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INCOME AND CLASS MOBILITY BETWEEN GENERATIONS IN GREAT BRITAIN: THE PROBLEM OF DIVERGENT FINDINGS FROM THE DATA-SETS OF BIRTH COHORT STUDIES

by

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Abstract

Analyses based on the data-sets of British birth cohort studies have produced differing findings on trends in intergenerational income and intergenerational class mobility. As between a cohort born in 1958 and one born in 1970, income mobility appears to show a sharp decline, while class mobility remains essentially constant. We investigate how this divergence might be explained. We find no evidence that it results from the differing subsets of data that have been used. However, we show that for both birth cohorts a stronger association exists between father's class and child's class than between family income and child's earnings (and likewise between father's class and child's educational qualifications than between family income and child's qualifications) - and that these differences are especially marked in the case of the 1958 cohort. We therefore argue that it is the surprisingly weak influence exerted by the family income variable for this cohort in these - and other - respects that must be seen as crucial in accounting for the inter-cohort decrease in income mobility that shows up. We point to evidence that as between 1974 and 1986, the years when the family incomes of children in the two cohorts were determined, the transitory component of earnings fell, so that the one-shot measure of such income made at the earlier date will be a less good measure of permanent income than that made at the later date. We therefore suggest that, at least to some extent, the apparent decrease in income mobility may come about in this way. But even if the finding is taken at face value, it would still appear the case that the class mobility regime, as well as having greater temporal stability than the income mobility regime, tends also to be stricter in the sense of entailing a stronger intergenerational association between origins and destinations and one that thus more fully captures continuities in economic advantage and disadvantage.

Introduction

The starting point of this paper is with divergent findings on intergenerational social mobility that have recently been reported by researchers using data from the leading British birth cohort studies: namely, the National Child Development Study (NCDS), which aims to cover all children born in one week in 1958, and the British Cohort Study 1970 (BCS), which aims to cover all children born in one week in 1970.

First, Blanden *et al.* (2004; cf. also Blanden *et al.*, 2005, 2007) have used data from these studies to examine changes in intergenerational income mobility. More precisely, these authors consider the association between the level of *family income*, as reported by the parents of children in these two cohorts at their child's age 16 (i.e. in 1974 for the earlier cohort and in 1986 for the later cohort), and the *individual earnings* of these children when they had reached age 33 in the earlier cohort (i.e. in 1991) and age 30 in the later cohort (i.e. in 2000). The main finding that emerges from their analyses is that, for both men and women alike, the association between family income and individual earnings is clearly stronger in the 1970 cohort than in the 1958 cohort. If, for example, the relationship in question is displayed through intergenerational transition tables based on income quartiles or quintiles, significantly more cases fall into cells on, or adjacent to, the main diagonal in the tables for the later cohort than in those for the earlier cohort. Thus, Blanden *et al.* conclude that over the twelve years that separate the two cohorts intergenerational income mobility has declined in that individuals' earnings have become more strongly related to their families' incomes during their childhood.[1]

Second, Goldthorpe and Jackson (2007) have used the same data-sets to examine changes in intergenerational class mobility. On the basis of a seven-class version of the Goldthorpe schema (see further n. 6 below), they construct standard mobility tables based on father's

class at child's age 11, for the earlier cohort, and at age 10 for the later cohort, and children's class positions at age 33 or age 30, respectively. As regards absolute mobility rates, they find that for both men and women total mobility is little changed across the cohorts, although, for men, upward mobility significantly decreases while downward mobility significantly increases. And as regards relative rates - which are the more comparable with the rates of mobility between quartile or quintile income positions considered by Blanden *et al.* - they likewise find, for both men and women, a situation of essential stability. That is to say, it is not possible to reject the hypothesis that the degree of association between children's class positions and those of their fathers, considered net of all class structural change, is unaltered between the two cohorts or, in other words, that *constant social fluidity* prevails.[2]

The contrast between these two sets of findings is intriguing. Intergenerational income mobility and intergenerational class mobility are of course different phenomena, and there is no *a priori* reason why they should change in tandem (cf. Björklund and Jäntti, 2000). None the less, the question of why the one should appear to be decreasing while the other does not is of some evident interest. Is one to conclude that the relationship between income and class is itself changing? And, if so, what are then the wider implications for the way in which family background conditions children's life-chances? Or could it be that the findings reported, rather than reflecting a changing social reality, are essentially a methodological artefact, resulting from the differing constraints faced by researchers seeking to investigate income and class mobility via the NCDS and BCS data-sets and/or from their differing analytical approaches? These are the questions that we seek here to address.

Problems of data

In using the NCDS and BCS as a basis for the study of intergenerational mobility, data problems arise in treating both income mobility and class mobility. However, there can be little doubt that these problems are more severe in the former case than in the latter.

To begin with, the extent of missing - or reportedly missing[3] - data on family income and respondent's earnings is far greater than on father's class and respondent's class. In addition, in both data-sets, the earnings data for self-employed respondents appear to be of very low quality, and this leads Blanden *et al.* to exclude these respondents from their analyses, whereas the self-employed can be included in analyses of class mobility. In consequence of these problems, the mobility tables used by Blanden *et al.* have Ns substantially smaller than those used by Goldthorpe and Jackson.

Moreover, while some difficulties do arise with the available NCDS and BCS data in applying a uniform version of the Goldthorpe class schema to respondents and their fathers (see Goldthorpe and Jackson, 2007: 529-30), these data must be regarded as being far less suited to the study of intergenerational income mobility. In the present context, three problems are of particular note.

First, there is the problem of obtaining similar income measures for children and their parents between the two cohorts. While both the NCDS and BCS provide information on respondent's - i.e. children's - earnings (at ages 33 and 30 respectively, as noted), and the NCDS has information on father's and mother's earnings (at respondent's age 16), intergenerational comparisons of *earnings* are not possible because, for respondents to the BCS, information is available only on *total* family income (at respondent's age 16) which cannot be broken down into its component parts. Thus, Blanden *et al.* have to seek to match this BCS variable with a constructed NCDS family income variable based on a summation of father's earnings, mother's earnings and 'other family income' which NCDS also records. It would then in

principle be possible to carry out analyses of intergenerational mobility in terms of family income by further constructing family incomes for NCDS and BCS respondents at ages 33 and 30. However, Blanden *et al.* choose rather to work with 'asymmetrical' tables in the interests of investigating the effects of family incomes during childhood on individuals' earnings in later life.

