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Asymmetries in the Opportunity Structure. Intergenerational Mobility Trends in Europe

Gosta Esping-Andersen and Sander Wagner

E-mails:

gosta.esping@upf.edu
sander.wagner@upf.edu

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Department of Political & Social Sciences
Universitat Pompeu Fabra
Ramon Trias Fargas, 25-27
08005 Barcelona
http://sociodemo.upf.edu/

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Abstract

It remains unclear whether social mobility is increasing in the advanced nations. The answer may depend on mobility patterns within very recent birth cohorts. We use the inter-generational module in the 2005 EU-SILC which allows us to include more recent cohorts. Comparing across two Nordic and three Continental European countries, we estimate inter-generational mobility trends for sons both indirectly, via social origin effects on educational attainment, and directly in terms of adult income attainment. In line with other studies we find substantially more mobility in Scandinavia, but also that traditionally less mobile societies, like Spain, are moving towards greater equality. We focus particularly on non-linear relations. Most interestingly, we reveal evident asymmetries in the process of equalizing life chances, in Denmark. The disadvantages associated with low social class origins have largely disappeared, but the advantages related to privileged origins persist.

Introduction

Research on inter-generational mobility has been on a roller-coaster ride over the past decades. The optimistic vision of rising meritocracy in the post-war era gave way to the gloomier 'constant flux' thesis in the 1990s, but now the optimistic view seems to be gaining ground once again – although, it seems, primarily in terms of more equality of educational attainment.

The seminal studies of Erikson and Goldthorpe (1992) and Shavit and Blossfeld (1993) depicted a scenario of persistently strong origin effects, be it in terms of educational attainment or of social class mobility.[1] And, yet, both studies suggested that Sweden had broken the Gordian Knot of social inheritance. The impact of educational reform emerged as a key issue, not surprisingly considering that origin-destination relations are increasingly mediated by origin effects on educational attainment (Breen and Luijkx, 2004). The literature concluded, broadly speaking, that Swedish exceptionalism was primarily due to the elimination of financial constraints (via welfare state redistribution) and to the *de facto* elimination of tracking up to age 18 (Erikson and Jonsson, 1996). If concertedly strong egalitarian policies should make a difference, this should become evident also in Denmark and Norway. This indeed appears to be the case (Lindbekk, 1998; Jaeger and Holm, 2007; Esping-Andersen, 2004).

Jaeger and Holm (2007), in fact, argue that Scandinavia has fostered a uniquely egalitarian mobility regime. This seems clear as far as education is concerned, but less so with regard to the direct effects of origin on destinations. Some studies conclude that the equalization thesis extends also to offspring's career success, in particular income (Corak, 2006; Bjorklund and Jantti, 2009); others show the opposite (Mastekaase, 2011).

More broadly, there is mounting evidence that other countries, too, are becoming less class-ridden. This is however primarily in terms of the influence of origin on educational attainment (Breen and Jonsson, 2005; Breen et.al., 2009). The latter study identifies two distinct trajectories. In one group (Britain, the Netherlands and Sweden) class inequalities in educational achievement were always, comparatively speaking, more modest. In the other group (Germany, France and Italy) class inequalities were very strong in the past and have declined markedly. But – and this is an important qualifier – the decline of origin effects is primarily manifest at the lower tiers of the education pyramid. In some countries (like the UK) the influence of social origins seems actually to have strengthened at the tertiary level (Blanden et.al. 2004).

Recent studies that focus on direct origin effects, i.e on offspring's career outcomes, are more likely to support the constant flux thesis – be it in Norway (Mastekaase, 2011), in Britain (Bukodi and Goldthorpe, 2011), in Italy (Barone, 2009), or in Spain (Carabaña, 1999). [2]

[1] Some later studies have produced consistent results in terms of the direct effects of origin on destination (Mastekaasa, 2011; Bukodi and Goldthorpe, 2011).
[2] Note, however, that Ballarini and Schadee (2010) find weakening origin effects for Italy.

Explaining Mobility Trends

How does one explain the mix of persistent and declining origin effects? Firstly, some degree of persistency should be expected if life chances are governed by genetic endowments. The best estimates available suggest that the father-son earnings correlation would be reduced by 40-50 percent if their biological link were removed (Bjorklund et.al., 2006; Liu and Zeng, 2009). In any case, genetics are clearly irrelevant for explaining cross-national variations in social mobility.

Secondly, building on Boudon's (1974) distinction between primary and secondary origin effects, Breen and Goldthorpe (1997) present a rational choice explanation that focuses on how educational decisions are made. Here, any given choice will depend on the perceived chances of success and failure, and on the estimated costs and benefits associated with additional education. How people choose will, in turn, depend very much on the interplay between family characteristics and the education system (e.g. systems with a strong vocational tradition may bias working class parents to favour apprenticeship rather than academic lines). As Erikson and Jonsson (1996) emphasize, less educated parents may also have difficulties navigating their children through an education system that they, themselves, are unfamiliar with – thus producing risk avoidance. This is why early tracking is likely to strengthen origin effects.

A third explanation for the persistency of social inheritance is that educational systems, however egalitarian in design, are incapable of compensating for inequalities rooted in the family, particularly with regard to how (and how much) parents can invest in their children. This perspective has found its way into a number of analytically different approaches. In Lucas' (2001) model, the main mechanism lies in quality-differentials in education systems that fortify class inequalities. In James Heckman's learning-begets-learning model the primary reason lies in family-induced stratified effects already determined in the *pre-school* ages (Meyers et.al., 2004; Carneiro and Heckman, 2003; Duncan and Brooks-Gunn, 1997; Jencks et.al., 1979). But, as Carneiro and Heckman (2003) show, high-quality pre-school programmes can be extraordinarily effective in equalizing children's learning abilities. In fact, there is some (indirect) evidence that countries with universal, high-quality child care also produce more homogenous distributions of both cognitive skills and educational outcomes (Esping-Andersen, 2004; Esping-Andersen et.al, 2011). [3]

A fourth possible explanation stresses the role of macro-level conditions, in particular prevailing levels of income inequality. This is explicit in Solon's (1999) model of inter-generational income mobility. From this model one would predict that aggressive welfare state redistribution can promote more mobility.

