Linking the Macro to the Micro: A Multidimensional Approach to Educational Inequalities in Four European Countries

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Abstract

Recent research into educational inequalities has shown the importance of decomposing social origins into parental class, status and education, representing economic, socio-cultural and educational family resources, respectively. But we know little about how inequalities in educational attainment at the micro-level map onto institutional characteristics of educational systems at the macro-level, if we treat social origins in a multidimensional way. Drawing on the rich over-time variation in educational systems in four European countries – Britain, Sweden, Germany and Italy – this paper develops and tests a number of hypotheses regarding the effects of various components of social origins on individuals' educational attainment in different institutional contexts. It is evident from our results that a great deal of similarity exists across nations with different educational systems in the persisting importance for individuals' educational attainment of parental class, status and education. But our findings also indicate that changes in the institutional features of educational systems have, in some instances although not in others, served to reinforce or to offset the social processes generating educational inequalities at the micro level.

Key words: educational system, comparative research, social origins, educational attainment

Introduction

Past research has shown that parental class, status and education have independent and distinctive effects on children's educational attainment (Authors). Rather than representing interchangeable indicators of the same concept of 'social origin', the three components relate to different dimensions of social background and can be seen as influencing children's educational attainment through particular mechanisms. In this paper we investigate the relevance of these components of social origins in a comparative setting, using longitudinal data from four European countries: Britain, Sweden, Germany and Italy. We choose a comparative approach because we aim to explore to what extent changes in the effects of the three components of social origins follow changes in the various properties of educational systems. The main objective is to match a multidimensional understanding of social origins with a multidimensional conceptualisation of educational institutions, and propose hypotheses regarding how far the different features of educational systems may *reinforce* or *offset* the effects of different components of social origins on individuals' education.

More specifically, we address the following research questions. (1) Do parental class, status and education have distinctive effects on individuals' educational attainment, and if so, how far do these effects show up in a similar fashion in our four countries? (2) Do the effects of parental class, status and education on individuals' educational attainment vary over time in the four countries, and if so, do they vary following

changes in features of countries' educational systems? (3) To what extent do the effects of parental class, status and education, when *taken together*, differentiate individuals' education, and do the combined effects of social origins differ in the four countries, depending on the characteristics of their educational systems?

Regarding case selection, we were driven by the aim to maximise variation in the institutional dimensions we consider, while ensuring the availability of high-quality micro-data. Although educational systems in all four countries were characterised by elitism, strong selection and stratification in the aftermath of WWII, reforms of the 1960s and 1970s introduced comprehensive education in Britain and Sweden, whereas the architecture of the German system largely remained untouched. Italy, in this respect, takes an intermediate position.

Components of social origins

We argue that in the study of social inequality it is necessary to distinguish between *relational* aspects, e.g. social class and status, and *attributional* aspects, e.g. education or income, and that these different aspects of social inequality need to be considered, both separately and in conjunction, if inequalities in educational attainment are to be understood. Each component of social origins captures different, even if correlated, resources that a family has available to support children's education.

We take parental class as indicating the extent of *family economic resources* (income, wealth and degree of economic security) available for the support of children's

education. We would regard class as being a better indicator in this respect than parental income alone. This is because class can be shown to be associated not only with level of current income but also with differences in income security, short-term income stability and longer-term income prospects (Goldthorpe and McKnight 2006). Moreover, it has been shown that the increasing inequality in incomes over the past decades has occurred to a greater extent *between* rather than within social classes – at least in Britain and Italy (Williams 2013; Albertini 2013).

Regarding parental status, we aim to capture the Weberian idea of status as being grounded in relations of perceived social superiority, equality and inferiority, as expressed in patterns of inclusion in and exclusion from more intimate forms of association and distinctive life-styles. We take parental status as indicating the extent of *family socio-cultural resources* available to support children's education as through parents' social contacts and networks and their cultural tastes and forms of cultural participation (cf. Chan 2010).

Given that parental education will be included in our analyses together with parental class and parental status, we take it as indicating the extent of the specific *educational resources* that parents have available to help their children; e.g. their ability to create a favourable home-learning environment, including assistance with homework or preparation for exams, and to provide their children with informed guidance through the educational system in regard to choice of schools, subjects, courses and examinations to take (cf. Schütz *et al.* 2005).

Linking the effects of social origins to educational institutions

Until recently the social science literature has predominantly focused on individual-level determinants of educational attainment. But of late a growing number of studies investigate the link between various characteristics of educational systems and individuals' educational outcomes (e.g. Van de Werfhorst and Mijs 2010; Bol and Van de Werfhorst 2013; Ansell and Lindvall 2013; Pfeffer 2015). One could argue that if institutional context were meaningless, one should find near-constancy in the association between social origins and educational attainment, and the effect of social origins should exhibit a uniform pattern across countries, which is not unequivocally the case (Pfeffer 2008). Insofar as institutions alter the costs and benefits associated with educational choices, and increase or decrease the probability of succeeding in a specific educational pathway, they constitute a potentially important mediating variable in accounting for the relationship between social origins and educational outcomes (Peter *et al.* 2010; Beblavy *et al.* 2013; West and Nikolai 2013).

Here we focus on institutional arrangement at the (lower and upper) secondary level of education, as students spend most time at this level and the decision whether or not to carry on to upper secondary level is known to be a critical juncture in school careers. We take into account the three dimensions of educational systems, which have received most theoretical and empirical attention: stratification, decommodification and standardisation.

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Stratification (Allmendinger 1989; Kerckhoff 2001) denotes the differentiation of the educational system into strata with varying degrees of permeability between these strata. It comprises two important sub-dimensions: tracking or streaming and selectivity. By tracking we mean separating students by academic ability into groups, classes and curriculum within a certain level of the school system. Tracking has been widely discussed in the literature (e.g. Ammermüller 2005; Brunello and Checchi 2007; Hanushek and Ludger 2005) and has generally been viewed as reinforcing educational inequalities (Werfhorst and Mijs 2010). To explain this effect, past research (e.g. Pfeffer 2008, Le Donne 2014) has emphasised the link between parental education and tracking. Educated parents may use their strategic knowledge of educational pathways to guide their children through the system. We accept this but also see a potential association with parental status. High-status parents could use their connections and networks to provide their children with information about the potential labour-market returns of various qualifications, thereby enabling them to make optimal educational decisions in order to maintain the family's social position and avoid downward mobility (Breen and Goldthorpe 1997). This mechanism is considered particularly relevant when it comes to decisions about upper secondary and tertiary education.

Drawing on Gamoran (1992), we distinguish selectivity of educational paths as a second sub-dimension of stratification. We define selectivity as a mechanism to assign pupils to schools, based on their test scores and past academic performance.

