

## **Social Selection in Stockholm Schools:**

### **Primary and secondary effects on the transition to upper secondary education**

#### **Introduction**

It was early observed that children from higher social classes on average perform better at school *and* that they, given performance, tend to choose academic tracks in school to a larger extent than children from lower social origins (Boalt 1947; Härnqvist 1958; Jencks and Riesman 1968). In his analysis of inequality of educational opportunity Boudon (1974) labelled these two mechanisms primary and secondary effects. In a recent paper Jackson et.al. (2005) show that secondary effects since around 1970 account for between a quarter and a half of social selection to A-levels in Britain, and that no substantial change could be observed in this respect. In this paper we intend to make a comparable study for Sweden, where inequality of educational attainment has diminished, in difference to the development in Britain.

#### **Background**

Social selection to upper secondary school decreased in Sweden during the 20<sup>th</sup> century (Erikson and Jonsson 1996), but how did this happen? Differences in material conditions between children in the salariat and the working class seem to have decreased during all of this century as e.g. indicated by decreasing differences in body height between men and women from different social origins (Nyström Peck and Vågerö 1987). It seems fully

possible that decreasing differences in material conditions could also be associated with a parallel diminishing of differences in cognitive development (ref?). Given that the absolute differences in schooling between parents in different social classes have diminished – the number of years in education among parents in the salariat has only increased slowly while the corresponding increase in the working class has been much faster – differences in mental climate in the family and in parents' capacity to help their children with school work may also have diminished.

Decreasing income inequality (ref) up to the beginning of the 1980s and low rates of unemployment could not only have improved the relative material conditions of children in the working class, but also made the choice of a theoretical education more attractive, since the differences in the risks connected to continued education and the related costs decreased between classes (Erikson and Jonsson 1976, Breen and Goldthorpe 1997; Jonsson and Erikson 2000?).

In consequence, the decrease in inequality of educational opportunity could be related to primary effects as well as to secondary ones. The decrease may furthermore not have been even over different tracks in upper secondary education, that is, children from the working class may be relatively more attracted by some tracks than by others. This may have been so much more the case since decreasing inequality in educational attainment was faster among girls than among boys (Erikson and Jonsson 1996) and the two sexes differ in their choice of tracks. In this paper I intend first to study the importance of primary and secondary effects in the transition to different tracks in upper secondary school among boys and girls around 1969 and then to investigate possible changes in these respects from 1969 to 1989.

## Primary and secondary effects

Erikson and Jonsson (1996, p. 76) suggested that the proportion continuing to further studies in social class  $i$  can be modelled as

$$P_{ii} = \int f_i(x)g_i(x)dx \quad (1)$$

where  $f_i(x)$  is the distribution of performance, labelled  $x$ , at school and  $g_i(x)$  is the probability to continue from this level of education to further studies, given  $x$ .

Performance is typically measured as Grade Point Average, but other measures can of course be envisaged. The integral can only be solved if assumptions are made about the functions  $f(x)$  and  $g(x)$ . Erikson and Jonsson suggested the performance distribution to be normal and that transition propensities follow a logistic curve. These assumptions have turned out to give a good fit between observed and from the model expected values (cf Jackson et.al. 2005).

By substituting one of the functions for class  $i$  in (1) with the corresponding function for another class  $j$

$$P_{ij} = \int f_i(x)g_j(x)dx \quad (2)$$

we produce a counterfactual proportion, in which the performance distribution is equal to that of class  $i$ , while the transition propensities follow the function for class  $j$ . By setting such counterfactual proportions in relation to the estimated ones we can obtain estimates of the sizes of primary and secondary effects (Erikson et. al. 2005; Jackson et. al. 2005).

[should I show how this is done?] The odds ratio for the transition propensities of class  $i$  as compared to class  $j$  can be written as

$$Q_{ii,jj} = (P_{ii}/(1-P_{ii})) / (P_{jj}/(1-P_{jj}))$$

where the Ps refer to the proportions making the transition in classes i or j. The counterfactual odds ratio, where the actual odds for class i are connected with the counterfactual odds resulting from class j having the same transition propensities as class i but its own performance distribution, is

$$Q_{ii,ji} = (P_{ii}/(1-P_{ii})) / (P_{ji}/(1-P_{ji}))$$

and we can likewise construct the counterfactual odds ratio

$$Q_{ii,ij} = (P_{ii}/(1-P_{ii})) / (P_{ij}/(1-P_{ij}))$$

where we compare the actual odds for class i with the counterfactual odds where class j has its own transition propensities but the same performance distribution as class i.

The sums of logarithms of appropriate pairs of counterfactual odds ratios can be shown to be equal to the logarithms of the estimated odds ratios (Jackson et.al. 2005), which can be taken as measuring overall inequality of educational opportunity. Thus

$$L_{ii,jj} = L_{ij,jj} + L_{ii,i} \quad (3)$$

and

$$L_{ii,jj} = L_{ii,ji} + L_{ji,jj} \quad (4)$$

where the first term on the right hand side in each case refers to situations with different performance distributions but similar transition propensities and the second term to situations with similar performance distributions but different transition propensities.