So, there are numerous plausible explanations for why we should find change in the association between origins and destinations. Income redistribution should matter, as

[3] Erikson and Rudolphi (2010) argue, similarly, that the expansion of pre-schools has equalized educational attainment in Sweden. Woessmann (2004) suggests that the weaker impact of family characteristics on children in France compared to Germany is related to differences in pre-school attendance.

should the cost of education and the perceived returns to continuing in the system. A unique feature of the Nordic countries is not only their highly compressed income distribution but also their efforts to eliminate tracking and encourage children to remain in school through the upper-secondary level.[4]

The learning-begets-learning hypothesis offers another credible account for Scandinavian exceptionalism. These nations are World leaders in terms of providing universal, high quality early care which should produce exceptionally positive effects for disadvantaged children. In addition, their education systems are extraordinarily homogenous with regard to quality standards. Except for Belgium and France, early child care has been marginal in all EU countries.

If any or a combination of such 'welfare state' effects exert a decisive influence on mobility, we should expect to find clear differences across child cohorts. [5] But it is evident that any salient child care effects anywhere are unlikely to apply to children born prior to the mid-1960s. The same applies to rival welfare state effects, such as income equalization or school reforms. One way to capture welfare state effects would therefore be to compare not only across countries, but also across cohorts born before and after the implementation of crucial welfare state reforms.

The two major 'constant flux' studies cited above analyzed rather old birth cohorts. Indeed, the evidence that demonstrates increased mobility comes from studies that include younger cohorts (Breen et.al., 2009; 2010; Esping-Andersen, 2004). And yet, the youngest cohorts in the Breen studies were born 1959-66. These would have benefited from income equalization and school reforms introduced in the 1960s, perhaps in particular those that postponed tracking, but they are too old to have benefited from child care expansion.

Sorting out the role of these various factors is inhibited by data limitations. Rich data on family characteristics are difficult to obtain in cross-national comparative studies. And identifying salient institutional features of education systems and welfare states is even more difficult.

Identifying Mobility Change

It is common in stratification research to test models that include only core origin variables such as parents' education and social class, as in the Breen (2009) and Eriksson and Goldthorpe (2002) studies. From other research, however, emerges quite compelling evidence that family structure (such as lone parenthood or sibling size) and culture can have a decisive impact on children's life chances (de Graaf, 1988; Esping-Andersen, 2009; Woessmann, 2004). The evidence suggests that the influence of family structure varies considerably across countries. Woessmann (op.cit) finds that single parenthood has negative effects on children's school performance in the US,

[4] Bjorklund and Jantti (1997) argue that Sweden's high degree of inter-generational income mobility is mainly due to its compressed earnings distribution.
[5] For a review of how welfare states can influence social mobility, see Nolan et.al. (2010)

Norway, Ireland and Germany, whereas not in Denmark, the Netherlands or Spain. Moreover, such effects may change over time if welfare state reforms alter their impact or if the social gradients, say of lone parenthood, change.

One important issue is whether origin-destination patterns are non-linear. This is, of course, explicitly assumed in class-based models, such as Erikson and Goldthorpe (1992), and in research that focuses on educational transitions (Mare, 1981; Shavit and Blossfeld, 1993; and Breen et.al., 2009). The importance of non-liniarities has been corroborated in inter-generational income mobility studies (Couch and Lillard, 2004; Jantti et.al., 2006; Bjorklund and Jantti, 2009). These show that parent-child correlations are especially strong at the very top and bottom of the income distribution, but comparatively weak in the middle. Jantti et.al's (2006) study is especially revealing since it shows a similar lack of downward mobility from the very top across many countries, whereas there are truly significant country differences in terms of upward mobility chances for those who come from the bottom. Children from poor families in Scandinavia are more than twice as likely to be upwardly mobile as are poor children in the US.

It would accordingly seem that the mechanisms that drive mobility patterns differ across populations. The reason may be that families and institutions interact differently. This appears to be the case for early child care which produces a far greater marginal benefit to children from low socio-economic origins (Esping-Andersen et.al., 2011). Similarly, if the negative effects of lone-parenthood are primarily driven by financial constraints, they should be less decisive where welfare state support is generous and-or where solo mother employment rates are high (as in Denmark).

This is very much our starting point. One way to interpret the mobility asymmetries found in Jantti et.al. (2006) is that all major welfare state effects primarily produce strong, positive effects for children from disadvantaged origins. It is likely that children from advantaged families would fare equally well with or without welfare state support. In other words, the analyses to follow are guided by the general hypothesis that welfare state induced changes in the opportunity structure will promote more upward mobility from the 'bottom', compared to the 'middle', but are unlikely to influence the relative advantages enjoyed by the 'top'. This asymmetric mobility scenario echoes Alba's (2009:15) notion of 'non-zero-sum mobility', which obtains…"when members of lower-situated groups can move upward without affecting the life chances of members of the well-established ones".

To explore this hypothesis we analyze the inter-generational module in the 2005 EU-SILC. These data allow the inclusion of very recent birth cohorts (born 1964-77) and comparisons across different welfare state models (Denmark, Norway, France, Italy, and Spain). As explained below we, like Jantti et.al. (2006), focus specifically on mobility patterns from the 'bottom' and 'top'.

Identifying Meritocratic Mobility Systems

Education is primarily a means by which parents try to maximize the life chances of their offspring. This is why inter-generational mobility studies assume that social origin effects are primarily mediated by their influence on educational attainment. Those that favour a non-linear approach identify stronger direct origin effects while the more linear approach of the social status tradition finds that education accounts for most of the origin-destination correlations (Breen and Jonsson, 2005). Breen and Luijkx (2004) suggest that the mediating effect of education is strengthening over time.

One reason why class models arrive at stronger direct effects has to do with the already mentioned lower mobility at the very bottom and top of the social pyramid. Very rich parents can, by over-investing in their kids, shelter them from downward mobility; the poor are likely to suffer from multiple disadvantages (Mayer, 1997).[6] As Mayer's study also suggests, it is not certain that the main culprit is low income *per se*. What maybe really matters are the characteristics that explain why the parents are poor to begin with. Another reason has to do with the social class correlates of family structure. US research shows that children of lone parents have consistently lower attainments. But it is not altogether clear whether this is a low-income effect, due to other disadvantages connected with lone motherhood (such as less parenting input), or to social selection into lone motherhood (McLanahan and Sandefur, 1994; Biblarz and Raftery, 1999).

If Breen and Luijkx (2004) are correct, this has important ramifications for how we study social inheritance. A weakening of the direct impact of social origins concomitant with a strengthening of education effects would suggest rising meritocracy, but only *if* also the origin-education correlation is declining.

Our approach is, like in so many studies, to capture macro-level effects by comparing across countries and successive birth cohorts. It is, however, near impossible to distinguish education system effects from the potential impact of welfare state redistribution. There is a very high degree of covariance in terms of welfare state redistribution and key 'egalitarian' education system features, such as tracking, comprehensiveness, costs, or child care attendance.