Second, the matching of the BCS family income measure through a constructed NCDS variable can in any event be done only approximately, and in fact requires some adjustment of the *former* variable. Parents of NCDS children were explicitly asked to include child benefits in 'other family income', while parents of BCS children were asked to discount such benefits in estimating their total family income. Blanden *et al.* need therefore to modify the BCS variable by adding in a value for child benefit imputed from the number of the children in the household (and lone parent status). Further, in the NCDS all income is reported net of tax but in the BCS total family income is reported gross. Blanden *et al.* have thus to estimate net equivalents through the use of Family Expenditure Survey data for the appropriate year (1986), where family incomes are available both net and gross. And finally, while the constructed NCDS family income variable generates 77 income categories, the BCS family income variable has only 11. To compensate for this, Blanden *et al.* use maximum likelihood estimation to model a continuous Singh-Maddala (1976) distribution for the BCS data.[4]

Thirdly, the limitations of the NCDS and BCS data-sets mean that in their mobility analyses Blanden *et al.* have to rely on only 'one-shot' measures of income and earnings. At least since the work of Solon (1992) and Zimmerman (1992), it has been recognised that analyses based on such measures will in fact tend to overestimate the extent of intergenerational income mobility as a result of the undue weight thus given to transitory components of income uncorrelated with underlying 'permanent income' (see also Bowles, Gintis and Groves eds., 2005). Blanden *et al.* fully recognise this point (see esp. 2004: 133-8), and note that the

estimates of intergenerational income elasticities that they produce (cf. n. 1) are well below the 0.4 'consensus' that has emerged from research using the time-averaging of multiple income observations. They argue, however, that as regards their claim of declining mobility between the two birth cohorts, the crucial issue is that of whether there are any grounds for supposing that error resulting from one-shot measures is substantially greater for the 1958 than for the 1970 cohort, and they do not believe that this is the case.

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Income and class mobility re-examined

In seeking to establish the extent to which the differing results reported on income and class mobility may be simply a methodological artefact, we begin with analyses of the same data-files as used by Blanden *et al.* in studying income mobility and by Goldthorpe and Jackson in studying class mobility, from which, however, we delete the cases of all individuals who cannot be included, because of missing data, in *both* income *and* class mobility tables. As earlier noted, Goldthorpe and Jackson were able to analyse tables with Ns much larger - by in fact around 50 per cent - than those used by Blanden *et al.*, and this alone could lead to differing findings.

Respondents who can be included in both income and class mobility tables number 3256 (1767 men and 1489 women) from the NCDS and 3168 (1648 men and 1520 women) from the BCS.

To further facilitate comparisons between income and class mobility, we construct in each case 5 x 5 transition tables. In the former case, these tables relate the quintile position of family income at child's age 16 to the quintile position of child's own earnings at age 33 or 30.[5] In the latter case, they relate father's class at child's age 11 or 10 to child's own class

position at age 33 or 30, with class being treated on the basis of a fivefold collapse of the same version of the Goldthorpe schema as used by Goldthorpe and Jackson, as shown in Table 1.[6]

[Table 1 here]

With the income and class mobility tables thus formed (raw counts are available from the authors on request), we undertake a modelling exercise on the following lines. Taking corresponding tables for the 1958 and 1970 cohorts for men and women separately, we first of all fit, as baseline, the loglinear model that proposes independence of origins and destinations: that is, of family income and child's earnings, and of father's class and child's class, respectively. This model - the model in effect of 'perfect mobility' in which all odds ratios defining the net association between origins and destinations equal 1 - can be written as

$$\log F_{ijk} = \mu + \lambda_i^O + \lambda_j^D + \lambda_k^C + \lambda_{ik}^{OC} + \lambda_{jk}^{DC} \tag{1}$$

where F_{ijk} is the expected frequency in cell ijk of a three-way table comprising origin (O), destination (D) and birth cohort (C) and, on the right-hand side of the equation, μ is a scale factor, λ_i^O, λ_j^D, λ_k^C represent the main effects of the distributions of individuals over origins, destinations and cohorts and the remaining terms refer to corresponding associations. (For a fuller account of the modelling of mobility tables on the lines here followed, see Breen, 2004).

Secondly, we fit the further loglinear model that, while recognising an association between origins and destinations (net of marginal effects), states that the odds ratios defining this association - or, that is, rates of relative mobility - do not change from one cohort to the other. This model, known as the constant social fluidity (CSF) model, can be written as

$$\log F_{ijk} = \mu + \lambda_i^O + \lambda_j^D + \lambda_k^C + \lambda_{ik}^{OC} + \lambda_{jk}^{DC} + \lambda_{ij}^{OD} \qquad (2)$$

- i.e. the further two-way association $\lambda_i^O{}_j^D$ is added to (1) but not the three-way association $\lambda_i^O{}_j^D{}_k^C$ which would imply change in the association between origins and destinations between the two cohorts (and which would in fact saturate the model).

Then, thirdly, we fit a logmultiplicative model, known as the UNIDIFF model (Erikson and Goldthorpe, 1992), which we write as

$$\log F_{ijk} = \mu + \lambda_i^O + \lambda_j^D + \lambda_k^C + \lambda_{ik}^{OC} + \lambda_{jk}^{DC} + \beta_k X_{ij} \qquad (3)$$

where X_{ij} represents the general pattern of the origins-destination association and β_k the relative strength of this association that is specific to a cohort. This latter model thus tests for the possibility that from the 1958 to the 1970 cohort the log odds ratios defining the origins-destinations association increase or decrease by some common factor; or, in other words, for the possibility that relative rates become more or less unequal, implying either a uniform fall or rise in social fluidity within the class structure. The results obtained from our modelling exercise are shown in Tables 2 and 3.[7]

[Tables 2 and 3 here]

It is of interest to note, first of all, that in the case of the independence model the G^2s returned for both men and women are substantially larger for class mobility than for income mobility, thus suggesting that a stronger intergenerational association exists between class position than between quintile income position. This is a point to which we return in the following section.

