

# 1. Education as the great equalizer: a theoretical framework

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A man may fish with the worm that hath eat of a king, and eat of the fish that hath fed of that worm . . . Nothing but to show you how a king may go a progress through the guts of a beggar. (Shakespeare, *Hamlet*, Act IV)

The gun has been called the great equalizer, meaning that a small person with a gun is equal to a large person, but it is a great equalizer in another way, too. It insures that the people are the equal of their government whenever that government forgets that it is servant and not master of the governed. (Ronald Reagan)

Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery. (Horacio Mann)

## 1.1 MOTIVATION

The quotations at the top of this page suggest that weapons, death and education make people equal. A king ultimately faces death as a beggar, an armed small person is equal to a large one, and an educated poor person can overcome the disadvantage and become rich. However, the tomb of a king is usually very different from that of a beggar, if the latter is so lucky as to be buried in one. Moreover, we also know that there are substantial differences in life expectancy between a beggar and a king. In Hamlet's Denmark of the late sixteenth and early seventeenth centuries a king could expect to live for about 60 years,<sup>1</sup> while the Danish average life expectancy at that time has been assessed at about 35 to 40 years (Johansen 2002). Without going to the extreme of the social hierarchy, still today in Organisation for Economic Co-operation and Development (OECD) countries the gap in life-expectancy between adults with a tertiary education and those with below upper-secondary education is about eight years (OECD 2013). If we are all equal after death, some appear at least more able to delay it.

We also know that the probability of encountering someone with a gun is not the same for everybody. Crime and victimization statistics show that the risk of experiencing violent crime is higher among individuals living in low-income households<sup>2</sup> (Kearney et al. 2014). Still, if one takes the opening quotations at their face value, the equalizing role played by death in its aftermath is uncontested, and the Wild West movie-style armed equality depicted by Reagan seems irrelevant to the study of social stratification processes, at least in contemporary modern democracies.<sup>3</sup> The claim that education is a social leveller is, however, much more complex, contested and politically important in times of increasing income inequality across the world. Whether education is the great social equalizer (hereafter: EGE) is indeed a recurrent topic in public debate and a disputed question in academic research. A closely related question is whether advanced Western democracies are education-based meritocracies (EBMs). Loosely speaking, a society may be considered an EBM if a person's socio-economic position in society is exclusively determined by their achieved education (supposedly reflecting their merits).

The EGE can be considered a weak variant of the EBM thesis. It suggests that once two individuals achieve the same level of education, they become equal and have the same chances of success in the labour market, even though they differ in a number of other important characteristics such as gender, ethnicity and social origin. Education thus equalizes the life-chances of otherwise different individuals. In this variant, the process that leads to the achievement of education is not considered. What matters is that once education has been achieved, it equalizes the life-chances of its holders.

The stronger version of the EBM theory also considers inequality in educational achievement, and three propositions are implied (Goldthorpe 2003). First, there is no association between individuals' social origins and their educational attainment. Second, individuals' occupational outcomes are fully determined by their level of education. Third, there is no direct association between individuals' occupational outcomes and their social origins, once their level of education has been taken into account.<sup>4</sup> Taken together, these three propositions form a triangle: the so-called social origin–education–destination (OED) triangle that represents the basic processes underlying the intergenerational reproduction of inequality. Thus, the strong version of the EBM theory requires: (1) a zero (or gradually smaller over time) association between O and E; (2) a zero (or gradually smaller over time) association between O and D; and (3) a strong (or gradually stronger over time) association between E and D. On the other hand, the weaker notion of education as an equalizer only requires that the OD association be equal or grow closer to zero over time.