Higher level of selectivity is, again, expected to reinforce the effects of parental status and education, but via different mechanisms. Parental education enables parents to provide a supportive home-learning environment and thus makes it easier for children to pass admission thresholds. Parental status furnishes cultural resources which, in turn, help improve children's academic performance and pass admission thresholds. This effect is expected to be particularly pronounced if selection hinges on a child's reproduction of cultural knowledge and mastering of an established *culture générale*.

Decommodification as a dimension of educational systems denotes the extent to which education is provided by the state in the form of a public good, rather than being purchased as a private good on the market. We acknowledge that in all our four countries education is predominantly provided as a public good. However, the extent and the quality of public education critically hinges on the allocation of financial resources, which varies a great deal both across time and across countries. More specifically, we deem three sub-dimensions of decommodification to be particularly important. First, if the level of public expenditures on education is low, higher class parents may use their financial resources to purchase private education in the form of tutoring or various extra-curricular activities, thus supplementing low-quality public education (Ammermüller 2005; Schlicht *et al.* 2010). Second, higher class parents may decide to 'opt out' of the public system entirely if private education offers high-quality alternatives to public education (Busemeyer and

Iversen 2014). Third, in systems where access to tertiary education is associated with considerable direct costs, the availability of economic resources to pay for these fees is expected to influence whether or not students enrol in higher education. In sum, decommodification is expected to offset the effect of parents' unequal endowment with economic resources and, hence, the effect of parental class, on educational attainment.

Standardisation characterises the degree to which educational systems follow common, nation-wide standards and are controlled by central government as opposed to local authorities or by schools themselves. While tests of the effect of standardisation on attainment have yielded mixed results (Pfeffer 2008; Werfhorst and Mijs 2010), we expect three aspects of standardisation – budget making, examination and curriculum – to modify the effects of social origins in the following ways. To the extent that decentralised budget-making means that school budgets rely on local taxes, the economic profile of the local community and, by extension, the class profile of parents affects the resources available to schools (Gingrich and Ansell 2014). This, in turn, results in better-equipped schools and better learning environments, such as smaller class sizes in more affluent neighbourhoods (Kerckhoff 1995; Krueger 2003; Wößmann 2003). In addition, decentralised budget making opens the door at the local level for parental lobbying, which enables higher status parents to use their networks and connections to channel funding towards elite tracks of the educational system. Parental lobbying can also be important

regarding examinations. In contexts where examinations are set by local authorities or schools, high-status parents may employ their lobbying potential to strategically shape the type and content of exams, tilting them towards their own socio-cultural characteristics and thus favouring their children's success. In sum, stronger standardisation is expected to offset the effects of parental class and status. Regarding parental education, centralised examinations may in fact reinforce its effect on individuals' education, as it would be easier for highly educated parents to use their strategic knowledge of the education system and their own experience with exams to advance their children's education.

Educational institutions across the four countries

With a time frame spanning six decades (1950s until 2000s), comparing educational systems across four countries is a daunting task. Unlike recent studies that have analysed educational institutions in a shorter time-frame (e.g. Le Donné 2014), this study cannot rely on easily accessible indicators. Moreover, while some aspects of education, such as spending, easily lend themselves to quantification, other institutional features necessitate a more qualitative assessment based on case studies, historical narratives and other secondary accounts. We therefore rely on a number of country-specific sources to measure the properties of the educational systems we are interested in. To ensure the comparability of our indicators over time, we code every sub-dimension of stratification, decommodification and standardisation on an ordinal scale, ranging from low (=0) to high (=1), for every decade since the 1950s.

Depending on the level of detail of each indicator, the ordinal scale is either a 5-point or a 3-point scale. Since we do not attribute a particular weight to any specific sub-dimension, we take the average to derive an overall indicator for each decade[1]. *Table A1* in the *Appendix* summarises the indicators we use.

Starting with our *stratification* index, we measure the extent of tracking in an educational system by taking into account both the number of tracks and the duration of tracking at the secondary level. We then map the extent of tracking onto a 5-point scale as shown in *Table A2*. We in fact attribute a greater importance to duration of tracking than the number of tracks, considering that earlier tracking has a more long-lasting impact on students' educational attainment. As for selectivity, we follow a similar procedure by taking into account whether access to upper secondary education is based on academic performance assessed by tests, and whether specific tracks within upper secondary education are restricted to high-performing students. We also take into account the fact that there might be more than one entry barrier to upper secondary education. For instance, selection could take place both at the end of primary and lower secondary education. Overall, we deem the first criterion – general accessibility – to be more important, as such entry barriers bifurcate the student population into those with and without access. The coding rules are shown in *Table A2*.

Regarding *decommodification*, we work with four indicators. Total spending on public education and spending specifically on secondary education, both as a share of GDP,

capture a country's commitment to providing high-quality education as a public good. The percentage of privately educated students at the secondary level measures to what extent parents can opt out of public education in favour of a, supposedly, higher-quality private alternative. Finally, we also take into consideration the direct costs of attending tertiary education in the form of tuition fees. Although this indicator captures a feature of tertiary rather than secondary education, the costs of higher education influence parents' and students' decisions about whether or not to pursue upper secondary education; this is why we include it in the decommodification index.

To map the interval-scale data on spending and private education onto a 5-point ordinal scale, we first use a logistic function to fit the raw data in-between 0 and 1, with a cross-over point of 0.5 at the medium level (Ragin 2008). This medium level reflects the OECD average for total education spending, secondary education spending and spending on private education. The upper and lower boundaries reflect spending levels of the top and bottom three OECD countries, or, in the case of private education, the share of the most heavily privatised and exclusively public education systems. The logistically transformed values were then rounded to map onto a 5-point scale. Regarding the direct costs of attending tertiary education, we coded the country decades according to the level of annual tuition fees relative to the annual disposable household income. The coding rules are displayed in *Table A3*.

Regarding *standardisation*, we use three indicators. First, we code whether budget making for primary and secondary education takes place at the local, central, or a mixed intermediate level. Second, we assess the degree of standardisation of examinations and tests, ranging from unstandardised, through partly standardised, to fully standardised. Third, we consider the standardisation of school curricula, again on the same 3-point ordinal scale. Using secondary accounts, we qualitatively code these dimensions for each country-decade following the coding rules shown in *Table A4*.

Our measurements of the three dimensions of educational systems, as shown in *Figure 1*, reveal an interesting picture of institutional variation over the last six decades in all four countries[2].