That is, the first terms can be said to refer to primary effects while the second terms refer to secondary effects. The estimates of primary and secondary effects, respectively in (3) and (4), will, given the choice of functions in (1), not be identical (Erikson et.al. 2005), while in most cases quite similar. We will therefore use the averages as estimates of the

primary and secondary effects, that is, primary effects will be estimated by<sup>1</sup>

$$IEO_p = (L_{ij,jj} + L_{ii,ji})/2 \quad (5)$$

and secondary effects by

$$IEO_s = (L_{ii,ij} + L_{ji,jj})/2 \quad (6)$$

## Data

The empirical analyses are based on three data sets, the Stockholm Birth Cohort Study (Stenberg et.al. 2005), a 25 percent sample of all pupils who left elementary school in 1991 or 1992 collected by the Swedish Governmental Commission on Educational Inequality (Erikson and Jonsson 1993, Ch. 4; 1996) and, for the analysis of transitions to tertiary education, another data set collected by the Commission.

The Stockholm Birth cohort study started in 1963 by all pupils in the sixth form, most of them at age 13, in schools in Greater Stockholm filled in an extensive questionnaire at school. To the information thus gathered, register data was added, including data on continued education and grades as well as on father's occupation and education. The number of students in the data set is 15,117.

Both data sets collected by the Swedish Governmental Commission on Educational Inequality are based on register (school record) information on grade point averages, enrolment, and examination. In order to facilitate comparisons with results from Stockholm Birth Cohort Study, the analysis to persons of these data sets are restricted to

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<sup>1</sup> As indicated above, Boudon discussed primary and secondary effects under the general heading 'Inequality of Educational Opportunity (IEO)', so we here use this acronym after him.

those who grew up in the county of Stockholm.<sup>2</sup> The sample fractions were for both data sets 25%, producing a total sample size of 23 253 cases in the school leavers study. The study of transitions to university is restricted to those born 1962 to 1964, which results in a sample of 15 349 cases. For all three data sets, the active files are slightly reduced, due to missing information on some of the variables. For each of these individuals we linked data on the characteristics of the parents and the household based on the censuses of 1960, 1970, and 1980 using the personal identification number assigned to every Swedish citizen.

## **Variables**

In SBC social origin is coded in five classes, (upper and upper middle class; employed lower middle class; self-employed lower middle class; skilled workers and unskilled workers) while social origin in the two other data sets are coded according to the standard Swedish classification established in the middle of the 1970s (SEI; SCB 1989) and very similar to the internationally used class schema (EGP) proposed by Erikson and Goldthorpe (1992, Ch. 2). In Table 1 the number of cases in the five origin classes in SBC as well as five classes origin in the Stockholm county study and the School leaver study, using the notation of EGP.

In Table 1, SBC53 refers to father's class in the year when those in the data set were born, i.e. 1953, while SBC63, refers to father's class at the start of the study in 1963. To check the comparability among the data sets, father's class is given for those in the Stockholm county study who were born in 1952-1954 (SC52-54). The corresponding

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<sup>2</sup> Some parts of the county of Stockholm are not included in Greater Stockholm, but the vast majority of the population of the county live in Greater Stockholm, which makes the samples sufficiently comparable.

class origins for those born 1962-1964 (SC62-64) are those actually used in the study of transitions to university.<sup>3</sup> SL90-91, refers to father's class in 1990 for the pupils in the school leaver study. Further, to check the accuracy of the coding of social class, frequencies over the five classes are taken from the level of living surveys 1968 and 1991 (Jonsson and Mills 2001), for men, aged 36 to 56 living in Stockholm county.

The most sensitive issue here for studying change in educational social selection is the comparability of the class coding in SBC to that in the other studies. All the latter are coded according to the same class schema, while the class coding in SBC is done according to an earlier schema. A first observation from Table 1 is that the coding of class from register data (SBC53 to SL90-91) underestimates the number of self-employed men, as the coding of class in the Level of living surveys can be regarded as highly reliable (although the numbers in Table 1 obviously are based on rather few cases). It seems as if many self-employed are assigned to Class II, the employed lower middle class. It seems furthermore as if the number in the skilled working class is underestimated in SL90-91, although it also seems probable that this class has become smaller in Stockholm, as indicated by the change from LNU68 to LNU 91. However, the low number of skilled workers in SL90-91 may partly be due to the high unemployment rate in the early 1990s (unemployed persons are in the level of living surveys coded according their regular occupations). Comparability to the other studies is therefore expected to increase if men without jobs are assigned to the working class. The in Table 1 indicated considerable increase in the number of men belonging to class I is most

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<sup>3</sup> Reliable information on educational attainment is not available for those born 1952-1954.

certainly mirroring the substantial change of the class structure of Stockholm in the latter half of the 20<sup>th</sup> century.

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Table 1

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The comparison of the origin distributions in SBC with those in the Stockholm county studies suggests that relatively more men are coded in Class I in SBC (observe that SBC53 refers to the origin distributions at the births of the children – that is, in the early part of the careers of many fathers). Overall, however, the distributions are quite similar. This suggests that the origin coding is comparable among studies. This is supported by the fact that there is a clear link between the earlier class schema, applied in SBC, and that developed in the 1970s.

In the analysis here, we will compare children from class I with those from the working class, leaving the intermediate classes outside the exposition.<sup>4</sup> In the interpretation of the results it should then be remembered that class I probably includes more occupational positions in SBC than in the Stockholm county studies, while the inclusion of those with no jobs in SL90-91 could result in some fathers wrongly included in the working class. In the first case we may underestimate social selection in the early period, while the inclusion of those with no jobs could result in an underestimation in the later period.