Research on social mobility has extensively scrutinized each side of the OED triangle, and an increasing number of comparative studies have also become available over the past two decades. Admittedly, however, most of the research has focused on inequality in educational opportunities (that is, the association between social origins and individuals' educational attainments: OE) and on variations in educational returns (that is, the association between individuals' educations and their occupational outcomes: EO) over time and/or across countries (Kogan et al. 2011; Shavit and Blossfeld 1993; Shavit and Müller 1998). Most of the recent studies have documented a decline in inequality in educational opportunities by social background (Shavit et al. 2007; Breen et al. 2009; Ballarino et al. 2009). Educational returns and their trend over time show more variation across countries, so that they have increased in some countries (for instance the USA; Goldin and Katz 2008), while they have declined or remained stable in others (for instance in many European countries; Müller and Gangl 2003). Far less attention, however, has been paid to the intergenerational socio-economic association among persons with the same level of schooling (the OD association).

The purpose of this book is therefore to fill this gap in the literature and to enhance our understanding of the intergenerational transmission of advantage in 14 developed countries. We focus on the direct effect of social origin (DESO), more precisely the association between the socio-economic status of individuals and that of their parents, net of own achieved education.<sup>5</sup> We then address the 'education as the great equalizer' thesis. If among individuals with the same level of schooling those from better-off families still on average achieve better jobs, the thesis that education functions as a great social equalizer is disproved. Note, however, that if the thesis of EGE is rejected, also the thesis of EBM is disproved, since the latter can be considered a corollary of the former.

The 14 countries are the United States, the United Kingdom, Sweden, Norway, Germany, the Netherlands, France, Russia, Hungary, Japan, Switzerland, Italy, Spain and Israel. Each country chapter addresses four research questions: first, is there an association between individuals' social origins and their occupational outcomes, once their educational attainment has been controlled for? Second, has this intergenerational association declined over time? Third, does the intergenerational association vary across levels of schooling? Finally, addressing the question of change over time in the direct association between individuals' occupational outcomes and their social origins also requires examination of whether the association between individuals' educations and their occupational outcomes has varied. This question leads directly to the extensive debate on the consequences of the expansion of education on the labour-market value

of qualifications (Goldin and Katz 2008). The fourth question is therefore whether returns on education have varied over time in each of the countries covered by the study.

## 1.2 THEORIES AND HYPOTHESES

Classic theories of industrialization and post-industrialism coincide in assuming a trend from ascription to achievement (Bell 1976; Blau and Duncan 1967). A central claim of both theories is that the position attained in the labour market will increasingly depend exclusively on own achieved education. Contemporary modern societies grow increasingly close to being education-based meritocracies. The driving force behind this pattern of change is market competition among different employers, who are constrained to hire the more productive workers in order not to be pushed out of the market by their competitors, and then use educational qualifications as screening devices. Many empirical processes can be taken as instances of this fundamental change in the mechanisms of occupational allocation: the increase in the demand for skilled workers associated with the shift of employment from agriculture to industry and then services; the increase in firm size and hence the gradual bureaucratization of recruitment and internal promotion processes increasingly governed by education credentials; geographical mobility and the loss of community bonds; and the spread of egalitarian ideologies and cultures (Ganzeboom and Treiman 2007; Treiman 1970). All these processes supposedly strengthen the role of education in determining success in the labour market and reduce the direct transmission of advantage across generations. An important testable corollary of the thesis of education-based meritocracy is that the direct effect of social origin on occupational achievement, over and above the effect of own education, should have declined in recent decades, while the effect of own education should have increased.

The thesis of EBM has been discussed and most forcefully rejected empirically and theoretically in a series of publications by John Goldthorpe and his co-authors (Breen and Goldthorpe 2001; Bukodi and Goldthorpe 2011; Goldthorpe 2003, 1996). The existence of a direct effect of social origin on occupational attainment, net of own education, is interpreted as the most evident violation of the EBM. Erikson and Jonsson (1998) and Hällsten (2013) discuss various mechanisms that may underlie the DESO. These may be differences in productivity, social networks, aspirations, favouritism and, in the case of employers and the self-employed, direct inheritance of the family business. Differences in productivity refer to differences in non-cognitive skills (for example, communication skills)

