6	26	19	46	99
N	626	732	539	149	208	2,254
SVN						
<i>ISCED0/1</i>	118	126	98	9	5	356
<i>ISCED2</i>	82	270	410	44	31	837
<i>ISCED3</i>	17	81	427	103	62	690
<i>ISCED5</i>	0	1	33	14	17	65
<i>ISCED6/7</i>	0	2	25	14	35	76
N	217	480	993	184	150	2,024

SWE						
<i>ISCED0/1</i>	250	153	452	130	81	1,066
<i>ISCED2</i>	7	17	73	22	18	137
<i>ISCED3</i>	13	25	177	83	64	362
<i>ISCED5</i>	0	9	45	31	30	115
<i>ISCED6/7</i>	0	3	47	30	62	142
N	270	207	794	296	255	1,822
CH						
<i>ISCED0/1</i>	3	11	52	7	4	77
<i>ISCED2</i>	1	34	111	19	7	172
<i>ISCED3</i>	5	19	373	81	40	518
<i>ISCED5</i>	0	1	62	23	14	100
<i>ISCED6/7</i>	0	1	35	15	28	79
N	9	66	633	145	93	946
USA						
<i>ISCED0/1</i>	87	49	142	33	50	361
<i>ISCED2</i>	18	33	85	22	31	189
<i>ISCED3</i>	48	43	404	115	215	825
<i>ISCED5</i>	5	1	33	26	55	120
<i>ISCED6/7</i>	6	8	69	47	226	356
N	164	134	733	243	577	1,851
<hr/>						
All *						
<i>ISCED0/1</i>	3,664	4,281	3,552	877	757	13,131
<i>ISCED2</i>	710	4,369	3,981	1,111	1,292	11,463
<i>ISCED3</i>	278	1,199	4,236	1,298	1,754	8,765
<i>ISCED5</i>	24	263	662	462	589	2,000
<i>ISCED6/7</i>	33	183	760	444	1,410	2,830
N	4,709	10,295	13,191	4,192	5,802	38,189

* All countries, excluding NL

Appendix II

Brief description of the education system of each IALS country

The following synoptical descriptions of national education systems lay no claim to completeness but instead focus on some selected institutional aspects that are central to this project (structure of secondary education and locus of control). Furthermore, they apply to the period between the early 1940s and the late 1980s when the IALS respondents attended education.

Belgium (Flemish Community)

Historically, Belgium's secondary education was composed of one lower and one upper three-year cycle and divided by general and vocational education. Only after political authority over educational matters was transferred from the central state to the Flemish language community in 1990, secondary education evolved into a more comprehensive form through the introduction of a general framework for secondary education (combination of general, technical, artistic and vocational education in comprehensive secondary schools). The constitutionally guaranteed freedom of education (since 1958) distributes organizational and financial responsibilities to three largely autonomous networks (*onderwijsnetten*: Flemish community; provincial or municipal authorities; subsidized private sector). The organizing body (*inrichtende Macht*; school board) within these networks has authority over the educational project.

Canada

The Canadian system combines elementary and lower secondary education into one program and offers both academic and vocational courses at the upper secondary level in comprehensive schools. Despite growing influence of the federal government since the 1960s, education remains under the control of the ten provinces and two territories. The extent to which provincial school systems are decentralized varies, but a strong ideological commitment to local control exists. Local school boards operate schools and local property taxes have traditionally been an important part of educational financing (but decreasingly so in the present).

Chile

After eight years of primary education, students choose between academic-humanistic and technical-professional high school. While both high school types grant access to post-secondary education, a much larger share of students who graduate from an academic-humanistic school go on to higher education. Despite radical efforts by the military regime (1973-2000) to restructure the Chilean education system, education still largely remains a national matter with curricular and financial decision chiefly made by the National Ministry for Education.