School performance will be estimated by grade point averages at exit from compulsory school as well as from upper secondary school. Furthermore, the pupils in SBC answered

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<sup>4</sup> In the instances where I have checked (which admittedly are not all), the intermediate class falls between the salariat and the working class. [Perhaps I anyway should include the intermediate class in the analysis??]

a mental test at age 13. The test was based on three subscales, verbal opposites, metal folding and numerical series. The results from these tests will be used as a further indicator of cognitive ability, less influenced by the aspirations of children and parents than grades.

There were four tracks in upper secondary school, in 1969, when most of the pupils in BCS left compulsory school, and in 1990/91, when pupils in the school leaver study left. The tracks were natural science, humanities and social science,<sup>5</sup> economics and technology. To what extent pupils went over to these tracks is reported in Table 2. The tracks are ordered according to their academic character, from natural sciences to technology. While the proportion of pupils who continued to any track in upper secondary school increased with over 15 percentage points, the proportion who continued to the natural science track, which opens most alternatives at tertiary level, decreased with five percentage points. The proportions continuing in the other three tracks increased, and this was particularly the case for the two tracks regarded as least academic, economics and technology.

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Table 2

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The proportions continuing to the four tracks will be analysed in what can be regarded as a cumulative fashion. That is, we will analyse the proportions continuing to the natural science track (N), natural science, humanities and social science tracks (NS), natural

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<sup>5</sup> This line of upper secondary school was kept together, while the study programmes were slightly different depending on whether the pupils choose that humanities or the social science programme. The track will here be designated S, as most students choose the social science programme. [Is this true? Evidence?]

science, humanities, social science and economics tracks (NSE) and finally all four tracks (NSET) of the upper secondary school.

## Results

In Table 3 the percentages continuing to the different tracks in upper secondary school among boys and girls from the salariat and the working class are reported. The log odds ratios for the comparison of the salariat and the working class are furthermore reported.

[Which is to prefer: figures or a table?]

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Figures 1 and 2 or Table 3

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What is perhaps most striking in Table 3 is the remarkable reduction in the percentage of boys continuing to natural science tracks. The percentage is around halved both among those from the salariat and the working class. The percentage of salariat boys continuing to the humanities and social science track remained about constant while the proportions continuing to economics and technology increased considerably, with the consequence that slightly more than three quarters of boys from the salariat went to the academic tracks of upper secondary school both in 1969 and 1990. The percentage continuing to the natural science track decreased, as mentioned, also among working class boys, while the proportions taking up upper secondary studies among them increased for the other three tracks, resulting in an overall increase in the academic tracks of around ten percentage points.

There was also a decrease in the proportion continuing to natural science among girls from the salariat although smaller than among boys. However, the proportion continuing

to humanities and social science, in difference to the development among boys, decreased among salariat girls. On the other hand, the increase in the proportions continuing to the other two tracks led to an overall increase in the proportion among them going to upper secondary studies. The corresponding increase was even more marked among girls from the working class. There was a small decrease in the percentage continuing to natural science tracks among them, but considerable increases to the other three tracks, resulting in a doubling of the proportion in upper secondary education.

With one exception (NSE 1990) it is from Table 3 clear that IEO has been greater among boys than among girls. The degree of social selection decreased considerably for all tracks and for both boys and girls.

The proportions continuing to from upper secondary gymnasia to university are also reported in Table 3.<sup>6</sup> These proportions increased considerably among boys and girls from the salariat, both among those who completed upper secondary school and among all (who finished compulsory school). There was no increase among working class boys, who left upper secondary school and only a minor increase among girls. The increasing proportions of working class children continuing to upper secondary school anyway led to an overall increase in the proportions of children from this class who took up university studies. This means that IEO increased in the transition from gymnasium to university, while it remained constant among all children.

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<sup>6</sup> While there is a twenty year span in the analysis of transitions to upper secondary school, we can only analyse a ten year span when looking at transitions to university, since otherwise too few in the younger cohort would have had the chance to continue to universities. The year for the transitions are put between inverted commas, since they refer to the first year of entering universities rather than a common year.

## Changing primary and secondary effects

It is from Table 3 clear, as already mentioned, that the association between social origin and transitions to academic tracks in upper secondary school decreased from 1969 to 1989. But which were the mechanisms behind this decrease? Was it a question of decreasing primary effects, of weaker secondary effects or perhaps of both? We have estimated the two types of effects through the procedure described above. Performance distributions were assumed to be normal and transition propensities were estimated through logistic regression. Estimated and counterfactual proportions were found through numerical integration.<sup>7</sup> Estimated and observed proportions are shown in Appendix Table A1, where grade point averages have been used to estimate performance at school. As is evident from this Table, the estimated proportions come close to the observed ones. In all but two cases (N69 and NS69) the estimated proportions come less than one percentage point from the observed. Formulas (5) and (6) are applied to the values in Table A1 to calculate primary and secondary effects, respectively, for boys and girls as shown in Figures 1 and 2 [Table 4?? Which is to prefer: figures or a table?].