Unfortunately, for some countries the EU-SILC data suffer from very low response rates on key variables, such as parental occupation and education. This implies that we must omit important cases like Germany, Sweden, and the UK. We can, however, include two Nordic (Denmark and Norway), two Mediterranean countries (Italy and Spain), and France. [7]

[6] The impact of childhood poverty tends to be somewhat less severe in Europe, but this does not mean that it matters less (Gregg et.al., 1999; Maurin, 2002).
[7] The EU-SILC is a joint European effort to construct harmonized data for the member countries, in particular with regard to household income and well-being. The 2005 panel wave included a special inter-generational module with information on attributes related to the family of origin.

The limited number of nations implies very little leverage in terms of distinguishing education system and welfare state effects. The two Nordic countries are very similar both as regards redistribution, child care attendance, and educational institutions -- the one major difference being Denmark's considerably stronger vocational education tradition. Also in terms of timing, the two countries promoted welfare state expansion and education reforms pretty much in tandem. The two Latin countries form another very similar pair, with comparatively un-developed family policies and low degrees of income redistribution. Their educational systems are also quite similar with a weak vocational tradition and, until recently, quite early tracking. The latter is also the case for France, which however boasts a comparatively generous family policy. But French family policy has also been very pro-natalist in orientation, hugely favouring higher-order parities (the 3rd child in particular) which means that sibling size should matter importantly. France also stands out in terms of child care provision. Attendance rates are as high as in Scandinavia at age 3, but considerably lower for the under-3s (Esping-Andersen, 2009).

Child care enrolment will reflect maternal employment. This means that there are bound to be important selection effects related to mother characteristics that influence children's educational trajectories. In Scandinavia, where basically all mothers work, the influence of such selection is likely to be minor. In France, Italy, and Spain, maternal employment remains low among the less educated.

As noted, we would expect that salient macro-level effects pertain only for cohorts born after the mid-1960s. For the two Mediterranean countries, the only really significant effect would have to come from education reforms and delayed tracking. [8] In order to ensure sufficient observations, we distinguish two broad post-war cohorts: those born 1950-63 (the post-war cohort), and those born 1964-77 (the 'welfare state' cohort). We chose 1977 as our cut-off date so as to ensure that that the youngest men (28 years) in our sample would, in all likelihood, have completed education and made the transition into employment. Like Breen et.al. (2009), we focus exclusively on sons. The cohort-specific sample sizes are shown in Appendix Table 1.

Identifying direct and indirect effects

Our aim is to identify the salience of both direct and indirect (via education) family-of-origin effects. To identify direct (origin -> destination) mobility, our destination measure is sons' annual (log) earnings (measured for one year). This is importantly motivated by the higher quality of income information in the SILC. The occupational data are limited to a 2-digit ISCO classification.

Since the youngest persons in our study are only 28 years old, some will be at an early stage of their careers. Because high skilled workers typically experience a far steeper age-wage curve, the upshot is that we will have some downward bias in terms of

[8] Checchi et.al. (2006) find an increase in mobility for cohorts that benefited from postponed tracking in Italy during the 1960s.

income measurement for the youngest with tertiary-level education. We partially correct for this by including an age variable within each cohort-specific model.
To identify indirect effects (origin -> education), we adopt a transitions approach with selection models. We opt for bi-variate Probit estimation which, in contrast to the standard Logit approach, does not assume that selection on unobserved heterogeneity is identical for each of the transitions (Cameron and Heckman, 1998; Cappellari and Jenkins, 2006; Holm and Jaeger, 2009).

The theoretical model

As noted, the destination variable is the respondent's log net income. The underlying theoretical model from which all our estimations can be derived (and interpreted) is the following:

$$(1) \ln Y = \beta_1 C_{obs} + \beta_2 C_{unobs} + \beta_3 P_{obs} + \beta_4 P_{unobs} + \beta_5 E + \beta_6 S + \varepsilon$$

The son's income, Y, depends on a set of observable and unobservable characteristics of the child (C), as well as of the parents (P). Furthermore income depends on societal-level factors (S), such as the welfare state, early childhood programs, and the education system. Because of the importance of education (E) we model it separately. The error term ε can be thought of as including all things similar to lottery winnings.

Obviously C, P, S and E are likely to interact in many ways. We tested the relationship of the variables we use for modelling C and they are not strongly correlated. We therefore treat them as if they are independent one of the other. The societal effects are implicitly identified via cohort and country specific estimation. We have, in any case, too few countries and cohorts for any genuine test of S-effects. To ascertain how S interacts with P and C, we compare the effect of child and parental characteristics over time and across countries. Our underlying theoretical model for education is.

$$(2) E = \gamma_1 C_{obs} + \gamma_2 C_{unobs} + \gamma_3 P_{obs} + \gamma_4 P_{unobs} + \gamma_5 S + \vartheta$$

Here, all variables are defined as previously and ϑ is the error term. Similar to the approach outlined for (1) we identify S by comparing cohort and country specific estimates. Combining (1) and (2), then, gives us our final model in which log income depends on current child characteristics as well as parental characteristics, both directly and mediated via educational attainment.

To identify meritocracy, we must demonstrate three effects. A first precondition is that social origins do not directly influence the life chances of children – here measured with income. In terms of (1) this implies that $\beta_3 = 0$. The second criterion is that social origins have no effects on educational outcomes. This condition refers to (2) and would imply that $\gamma_3 = 0$. Thirdly, meritocracy implies that educational attainment plays an increasingly strong role in dictating final outcomes, which means that β_5. must have strong effects. In other words, we operate with two inter-related and sequential outcome variables: on one hand education as mediator and, on the other hand, a variable that captures life chance outcomes.

Variables

The term Y in (1) denotes total employee net cash income as recorded over the last 12 months. Education is relevant both in terms of origin characteristics and of sons' achievements. Sons' education enters (1) and (2) as E, and mothers' education enters into P_{obs} in both (1) and (2). Education is measured using the standard ISCED approach:

ISCED 0+1: only primary school or less
ISCED 2: lower secondary
ISCED 3: upper secondary
ISCED 4: Post-secondary, non-tertiary
ISCED 5: Tertiary degree (combines all levels)

The SILC data do not distinguish between vocational and academic lines within each level (except for ISCED 4) and this, as Schneider and Muller (2009) observe, may introduce some bias in estimations, particularly for countries with a strong vocational tradition (in our study this pertains primarily to Denmark).