or personality traits (for example, assertiveness, capacity to work in a team) that are not fully captured by educational qualifications but are highly rewarded by employers and are more easily developed within socio-economically advantaged families. Social networks give access to information on vacancies but can also influence decisions concerning hiring and promotion. Social networks may be distinguished between the family network and the larger network that individuals build during their studies and through their acquaintances. In both cases, persons from high socio-economic status (SES) families are likely to have access to contacts who can assist them in securing better positions in the labour market. Career aspirations (in turn related to the will to avoid social demotion) may differ by social background, so that persons of higher social standing are more career-oriented and more willing and able to take risky choices that, later on, pay off in terms of higher earnings. Those with lower social standing may prefer employment security to more rewarding and prestigious but less secure occupations. Favouritism refers to employers' preferences to hire for better jobs applicants from socio-economically advantaged families, all other conditions, including productivity, being equal. This type of favouritism may be the outcome of statistical discrimination (Phelps 1972), or reflect the employers' taste for discrimination based on social origin (Becker 1971) or also some strategy of class closure on their part (Sørensen 2005). Finally, in the case of employers and the self-employed, direct inheritance of the family business is also possible. Inheritance of parental money in the form of anticipated inheritance, gifts and favourable borrowing can indeed help them set up their own businesses and thus improve their occupational and earnings prospects.

While the importance of each of these mechanisms may vary across time and space, it seems unlikely that all of them have weakened and progressively become unimportant in contemporary modern societies, as implied by the EBM thesis and by its EGE corollary. This is for two main reasons. First, modernization has come about with an expansion of participation in higher education. To the extent that part of the value of education in the labour market (LM) is positional, the signalling value of higher education has deteriorated and possibly other factors have become important in explaining LM outcomes. Second, it has been argued that non-cognitive skills are more highly rewarded in the service sector than in manufacturing, and particularly so in 'the leisure, entertainment, or hospitality industries . . . high-value sales, customer services, or public relations' (Goldthorpe 2000). To the extent that non-cognitive skills are not fully reflected in educational qualifications and correlate with the family of origin, one may expect the OD direct association to persist also in post-industrial societies.

The leading research question on education as the great equalizer can

be also refined by focusing not on education as such, but on specific levels of education. This entails studying the three-way OED interaction. Recent studies have accordingly investigated whether the OD association is weaker among individuals with a college education (Mastekaasa 2011; Torche 2011). In this regard, it has been argued that the labour market for the highly educated operates more meritocratically, with less space for social origins to influence occupational attainment (Breen and Jonsson 2007; Hout 1988). Moreover, as has been noted in research on inequality in educational opportunities, persons from lower social origins who manage to achieve a higher education are likely to be positively selected on characteristics such as ability and motivation that are also highly rewarded in the labour market (Mare 1993). From a life-course perspective one may argue that people who stay at school longer start their careers at a later age, when they are less likely to be subject to parental influence and control (Shavit and Blossfeld 1993). These three different explanations (that is, meritocracy of the labour market for the highly educated, positive selection of those who achieve higher education while coming from the lower classes, and weakening parental influence over the life-course) suggest that the direct OD association should be lower, the higher the level of education achieved.

However, we take a different view of the three-way OED interaction. To start with, while previous explanations have focused on high achievers, we focus on low achievers. Explaining the weaker OD association among persons with a college degree can also be accomplished by explaining the stronger OD association among those who have not achieved one. Instead of pointing to the characteristics of the labour market for the highly educated, or to the unobserved characteristics of college degree holders from disadvantaged socio-economic backgrounds, we focus on the intergenerational mobility strategies of the upper class (Goldthorpe 2000). Our main expectation in this regard is that in the case of low educational achievement persons from the most socio-economically advantaged backgrounds will be able to achieve occupations better than those that on average match the level of education that they have achieved. This expectation is based on the notion of 'compensatory advantage', which predicts that 'an early disadvantage is likely to persist or grow larger over time for those from disadvantaged families, while it is likely to be attenuated for those who come from more advantaged families' (Bernardi 2014).