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Figures 3 and 4 or Table 4

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It is from Figures 3 and 4 clear that the decrease in overall IEO is mostly connected to decreasing secondary effects among both boys and girls. Secondary effects decreased substantially for all the four track combinations. Primary effects did in no case increase

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<sup>7</sup> The numerical integration was done through the procedure at [http://people.hofstra.edu/faculty/Stefan\\_Waner/RealWorld/integral/integral.html](http://people.hofstra.edu/faculty/Stefan_Waner/RealWorld/integral/integral.html) provided by Stefan Waner at Hofstra University.

and decreased considerably in three cases – NS and NSE among boys and NS among girls – but secondary effects decreased more than primary also for these three cases.

Conversely, secondary effects increased considerably for the transition from upper secondary school to university, in spite of being larger than the primary effects already in 1969. Primary effects increased as well although less than the secondary effects.

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Figures 5 and 6 or Table 5

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If test results at age 13 are taken as indicating performance, instead of grade point averages, primary effects are smaller and secondary effects larger than in the case where GPAs are used, as is obvious from Figures 5 and 6. In this case secondary effects are larger than primary effects for all track combinations. Secondary effects are generally larger for what is here assumed to be the less academically oriented tracks.

That secondary effects is relatively more important when test results rather than grades are used as indicators of performance was found also for the 1958 cohort in United Kingdom (Jackson et.al. 2005). An explanation could be that in the years between taking the test, in our case at age 13 and in the British at age 11, and finishing elementary school, at age 16, some pupils will decide that they want to continue to academic tracks in upper secondary school while others come to the opposite conclusion. It is then probable that those intend to continue will put more effort on school work than the others and accordingly get a more positive grades/test relation than them. In this way choice, which is related to secondary effects, creeps into the measurement of primary effects, which suggests that we in some sense overestimate the importance of these effects, when using

grades from the final year as indicator of performance. On the other hand, the mechanisms that lead to the generally better performance among salariat kids than among those from the working class do not stop to operate after ages 11 or 13, which means that using early test results as indicators of performance will lead to a certain overestimation of secondary effects.

## **Summary of results**

- In 1969 boys more than girls went on to natural science and technology tracks, while girls more frequently went on to study humanities and social science. In 1990 girls still went more to humanities and social science tracks and boys more often to technology ones, while differences between the sexes in continuing to natural sciences and economics were small. That boys in 1969 more often than girls went to any upper secondary education was if anything reversed in 1990.
- Among boys the proportion continuing to natural science tracks in upper secondary schools decreased considerably, while the percentages continuing to economics and technology tracks increased substantially. Among girls the percentages continuing to natural science studies decreased, but less than among boys, while there was a noticeable decrease in transitions to the humanities and social science track and clear increases in the number of girls continuing to economics and technology tracks.
- Social inequality in the transitions were generally larger among boys than among girls.

- Social inequality in the transition from elementary school to upper secondary decreased from 1969 to 1990.
- This decrease was to a mostly dependent on decreasing secondary effects.
- Social inequality in transitions from upper secondary school to university increased mostly dependent upon increasing secondary effects. The increase was countervailed by the decreasing inequality in transition to upper secondary school, resulting in no change in overall inequality of educational opportunity.
- Secondary effects appear as smaller if grades are used as measures of performance rather than test results from an earlier age. This is presumably mostly due to anticipated decisions on educational continuation made in elementary school.

## Discussion

Social selection to the upper secondary level decreased in Stockholm in the twenty years from 1970 to 1990. This was mostly due to a decrease in secondary effects. The change did not appear evenly over the various tracks in upper secondary school. But is the chosen cumulative order of the tracks valid? The natural science and humanities tracks are what is left of the traditional higher secondary school with a *Realgymnasium* and a *Latingymnasium*. Not only were they, at least in 1969, the tracks that educated parents believed they had some knowledge of, but also the two tracks that gave most openings for tertiary studies, which especially was the case for those who took the natural science line. The economics (commerce) and the technology lines had recently, 1966, been reformed and should give general access to university education, but parents and children may still

have been uncertain about the value of these types of secondary education for further studies, they may still have been seen as dead ends. The log odds ratios relating the transitions of salariat kids to those for the working class bears witness of this – N: 1.91; S: 1.92; E: 0.75; and T: 0.37, and the pattern was the same for both sexes. Twenty years of experience of the new gymnasium changed this pattern substantially. The natural science track remained relatively most attractive to children from the salariat, but technology was second in this respect in 1990. The log odds ratios now were N: 1.64; S: 0.77; E: 0.51; and T: 0.91. The salariat seems to have made a correct assessment of the new situation, i.e. the technology track by that time actually opened more possibilities at the tertiary level than the humanities and social science track. [evidence??]

Secondary effects are least important for the transition to natural sciences, compared to those of the other track combinations, both in absolute and relative terms and both in 1969 and 1990.<sup>8</sup> This seems to be a consequence of the relatively high grades threshold to the natural science track and that children with high grades from all classes decided to choose this track. The high grades threshold also means that the relative proportion of children from the salariat, given their more advantageous grade distributions, is higher above the threshold than overall. This should result in primary effects being relatively more important for this transition.