[Figure 1]

The *British* case is characterised by a gradual elimination of selectivity and tracking. Regarding decommodification, the pattern is bell-shaped, driven by increasing outlays for education in the 1960s and 1970s, followed by declining spending levels and the introduction of university tuition fees in the late 1990s. The British system initially featured a very low level of standardisation, owing to mixed local-central budget making, decentralised examinations and the absence of a national curriculum. But the introduction of a national curriculum and the gradual standardisation of examinations starting in the 1980s changed the character of the British education, from a largely decentralised to a mostly centralised system.

The *Swedish* case resembles the British in that public education turned from a highly selective, early tracked system to a largely untracked, highly permeable one (Erikson and Jonsson 1996). However, education in Sweden still retained a higher degree of selectivity and tracking, insofar as students are streamed into different upper secondary tracks at the end of lower secondary education, and access to specific tracks is based on students' average grade points (Rudolphi 2013). Institutional reforms were accompanied by a marked increase of public expenditures on education, in particular from the 1960s until the 1980s, which is reflected in the rapid rise of our decommodification index. Private education has historically been very low in Sweden, but there was some increase in the 2000s. Regarding standardisation, Sweden switched from a rather unstandardised to a rather standardised system, due to the 1962 educational reform, which introduced a national curriculum and standardised examinations.

In marked contrast, the *German* educational system has not changed significantly (Schneider 2006), and its highly stratified nature has remained a constant feature since the early 1950s (Neugebauaer *et al.* 2013). Differentiation into a number of different tracks occurs early. To gain access to upper secondary education, students normally need to attend the *Gymnasium.* In this transition process, teachers' recommendations function as a key selection mechanism. But it should be noted that these recommendations are binding in only one third of all federal states. Moreover, selection continues even within the *Gymnasium* insofar as students may be required,

chiefly because of poor grades, to move to other school types. Overall, the German system has more than one de facto selection barrier, which would yield a selectivity score of 1 (very high). However, considering that the teacher recommendation is not binding in all federal states, we code selectivity at 0.75 (high). Regarding decommodification, the German pattern resembles the British in that spending levels generally increased from low levels, followed by a gradual decline since the 1970s. Although university tuition fees were abolished in the 1970s, they were reintroduced by some federal states in the 2000s. However, by 2012 this experiment had been abandoned. Regarding standardisation, centralised budget making at the *Bundesländer* level and a standardised curriculum have both been persistent features of the German educational system.

Finally, *Italy* has an educational system that occupies a middle position on all three of the dimensions we have distinguished. The country started with a highly elitist system in the 1950s where access to upper secondary education was based on academic performance and parental income (OECD 1969). In the early 1960s, educational reform eliminated the entrance barriers to upper secondary education (Barone 2009), and also reduced the degree of tracking in secondary education in general, although at the upper secondary level some de facto academic versus vocational tracking still exists (Barone and Schizzerotto 2008). Regarding decommodification, educational spending first climbed up from very low post-WWII levels, and private education gradually declined. However, since the 1970s there

have been no further significant improvements in these respects. Moreover, university fees were raised in the 1990s, although their level remained rather low (Brunello *et al.* 2000). As for standardisation, Italian education has historically been highly standardised, with the central government having ultimate control over exams, curriculum and the budget. However, standardisation recently declined somewhat in the wake of a devolution process granting limited budget making competences to the regional level.

Hypotheses

In *Table 1* we show the links that we envisage between the effects of our three dimensions of social origins on individuals' educational attainment and our three dimensions of educational systems. Taking these links together with the over-time change in the latter, as indicated in *Figure 1*, we can now formulate hypotheses about the expected changes in the effects of social origins in our four countries. The hypotheses are summarised in *Table 2*. We should highlight that the expected effects are *stylised* representations of complex social processes, in which social origins effects on educational attainment are likely to be influenced by a number of intermediating conditions apart from that of educational institutions, on which we here focus.

[Tables 1 and 2]

Regarding the effect of parental class, based on our decommodification and standardisation indices, we do not expect a sustained decline in any of our four

countries. For Britain and Sweden, an overall and fairly sharp decline is expected, but without much change in recent decades. For Germany and Italy, we hypothesise a moderate decline of the importance of parental class, but only for the earlier decades – based on the reverse U-shaped trend in decommodification and persistent and strong standardisation.

Regarding the effect of parental status, we expect a sustained decline in Britain – due to the sharp drop in the strength of our stratification index and a marked increase in the strength of our standardisation index in recent decades. A decline is expected in Sweden too, although with little change in recent decades, in accordance with the stability in stratification and standardization scores. In Germany, no change is expected, again, because of the relative stability of the two dimensions of the educational system that are thought likely to modify the parental status effect. For Italy, we expect only a moderate decline of the importance of parental status chiefly because of the drop in the stratification scores in the 1950s and 1960s being offset by strong standardisation throughout the whole period covered.

Regarding the effect of parental education, we again take the stratification and the standardisation dimensions of the educational system as most relevant. In Britain, we thus expect a fairly sharp decline of the effect, followed by relative stability. In Sweden and Germany, the effect of parental education is expected to be persistent. In Italy, we hypothesise a moderate decline, followed by relative stability.

Finally, we would expect that when all three components of social origins are taken together, their combined effect on individuals' educational attainment will decline fairly sharply in Britain and Sweden, but rather moderately in Italy. For Germany, we would expect only a minimal, if any, reduction.

Data and variables

The British data are taken from three birth-cohort studies: the MRC Survey of Health and Development, the National Child Development Study and the British Cohort Study. The studies follow children born in one week in 1946, 1958 and 1970, respectively, through their lives. The Swedish data come from four longitudinal studies on pupils born in 1948, 1953, 1967 and 1972, respectively. The studies, conducted by the University of Gothenburg, selected a representative sample of 10% of all pupils reaching Grade 6, that is, at around age 13. Data for Germany are taken from the adult cohort of the German National Educational Panel Study, which includes individuals born between the mid-1940s and the late-1980s. Based on a multi-cohort design, the NEPS contains detailed retrospective monthly information on respondents' educational trajectories and family histories. For our purposes, we group the respondents into three birth cohorts spanning the years 1945-54, 1955-54 and 1965-74. Since the institutional background of East Germans' education was very different from the one described above, we include individuals born in *West* Germany only (hereafter 'Germany'). As for the Italian data, we rely on the 2005 Italian section of EU-SILC. The dataset includes individuals born between 1939 and

1988 and provides information on educational attainment and parental background. For our purposes, we selected a sub-sample of respondents born between 1939 and 1975 and grouped them into three birth cohorts: 1939-53, 1954-64 and 1965-75. The cut-off points for the cohorts align with the institutional changes noted in the Italian educational system.

In all countries, we only include into our analyses those respondents for whom we have complete information on all variables described below[3].