Secondly, as regards income mobility, the hypothesis of constant social fluidity appears problematic for both men and women. Although for men - but not for women - the CSF model does give an acceptable fit to the data, in both cases alike the UNIDIFF model significantly improves upon it. The UNIDIFF parameters (βs), in being greater than 1, indicate that from the 1958 to the 1970 cohort all odds ratios defining the association between family income and children's earnings *increase* in a uniform way and, it may be added, by factors that for both men and women are remarkably large given that the two cohorts are only twelve years apart - far larger than those (if any) that tend to show up in class mobility analyses extending over several decades.[8] Although, then, arrived at through a different methodology, this result is fully consistent with that which, as we have noted, is reported by Blanden *et al.* (2004) on the basis of tables covering all respondents for whom adequate income information could be obtained, and including, therefore, a small number whom we here exclude since information on either their father's or their own class is not available.

Thirdly, though, so far as class position is concerned, the hypothesis that intergenerational social fluidity is constant across the two cohorts cannot be rejected for either men or women, and in neither case does the UNIDIFF model improve significantly on the CSF model. In other words, we here replicate the result obtained by Goldthorpe and Jackson (2007) which was based on tables covering all respondents for whom there was information on class origins and destinations, regardless of the availability of data on income.

We can, therefore, fairly safely conclude that the differing findings on income and class mobility that motivate the present paper are *not* the outcome of the researchers concerned working with different subsets of NCDS and BCS respondents. Their findings can in their essentials be reproduced by analyses that are based on exactly the same subset - i.e. that of respondents who can be included in both income and class mobility tables. Either, then, a

methodological artefact is being produced in some other way or it has to be accepted that a real divergence occurs.

The relative strength of intergenerational association between class and income

As a next step in seeking to resolve this issue, we pursue further the indication we obtain from the fits of the independence model in Tables 2 and 3 that the association between father's and children's class position is stronger than that between family income and children's earnings.

As a means of so doing, we calculate, for each of our 5x5 table mobility tables, the set of 16 'global' odds ratios, in log form, that can be obtained by their successive partitioning into 2x2 tables. A 5x5 table can be split into 16 2x2 tables by dichotomising the row and column variables at each consecutive dividing line between their categories. Each pair of dichotomised rows and columns defines a four-field table which can be represented as

$$\begin{array}{cc} a & b \\ \\ c & d \end{array}$$

Thus, let x_{ij} be the number of cases in the ijth cell of a table, and

$$a_{11}=\sum_{i=1}^{1}\sum_{j=1}^{1}x_{ij} \ \ ; b_{11}=\sum_{i=1}^{1}\sum_{j=2}^{5}x_{ij} \ \ ; c_{11}=\sum_{i=2}^{5}\sum_{j=1}^{1}x_{ij} \ \ ; d_{11}=\sum_{i=2}^{5}\sum_{j=2}^{5}x_{ij} \ \ .$$

Then the log odds ratio$_{11}$ = $\ln(a_{11}d_{11}/b_{11}c_{11})$ - i.e. the log odds ratio resulting from separating the first row and the first column, respectively, from the other categories. Similarly, if

$$a_{12}=\sum_{i=1}^{1}\sum_{j=1}^{2}x_{ij} \; ; \; b_{12}=\sum_{i=1}^{1}\sum_{j=3}^{5}x_{ij} \; ; \; c_{12}=\sum_{i=2}^{5}\sum_{j=1}^{2}x_{ij} \; ; \; d_{12}=\sum_{i=2}^{5}\sum_{j=3}^{5}x_{ij}$$

log odds ratio $_{12}$ = ln($a_{12}d_{12}/b_{12}c_{12}$)   and so on down to

log odds ratio $_{44}$ = ln($a_{44}d_{44}/b_{44}c_{44}$)

where

$$a_{44}=\sum_{i=1}^{4}\sum_{j=1}^{4}x_{ij} \; ; \; b_{44}=\sum_{i=1}^{4}\sum_{j=5}^{5}x_{ij} \; ; \; c_{44}=\sum_{i=5}^{5}\sum_{j=1}^{4}x_{ij} \; ; \; d_{44}=\sum_{i=5}^{5}\sum_{j=5}^{5}x_{ij}$$

In Figure 1 we plot for men in the 1958 and the 1970 cohorts the 16 corresponding log odds ratios deriving from our class mobility and quintile income mobility tables in the order, moving from left to right, of the 1.1 value through to the 4.4 value. Figure 2 shows the corresponding plots for women. In Table 4 we give average log odds ratios for each table in unweighted and weighted[9] form. Two main points emerge.

[Figures 1 and 2 and Table 4 here]

First, with the 1958 cohort, the log odds ratios deriving from the class mobility tables are clearly and rather systematically higher than those deriving from the quintile income mobility tables, for both men and women alike - confirming, that is, a much stronger intergenerational association in the case of class than of income. Second, with the 1970 cohort, the difference is far less marked and systematic - and especially for men - although the average log odds ratios for the class mobility tables do still remain higher for both men and women, whether considered in unweighted or weighted form.[10] It could therefore be said that the cross-cohort decrease in intergenerational fluidity as regards quintile income position comes about through such fluidity *moving closer to the lower and essentially constant level that is found in the case*

of class (i.e. the 'income' graphs in Figures 1 and 2 can be seen to shift generally upwards on the log odds scale from the earlier cohort to the later).

If, then, one has an interest in establishing the full extent to which differences in economic advantage are intergenerationally transmitted, there is here evidence in favour of focusing on social class rather than on income. Class, as treated in terms of the schema we use, can be shown (Goldthorpe and McKnight, 2006) to be rather systematically related not only to current income level but further to economic security (as measured by the risk of long-term or recurrent unemployment), to earnings stability, and to longer-term income prospects. In other words, class position may be a better proxy for permanent income than simply one-shot measures of current income of the kind that Blanden *et el.* have to use or, at all events, for the more general concept of 'economic status' to which economists now seem increasingly to resort in discussion of intergenerational mobility (see e.g. Bowles, Gintis and Osborne Groves, 2005; Mayer and Lopoo, 2005; Lee and Solon, 2006; Hertz, 2007).[11] But, whatever view may be taken on this latter point, what is most relevant to observe for present purposes is that, as against the background of what we know about class mobility, the outstanding feature of the quintile income mobility tables that we analyse is *not* the strength of the intergenerational association that is found for the 1970 cohort but rather the *weakness* of the association - or, that is, the rather remarkably high fluidity - that is found for the 1958 cohort. And in view of the degree of temporal stability that is displayed by social fluidity within the British class structure over the course of the twentieth century (Goldthorpe, 1987; Goldthorpe and Mills, 2004), it is then this weak linkage between the earnings of children in the 1958 cohort and their family incomes that would appear unusual and most in need of some special explanation, whether as an artefact or otherwise.