A key tenet of social stratification research is that intergenerational mobility patterns are driven by the goal of avoiding social demotion (Boudon 1974; Goldthorpe 2000). The prime motivation for parents is that their children do not move downward socially and that they achieve a social position at least as good as theirs. Given the mechanisms discussed

above, parents may therefore actively use their social contacts to favour the occupational attainment of their children, particularly in the case of the most needy who have not achieved higher education. They may also transfer or help them borrow the money needed to start up a business. Growing up in a socio-economically advantaged family may also provide language and non-cognitive skills, such as assertiveness and self-confidence, that enable them to achieve good and well-paid occupations despite a low educational achievement.

The idea of compensatory advantage thus suggests that, among individuals with the same level of education, social background should matter more in 'rescuing' those from the upper class who have failed at school and 'lifting' them up to a social position similar to that of the family of origin. In the case of low educational achievement, persons from the upper class can rely on their socio-economic resources and non-cognitive skills in order to avoid low-level occupations and downward social mobility.<sup>6</sup>

With regard to the variation of educational returns over time, most of the current research in economics addresses the so-called skill-biased technological change (SBTC) hypothesis (Acemoglu 2002). Its empirical starting point is evidence of a widening wage gap in the US between individuals who hold a college degree and individuals who do not. In order to explain this gap, scholars focus – again – on market competition. The main argument is that the evolution of technology, driven by market competition, allows employers to substitute the standardized jobs of poorly educated workers with machines, thus raising productivity and reducing the market value of the low-educated. The same process gives more value to the skills of the highly educated, whose work becomes more important in order to manage the development of technology, its application to production and the process of marketing products and services in an increasingly competitive economy. However, the expansion of participation in higher education that has taken place in Europe since the 1990s, and the high levels of unemployment experienced by young people, even when highly educated, has brought the inflation of educational credentials (IEC) hypothesis back into the public debate (Collins 1979). As happens with the circulation of money, an increase in the number of higher education qualifications in the population, associated with increasing participation, lowers the signalling value of these qualifications to employers. Returns on education are thus expected to decrease.

To be noted is that the mechanisms described by the SBTC and IEC hypotheses can both be active at the same time (Goldin and Katz 2008; Bernardi and Ballarino 2014). In this regard, it seems important to distinguish between absolute and relative returns to education. Absolute returns refer to the proportion of persons with a given educational level

who reach a specified class position. Relative returns are based on the comparison between the proportion of persons who have a given educational level (for instance, higher education) who reach a specified class position and the equivalent proportion of those with a different educational level (for instance, low education). While credential inflation refers to absolute returns on education, the SBTC thesis is usually addressed in terms of relative returns. The IEC thesis has been traditionally advocated to interpret the increase over time in the unemployment and unskilled employment rates of individuals with a university education. On the other hand, the classic evidence in favour of the SBTC is based on the comparison of the average earnings of those with a college education and those without one. The observed variation over time of the absolute returns on education will then depend on the interplay between the upgrading of the occupational structure on the one hand, and the expansion of the population with high education on the other. If the expansion in the supply of highly educated workers outstrips the demand, one can expect the absolute returns to education to decrease. A decline in absolute returns is, however, compatible with an increase in relative returns.

### 1.3 PREVIOUS RESEARCH<sup>7</sup>

A direct origin effect on labour-market success over and above own education is reported by the large majority of studies on European Union (EU) countries: Bukodi and Goldthorpe (2011) and Goldthorpe and Mills (2008) for the UK; Grätz (2011) and Müller et al. (1998) for Germany; Hansen (2001) and Mastekaasa (2011) for Norway; Erikson and Jonsson (1998) for Sweden; Vallet (2004) for France; Bernardi (2003) and Zella (2010) for Italy.