We measure educational attainment – our dependent variable – at some point between ages 35 and 40, which maximises the chances that individuals have attained their highest possible qualification. We focus on two 'educational thresholds': first, that which divides a high level of attainment at secondary level (at least) from any lower attainment; and second, that which divides tertiary level education from any lower attainment. The distribution of individuals according to the two thresholds is displayed in *Table A7*.

The main points to emerge from this table are the following. First, in each country we see a significant growth in the numbers attaining the upper secondary threshold. Second, expansion at the tertiary threshold has been more sluggish and predominantly benefited women. Third, in the latest cohort, women either outstrip men in terms of attainment (Sweden, Italy) or are at least on par with men (Britain, Germany).

Our explanatory variables are parental class, status and education. For Britain and Sweden, information on these variables was collected when children were aged 10-11 and 7-13, respectively. In the German and Italian surveys the parental variables are based on retrospective information from respondents and refer to when respondents were age 15 (Germany) and 14 (Italy). In constructing the parental background variables, our aim has been to reflect the national situation as closely as possible, rather than working with nominally identical indicators.

Regarding parental class, we use the National Statistics Socio-Economic Classification (NS-SEC) for Britain, the Erikson-Goldthorpe-Portocarero (EGP) scheme for Sweden and Germany (Erikson and Goldthorpe 1992) and the European Socio-economic Classification (ESeC) (Rose and Harrison 2014) for Italy. It is important to note that all three classifications have the same theoretical basis. In Britain, Sweden and Italy, we use the dominance approach of class allocation (Erikson 1984); i.e. we choose the class category of the parent working full-time or, if both parents work full-time, we choose the higher category. In Germany, given that in the cohorts in question mothers rarely worked, let alone in higher classes than fathers, the default is to use the father's class, save for individuals for whom this information is missing, in which case we use the mother's class.

Regarding parental status, we use national versions of the CAMSIS scale (Prandy and Lambert 2003) for Sweden, Germany and Italy. The CAMSIS scale is based on the occupational structure of marriages and uses multidimensional scaling to derive

scores. For Britain, we use the status order developed by Chan and Goldthorpe (2004), which is based on the occupational structure of close friendship. Like the CAMSIS scale, the Chan-Goldthorpe scale uses multidimensional scaling to derive status scores.[4] We used the dominance approach for all four countries to construct parental status scores. To facilitate comparison across cases, status scores are standardised between 0 and 1, with higher scores indicating higher status.

Regarding parental education, we use seven ordered categories for each country. While these categories reflect the specificities of the respective educational systems, they all capture the key qualification thresholds at the upper secondary and tertiary level, and are thus broadly comparable. For Britain, Germany and Italy, the variable represents parents' qualifications considered in combination, while in the Swedish case parental education represents the level of education of the parent who attained the higher qualification. Given that our study spans several decades in which the distribution of education markedly changed, we prefer a *relative* measure of parental education. We therefore score parental education according to the proportion of parents falling below a specific category in the cumulative distribution for their children's cohort. Representing a proportion, the resulting measure ranges from 0 to 1. Summary statistics showing the distributions of each parental variable are available in *Table A8[5]*.

Results

Since we do not have detailed data on the educational pathways that respondents followed, we could not use educational transition models (cf. Breen and Jonsson 2000). We therefore use binary logistic regression models with the two educational thresholds indicated above as dependent variables and the three parental background indicators as explanatory variables. A similar approach was taken by (Authors)[6]. The models also include cohort dummies and are estimated separately by country for men and women.

When in the following sections we talk about the 'effects' of our explanatory variables, it should be noted that we intend this in a purely *statistical* sense and do not suppose that we are establishing causal relationships. The most we would claim is that insofar as our results are in line with the hypotheses we have set out, indirect support at least is given to the causal processes or mechanisms implied by these hypotheses.

Do parental class, status and education have independent effects?

Our first research question asks whether parental class, status and education have independent effects in each country and whether these effects show up in a similar fashion across countries. We present our findings in graphic form in *Figure 2*. The full results are shown in tabular form in *Tables A9* and *A10*. The graphs display the *net* average marginal effects (AMEs) of social origins on the likelihood of exceeding or not the upper secondary and the tertiary thresholds. Considering that parental class

is a categorical variable, in order to demonstrate its effect, we plot the class exhibiting the highest net AME in comparison to the class of routine wage-workers.[7]

[Figure 2]

The graphs for men and women alike bring out the importance of all three dimensions of parental background in all four countries. With few exceptions, parental class, status and education exert distinctive significant effects on men's and women's educational attainment. But the findings also reveal that the dimensions of parental background matter somewhat differently across countries. Specifically, parental class effects are clearly stronger in Britain and Sweden than in Germany and Italy. A reverse pattern then shows up for parental status and education. These latter components of social origins apparently matter more in Germany and Italy than in the other two countries. For instance, in Italy the effect of parental education on the probability of exceeding the upper secondary threshold is about twice as large as in Britain and Sweden. A further finding is that the effects of social origins, especially the effects of parental status and education, are greater for the upper secondary than for the tertiary threshold – thus confirming that in all four countries upper secondary education is a critical juncture in educational careers.

Do the effects of parental class, status and education vary over time?

Our second research question is about time variation in the effects of the three components of social origins and the differences in this variation across countries.

We are interested to see whether or not such variation is aligned with what we have hypothesised in the light of macro-level changes in educational systems. To bring out changes in the effects of the three parental variables over time, we focus on the differences in the predicted probabilities – based on our logistic regression models – of exceeding or not our two education thresholds for individuals from most advantaged and least advantaged backgrounds – i.e. the overall 'attainment gap'. The construction rules for assigning each parental variable to one of three levels, representing either the most advantaged or the least advantaged or an intermediate level are detailed in *Table A11*. We then consider the effects of each parental variable in turn, while holding the other two parental variables constant at the intermediate level. Given very similar results for men and women, we average the predicted probabilities across gender and show the combined probabilities in single graph in *Figure 3*[8].

[Figure 3]

For parental class, we find evidence of a sustained decline of the effect in Italy and Germany, in the case of the upper secondary but not for the tertiary threshold. In Britain there is no significant change in the effect of parental class for either threshold; in Sweden there is even some strengthening of the effect for the latest cohort, at least for the upper secondary threshold. With regard then to our hypotheses, the outcome is mixed. The results for Italy and Germany at the upper secondary levels are, for the earlier cohorts at least, in line with our expectations, but

while for Britain and Sweden we expected a weakening influence of parental class for the earlier cohorts, this is not apparent.