The relationship between class and income

A question that rather obviously follows on from the foregoing is then that of the relationship between class and income and of possible changes in this relationship between the 1958 and 1970 birth cohorts. One relatively straightforward way of addressing this question is through analyses of variance of (log) family income on father's class and of child's (log) earnings on child's class. Taking the same subsets of respondents as in the mobility tables previously considered, we obtain the results that are shown in Table 5.

[Table 5 here]

It is apparent that the analyses for the two cohorts do, in one respect, give quite differing results. For both men and women in the 1958 cohort, the association between father's class and family log income - i.e. as of 1974 - is at a relatively low level: father's class accounts for less than 10% of the total variance in such income. However, both for men and women in the 1970 cohort - i.e. as of 1986 - this proportion rises to clearly over 20%. At the same time, though, the association between children's class position and their log earnings shows no tendency to strengthen, that is, as between 1991 and 2000. The proportion of the total variance in their earnings accounted for by their class remains at around 20% for sons and 40% for daughters.

Analysis of variance has the advantage of allowing us to examine the class-income relationship while retaining class as a categorical variable. However, if we are ready to score the five classes that are shown in Table 1 so as to reflect in some way the relative degree of economic advantage that we would see as being conferred on their members - say, 5 for Class I, 4 for Class II+IVa and so on down to 1 for Class IIIb+VII - then we can also take a

correlational approach. Applying this scoring for class, we obtain the correlation matrices for the four variables used in our mobility tables that are shown In Table 6 (again taking the same subset of respondents to the NCDS and BCS as represented in these tables).

[Table 6 here]

What is most notable about the correlations reported in this table is that, for men and women alike, they are all fairly similar from one cohort to the other *except* where family income is involved. Thus, there is no great change across cohorts in the correlations between father's class and child's class - consistently with the results of our class mobility analyses - or between father's class and child's earnings or between child's class and child's earnings. However, the correlations between family income, on the one hand, and father's class, child's class and child's earnings, on the other, all change and in the same direction: that is, all strengthen markedly from the 1958 cohort to the 1970 cohort. And what is here particularly remarkable are the very low correlations for both men and women in the 1958 cohort between their family incomes and their own earnings - r = 0.18 and 0.16 respectively. In fact these correlations are lower than those between their father's class and their own earnings, and in the case of men substantially so. In the 1970 cohort, this seeming anomaly then disappears. And at the same time, and again for both men and women, the correlation between father's class and family income moves up to a relatively high level.

The main conclusion that we would draw from our analyses of variance and our correlational analyses, when taken together with the results reported in preceding sections of the paper, is therefore the following: that in accounting for the differing findings on income and class mobility across the two birth cohorts, crucial significance must attach in the analyses reported by Blanden *et al. to the family income variable and especially to this variable for the 1958 cohort*. It is the weakness of the association between family income and children's earnings

in the 1958 cohort, rather than the strength of this association in the 1970 cohort, that appears generally out of line with other indications of the degree of intergenerational transmission of economic advantage and disadvantage.

Income, class and education

To pursue the concern of the last paragraph somewhat further, it is relevant also to consider the relationships existing between family income and father's class, on the one hand, and, on the other, children's educational attainment. Blanden *et al.*, it may be noted, see it as a key factor in declining intergenerational income mobility that children from higher income families have benefited disproportionately from educational expansion from the 1970s onwards (Blanden *et al.*, 2004: 138-43, 2005, 2007; cf. Blanden and Machin, 2004).

In this connection, we have carried out analyses analogous to those reported on in Tables 2 and 3 above but in which children's earnings or children's class is replaced by children's highest level of educational qualification, according to a six-level classification that ranges from no qualifications to degree or NVQ equivalent. The results are presented in Tables 7 and 8.[12]

[Tables 7 and 8 here]

Two features of main importance emerge in the case of men and women alike. First, the association between family income and children's educational attainment strengthens significantly from the 1958 to the 1970 cohort, in a way that is generally consistent with various findings reported by Blanden *et al.*, while, in contrast, the association between father's class and children's educational attainment remains unaltered: the UNIDIFF model does not improve significantly on that of constant association. Secondly, though, the G^2s

returned under the independence model are much larger with the class-based than with the income-based analyses, suggesting a generally stronger association in the former case than in the latter. And in fact if, as previously with our income and class mobility tables, we calculate underlying global log odds ratios, we find the following. First, for the 1958 cohort the (weighted) average of such ratios for the income-by-education tables is, for men, 0.64 as against 1.16 for the class-by-education tables, while, for women, these averages work out at 0.73 as against 1.28. In other words, for the 1958 cohort, family income would appear to have been far less consequential than father's class for the level of educational qualification that its members achieved. Secondly, for the 1970 cohort, the corresponding figures to the above are, for men, 1.04 as against 1.17 and, for women, 1.22 as against 1.34. In other words, with this later cohort the income-education association comes much closer to the level of the class-education association, while, however, still remaining below it - in parallel in fact with the results reported in Table 4 in regard to income and class mobility.[13]

We would then take these findings as lending further emphasis to two points: first, that the widening inter-cohort inequalities detected by Blanden *et al.* - in children's educational chances just as in their income mobility chances - must be seen as driven essentially by what we, in a class perspective, would have to regard as the surprisingly weak effects of family income in the case of the 1958 cohort; and second, that, in regard to education and mobility alike, father's class would seem be both the more constant and, even for the 1970 cohort, the stronger influence. We might also note that our findings here do not accord well with the suggestion made at various points (e.g. Blanden and Machin, 2004: 235; Blanden, Gregg and Machin, 2005: 104) that income provides a more stable over-time metric of families' economic circumstances than does parental class.

Explaining the finding of declining income mobility

We now return to the central issue of how to account for the differing results from analyses of intergenerational income and class mobility and, more specifically, to the explanation of change - i.e. declining mobility - as found in the former case as compared with stability in the latter.