To identify parental (P) characteristics, we focus on father's social class (using a 5-class version of the EGP scheme). Additionally, P includes mothers' education, immigrant background, lone motherhood, maternal employment, number of siblings, and financial hardship in the parental family. Since the SILC data furnish only 2-digit ISCO (88) information on occupations, we are limited in our ability to construct comparable EGP classes. We follow the conversion procedure proposed by Ganzeboom and Treiman (1996) and distinguish the following classes:

Class 1: large employers, high-level managers, administrators, and professionals
Class 2: medium-grade managers, administrators, and professionals and higher-grade technicians (including also the self-employed).
Class 3: white collar employees (clerks, sales and service employees)
Class 4: skilled manual occupations
Class 5: Unskilled manual workers

We focus on the top and bottom, i.e. on the impact of class 1 ('salariat') and class 5 ('unskilled') origins. We use the remainder (combined) as reference classes. A focus on the top and bottom of the class structure is motivated by our chief analytical objective, namely to identify mobility at the two extremes. [9]

[9] The EU-SILC data has some comparability problems for occupational coding. Applying the standard classification procedure for the EGP class scheme produces a salariat class for France, Italy and Spain that is clearly far too small. And if the salariat class here includes only 'elite' groups this is likely to produce an upward bias in the father-son mobility estimates for this group. We believe this problem stems from imprecise occupational coding that has classified some members of class 1 in class 2. To

In all our analyses, the middle is the reference category. It is clearly important to ensure that any observed mobility changes for either salariat or unskilled class origins are not driven by mobility changes occurring in the reference class. [10] To address this issue we conducted separate analyses that identify both compositional and mobility shifts in the reference class (see Appendix Figure 1 and 2). As the graphs for all the countries suggest it would not appear to be the case that any mobility gains across unskilled-class cohorts are driven by mobility declines in the reference (middle) class. In Figure 1 we see that the relative size of the 'middle' remains fairly stable across time and, as one would expect, the salariat class expands. And Figure 2 suggests a clear trend towards more education across all class origins. One notes that the difference between salariat and 'middle' origins does not change much over time, while sons of working class origins tend to experience a much steeper increase.

Controls

Including control variables in mobility models is not uncontroversial since they can influence the key variable of interest. We opt in favour of including a limited number because their impact is likely to vary both across countries and cohorts.

Firstly, the immigrant population has grown very rapidly in Western Europe (in the typical EU country, second-generation immigrants now account for roughly 5-7 percent of the school-age population). Potential immigrant effects should therefore intensify across the cohorts we observe. We should additionally expect that children of immigrants will be disfavoured in terms of educational attainment. There is now ample evidence that children (especially boys) of immigrants do very poorly in European educational systems (for an overview, see Heath et.al., 2008). Testing for immigrant-effects would appear crucial for assessing over-time trends in meritocratic selection.

Secondly, lone motherhood can have adverse effects for educational attainment (McLanahan and Percheski, 2008). We should expect different social selection mechanisms both across countries and cohorts. In the US, the race correlate exerts a major influence that will not obtain in most of Europe. Additionally, it is likely that the social gradients of divorce or non-marriage differ. Until recently, divorce probabilities were substantially greater among higher educated women. Any low-income effects are also likely to be weaker due to more generous welfare state support and, in Scandinavia at least, high rates of lone mother employment.

The impact of maternal employment is inherently ambiguous. There is clear evidence of adverse effects if mothers work during the child's first year; subsequently, the main issue is whether external care is of high quality (Ruhm, 2004). But we should, again, also consider changing social selection mechanisms. The first wave of female

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address this problem we decided to pool class 1 and 2 into a broader salariat class for these three cases. This, in turn, produces a salariat class that is probably a bit too large since it will include also semi-professional occupations (like lower-grade engineers). As a result, we are now likely to have a downward bias in our estimations for salariat origins in these three countries.

[10] We thank the anonymous reviewers for alerting us to this problem.

employment growth was biased towards educated, professional women. For the countries and cohorts included in our study, the correlations between maternal employment and children's educational attainment are generally very low and statistically insignificant. As will be explained below, maternal employment is our preferred variable to tap selection because it correlates strongly with other mother attributes and not with child outcomes. More importantly, it captures the mother's career dedication.

As noted, low income has been shown to strong influence child outcomes. The SILC module includes a recall measure of the presence and the degree of severity of economic hardship in childhood (ages 12-16). It originally included 4 degrees of hardship: severe and persistent, frequent, almost never, and never. We combine the two first and last values into a simple (yes/no) hardship dummy.

We finally control for sibling size. This is important because parents may be forced to prioritize child investments under conditions of severe budgetary constraints. Alas, we do not have information on birth-orders.

Since our focus is on origin effects, we avoid variables pertaining to the son's present characteristics since this could bias the origin estimations whether or not such may be related to origin. But we do control for self-reported health status in C_{obs} since this can obviously affect income. Descriptive statistics for our analyses are presented in Appendix Table 1.

One might argue that the inclusion of these controls can influence our social origin effect estimates. To test whether this is the case, we ran models without the controls separately (not shown). It turns out that inclusion of the controls does not in any significant way affect the class-of-origin estimations. But, as we shall see there are two co-variates, financial hardship and mother's education, that consistently exert a strong independent influence.

Indirect social inheritance effects: origins ->education

We estimate educational attainment as transitions with bi-variate Probit models.[11] This is particularly relevant for cohort comparisons because this type of modelling is invariant to changes in the overall education distribution.

Transition models can be thought of as a different approach to dealing with P_{unobs} and C_{unobs} simultaneously. There are two alternative ways to study transitions: one, to examine whether a person takes the step into a higher level; another, to focus on whether a person completes a higher-level degree. Like Breen et.al. (2009), we opt for the latter. Any salient origin effects should emerge at the baccalaureate level and

[11] We have also re-estimated with a linear OLS approach (not shown) so as to check for robustness, and to verify whether inheritance effects coincide or differ according to our theoretical specification. As it turns out, the results are similar to those derived from our transition models.

beyond. We focus on two transitions, E_1 (completed upper secondary) and E_2 (completed 4-year tertiary). The probability of any higher-level transition must be conditional on making the first transition $[P(E_2|E_1 = 1)$. We estimate the following equations:

(5) $E_1 = \gamma_1 C_{obs} + \gamma_3 P_{obs} + +\vartheta_1$

(6) $E_2 = \gamma_1 C_{obs} + \gamma_3 P_{obs} + +\vartheta_2$

(6) is only calculated on the sub-sample where $E_1 = 1$, i.e. those who made the first transition. The error terms ϑ_1 and ϑ_2 will include the unobserved effects from (2). We assume that

$$\begin{pmatrix}\vartheta_1\\ \vartheta_2\end{pmatrix} \sim N(0, \Sigma)$$

where

$$\Sigma = \begin{pmatrix}1 & \rho\\ \rho & 1\end{pmatrix}.$$

Bi-probit estimation of models (5) and (6) allows us to identify ρ, the correlation between the error terms of the two transition equations. Put differently, we do not unrealistically assume that unobserved heterogeneity related to the first and second transition is uncorrelated. [12] We must also assume that the variance for the two models will differ (those that study at the tertiary level are likely to be more similar than those at the secondary level). We therefore normalize by dividing the obtained coefficients for model 2: $[\beta/\sqrt{1-\rho^2}]$.