Turning to the effects of parental status, we observe a sustained decline for both thresholds in Sweden and a marked decline in Britain for the upper secondary threshold. In Germany, the parental status effect remains constant at the upper secondary level but there is a decrease at the tertiary level. In Italy, there is no change at either threshold. These results are then broadly in line with our hypotheses, so far as Britain and Sweden are concerned. For Germany, our expectation – persistence of the parental status effect – is only supported at the upper secondary level. For Italy, where we envisaged a moderate decline of the importance of parental status, we in fact found overall stability.

Regarding parental education, we find a strengthening effect across the cohorts in Britain and Sweden – in Britain the pattern is V-shaped but with the effect being much stronger in the latest than in the earliest cohort. These results go contrary to our expectations of persistence in Sweden and first decline and then stability in Britain. But for Germany, our hypotheses are fully supported: parental education has a persistent effect on individuals' educational attainment. The L-shaped pattern in Italy also aligns with our expectation; i.e. the importance of parental education declines sharply between the first and the second cohorts and then levels out.

Are the combined effects of social origins different in the four countries?

Our third research question concerns the combined effect of the three social origin variables and asks to what extent this effect has changed across cohorts within countries, and how far these changes map onto changes in the countries' educational systems. To address this issue, we follow the same approach as above: i.e. we plot the difference in the predicted probabilities of exceeding or not our two educational thresholds, for individuals from consistently advantaged and consistently disadvantaged backgrounds *when all three dimensions of parental background are considered together*.

We assign respondents to different categories of social origins according to the derivation rules shown in *Table A12.* Briefly, we assign respondents to the *consistently disadvantaged* category if at least two out of the three components of parental background are at the most disadvantaged level; and likewise, respondents are assigned to the *consistently advantaged* category if at least two out of the three components are at the most advantaged level. All other respondents are categorised as intermediate. Having derived these social origin categories, we then compare the predicted probabilities of exceeding or not our two educational thresholds for individuals from consistently advantaged backgrounds with those for individuals from consistently disadvantaged backgrounds. *Figure 4* graphs these attainment gaps for men and women combined.

[Figure 4]

The figure reveals two points of main interest. First, so far as the *size* of the combined effects is concerned, our four countries appear to form two groups: the effects are clearly stronger in Germany and Italy than in Britain and Sweden. For instance, in the latest cohort, the attainment gap between individuals from consistently advantaged and consistently disadvantaged origins in exceeding the tertiary threshold is around 40 percentage points in Italy and Germany as compared to 30 percentage points in Britain and 20 percentage-points in Sweden.

Second, so far as cross-cohort *changes* are concerned, the results are for the most part in line with our expectations, as shown in the last column of Table 2, so far as the upper secondary threshold is concerned. There is a sharp decline in the combined origins effect in Italy, a moderate decline in Britain and Sweden, while in Germany there is not much change. However, when it comes to the tertiary threshold, a decline in the combined origins effects is far less apparent, even in Italy.

Conclusions

In this paper, we have built on previous research that argues for a more comprehensive understanding of social origins to fully appreciate their effects on individuals' educational attainment. On this basis, we posed three research questions regarding the effects of three different components of social origins and their variation over time in four European countries. Further, we sought to link individual micro-level with institutional changes in the countries' educational systems, and

have proposed a number of hypotheses about the variation of parental background effects over time, both within and across countries. Our results can be summarised as follows.

First, it is apparent that all three components of social origin matter across the four countries. A multidimensional conceptualisation of social origins, such as the one proposed in this paper, thus seems necessary to fully capture the different sources of social inequalities in education. However, our results further suggest important differences between countries in terms of the specific components of social origins that matter most. In Britain and Sweden, parental class – i.e. family economic resources – appears to be a more important driving force behind educational inequalities than in Germany and Italy. In the latter two countries, parental status – i.e. socio-cultural endowments – and parental education – i.e. capacity to provide an effective home-learning environment and strategic knowledge of the educational system – play a greater role in children's educational attainment than in Britain or Sweden.

Second, we find that the effects of parental background on children's educational attainment, and especially on the probability of their attaining upper secondary education, have been subject to important changes over time. Some, though by no means all, of these changes at the micro-level appear to be aligned with institutional changes in the countries' educational systems. In *Figure 5,* to give a general picture, we overlay our hypothesised and the actually observed patterns of change in

educational inequalities in our four countries, averaging for this purpose the effects that apply at the upper secondary and tertiary thresholds. It can be seen that our hypotheses are most fully borne out in Germany, where we expected, and mainly found, rather little change. In the other three countries we tended to overestimate the magnitude, rather than the direction, of cross-cohort change.

[Figure 5]

It can also be seen that with our three components of social origins, we obtain the closest fit with our expectations in the case of parental status: that is, a clear decrease in its importance in Britain and Sweden and persistence, at least at the upper secondary level, in Germany. In Italy, somewhat unexpectedly though, we also found the parental status effect relatively stable across cohorts. In contrast, we overrated the potential of the decommodification of educational systems to reduce the parental class effects, especially for Britain and Sweden. With parental education, our expectations generally hold for Germany and Italy, but we miss the increasing importance of this component of social origins that can be observed in the British and the Swedish cases.

Third, as regards the combined social origin effects, our expectations concerning a general decline are met most clearly in the case of Italy (cf. Triventi *et al.* 2015) and also, so far as earlier cohorts are concerned, for Sweden (cf. Breen and Jonsson 2007). With the other two countries, while some decline may have occurred at the upper secondary threshold, at the tertiary threshold social inequalities in educational

attainment appear very persistent (see further for Britain, Blanden and Macmillan 2016, and for Germany, Blossfeld *et al.* 2015).

Finally, as to the general question of the relative importance of micro-level and institutional effects on social inequalities in educational attainment, we might sum up our findings and their implications on the following lines. It is evident that a great deal of similarity exists across nations with different educational systems in the persisting importance for individuals' educational attainment of parental class, status and education – even though cross-national differences are apparent in which of these components have the stronger effects. This variation may itself be related to institutional differences, and our findings do also indicate that changes in the institutional features of educational systems have, in some instances although not in others, served to reinforce or to offset the social processes generating educational inequalities at the micro level.

The question that obviously arises is then that of what determines the extent to which institutional change is or is not influential. In this regard what is further suggested by our findings is that the crucial factor may be the extent to which institutional change does or does not 'go with the grain' of further change at the macro-level in the form and degree of social inequality. Thus, for instance, the decline in the importance of parental status on individuals' educational attainment that we have observed in Britain and Sweden may result from the de-stratification and increasing standardisation of educational systems that is *going together with* a

generally declining importance of status stratification in society at large. In contrast, the persisting importance of parental class and the apparently rising importance of parental education, may reflect the fact that even where educational systems have been formally decommodified, such change *has been countered by* widening class inequalities, especially in regard to income levels and income security, so that parents with superior economic resources and a good knowledge of how the educational system actually works can still use these resources effectively to their children's educational advantage. Future research, we would believe, could best be directed to exploring interactions between the micro- and macro-levels of the kind in question.