Direct comparison of the size of the estimates of the direct origin effect produced in the aforementioned studies is not possible due to different measurements of the dependent variable in terms of earnings, income, occupational status and class of destination. There are also differences in model specification and in the statistical analyses. Nevertheless, the size of the direct origin effect is not at all trivial. For instance, in Great Britain on average a person with a service class origin has a 14 percentage point advantage in accessing the service class, net of the effect of own education, with respect to someone with an unskilled working class background (Bukodi and Goldthorpe 2011). For Norway, Hansen (2001) found that persons with managerial and executive origins expect earnings on average 15 per cent higher than those originating in the working class, again controlling for own education. This result from Norway has been confirmed

in a subsequent study by Mastekaasa (2011) which shows that the earnings of someone at the top of the parental earnings distribution are expected to be 9.4 percentile points higher in the destination earnings distribution than those of someone at the bottom of the parental earnings distribution. In a recent study for Sweden that uses an extremely detailed measure of education in both the vertical and horizontal dimensions, the class of origin wage gap turns out to be about 5 per cent (Hällsten 2013). In other words, persons from the service class can expect to earn on average 5 per cent more than those from the unskilled working class, everything else being equal. The comparative study of 12 EU countries by Iannelli (2002: Table 6) shows that the increase in the occupational status of the first job for young people who have parents with a tertiary education when compared to those with a lower secondary education or less, again net of own achieved education, ranges from about four International Socio-Economic Index of Occupational Status (ISEI) points in Sweden and Finland, to about seven points in Spain, Greece, Romania and Hungary.

On the other hand, no direct effect of social origin on earnings and occupational status has been found in the USA in studies based on the Wisconsin Longitudinal Study (Warren et al. 2002). Similarly, van de Werfhorst (2002) reports no direct effect of class of origin on class of destination for Dutch men. One should note, however, that Torche (2011) for the US and Ganzeboom and Luijkx (2004) for the Netherlands document a direct effect of social origin on class of destination.

The discrepancy in the findings on whether the origin effect has declined over time is even larger. Again this may be due to differences in the measurement of the dependent variable, and/or in model specifications. Additionally, there is variation in the time span considered. A decrease is reported for Sweden between the late 1960s and early 1990s (Jonsson 1996), in the Netherlands between the 1920s and the 1980s (De Graaf and Kalmijn 2001; Jonsson 1996), and in Germany (Müller et al. 1998). More recent studies, however, report no variation over time for the class of origin effect on class destination for the 1946, 1958 and 1970 cohorts in Great Britain (Bukodi and Goldthorpe 2011), and in Norway for direct influence of parental earnings on own earnings for the 1955–69 cohorts (Mastekaasa 2011). A recent study by Marks (2014) looks at the pattern over time of the intergenerational occupational correlation, measured by the ISEI and controlling for own education, in as many as 53 countries, and finds it to be declining in 36 of them, among which are all those included in this book.

Recent evidence for the conditioning effect of social background on the level of education achieved is also not fully consistent. Hout's (1988) original finding that the importance of social origin declines for the highly educated was confirmed in Norway (Mastekaasa 2011), while Torche's (2011)

in-depth study for the US documents a U-shaped pattern, so that the direct parental influence is stronger among persons with low educational attainment and those with advanced university degrees, while it disappears among bachelor's degree-holders.