Social Origins and Educational Transitions

As shown in Table 1, in some cases the rho values are very close to 1.00 (the oldest Danish cohort and both Norwegian cohorts), but in many cases also quite low. Origin effects have as a general rule weakened across the cohorts in all countries. But in line with previous research, this pertains primarily to the lower transitions.

Our results confirm the idea that Scandinavia is exceptionally egalitarian. But we also see that equalization is distinctly one-directional: there are no real disadvantages of low class origins or financial hardship, both for secondary and tertiary level education. Additionally, we find that the advantages, albeit less strong, persist for those with 'salariat' origins. Moreover, the higher is the mother's education, the greater are the son's chances of higher educational attainment. And this effect has not really abated

[12] A technical account of this procedure can be found in Capellari and Jenkins (2008) and Holm and Jaeger (2009).

across the cohorts. For the Nordic countries we find (not shown) no significant effects of our family structure and immigrant origin variables. [13]

So far, then, our analyses suggest that Denmark and Norway conform to Alba's (2009) notion of non-zero-sum mobility. They have removed key mobility barriers by equalizing on behalf of the 'bottom', while the relative advantages for those at the 'top' are rather persistent. And as previously discussed, these findings are not driven by shifts in the reference (middle) class.

Table 1. Transitions Analysis for Upper Secondary (2nd) and Tertiary (3rd) Education. Bivariate Probit Selection Models *)

	Denmark		**Norway**		**France**		**Italy**		**Spain**	
	2nd	3rd	2nd	3rd	2nd	3rd	2nd	3rd	2nd	3rd
Father Low EGP										
Cohort 50-63	-.13	-3.25*	.05	-.94*	-.10	-.19**	-.17***	-.21***	-.52***	.01
Cohort 64-77	-.11	-.25	-.11	-.42	.12	-.34 ***	-.19***	-.13*	-.31***	-.08
Father Highest EGP										
Cohort 50-63	.77***	6.78***	.99**	2.49***	.14	.36***	.38***	.48***	.59***	.32**
Cohort 64-77	.37**	.38**	.05	1.48***	.22	.33***	.38***	.47***	.27***	.19*
Poor Finances										
Cohort 50-63	-.45*	4.20	-.24	.59	.09	-.03	-.26***	-.33***	-.21***	-.13
Cohort 64-77	.24	-.20	-.08	-.43	-.25*	-.27*	-.28***	-.13*	-.20**	-.20
Mother Education										
Cohort 50-63	-.00	4.15**	.24***	.92***	.22***	.13***	.40***	.34***	.46***	.26***

[13] The one exception is that single motherhood has a negative effect on tertiary education for the old (1950-63) cohort.

Cohort 64-77	.27***	.14*	.25***	.83***	.12**	.23***	.36***	.26***	.40***	.03
P										
Cohort 50-63		.997***		.965***		-.951		.922**		.105
Cohort 64-77		-.225		.954***		.278*		.319		-.239

*) Coefficients for Tertiary level are normalized. Control variables in models: Number of siblings, immigrant status (dummy), and single mother family (dummy).
*** p<0.01; ** p<0.05; * p<0.1

France exhibits partial equalization. Unskilled origins have no adverse effects at the secondary level, but they persist for tertiary education. The advantages of salariat class origins have disappeared with regard to secondary schooling, but not for the tertiary level. In this respect, France parallels Scandinavia. We note that the financial hardship effect has become stronger for the younger French cohort. Italy and Spain depict a much more class-ridden scenario. Origin effects for both the highest and lowest EGP class remain strong and significant (except for tertiary education in Spain). The same holds for financial hardship. Although Ballarini and Schadee (2010) found a weakening of origin effects for Italy, our results point to persistency over time – which is basically consistent with Checchi et.al. (2006), and Barone (2009). [14]

In these countries, family structure and immigrant status do influence educational attainment (not shown). In France, interestingly, the impact of immigration changes sign between the two cohorts: significantly positive in the oldest and negative in the youngest. This surely mirrors post-war trends in French immigration. The older cohort included a large proportion of elites from former colonies; in the latter cohort, the bias is towards less skilled immigration. France also exhibits significant negative effects of lone motherhood in both cohorts, but limited to tertiary level education. And sibling size, too, exerts a negative influence but, for the youngest cohort, exclusively for tertiary education. We find negative single mother effects both in Italy and Spain, but they pertain only to secondary level schooling. [15] We also find that sibling size exerts a clear negative effect on schooling in Italy and Spain, primarily in terms of the secondary level. In both Italy and Spain, the negative effect of immigrant status only appears for the youngest generation in terms of tertiary level education. This is not surprising since mass immigration in these countries is quite recent.

All told, the two Nordic countries have undoubtedly succeeded in developing a meritocratic selection order to a far greater extent than in the other countries. But, and this is an important qualifier, the equalization of opportunities has been quite one-

[14] These studies, of course, used different data sets and also modelling techniques (the Ballarini and Schadee study apply cumulative logit models). It is not easy to find a clear explanation for the absence of unskilled class origin effects on tertiary education in Spain. One possible explanation lies in the absence of a strong system of vocational training which, in turn, has been compensated for by, comparably speaking, very high enrolments in tertiary education.

[15] For Spain, this contradicts Woessmann's (2004) findings.

sided: eliminating the disadvantages associated with poverty and low SEI origins while allowing the privileged classes to retain their comparative advantages. And, to repeat, this is unlikely to be driven by trends in the middle reference class.
Models control for: son's health status (as adult), age, years employed, sibling size, immigrant status, and an immigrant*sibsize interaction variable.
Source: SILC 2006

Following Lucas's (2001) thesis of 'effectively maintained inequality', it could be argued that these weakened origin-effects are misleading if the quality of (and returns to) similar levels of educational attainment differs significantly – say between private and public schools. We cannot test for this in any direct way but if such effects obtain they should be relatively minor since private or elite educational institutions hardly exist in any of these European countries –apart from marginal cases such as the French Ecole Normale Superieur.