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Table 1: Mechanisms that explain the link between effects of social origins at a micro-level and features of education systems at a macro-level

Features of education systems	Effects of social origins		
	parental class	parental status	parental education
Strong stratification	no hypothesis	**reinforced** via more information is available through networks, connections on economic returns to qualifications; more cultural resources to draw on to help with admissions and pass exams	**reinforced** via strategic knowledge of educational pathways; supporting home-learning environment to help with admissions and pass exams
Strong decommodi-fication	**offset** via reducing the role of parents' economic resources	no hypothesis	no hypothesis
Strong standardization	**offset** via reduced importance of local taxes and thus parents' economic resources	**offset** via fewer opportunities for parental lobbying to shape the type and content of exams/curriculum	**reinforced** via more opportunities to use parents' own experience with educational systems/more opportunities to use strategic knowledge of education systems

Figure 1: Measures of the three dimensions of education systems
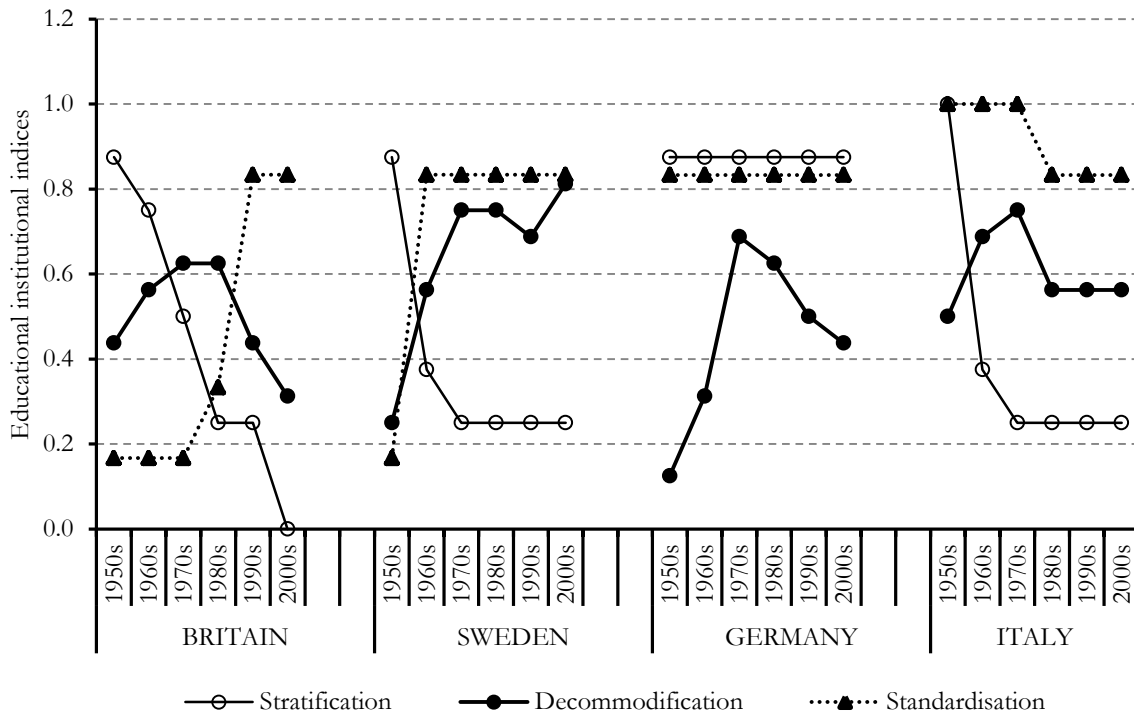
Table 2: Hypothesised effects of social origins on educational attainment over time
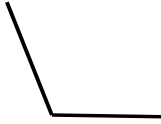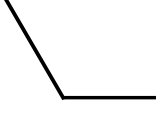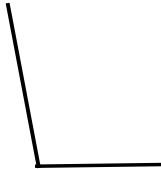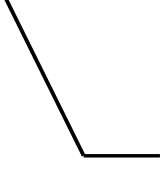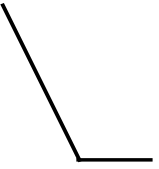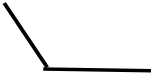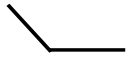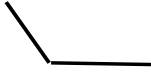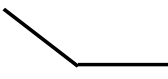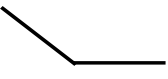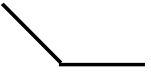
| Country	Effects of social origins			
	parental class	parental status	parental education	combined
Britain	first strenghtening and then weakening **decommodification** and first weak and then strong **standardisation**	sustained weakening of **stratification** and first weak and then strong **standardisation**	sustained weakening of **stratification** and first weak and then strong **standardisation**	
Sweden	first strenghtening and then stable **decommodification** and strenghtening and then stable **standardisation**	weakening and then stable **stratification** and strenghtening and then stable **standardisation**	weakening and then stable **stratification** and strenghtening and stable **standardisation**	
Germany	first strenghtening and then weakening **decommodification** and strong and stable **standardisation**	strong and stable **stratification** and strong and stable **standardisation**	strong and stable **stratification** and strong and stable **standardisation**	
Italy	first strenghtening and then slightly reduced and stable **decommodification** and strong and relatively stable **standardisation**	weakening and then stable **stratification** and strong and relatively **stable** standardisation	weakening and then stable **stratification** and strong and relatively stable **standardisation**	