With regard to returns to education over time, for the US there is also solid evidence that the earnings premium associated with tertiary education has increased dramatically since 1980. While a number of influential studies have argued that the sharp increase in the college earning premium is the result of skill-biased technological change (SBTC), what seems critical in this regard is that, while the relative supply of college workers in the US has declined since the early 1980s, as a consequence of slowing educational attainment for the cohorts born after 1949 and of the smaller size of recent cohorts entering the labour market, the relative demand for college graduates – indeed attributable to skill-biased technical change – has constantly increased (Goldin and Katz 2008). For European countries in the 1980s and early 1990s there is no clear pattern in the trend of the earning premium (Harmon et al. 2001). A more recent comparative study, however, reports lower earnings returns to education for younger cohorts (Middendorf 2008). Single-country studies do not give a consistent picture: for instance, Devereux and Fan (2011) for UK cohorts born between 1970 and 1975 finds higher wages for both men and women; while Naticchioni and Ricci (2009), for Italy and the period 1993–2006, find decreasing wage premia to education.

Fewer comparable results are available if one considers returns to education in terms of access to a given social class. Braun et al. (1997) find a slight decline in occupational returns in absolute terms for Germany, France, the UK and Hungary between the early 1980s and early 1990s. However, in relative terms, compared to the chances of lower-qualified school leavers, university graduates have maintained if not strengthened their competitive advantage. More recent studies have updated these findings. Absolute probabilities of attaining the service class for university graduates in Germany remained stable throughout the 1990s and increased in the 2000s. Relative returns (measured as log-odds ratios of attaining service class) for university graduates when compared to *Abitur* holders have been relatively stable since the 1990s. The suggested explanation for declining absolute returns on tertiary education in the 1980s and stable and increasing absolute returns in the 1990s and 2000s is that in the 1980s educational expansion proceeded faster than occupational upgrading, while educational expansion has been very limited since the 1990s (Klein 2011).

A recent study for the UK that compares three cohorts (1946, 1958 and 1970) shows that absolute returns on accessing the managerial and professional occupations are stable for persons with higher tertiary educa-

tions, and have increased for those with lower tertiary educations (Bukodi and Goldthorpe 2011). On the other hand, the relative returns to tertiary education, both higher and lower, have partly declined when compared to upper-secondary education. The main explanation for these findings is that the growth of the managerial and professional occupations has largely exhausted the supply of highly qualified personnel, so that even people with upper-secondary educations have gained more access to those occupations in more recent cohorts.

An almost opposite pattern has been reported for the Netherlands, where absolute returns to education declined between 1960 and 1991, in particular for persons with upper-secondary education; but relative returns to tertiary education, compared to upper-secondary, increased (Wolbers et al. 2001). In this case, the explanation is that the upgrading of the occupational structure in the Netherlands has not kept up with the great expansion of education. Similar evidence has been found for Italy, where analyses of Labour Force Statistics (LFS) data from 1985 to 2010 found, besides the already-known downward trend for secondary education, a less strong but significant decreasing trend for the association between a tertiary degree and the chances of obtaining a position in the service class. Thus, it might be said that returns to tertiary degrees have decreased in absolute terms, but have increased in relative terms, with respect to returns to upper-secondary qualifications (Ballarino and Scherer 2013).

To conclude this brief review, our reading of the evidence produced by previous research can be summarized as follows. First, the large majority of the studies reviewed document a non-trivial DESO. Second, the results on its variation over time are mixed, and there is too limited research on whether educational returns vary according to the social class of origin to allow for any generalization. Finally, absolute and relative returns to education (ED) and their variation over time depend on the interplay between educational expansion and occupational upgrading.

#### 1.4. DESIGN, VARIABLES AND METHODS

This book is the result of an international collaborative project that has spanned several years. It follows a model of comparative research established in now classic studies on the role of education in generating (in)equality, such as Shavit and Blossfeld (1993), Shavit and Müller (1998) and more recently Blossfeld et al. (2006), Jackson (2013), Kogan et al. (2011) and Müller and Gangl (2003). National experts in social mobility research have conducted in-depth analyses on their country following a common set of guidelines. Great effort has been made to ensure that the



analyses are as comparable as possible across countries. Each country study addresses the same four key questions put forward above and uses the same indicators for labour market success and social background. The definition of the analytical sample, the choice of the variables, and the modelling techniques have also been standardized as far as possible in all chapters.