Direct Effects of Social Origins on Income Attainment

In an ideal-typical meritocracy, life chances should not be dictated by social origins. Table 2 presents two sets of OLS estimations for the (log) income of sons. Since we focus on direct effects, the models do not include son's education. Our key origin variables, as before, are salariat and unskilled class origins, financial hardship, and mother's education. All models control for age, number of years employed, number of siblings, immigrant origin and also the son's health status as adult. [16] We also include an interaction variable for number of siblings by immigrant status. For reasons of space, Table 2 presents coefficients only for our key origin variables.

Table 2. Intergenerational Income Mobility. Social Origin Effects on Son's (log) Income. OLS estimation

	Denmark	Norway	France	Italy	Spain
Father Unskilled					
Cohort 1950-63	-.05	-.15	-.15***	-.02	-.11***
Cohort 1964-77	-.02	.02	-.02	-.03	-.15***
Father Salariat					
Cohort 1950-63	-.08	.21	.14***	.08**	.06***

[16] As will be recalled, the age control is included to adjust for education-based differences in career starts. For Norway we do not have data on number of years employed.

Cohort 1964-77	.22**	.01	.07	.00	.15***
Financial Hardship					
Cohort 1950-63	.02	.05	.00	-.09***	-.12***
Cohort 1964-77	-.19	.06	.03	-.08***	-.09**
Mother education					
Cohort 1950-63	.04	-.00	.05***	.11***	.02*
Cohort 1964-77	.01	.01	.04**	.06***	.10***
R^2					
Cohort 1950-63	.020	.050	.104	.071	.064
Cohort 1964-77	.061	.073	.053	.064	.116

Models control for: son's health status (as adult), age, years employed, sibling size, immigrant status, and an immigrant*sibsize interaction variable.
Source: SILC 2006

As a general rule, social origin effects diminish when we (not shown) include sons' educational attainment. This is what one would anticipate if the impact of origins is mediated via education. Considering the models' modest explanatory power throughout, it is also clear that salient social origin effects – if any – are mainly indirect (as was manifest in Table 1). Table 2 depicts the presence of very different intergenerational mobility patterns.

In Denmark and Norway, direct social inheritance effects were negligible already in the older cohort. But, yet again, the one notable exception is the positive and significant effect of salariat class origin on second-cohort sons' income in Denmark. And it remains very strong also when we control for sons' education. This may be because many sons in this cohort will have barely completed their studies and are, therefore, positioned at the very beginning of their age-wage curve.[17] For Norway, however, there are no strong effects of salariat origins. For the two Nordic countries, none of the 'family' variables – including immigrant status -- exert any particular influence on outcomes. By and large, then, we can portray the Scandinavian countries as essentially meritocratic as regards direct social inheritance effects – the one important exception being the advantage bestowed upon sons from the salariat in Denmark.

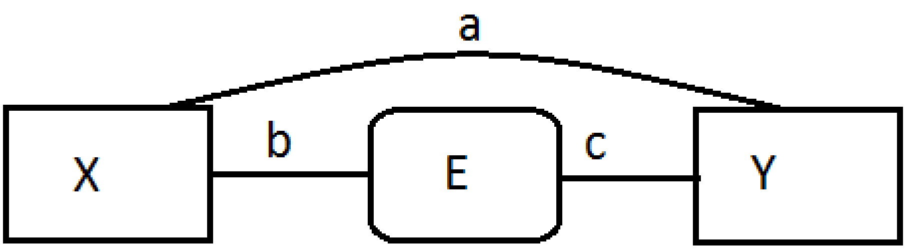
[17] This, in fact, is a plausible explanation since the age variable is highly significant for the youngest Danish cohort. We have (not shown) estimated social origin effects also for the other Goldthorpe classes, but the coefficients are systematically non-significant.

Italy and especially Spain present a direct contrast. Although class effects have weakened in Italy, the adverse influence of financial hardship is very persistent. This is pretty much in line with Bison's (2011) findings. Also, mothers' level of education has a relatively strong impact. As to the 'family' variables, sibling size has a negative influence for the oldest cohort in Spain, and for both cohorts in Italy. We find a strong negative immigrant effect for the older Spanish cohort and for the younger Italian cohort. In Spain, however, we find no weakening of origin effects – quite to the contrary.

Our French results are quite surprising since studies of intergenerational income mobility find very strong correlations for France (Corak, 2005). We, however, find that France approximates Scandinavia since the link between class origins and adult income has basically disppeared. Of course, our explanatory variables differ since the Corak studies estimated with parental income. Still, our limited income measure (financial hardship) clearly has no bearing on sons' life chances. But, as we saw, in France indirect origin effects remain very strong since origin class matters importantly for tertiary level educational attainment.

The Interplay of Direct and Indirect Origin Effects

The technical properties of mediation analysis are similar to those of path analysis in that they serve to decompose the total effect of X on Y into that which can be attributed to direct and indirect effects (Sobel, 1982). This is illustrated in the figure below.



A set of origin variables X affects Y (son's income), but mediated via Education. The direct effect of X is depicted in the 'a' path. But origins also influence education (the 'b' path) which, in turn, affects income (the 'c' path). The indirect effect, accordingly, is the product of b and c. To identify the indirect effect for our key variables we run two regressions, the first of which gives us the total effect of the origin variable on income (a+b*c). Using the terms established in equation (1) this regression is:

$$(7) \ln Y = \beta_1 C_{obs} + \beta_8 P_{obs} + \epsilon_1$$

As before, the only child characteristic we control for is health status (not reported in Table 3 below). By controlling for the effect of education we can then estimate the direct (or unmediated) effect of origin variables (the ‘a’ path):

$$(8) \ln Y = \beta_1 C_{obs} + \beta_3 P_{obs} + \beta_5 E + \epsilon_2$$

The coefficients obtained from (8) minus the coefficients from (7) will give us the indirect effect (b*c). Since the coefficient for the indirect effect is not obtained directly from regressions we cannot determine its significance level via a t-test. This is instead done using the ‘Sobel test’. The results are reported in Table 3.