Figure 2: Binary logistic regression of exceeding (or not) two educational thresholds, on parental class, status and education (average marginal effects in %)
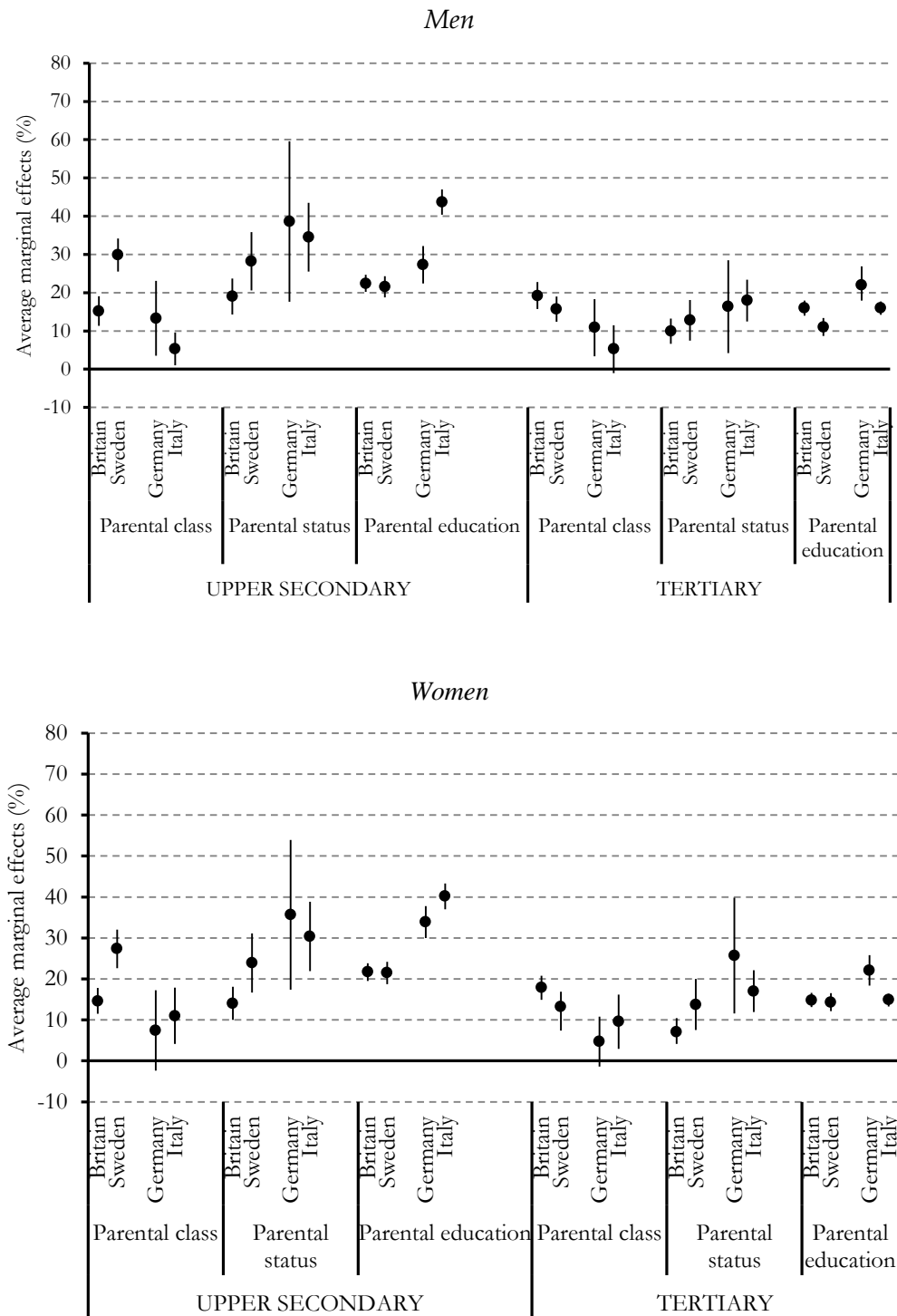
Note: (a): 95% confidence intervals are also shown.

(b) Average marginal effects (AMEs) are calculated under a model that includes parental class, status and education along with cohort dummies. For parental class, the highest AME, in comparison with the class of routine/unqualified workers, is plotted.

Figure 3: Differences in probabilities between individuals *most* and *least* advantaged in terms of parental class, status and education of exceeding (or not) two educational thresholds (%)
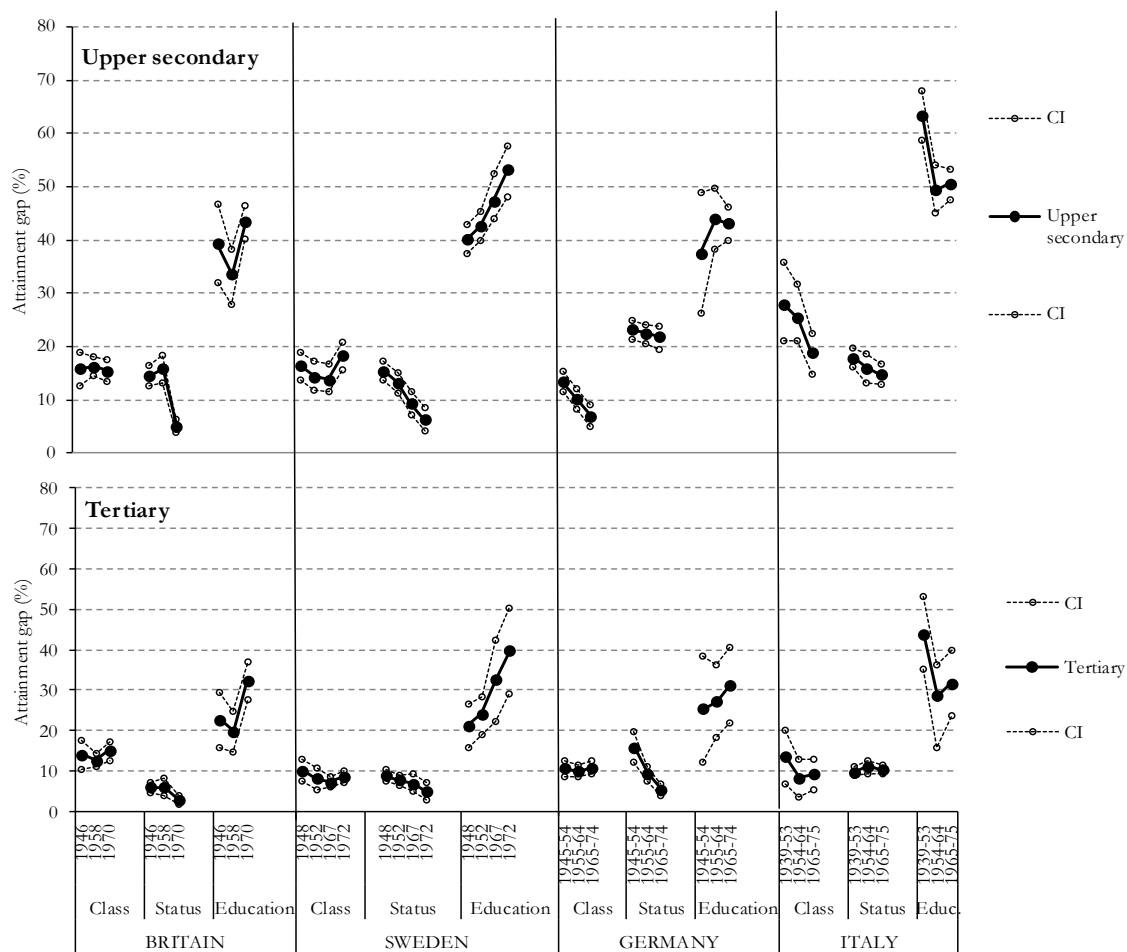