In their own attempts at explaining this finding, Blanden *et al.* (see esp. Blanden, Gregg and Macmillan, 2007) place main emphasis on the growth in inequality in earnings that is known to have occurred between the mid-1970s and mid-1980s. This, they argue, led to an increasing effect of family incomes on children's educational attainment and also on their labour market attachment, and, in turn, on their earnings in early adulthood. Further, they suggest that, given widening income inequality within classes, an explanation might also here be found for the divergence of findings on income and class mobility.[14]

However, it is relevant in this connection to observe that evidence from the US (Mayer and Lopoo, 2005; Lee and Solon, 2006; Hertz, 2007) indicates that large increases in income inequality are not necessarily associated with declining income mobility, at least in the relatively short-term, and that the level of such mobility in the US does in fact show considerable long-term stability. Moreover, for Britain, the findings of Nicoletti and Ermisch (2007) on intergenerational (father-son) earnings mobility can be taken as pointing in a somewhat similar direction. Analysing data from the British Household Panel Study (though with fathers' earnings being imputed rather than observed), Nicoletti and Ermisch find no significant change in mobility for cohorts of men born 1950 to 1960, followed, for cohorts born 1961 to 1972, by some significant - though not precisely estimable - decline in mobility if this is measured by earnings elasticities. But while this result may be thought to support Blanden *et al.*, it can also be seen from Nicoletti and Ermisch's analyses (Figures 1 and 2) that during this later period *correlations* between fathers' and sons' earnings remained stable *or actually decreased* - which is obviously not consistent with the sharp increase in correlation between

family income and sons' (and daughters') earnings that emerges from the NCDS and BCS data that Blanden *et al.* use (see also Table 6 above). Taken overall, then, Nicoletti and Ermisch's results would seem, if anything, more in line with the idea of little major change in income mobility in Britain during the later twentieth century than with that of the occurrence of a quite rapid and unambiguous decline (cf. Björklund and Jäntti, 2009), and in turn, then, more in line with the results of research into class mobility.[15]

From our own standpoint, from which it is the high level of mobility of children in the 1958 cohort that chiefly calls for explanation, we would suggest another possible way in which the apparent decline in mobility of children in the 1970 cohort could be accounted for. This is in fact one that Blanden *et al.* themselves consider but to which we believe, in the light of our own findings, greater weight should be given.

The possibility we have in mind is that the problem of one-shot measures of income, to which we have earlier referred, is accentuated in comparing the family incomes of the 1958 and 1970 birth cohorts - i.e. in 1974 and 1986 respectively - because of a decrease between these years in the transitory component of earnings. If such a decline occurred, then the measure of family income for the 1958 cohort would be more affected by transitory elements uncorrelated with permanent income than would that for the 1970 cohort, and this would then in itself make for a weaker association in this cohort between family income and children's earnings - and likewise between family income and the other variables, including children's education, that we have included in our analyses above. Using New Earnings Survey data, Blanden *et al.* (2004: 136-7) estimate that for a cohort equivalent to NCDS fathers, transitory fluctuation in earnings account for 32% of the total variance, while for a cohort equivalent to BCS fathers, this proportion falls to 21%. We would regard this finding as an important one, and could scarcely follow Blanden *et al.* in describing the former figure as being only 'slightly higher' than the latter. We would also note their further calculation that if the higher figure had

reached 38%, this would imply that the decrease shown up in mobility between children born in 1958 and 1970 could no longer be regarded as statistically significant. We would therefore think it at all events a very reasonable supposition that, if due allowance could be made for the problem here indicated, this fall in mobility would, even if still in evidence, no longer appear as dramatic as it does when the data are taken at face value, and with the result that the findings of Blanden *et al.* would then come at least into some closer accord with those of Goldthorpe and Jackson.[16]

Conclusions

In this paper we have started out from divergent findings on changes in intergenerational income and intergenerational class mobility that derive from analyses of the same data- sets: i.e. those of the NCDS and the BCS. It is of evident interest to enquire into how this divergence comes about and in particular into how far methodological artefacts rather than real social changes - as, say, in the relation between income and class - may be involved. In this last respect, we have noted that the data-sets in question are clearly less adequate for, and consequently create more problems in, the analysis of income mobility than of class mobility.

We have shown, first of all, that the contrasting findings are not the result of the researchers concerned working, on account of missing data, with different subsets of NCDS and BCS respondents. Taking the same subset - i.e. that of all respondents who can be included in both income and class mobility tables - we reproduce essentially the same findings as are reported in the original papers.

Secondly, we have shown that for both cohorts alike there is a stronger association between father's class and child's class than between family income and child's earnings, although this difference is much reduced from the 1958 to the 1970 cohort. This leads us to suggest that class may in general be a better indicator of 'economic status' than at least one-shot measures of current income. But, in any event, as against the background of the long-term stability, or at least only slight and trendless fluctuation, in the level and pattern of social fluidity that is known to prevail within the British class structure, it is the very high level of mobility apparent in the quintile income tables for the 1958 cohort, rather than the lower level apparent in those for the 1970 cohort, that would appear as unusual.

Thirdly, we have examined the relationship between class and income, as present in the data that we have used in our analyses of mobility, and find that this relationship is generally stable *except* where family income is involved. For the 1958 cohort there is a much weaker linkage than for the 1970 cohort between family income, on the one hand, and father's class, child's class and child's earnings, on the other. In fact, in the 1958 cohort, though not in the 1970 cohort, we have the rather anomalous finding that the correlation between family income and child's - and especially son's - earnings is lower than the correlation between father's class and child's earnings. There are, in other words, clear indications that it is the limited influence of family income variable for the 1958 cohort that is crucial to the marked increase in the intergenerational transmission of economic advantage or disadvantage that shows up in the analyses that Blanden *et al.* report.

And, fourthly, we have given grounds for supposing that it is the weak effect of this same variable on children's educational attainment, as compared to the effect of father's class, that likewise drives Blanden *et al.*'s further finding of widening inter-cohort inequalities in such attainment in relation to family income.

Thus, while Blanden *et al.* are led to seek for an explanation of the stronger association between family income and children' earnings in the 1970 cohort, and to emphasise the role of rising earnings inequality between the mid-1970s and the mid-1980s, we would rather focus on the weakness of this association in the 1958 cohort. In this regard, we suggest that, in the light of Blanden *et al.*'s own estimates of the declining transitory component in earnings, the possibility has to be seriously entertained that the apparent decrease in mobility is at least in some important part the result of the family income variable for the later cohort providing a better measure of permanent income than that for the earlier cohort.