Table 3. The Relative Weight of Direct and Indirect Effects on (log) Income

	Denmark		Norway		France		Italy		Spain	
	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77
Financial Hardship										
Total	.124	-.234	-.049	.036	-.001	.039	-.088***	-.085***	-.092***	-.113***
Direct	.120	-.245	-.087	.058	-.005	.057	-.054**	-.077***	-.055*	-.088***
Indirect	.005	.011	.037	-.021	.004	-.018	-.034***	-.008	-.037***	-.025***
Siblings										
Total	-.045	-.050	.003	-.024	-.034***	-.024*	-.030**	-.016	-.021***	-.011
Direct	-.047*	-.044*	.010	-.020	-.025**	-.020	-.018*	-.011*	-.009	.002
Indirect	.001	-.005	-.006	-.003	-.009**	-.003	-.012***	-.004	-.012***	-.013***
Single Mom										

Total	-.148	.245	n.a.	-.078*	-.150	-.138	n.a.	n.a.	-.012	-.093
Direct	-.081	.257	n.a.	-.055*	-.055	-.103	n.a.	n.a.	.012	-.092
Indirect	-.067	-.011	n.a.	-.023*	-.095**	-.035	n.a.	n.a.	-.025	-.001
Salariat Class										
Total	-.107	.171	.168	.056	.145**	.096	.076*	.000	.148***	.063
Direct	-.177	.148	.110	.019	.073	.066	.016	-.021	.058	.030
Indirect	.069*	.023	.057*	.037	.072**	.030	.059***	.022	.090***	.033***
Unskilled Class										
Total	-.093	.020	-.210	.012	-.124**	.012	-.004	-.026	-.148***	-.107***
Direct	-.063	.036	-.175	.045	-.071	.045	.040	-.021*	-.084***	-.072**
Indirect	-.030	-.015	-.035	-.032	-.053***	-.032***	-.037	-.006	-.064***	-.036***
Mothers Education										
Total	.042	.002	-.023	.036	.052*	.036**	.036*	.059***	.102***	.022
Direct	.032	-.008	-.046	.010	.016	.010	.006	.045***	.046***	-.009
Indirect	.009	.011	.023*	.025***	.037***	.025***	.030**	.014***	.056***	.030***
Immigrant										
Total	-.440	.121	-.569*	-.187	-.218**	-.218**	-.091	-.111	-.282***	-.119*
Direct	-.410	.080	-.586*	-.199	-.218**	-.285***	-.091	-.129	-.313***	-.129*

Indirect	-.030	.041	.016	.011	.067*	.067*	-.000	.019	.031	.010

n.a. = too few cases for estimation

The resultsillustrate very well our previous conclusion that French origin effects are primarily indirect. This is evident for the two class origins, for mother's education and also for the lone motherhood variable. In Scandinavia it is almost the other way around, considering that the origin class effects are primarily direct. But here we must remember that origins have very little predictive power for sons' income in the Nordic countries to begin with. We notice that, with few exceptions, the immigrant effect tends to be direct more than indirect. The exact opposite is the case for the mother education variable.

Conclusions

Our results for indirect effects confirm both the optimistic 'increased meritocracy' and the pessimistic 'constant flux' scenario. The impact of class origins on educational attainment has certainly weakened in France and the Nordic countries and it has abated somewhat in Spain. But in Italy it remains quite persistent.

We pursued a two-pronged approach to the meritocracy question. The first step was to test for indirect origin effects. Have educational opportunities been equalized? We estimated non-linearly (with Probit), but verified our results with also a linear OLS approach. The similarity of the results in the two kinds of analysis suggests that our analyses are credible.

Both models show clearly the bottom-up pattern of equalization in Scandinavia. In Denmark and Norway, educational attainment is clearly not influenced by either low-skilled class origins or by financial hardship. Nonetheless, the advantages of salariat class origins remain unabatedly strong. Norway exhibits a pattern that is roughly similar. Salariat class origins have no influence on higher secondary educational attainment, but they do significantly so for the tertiary level. The transition analyses (Table 1) show that class origin effects have declined markedly in France, less so in Spain, and not at all in Italy.

The second step was to identify direct (origin -> destination) effects. As evidenced from low R-square values and generally weak correlations, origin conditions generally do not matter much for adult income. This said, it is also evident that origins continue to matter far more in Italy and Spain, in particular as regards the adverse consequences of economic hardship. And even if the Scandinavian origin-destination correlations are small, we uncover once again the same asymmetric pattern: the equalization of life chances has primarily occurred at the bottom. This is most manifest in Denmark where the positive effects of salariat class origins have actually strengthened over time.

Using new data and being able to include younger birth cohorts, our analyses help confirm the results of recent scholarship that shows rising mobility across countries. Support for the constant flux thesis is only very partial. We believe, however, that our analyses have brought to light an, as yet, little noticed aspect of contemporary mobility regimes, namely the rather evident one-sided process of equalization that the Scandinavian countries have experienced.

How might we account for such asymmetries in the opportunity structure? Data limitations constrain our ability to provide clear answers. To the extent that cohort-cum-country variations capture macro level institutional influences, one might argue that such asymmetries are a logical consequence of aggressively egalitarian welfare state measures. To the extent that income redistribution matters, the main beneficiaries are to be found among the more vulnerable segments of society. Similarly, the democratization of access to education will in particular be of benefit to those who come from disadvantaged backgrounds. And the fact that the asymmetric patterns are especially pronounced in Scandinavia may very well support a Heckman-type hypothesis, namely that high quality early childhood institutions effectively reduce inequalities in children's school preparedness. In other words, the marginal effects of welfare state policies are far stronger at the bottom of the social pyramid.