The decrease in social selection to upper secondary education was mostly due to decreasing secondary effects – primary effects clearly decreased less and only for certain track combinations. Thus, even if class differences remained, children with similar grades tended to take more similar decisions regarding their schooling, regardless of class origins. We can here only speculate about the reasons behind this change. One reform

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<sup>8</sup> Secondary effects for transitions to N, NS and NSE were about the same for girls in 1990.

that could have influenced an increased propensity among working class children to continue to upper secondary education, was that the public financial support to children in secondary education increased considerably from 1970 to 1990 (Reuterberg and Svensson 1992). Upper secondary school was furthermore reformed in 1971. Vocational and theoretical education was integrated in the new gymnasium and the intention was that vocational education should give a general qualification to enter tertiary education. One could have expected that this reform would result in increased social selection to the theoretical tracks, since it could have made the vocational tracks more attractive to working class students, but this did obviously not happen. The importance of education was often asserted in the public discussion during these years [is this true?] – a view that the salariat had had since long. That there hardly were any increase in the proportion continuing among boys from the salariat could indicate that demand for upper secondary education was satisfied in this group already in 1969, even if a situation of ‘maximally maintained inequality’ may not have been reached (Raftery and Hout 1993). That social selection to university education did not change from the 1953 cohort to the 1963 one, could be seen as support for the assumption that demand for upper secondary education was already satisfied among the salariat in the older cohort.<sup>9</sup>

## **Conclusion**

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<sup>9</sup> Observe that the comparison is not fully consistent, since the transitions to universities refers to a cohort ten, not twenty, years younger than those born in 1953

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## Tables and figures

Table 1. Distributions of social class origins in Stockholm Birth Cohort 1953 and 1963; Stockholm County study born 1952-1954 and born 1962-1964; and School leaver study 1990-1991; as well for men in the Level of living surveys 1968 and 1991, aged 36-56, living in Stockholm county. Per cent.

Class	SBC53	SBC63	SC52-54	SC62-64	SL90-91	LNU68	LNU91
I: Upper middle class	13,9	17,6	13,5	14,9	28,6	18,7	33,9
II+IIIA: Employed lower middle class	32,0	35,6	40,1	41,3	36,1	28,8	20,4
IV: Self-employed lower middle class	6,4	7,9	7,8	8,7	6,3	12,3	14,0
VI: Skilled working class	28,4	22,5	22,0	21,1	9,9	24,7	15,6
IIIB+VII: Unskilled working class	19,4	16,4	15,1	13,3	13,7	15,5	16,1
No job					5,4		
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0
N	14538	14704	11446	12254	23253	219	186

Table 2. Transition to tracks in upper secondary school in greater Stockholm around 1969 and in Stockholm County around 1989. Per cent.

	SBC	SL
No gym	59,2	43,2
nat sci (N)	15,1	10,1
Humsoc (S)	14,5	17,5
Econ (E)	6,3	17,3
Tech (T)	5,0	11,8
Total	100,0	100,0
N	13417	22799

Table 3. Percentages continuing from primary school to tracks in secondary school around 1969 and 1990-91 among boys and girls from the salariat ( $P_{ss}$ ) and the working class ( $P_{ww}$ ) as well as percentages continuing to university among those with grades from upper secondary school and from primary school and log odds ratios comparing salariat pupils with those from the working class. Per cent.

N	Boys		Girls		All		IEO= $L_{ss,ww}$		
	Pss	Pww	Pss	Pww	Pss	Pww	Boys	Girls	All
1969	41,50	8,40	24,80	5,20	33,10	6,80	2,05	1,79	1,91
1990	19,70	4,30	18,50	4,60	19,10	4,40	1,70	1,55	1,64
NS									
1969	58,40	12,10	62,50	16,20	60,40	14,20	2,32	2,15	2,22
1990	34,70	10,30	50,70	23,10	42,40	16,70	1,53	1,23	1,30
NSE									
1969	68,00	16,10	69,90	20,70	69,00	18,40	2,40	2,19	2,29
1990	53,20	21,60	71,90	37,60	62,20	29,60	1,42	1,45	1,36
NSET									
1969	78,80	23,60	70,30	21,00	74,50	22,30	2,49	2,19	2,32
1990	76,90	32,90	78,40	40,00	77,60	36,50	1,92	1,69	1,80
University among those with grades from upper secondary school									
'1973'	43,50	13,90	28,10	11,40	36,00	12,70	1,56	1,11	1,35
'1983'	55,90	13,50	49,50	13,90	52,70	13,70	2,09	1,80	1,95
University among those with grades from primary school									
'1973'	36,60	5,20	23,20	4,30	29,90	4,80	2,35	1,91	2,14
'1983'	50,40	9,30	44,20	9,80	47,50	9,50	2,29	1,99	2,15