We appreciate that it may never be possible to adjudicate definitively on this issue unless new and better data for the period in question become available and, at all events in the case of income mobility where the currently available data are least satisfactory, this seems unlikely.[17] However, the final observation that we would make in the light of the results we have reported is the following. *If* the substantial decrease in income mobility that Blanden *et al.* claim between two birth cohorts only twelve years apart is accepted as real - and as indicating, therefore, a large and rapid shift in the relation between family income and parental class as determinants of children's life-chances - then it would seem that two other points have also to be accepted. First, the processes involved in income mobility are ones far more sensitive to relatively short-term changes, of whatever kind may be singled out, than are the processes involved in class mobility. And, second, the processes determining income mobility occur within, or at all events operate alongside, a class mobility regime that, as well as showing greater temporal stability than that which prevails in the case of income, has also to be regarded as stricter, in the sense of entailing a generally stronger association between origins and destinations. In other words, it more fully captures the continuity in economic advantage and disadvantage that persists across generations.

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Table 1

The collapsed five-class version of the class schema

Class I   Professionals, administrators and mangers, higher-grade;
            large employers

Class II+IVa   Professionals, administrators and managers, lower-grade;
                        technicians, higher grade; small employers

Class IIIa+IVbc+V   Routine nonmanual workers, higher-grade; non-
                    professional self-employed workers (including farmers);
                        technicians, lower grade

Class VI   Skilled manual workers

Class IIIb+VII   Routine nonmanual workers, lower-grade;
                    non-skilled manual workers

Table 2

Results of testing for constant social fluidity or uniform change between cohorts: men

(N=3415)

Mobility by	Model	G^2	p^a	DI^b	
	Independence	248.7	0.00	10.2	
Income quintiles	Constant association	19.6	0.24	3.1	
	UNIDIFF	9.5	0.85	1.9	(b= 1.54)
	Independence	410.0	0.00	13.2	
Class	Constant association	12.7	0.70	2.3	
	UNIDIFF	12.5	0.64	2.3	

Notes:

a. Degrees of freedom are: independence model, 32; CSF model 16, UNIDIFF model, 15.

b. Dissimilarity index showing percentage of individual cases misclassified.

Table 3

Results of testing for constant social fluidity or uniform change between cohorts:

women (N=3009)

Mobility by	Model	G^2	p^a	DI^b	
	Independence	192.0	0.00	9.4	
Income quintiles	Constant association	31.8	0.01	4.1	
	UNIDIFF	21.0	0.13	3.5	(b = 1.70)
	Independence	291.8	0.00	12.2	
Class	Constant association	23.9	0.09	2.8	
	UNIDIFF	22.6	0.09	2.6	

Notes:

a. Degrees of freedom are: independence model, 32; CSF model 16, UNIDIFF model, 15.

b. Dissimilarity index showing percentage of individual cases misclassified.

Table 4

Averages of log odds ratios obtained from 2x2 partitioning of quintile income and class mobility tables

		Men		Women	
		qu. Inc	Class	qu. inc.	class
unweighted	1958	0.60	1.17	0.48	0.84
	1970	0.97	1.03	0.79	1.00
weighted	1958	0.58	1.12	0.46	0.84
	1970	0.94	1.02	0.80	0.99

Table 5

Percentages of family log income accounted for by father's class and of children's

log earnings by their own class, one-way analyses of variance

	Men		Women	
	father's class	son's class	father's class	daughter's class
1958	9	23	9	40
1970	23	21	24	41

Table 6

Correlations among variables on which income quintile and class mobility tables are

based

		Men			Women		
		FI	RC	RE	FI	RC	RE
FC	1958	0.29	0.34	0.29	0.29	0.25	0.19
	1970	0.48	0.31	0.23	0.48	0.30	0.24
FI	1958		0.16	0.18		0.16	0.16
	1970		0.29	0.29		0.27	0.26
RC	1958			0.47			0.63
	1970			0.44			0.64

FC = Father's class
FI   = Family log income
RC = Respondent's class
RE = Respondent's log earnings

Table 7

Results of testing for change between cohorts in the associations between family income and child's education and father's class and child's education: men (N=4217)

	Model	G^2	p^a	DI^b
Income	Independence	328.8	0.00	10.2
	Constant association	33.5	0.03	3.5
quintiles	UNIDIFF	26.1	0.13	3.1 (β =1.43)
	Independence	573.0	0.00	13.0
Class	Constant association	19.0	0.52	2.4
	UNIDIFF	15.7	0.68	2.0

Notes:

a. Degrees of freedom are: independence model, 40; CSF model 20, UNIDIFF model, 19.

b. Dissimilarity index showing percentage of individual cases misclassified.

Table 8

Results of testing for change between cohorts in the associations between family income and child's education and father's class and child's education: women (N=4713)

	Model	G^2	p^a	DI^b	
Income Quintiles	Independence	464.6	0.00	11.3	
	Constant association	40.7	0.00	3.0	
	UNIDIFF	30.9	0.04	3.0	(β =1.41)
Class	Independence	726.9	0.00	14.1	
	Constant association	14.2	0.82	1.7	
	UNIDIFF	12.0	0.89	1.6	

Notes:

a. Degrees of freedom are: independence model, 40; CSF model 20, UNIDIFF model, 19.

b. Dissimilarity index showing percentage of individual cases misclassified.