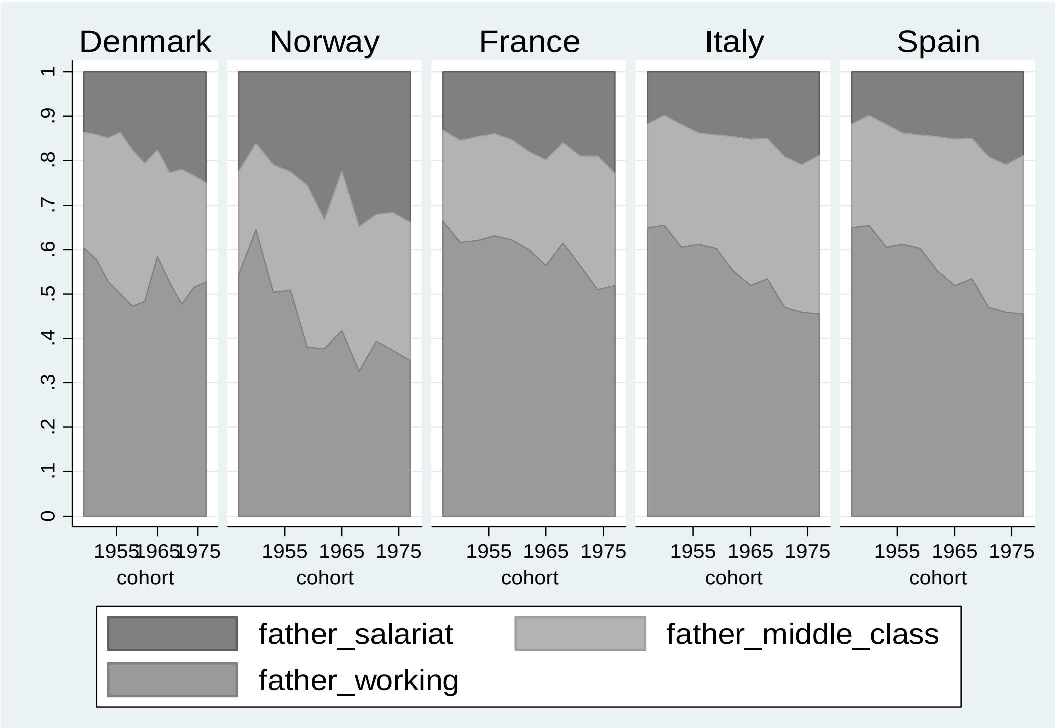
Appendix Table 1. Means and Standard Deviations

	Denmark		Norway		France		Italy		Spain	
	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77	Cohort 1950-63	Cohort 1964-77
Son Variables										
Log income	9.248 (3.582)	9.611 (3.00)	9.057 (3.670)	9.107 (3.348)	8.065 (4.169)	8.725 (3.348)	6.645 (4.593)	6.657 (4.451)	6.838 (4.396)	7.363 (3.982)
ISCED	3.375 (1.101)	3.468 (1.106)	3.603 (1.047)	3.745 (1.014)	3.235 (1.179)	3.643 (1.067)	2.639 (1.170)	2.872 (1.087)	2.638 (1.502)	3.033 (1.481)
Health	1.725 (.834)	1.615 (.776)	1.973 (.862)	. 1.885 (.828)	2.095 (.845)	1.798 (.765)	2.307 (.755)	1.978 (.720)	2.265 (.835)	1.958 (.743)
Parental Variables										
Mother Education	2.385 (.841)	2.895 (1.118)	2.897 (1.133)	3.354 (1.210)	1.319 (.987)	1.723 (1.232)	.966 (.856)	1.365 (.965)	.827 (.931)	1.154 (1.084)
Salariat Class	.161 (.367)	.214 (.410)	.139 (.346)	.191 (.393)	.232 (.422)	.291 (.454)	.180 (.421)	.231 (.243)	.127 (.333)	.168 (.374)
Unskilled Class	.396 (.489)	.371 (.483)	.348 (.477)	.259 (.438)	.485 (.500)	.434 (.496)	.491 (.500)	.401 (.490)	.566 (.496)	.471 (.499)
Single Mother	.070 (.255)	.130 (.337)	.053 (.225)	.072 (.259)	.069 (.254)	.093 (.290)	.040 .(1.95)	.043 (.204)	.043 (.203)	.050 (.219)

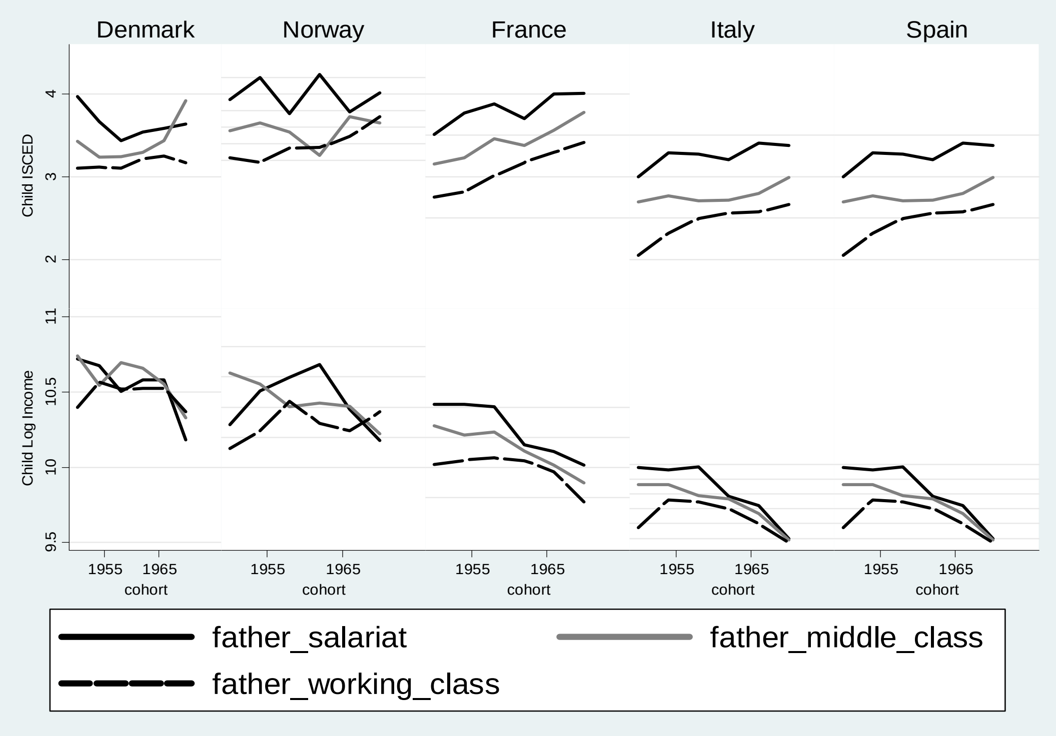
Immigrant Dummy	.036 (.187)	.038 (.191)	.037 (.190)	.068 (.253)	.107 (.309)	.074 (.262)	.030 (.172)	.059 (.236)	.037 (.190)	.064 (.245)
Financial Hardship Dummy	.078 (.269)	.067 (.251)	.063 (.243)	.072 (.259)	.228 (.419)	.181 (.384)	.446 (.497)	.316 (.465)	.246 (.431)	.164 (.370)

Source: SILC 2005

Appendix Figure 1. Composition of father's social class across son's birth cohorts.



Appendix Figure 2. Son's education and income by father's social class and birth cohort



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