Each chapter of this book (if not differently explained) considers people aged 28–65 and excludes first-generation immigrants, defined as those respondents who were born abroad.<sup>8</sup> Whenever the national data allow it, we consider both the first job and the current job at the time of the survey. With regard to the quality of the first and the current job (D in the above social stratification triangle) all chapters use two measures: the International Socio-Economic Index of Occupational Status (ISEI) (Ganzeboom and Treiman 1996) and income. A number of chapters also used a second occupation-based measure of job quality, namely social class defined using a reduced Erikson–Goldthorpe–Portocarero (EGP) class scheme (Erikson and Goldthorpe 1992). Results for the class analyses, however, could not be reported in the volume for lack of space, but in most chapters the additional findings are commented on, and the full results are available as working papers, or in the online appendix to this volume. Here it suffices to note that the analyses based on the ISEI and social class lead overall to the same substantive conclusions.

Previous studies on social mobility have used either class or the ISEI, or some other occupation-based measure, while income and earnings are rarely considered by sociologists. On the other hand, economists have mostly focused on income and earnings, ignoring occupational measures. To our knowledge, this is the first comparative project in the field of social stratification that combines the analysis of income together with that of occupation-based measures. Calls for such an integration have been made by many scholars in the past decade (DiPrete 2007) but they have largely gone unheeded. A multidimensional approach to occupational attainment allows us to exploit the different substantial content of each measure in order to gain more nuanced knowledge about the phenomenon of interest.

There are also theoretical reasons for considering occupation-based measures of labour market success in addition to income. Not only may it be difficult to obtain reliable measures of income using cross-sectional data, but inflation may also make it difficult for parents to predict levels of earning for their children.<sup>9</sup> Who, for instance, is able to predict the amount of future earnings, say in 20 years, equivalent to the current earnings of their family? It is thus likely that intergenerational mobility strategies are framed more in terms of education and occupation, than in terms of income (Mare and Chang 2006; Piketty 2014). In other words, parents set

the minimum desirable attainment for their children in terms of education and occupation, more than in terms of earnings.

We use the parental ISEI defined, using the dominance criterion, as the higher ISEI between that of the father and the mother. Sensitivity checks have been performed by adding a dummy that distinguishes persons whose parents were self-employed or had small businesses. In this way, we allow for non-linearity in the effect of social background, but the results that we present are robust to this specification. When the data sets did not allow us to construct the ISEI, EGP social classes were used instead.

Education is the other key independent variable in our study. Having an appropriate measurement of education is a major concern for a study that wishes to identify the direct OD association, net of education. If education is inadequately measured, part of its effect on D will be captured by the OD association. In order to minimize this problem, we have set minimum standards and then allowed each national team to use the most detailed classification available in their data. The basic requirement is to use a classification for education that distinguishes between short and long tertiary education and between vocational and general tracks for secondary education. In some cases, however, additional distinctions are considered in order to address the idiosyncracies of each national educational system.

We have tried to keep the empirical analyses as simple and intelligible as possible. The core of statistical analyses of each chapter is based on linear regression models. In some chapters quantile regression models are also used. While previous comparative studies on social stratification have privileged relative measures of inequality based on odds ratios (Breen 2004; Shavit and Blossfeld 1993), here we have opted to focus on the estimates of linear regression models, which can be directly interpreted as marginal effects. This choice is partly driven by the fact that our dependent variables, the ISEI and income, are continuous.<sup>10</sup> There are also, however, theoretical and methodological justifications for our use of linear regression models.