Figure 1. Global log odds ratios from 5x5 intergenerational mobility tables for class (black series) and incomes in quintiles (grey series). Men born 1958 and 1970
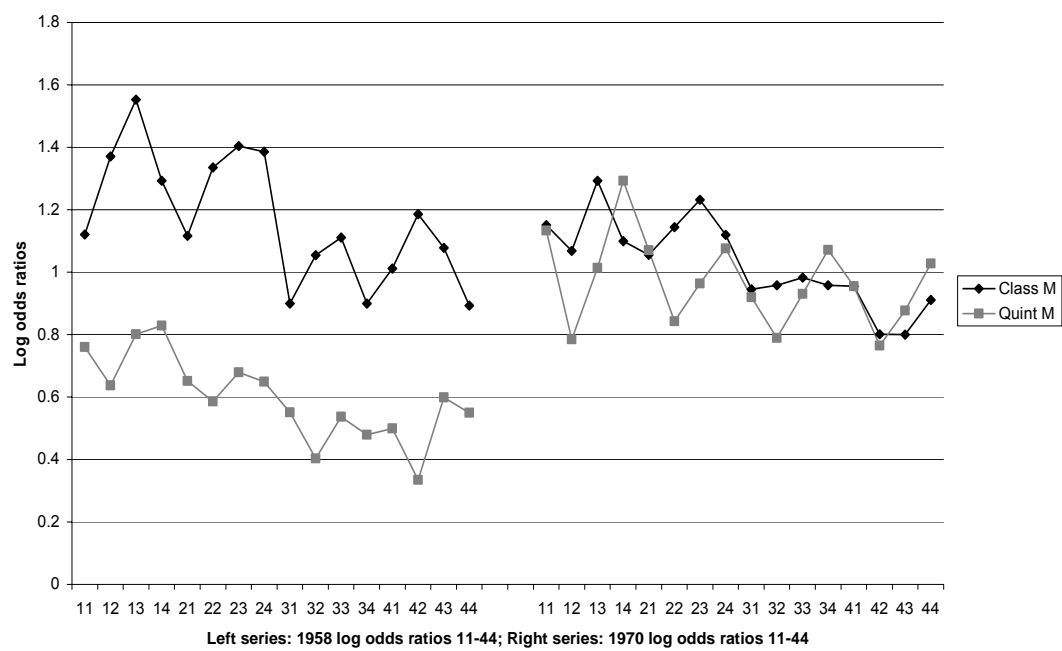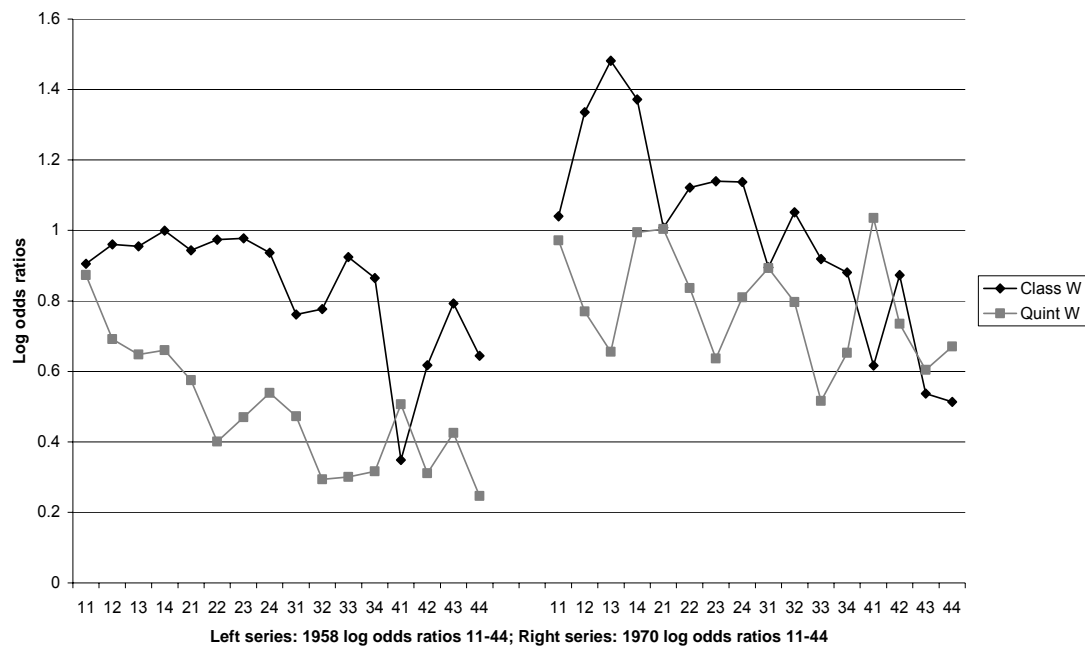

Left series: 1958 log odds ratios 11-44; Right series: 1970 log odds ratios 11-44

Figure 2. Global log odds ratios from 5x5 intergenerational mobility tables for class (black series) and incomes in quintiles (grey series). Women born 1958 and 1970

Left series: 1958 log odds ratios 11-44; Right series: 1970 log odds ratios 11-44

Notes

[1] This conclusion is also supported by results from more aggregated analyses of intergenerational elasticities - i.e. the slope coefficients in regressions of individuals' log earnings on log family income - and of the correlation of these two variables.

[2] Goldthorpe and Jackson do note that within this general constancy there are indications of two countervailing tendencies: i.e. of fluidity increasing because of a decline in the propensity for intergenerational immobility within Class IVb, that of non-professional self-employed workers (whom Blanden *et al.* exclude from their analyses - see further below); and of fluidity decreasing because of a decline in the propensity for long-range mobility between Class I, the higher salariat, and Classes VI+VII, manual wage-workers. However, they stress that these possible tendencies require independent confirmation, They also note that their conclusion of largely constant social fluidity - or, at all events, of only minor and trendless fluctuation - shows an essential continuity with that earlier reached by Goldthorpe and Mills (2004) on the basis of repeated cross-sectional analyses of GHS data from 1973 to 1992. On the now standard practice in sociological work of distinguishing between absolute and relative rates of social mobility and on the differences that arise with economists' treatment of income mobility, see further Erikson and Goldthorpe (1992: ch.2; 2002).

[3] With NCDS, components of family income - i.e. father's and mother's earnings and 'other family income' (see text below) - are sometimes reported as missing where it is unclear whether this means that the data are unavailable or that the family have no income from the source in question.

[4] Worries have also been raised about data on parental earnings for children in the 1958 cohort since the period during which these data were collected in 1974 included the 'three-day working week' crisis, resulting from industrial unrest in the coal mining industry and consequent power shortages. Blanden *et al.* rely here on the findings of an analysis undertaken by Grawe (2004) which concludes that there is no evidence of significant error in the data through parents in some cases reporting their - temporarily - reduced earnings rather than the 'normal' earnings about which they were in fact asked.

[5] While Blanden *et al.* measure family income as the residual from the regression of family income on age and age squared, we work with the unadjusted measure, assuming that it is income *per se* that will be the more crucial for children's life-chances. However, as will be seen, this difference in approach does not appear to be of any great consequence.