Czech Republic

With the adoption of the Soviet school system in 1948, Czechoslovakia's comprehensive 'basic school' was extended from four to eight years (and after the Velvet Revolution in 1989 to 9 years). Secondary education consists of either lower vocational education or

secondary schools (*gymnasium / technicum*), only the latter allowing application to post-secondary education. As a socialist country it managed educational matters centrally to ensure highly standardized provisions across the country. The transition to capitalism and creation of the Czech Republic only slowly introduced some decentralization tendencies.

Denmark

The Danish *folkeskole* is a comprehensive basic school that comprises primary and lower secondary education. Since 1967 the upper secondary level not only consists of the traditional 3-year academically oriented gymnasium but also an alternative two year higher preparatory course (*HF*) both of which provide a general education and - thanks to explicit political will - a route to post-secondary education. While some degree of local self-government is allowed for, educational financing is largely centrally controlled and curricular guidelines (which are relatively specific for upper secondary schools) are issued by the national Ministry of Education.

Finland

The comprehensive primary and lower secondary school (9 years) has its roots in the time when Finland was under Swedish rule. Upper secondary schools which were part of the characteristic folk school system only became separate institutions in the 1970s. Both general and vocational upper secondary as they now exist give access to further education on the post-secondary level. Despite an increase in decision-making at the local level since the 1980s, educational regulations such as curricular guidelines and student assessment are still centrally set by the National Board of Education

Germany

German students are sorted into one of three clearly hierarchically ordered secondary school types after grade four: nine years of *Gymnasium* prepare for post-secondary education while the *Hauptschule* last for only five years and traditionally prepares for later vocational education in form of apprenticeships. The *Realschule* lies in between these two types and is most often followed by attendance of higher vocational schools. Although federal states (*Länder*) have jurisdiction over educational matters a high degree of standardization across all states is guaranteed by coordination through a standing conference of states' educational decision-makers.

Great Britain (England and Wales)

The British school system has a complex structure and eventful history. One general trend throughout the 20th century though was the restructuring of the secondary sector towards a more comprehensive system to allow not only students from grammar schools the progression to the post-secondary level. Regarding the government of education one can note a coexistence and often competition between two regulatory levels: the national Department of Education and Local Education Authorities. Despite important standardization trends (e.g., the 1988 centralization of curriculum development), governing bodies at the local level maintain a high degree of autonomy. (Note: the classification of Great Britain as an unstandardized system is nevertheless contested in the literature).

Hungary

Socialist Hungary required its students to attend eight years of primary schooling. After that, several clearly hierarchically ordered options were (and in principle still are) available: three years of apprenticeship in a 'trade school', four years in technical secondary school, or academic grammar school (*gimnázium*). The latter two granted diplomas which were required for further education at a university. Though decentralization of educational administration slowly began in the 1970s and then accelerated after 1990, strong central state control of education as characteristic for socialist countries has dominated the Hungarian system.

Ireland

Primary school encompasses 8 years and is followed by a system of secondary education that is substantially differentiated in a horizontal sense (four different types: secondary, vocation, comprehensive, community) but not in a vertical sense. Two cycles of post-primary education conclude with a leaving exam that confers access to post-secondary education. Although schools are mostly owned by religious community groups, the locus of important educational decision-making lies on the national level with the Department of Education defining curricula, developing nation-wide school leaving exams, allocating funds, and the like.

Italy

In 1962 a unitary system of compulsory primary and lower level secondary education replaced a two-tier system of lower level secondary education. Higher level secondary education remains highly differentiated into several segments: five-year institutes of general education and various vocational schools of either five, four, or three year length. Since 1969, students graduating from either general or vocational five year schools qualify for post-secondary education; students from four year secondary school can attend an additional preparatory course for access to post-secondary education. Dating back to a law from 1859, power in educational matters has been highly concentrated at the national level (national curricula, central inspectors, etc.).