The main reason why relative measures of inequality have dominated empirical research in social stratification since the 1990s is that they provide measures of inequality insensitive to changes in the distributions of the variable of interest. This property is appealing because it makes it possible to address the major concern in social mobility study: separating structural from net mobility, that is, the mobility induced by changes in the occupational structure and the mobility driven by the 'true' association between O and D (Breen 2004; Erikson and Goldthorpe 1992). This same property, however, precludes the possibility of addressing some key questions in social stratification that precisely refer to the interplay between structural changes, such as occupational upgrading and educational expansion, and

intergenerational association of status at the individual level. For instance, do the returns to education decline in parallel with the expansion of higher education? Or does occupational upgrading over time weaken the OD association?

On methodological grounds, the odds-ratio paradigm has been recently questioned by the acknowledgment of certain limitations of the logit model and log-linear models (Mood 2010). Although solutions for those limitations are being developed, the alternative of using linear probability models to analyse dichotomous dependent variables is becoming increasingly common among sociologists, and is already rather well established among economists (Angrist and Pischke 2008).

Finally, one of the limitations of past social stratification research has been that its technical sophistication has not been paralleled by a capacity to transform the findings of complicated statistical models into more intelligible measures of inequality (Davies et al. 1998). In this regard, measures based on regression coefficients and, more in general, marginal effects provide more straightforward indicators of inequality, with a clearer substantive interpretation than log-odds or odds ratios. For instance, we will be able to show how many additional euros a person from a socio-economically advantaged background in a given country can expect to earn, when compared to someone with the same level of education but from a less advantaged background. Or how many additional points on a scale measuring the quality of the occupation (ISEI) can be expected to depend on their social background. These are easily interpretable figures, with substantive and theoretical implications. The reader can expect to find these figures in the subsequent chapters, for each of the 14 countries considered. In the final chapter, we will bring the separate results together and discuss their overall implications for social stratification theory and for the state of social inequality in advanced OECD countries.

## NOTES

1. Our calculation of kingly life expectancy in Denmark is based on age at death of the following kings: Christian IV (1577–1648), Frederik III (1609–70), Christian V (1646–99) and Frederik IV (1671–1730). Since we consider only those royal family members who actually became kings and thus survived until the time of succession, we possibly overestimate the life-expectancy of designated successors.
2. We must also acknowledge the possibility of within-arms inequality. As Ramón Rojo (Jonny Wels, alias Gian Maria Volonté) explains to Joe (Clint Eastwood) in *A Fistful of Dollars*, when a man with a 45 meets a man with a rifle, the man with a pistol is a dead man. He should have qualified the statement with 'is usually a dead man', because at the end of the movie the opposite occurs and the man with a rifle is a dead man.

3. The discovery of gunpowder, however, played an important equalizing role in the battlegrounds of early modern societies but a disequalizing role in economic and social growth across countries (Diamond 1997; Boix and Rosenbluth 2014).
4. Indeed, if the first condition holds, there is no longer any need to control for education because education is independent from social origin.
5. It is worth recalling that we use the term 'effect' without assuming the existence of a single direct causal mechanism. We will come back to the issue of causality in the concluding chapter.
6. Incidentally, in developing this expectation based on the social demotion avoidance argument (Boudon 1974), we come close to the suggestion, by Goldthorpe and Jackson (2008) that the EGE question should be addressed by focusing on the ED association conditional on O. This means studying how educational returns vary depending on the socio-economic resources of the family of origin. The point is that the ED association is weaker for members of the upper class because they benefit from other types of resources, such as social skills, that enable them to overcome a low educational achievement and thus avoid unskilled occupations.
7. Part of this section draws on Bernardi (2012).
8. The study of the direct effect of education and social origin for first-generation immigrants involves additional complications, related to measurement of the time since arrival in the destination country, and the family background in the origin country, which cannot be properly addressed here.
9. Indeed, Piketty (2014) observes that in the nineteenth century, when there was no inflation, people would discuss long-term career and mobility strategies in terms of income, while the practice disappeared after the First World War and its economic implications made inflation familiar to everybody.
10. We have also used linear probability models for the analysis of the probability of access to the service class.

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