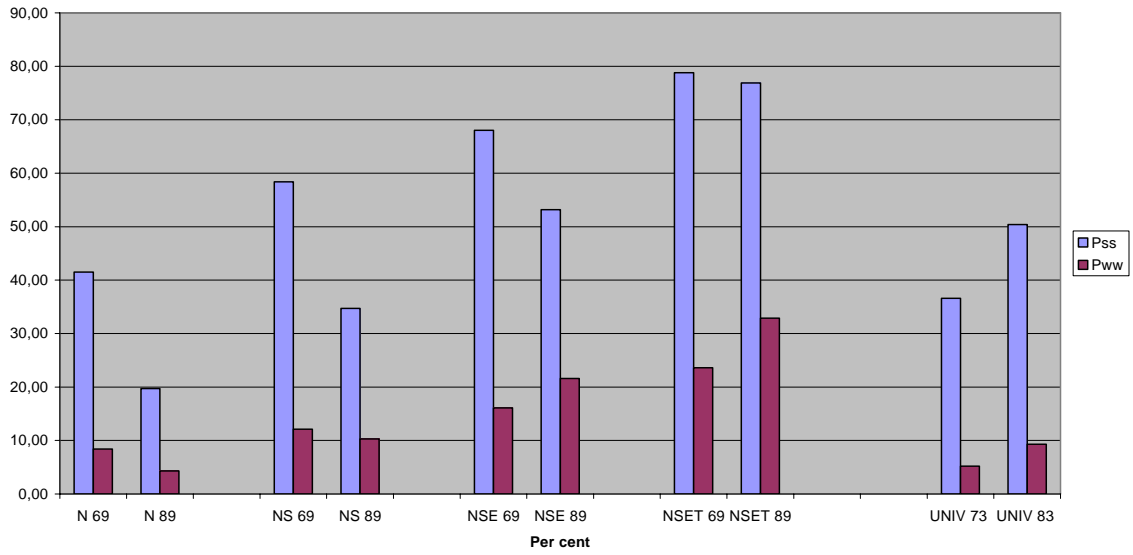
Table 4. Primary and secondary effects in the transition to tracks in upper secondary school in 1969 and 1989 among boys and girls and for the transition from upper secondary school to university around 1973 and 1983. Performance indicated by GPA.

N	Primary		Secondary		Total	
	Boys	Girls	Boys	Girls	Boys	Girls
1969	1,21	1,13	0,80	0,64	2,01	1,77
1989	1,18	1,11	0,56	0,47	1,73	1,58
NS 1969	1,12	1,02	1,17	1,11	2,29	2,13
NS 1989	0,84	0,78	0,70	0,46	1,53	1,25
NSE 69	1,07	1,02	1,31	1,15	2,38	2,17
NSE 89	0,76	0,99	0,65	0,49	1,41	1,47
NSET 1969	1,21	1,02	1,27	1,14	2,47	2,16
NSET 1989	1,11	1,00	0,79	0,72	1,90	1,73
Univ '1973'	0,52	0,36	1,07	0,75	1,59	1,11
Univ '1983'	0,61	0,50	1,48	1,35	2,09	1,84

Table 5. Primary and secondary effects in the transition to tracks in upper secondary school in 1969 among boys and girls and for the transition from upper secondary school to university around 1973. Performance indicated by test results.

	Primary		Secondary		Total	
	Boys	Girls	Boys	Girls	Boys	Girls
N 1969	0,83	0,77	1,17	0,98	2,00	1,76
NHS 1969	0,74	0,71	1,56	1,44	2,30	2,15
NHSE 1969	0,71	0,97	1,69	1,23	2,40	2,20
NHSET 1969	0,83	0,75	1,66	1,43	2,49	2,18
Univ/upp sec	0,22	0,23	1,34	0,87	1,55	1,10
Univ/elem	0,69	0,61	1,68	1,27	2,37	1,88

**Figure 1. Proportions continuing to upper secondary tracks and to university among boys from the salariat and the working class**



**Figure 2. Proportions continuing to upper secondary tracks and to university among girls from the salariat and the working class**

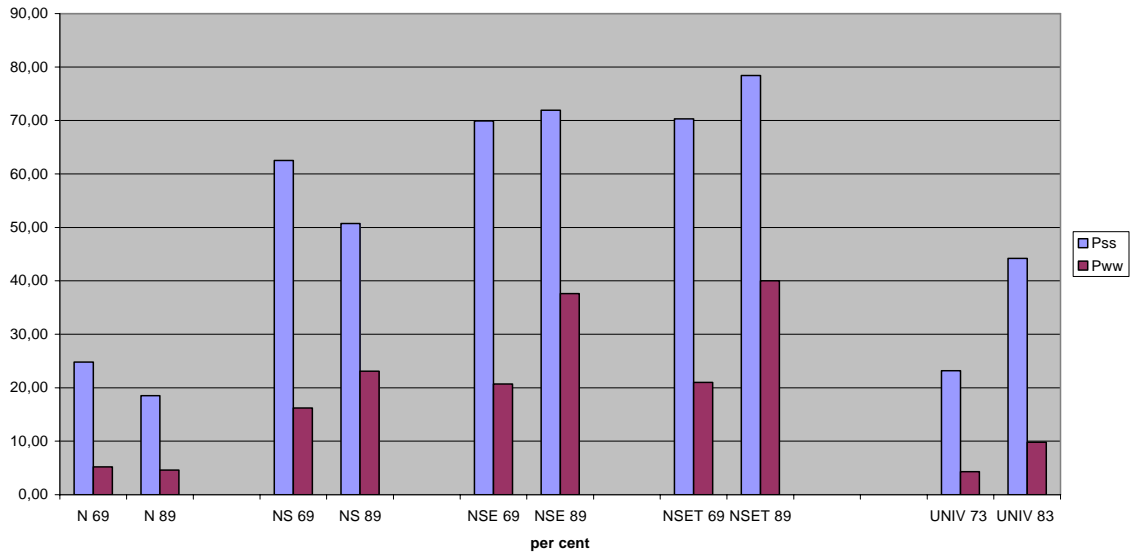


Figure 3. Primary effects, based on GPAs, and secondary effects among boys by year and track/university