Notes:
(a): 95% confidence intervals are also shown.
(b): Differences in predicted probabilities of exceeding the two educational thresholds are shown for each parental variable, holding the other two parental variables constant at the intermediate level.
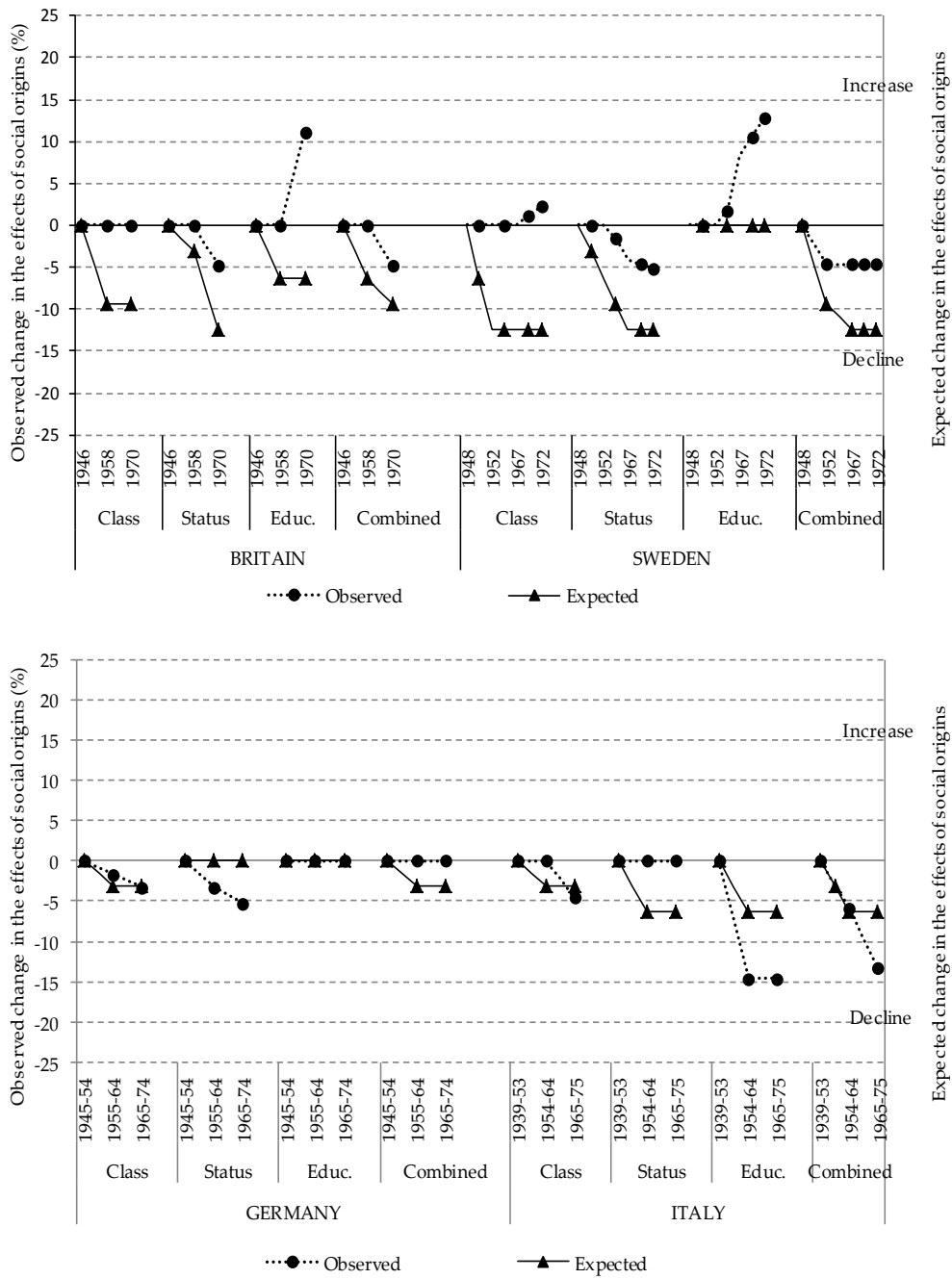
Figure 4: Differences in probabilities between individuals with *consistently advantaged* and *consistently disadvantaged* origins of exceeding two education thresholds (%)
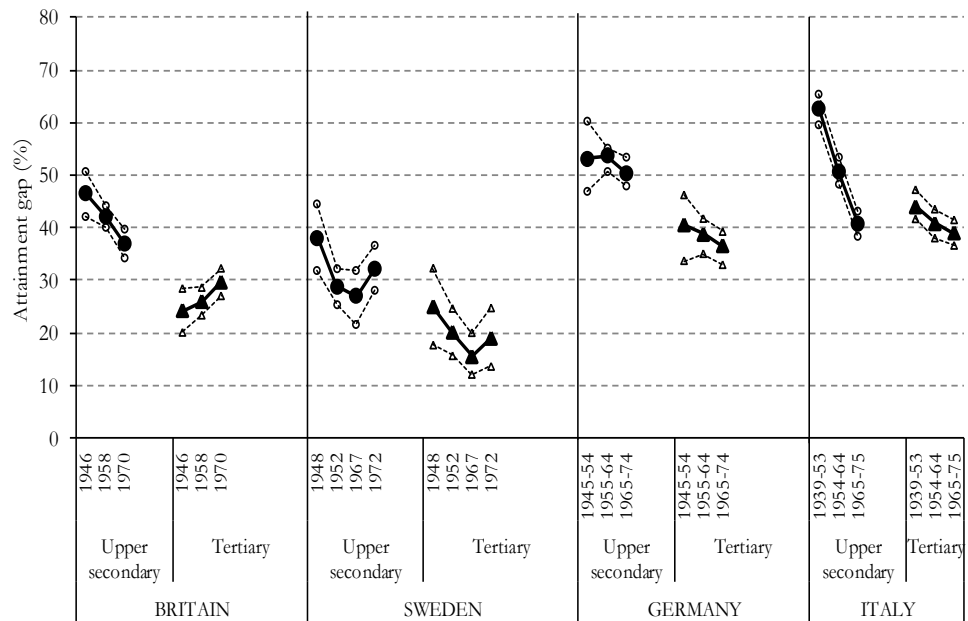
Note:
(a): 95% confidence intervals are also shown.

Figure 5: Expected and observed effects of social origins compared

Note:
(a): Observed effects: average of the effects of social origins that apply at the upper secondary and tertiary thresholds.