[6] The class schema treats class positions as being determined by social relations in economic life and, more specifically, by employment relations and, in the case of employees, by the differing forms of their employment contracts. For a fuller discussion of its theoretical basis, see Goldthorpe (1997, 2007, vol. 2, ch. 5). This basis is taken over in the National Statistics Socio-Economic Classification (Rose, Pevalin and O'Reilly, 2005; ONS, 2005) which represents in effect a new instantiation of the schema. Following extensive testing of both its criterion and construct validity, NS-SEC has, since 2000, replaced the Registrar General's Social Classes in British official statistics. Work is currently under way to develop a comparable EU classification (Rose and Harrison, forthcoming).

[7] It can be seen from the form of the models used that they are specifically designed to treat the origins-destination association in mobility tables net of any effects that may derive from the differing marginal distributions of the tables. This is of course scarcely an issue in the

case of quintile income mobility tables where all marginals will, by construction, be (at least approximately) the same, but it is obviously important in the case of class mobility tables where marginals will reflect the changing shape of the class structure. We have in fact carried out comparable analyses of further 5 x 5 income mobility tables where the categories are defined as percentage deviations from median income and marginals do therefore differ. These analyses give essentially the same results as those reported in the text below from analyses of the quintile tables.

[8] For example, in recent research into intergenerational class mobility in European countries over the later twentieth century, in those cases where the UNIDIFF model did reveal significant shifts in relative rates, the β parameters returned most commonly fell in the range of 0.8 to 1.2 (see Breen ed., 2004).

[9] The weights used are the inverted variances of the log odds ratios.

[10] A problem arises in assessing the statistical significance of the differences between the log odds ratios from the class and the income mobility tables, since the same individuals are involved in both. For this reason, it would be inappropriate simply to fit the CSF or UNIDIFF models to corresponding tables. Work on this problem by Lu (2007) and further developments of this work (Cox, Jackson and Lu, 2008) do, however, indicate that there can be little doubt as to the reality of the stronger intergenerational association operating in the case of class than of income at all events for the 1958 cohort.

[11] It is true that, at least in countries such as the UK and USA, there is evidence of a recent widening of differences in income within social classes; but at the same time there is also evidence of widening income differences *between* classes. For the UK see Goldthorpe and McKnight (2006). Economists sometimes complain that they do not know what sociologists

mean by 'social class'. However, accounts of both the theoretical basis and measurement of the concept, at least as used here, are provided in the sources cited in n. 6 above; and sociologists might welcome comparable clarification in regard to the concepts of permanent income (is the underlying theoretical idea adequately captured simply by the time-averaging of incomes?) and of economic status.

[12] Tables 7 and 8 are based on all respondents to the NCDS and the BCS for whom information on father's class, family income and highest level of respondent's educational qualification is available. There are 5,468 cases for NCDS and 3,462 for BCS. For NCDS respondents, highest level of qualification was recorded at age 33 (i.e. in 1991) and for BCS respondents at age 26 (i.e. in 1996). The six categories of the educational classification are in full: no qualification; CSE 2-5 passes/NVQ1; O Level/NVQ2; A Level/NVQ3; higher qualification/ NVQ4; degree+/NVQ5,6.

[13] Using the unweighted global log odds ratios gives essentially the same results. These are available from the authors on request. It may be added here that a recent study also using the NCDS and BCS data sets but focussing specifically on class differentials in tertiary qualifications also finds little change between the two birth cohorts (see Cheung and Egerton, 2007).

[14] So far as we can see, Blanden *et al.* (2007) does not add anything that would serve further to confirm that the decrease in mobility shown up in previous work is a real effect. Rather, it takes this result as given - including, implicitly, the generally weak effects of the 1958 family income variable - and focuses on tracing the underlying mechanisms. In so far as greater economic inequality *is* a factor in reducing income mobility, we would think it more relevant to focus on inequality in family incomes as resulting from their changing composition, rather than on inequality in earnings themselves. In this regard, Blanden *et al.* (2004: 133-4) do

consider the hypothesis that the greater importance of mother's earnings in family income for the 1970 cohort than for the 1958 cohort may help account for the strengthening link with children's earnings, and indeed find some evidence in favour of this hypothesis. But a further possibility is that a similar effect stems from a changing relationship within family incomes between all earnings and income from other sources. Since, as earlier noted, the 1958 family income variable is constructed by Blanden *et al.* through a summation of data on father's earnings, mother's earnings and other family income, it is possible to retain the summation of the first two components, so as to give a parental earnings variable, while considering other family income separately. Averaging over all individuals covered, we calculate that, as of 1974, parental earnings account for 89% of total family income, and other income for 11%; and we find that earnings and other income have a negative correlation, with $r = -0.22$. A comparable analysis is not possible for the 1970 cohort because of the crude nature of the data on family income. However, other data sources might make it possible to establish if in 1986, other family income no longer offset inequalities in earnings to the same extent as in 1974 - whether because of changes in the social benefits system or of the growing importance of forms of income, such as investment income, more likely to have a positive correlation with earnings.

[15] We take Nicoletti and Ermisch's results as implying that while the slope of sons' earnings on fathers' earnings increased, the variance of sons' earnings, given fathers', also increased and to a greater degree. Cheti Nicoletti (personal communication) notes that, under the assumption that log earnings are normally distributed, the correlation is invariant to changes in the mean or variance, and could thus be taken as an indicator of 'exchange' mobility, while the elasticity indicates 'structural' mobility. On this interpretation, it would then be more appropriate to compare findings on relative rates of class mobility (as in Tables 2 and 3 above), which are net of structural effects, with earnings or income correlations rather than

with elasticities. Unchanging correlations could then be seen as indicating an unchanging mobility regime, while increasing elasticities might also reflect increasing income inequality, which, while of course an issue in itself, need not imply a change in the mobility regime. On these grounds, Björklund and Jäntti (2008) argue in favour of using correlations rather than elasticities in cross-national as well as over-time analyses of variation in the intergenerational association of incomes.

[16] This interpretation is also in accord with the results reported by Blanden *et al.* (2007, Table 14), where the proportion of log family income explained by father's social class increases from 0.086 in 1974 (NCDS) to 0.232 in 1986 (BCS), while the corresponding increase in GHS is from 0.169 to 0.212.

[17] In the case of class mobility, it should be possible to resume, albeit with some data problems, the series of repeated cross-sectional analyses that could be made from 1973 to 1992 on the basis of GHS data by using data in the EU-SILC module included in the 2005 GHS. It will then be of particular interest to see how far evidence on trends between 1992 and 2005 matches up with that derived from the NCDS and BCS data-sets that Goldthorpe and Jackson (2007) report.