New Zealand

Up to the age of 16 students attend one of several possible types of comprehensive school ('primary school', 'primary' plus 'intermediate school', 'composite school'). Secondary education is also comprehensive and shows a low degree of within-school streaming by subject that allows students to prepare for both academic and vocational careers. Traditionally, central governance dominates educational policy in New Zealand (central funding, national curriculum, etc.) although major reform of its administrative structure in 1989 point towards decentralization of power.

Northern Ireland

In central features, especially the locus of political control, the education system of Northern Ireland resembles that of England and Wales. Yet, until recently one important difference was the maintenance of a secondary education structure that is divided into non-selective intermediate schools up to age 16 on one hand and grammar schools that

can only be attended after a successfully transfer test at age 11 on the other hand. Only grammar schools allowed access to postsecondary education.

Norway

The education system is marked by a traditionally strong commitment to comprehensive schooling throughout the primary and secondary sector (*Grunnskole*). General and vocational upper secondary programs normally start at the age of 16 and are both pathways to higher education. The national Ministry of Education draws up national curricula and allocates funds to municipal and country authorities who were only granted autonomy in their expenditure decision in the late 1980s.

Poland

Polish students attend one common school for the first eight (prior to 1969 seven) years of their educational career. Afterwards they have to choose between distinct types of secondary schools: lower vocational schooling which is considered terminal or academic secondary education at either a *liceum* or *technicum* (reflecting the traditional emphasis of the Polish education system on technical education). Both *liceum* and *technicum* end with the *matura* certificate that is required for the transition to higher education. In the socialist state the locus of control of educational matters lied exclusively on the national level.

Slovenia

The Slovenian education system has seen some of the most sweeping structural changes throughout the 20th century. Originating from the Austrian-Hungarian system, it used to select students after fourth grade into either 4 years of further primary schooling or 8 years of 'gymnasium'. In 1958 comprehensive schools for the first eight years were introduced and secondary education largely resembled that of other socialist countries (four year general secondary or professional school as well as shorter vocational programs). Between 1980 and 1990 this tripartite structure was temporarily replaced by a comprehensive secondary school system. Arguably, traditional community control of education could be maintained throughout the 20th century due to the peculiar character of 'soft socialism' or 'self-management socialism' of the Yugoslavian state (1976-1990).

Sweden

Sweden's present school system is known as one of the most open and structurally uniform systems. Compulsory, comprehensive schooling up to age 16 (nine years) is normally followed by the transfer to an integrated upper-secondary school (*gymnasieskola*) that comprises an academic, general (semi-vocation), and vocational branch. This comprehensive structure of education has gradually replaced what used to be a highly stratified system (comprehensive *grundskola* introduced in 1962 after an experimental phase in the 1950s; integrated upper-secondary school in 1971). Since then the Swedish system has practically gotten rid of any dead-end paths. Efforts to restrict the strongly centralized educational administration and control can be noted for the 1980s. Extensive market-oriented reforms began in the 1990s and therefore do not fall into the time frame of interest here.

Switzerland

In its central structural features the Swiss education system corresponds to the German system: it selects students early in their career (after grade four or six depending on the *canton*) into one of three types of secondary education. *Gymnasium* prepares for later post-secondary education, *Sekundarschule* (corresponding to the German *Realschule*) for entrance into higher level vocational programs, and *Realschule* (corresponding to the German *Hauptschule*) is typically followed by vocational apprenticeships. Although the 26 federal states (*cantons*) possess nearly exclusive regulatory authority over educational matters, a national Conference of Cantonal Directors of Education (*EDK*) ensures a relatively high degree of commonality across cantons.

[The French- and Italian-Swiss systems combine features of the Swiss-German systems with those of France and Italy, respectively]

USA

Student pathways up to higher secondary education are of a fairly linear character: students move from elementary school, through middle school (grade 6 to 8) or junior high school (grade 7 to 9) into (senior) high school which ends after grade 12 and confers access to post-secondary education. Ability-based tracking within schools is common. In nearly all states regulation of education occurs at the local level. Local school boards have high control over educational content and structure and financial resources are chiefly derived from local property taxes and distributed within local school districts.

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