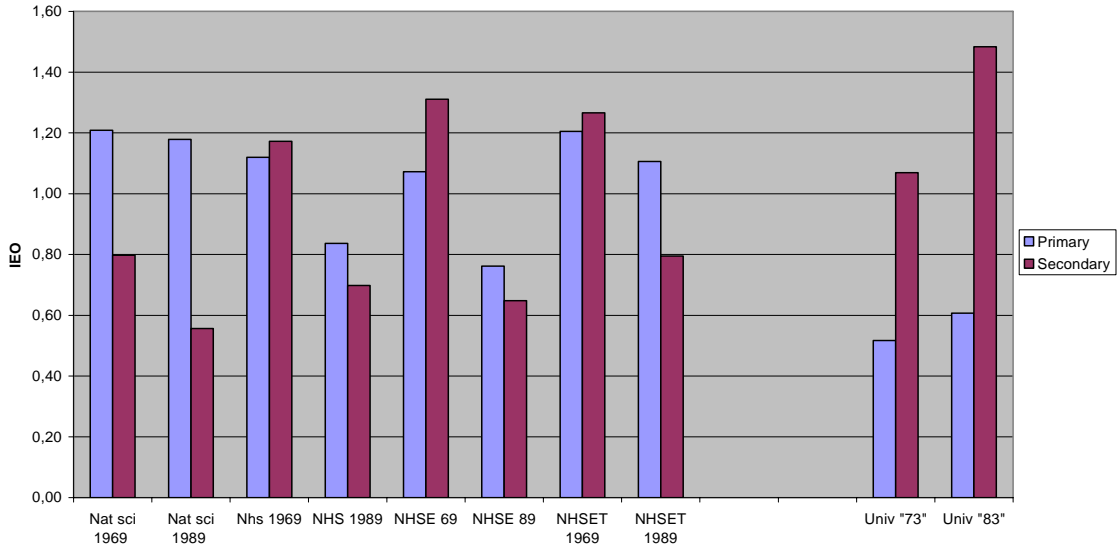
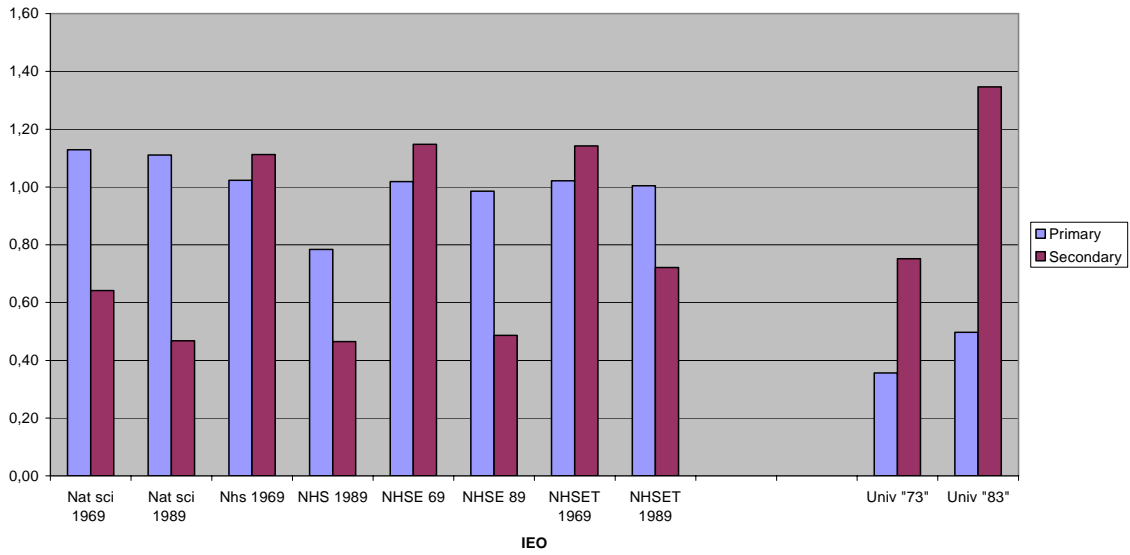
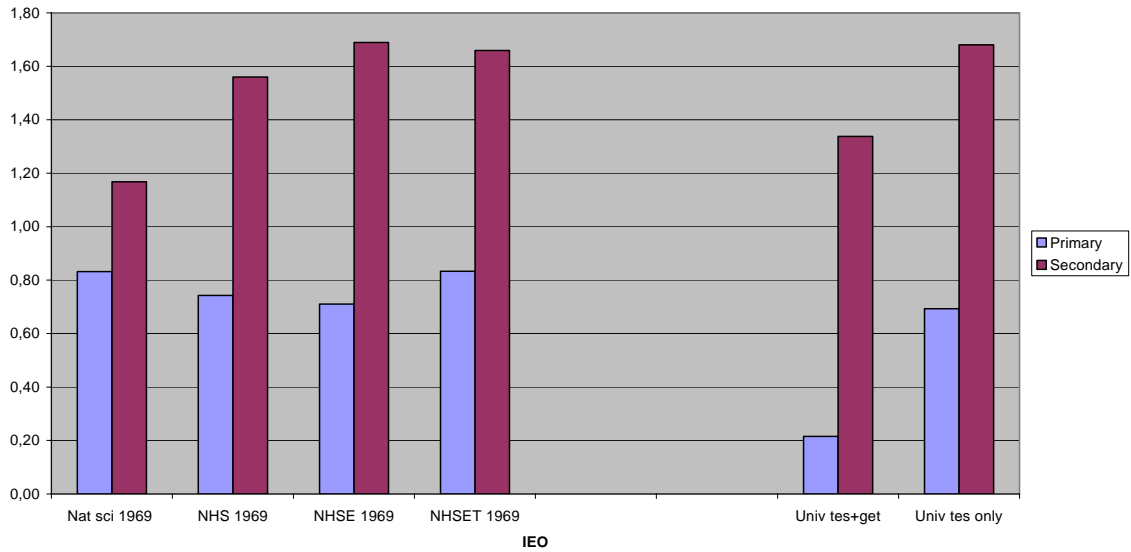


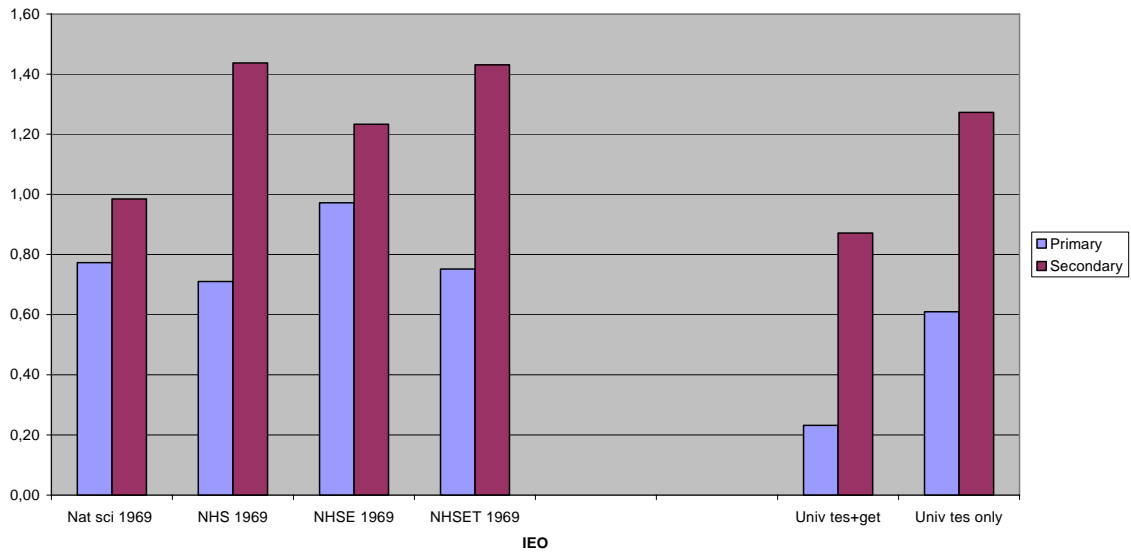
Figure 4. Primary effects, based on GPAs, and secondary effects among girls by year and track/university



**Figure 5. Primary effects, based on test results, and secondary effects among boys by year and track/university**



**Figure 6. Primary effects, based on test results, and secondary effects among girls by year and track/university**



## Appendix

Table A1. Estimated and observed percentages continuing to the next level of education among boys and girls from the salariat and the working class.

	Boys				Girls				All			
	Pss	Pww	Psw	Pws	Pss	Pww	Psw	Pws	Pss	Pww	Psw	Pws
N 69												
est	40,3	8,3	24,8	17,9	24,2	5,2	15,2	9,9	32,3	6,7	19,6	14,4
obs	41,5	8,4			24,8	5,2			33,1	6,8		
N 90												
est	19,3	4,1	12,6	7,2	18,2	4,5	12,4	6,9	18,7	4,3	12,2	7,4
obs	19,7	4,3			18,5	4,6			19,1	4,4		
NS 69												
est	57,4	12,0	30,9	32,0	61,8	16,0	35,0	37,1	59,5	14,0	33,1	34,4
obs	58,4	12,1			62,5	16,2			60,4	14,2		
NS 90												
est	34,6	10,2	22,2	19,9	50,5	22,6	40,6	33,2	42,2	16,7	32,2	26,2
obs	34,7	10,3			50,7	23,1			42,4	16,7		
NSE 69												
est	67,3	16,0	36,9	42,6	69,2	20,5	41,1	44,3	68,3	18,2	39,1	43,4
obs	68,0	16,1			69,9	20,7			69,0	18,4		
NSE 90												
est	53,2	21,7	40,2	37,5	71,8	36,9	59,9	47,6	62,1	29,7	50,8	45,2
obs	53,2	21,6			71,9	37,6			62,2	29,6		
NSET 69												
est	78,4	23,5	50,0	51,5	69,6	20,8	41,7	44,7	73,9	22,1	45,5	48,1
obs	78,8	23,6			70,3	21,0			74,5	22,3		
NSET 90												
est	77,1	33,5	59,8	52,2	78,4	39,3	63,7	57,0	77,8	36,7	61,2	55,7
obs	76,9	32,9			78,4	40,0			77,6	36,5		
Univ '73'												
Est	43,9	13,8	21,2	31,9	28,0	11,4	15,2	21,0	35,9	12,6	17,8	26,9
Obs	43,5	13,9			28,1	11,4			36,0	12,7		
Univ '83'												
Est	55,9	13,6	22,4	40,9	49,2	13,3	20,5	37,6	52,6	13,7	21,1	40,3
Obs	55,9	13,5			49,5	13,9			52,7	13,7		