MEMORANDUM

**The Impact of Economic Resources on Educational Attainment.
Changes Over Time**

By

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Abstract.

Previous sociological research has concluded that the impact of social origin on educational attainment is stable or decreasing. The analyses on the basis of which these conclusions are made usually do not include the cohorts entering education in the years following the economic recession of the 1980's. If parental economic resources affect educational choice, as is assumed in explanations of inequality in educational attainment based on a rational action perspective, we would expect increasing levels of inequality. This assumption is tested out on a large sample including the total cohorts of Norwegians born between 1955 and 1984, thus covering the thirty-year period up to the most recent years. The main focus is on the impact of parental economic resources, which is measured as the mean earnings of father and mother the five years before leaving compulsory school. The analyses indicate that the impact of economic resources increased among the cohorts born around 1970 and onwards. In the same period the impact of parental education decreased on the lowest educational, whereas parental education has a stable effect on the highest educational levels. It is suggested that similar findings should be expected in other countries as well.

Introduction

To what extent has the impact of social origin on educational attainment changed over time? The prevailing answers to this question have varied somewhat in different periods. In the mid-twentieth century a widely held opinion was that inequality would decline, in line with increasing rates of educational participation. This is part of the liberal theory of industrialism, according to which the impact of ascribed characteristics would decline and be replaced by achievement values (e.g. Blau & Duncan 1967, Parsons 1949, 1977). The school is a main arena for achievement values, and the selection to the higher educational levels should be determined by ability and effort rather than by social origin. Subsequent research did not support the view of declining inequality however. A major comparative work from the beginning of the 1990's, emphasised that the impact of social origin on educational attainment tends to be stable, a conclusion reflected in the title "Persisting inequality" (Shavit & Blossfeld 1993). Two countries, Sweden and the Netherlands, were perceived as exceptions, displaying tendencies towards equalisation at the lower educational levels. Researchers behind more recent analyses have maintained that equalisation has occurred in countries such as Germany, Britain, Italy, France and Norway (e.g. Jonsson et al. 1996, Shavit & Westerbeck 1998, Lindbekk 1998, Raaum 2003, Vallet 2004). These results have thus led to the conclusion that it is the countries that display persisting patterns of educational inequality that stand out as exceptions (cf. Breen & Jonsson 2005).

The results of empirical studies on inequality of educational attainment so far should not be considered as sufficient evidence of a general trend towards equalisation in educational attainment. For one thing, the development during the most recent years has not been uncovered, as the studies pointing towards equalisation typically end with the cohorts born in the 1950's, or sometimes the beginning of the 1960's. This excludes the cohorts entering secondary education in the years following the economic recession of the 1980's.

Increasing economic insecurity may be expected to influence educational inequality, and might well be evident in increasing inequality in educational attainment. Recent evidence from Great Britain comparing the children born in the late 1950's and those born two decades later does indeed indicate that the correlation between family background, measured by family income, and educational attainment has been rising (Blanden & Gregg 2004). Moreover, the rapid expansion of British higher education contributed to increasing participation gaps between rich and poor children (Blanden & Machin 2004).

This leads over to another issue, concerning the measurement of social origin. Sociological studies of changes over time usually rely on a classification of class, parental education or both. One cause of a weakening impact of social class origin or parental education may be inflation in occupational titles and in the value of higher education degrees. A widely used classification scheme is the Erikson –Goldthorpe scheme, in which the highest category consists of higher-grade professionals, administrators and managers, a category that has increased strongly in recent decades. Belonging to this class category would clearly indicate a more "elite" position in the mid-twentieth century, for example, than around 2000. A recent study also indicates that a large proportion of service class members in fact do not have the employment contracts they according to the theoretical rationale of the scheme should be supposed to have (Evans and Mills 2000). Similar arguments can be made in relation to parental education. After massive expansion in the educational system, having parents with university level education is not necessarily a sign of the same elevated position as it would be some decades ago.

Finally, a further complicating factor for conclusions about developments in social inequality in many countries is the growing number of people that are outside the labour force, and who therefore usually are omitted in analyses applying class classifications. If it is

the case that the most dispossessed increasingly are omitted from analyses of educational inequality, this could also influence conclusions about change over time.

The aim of this paper is to present an analysis of the development of inequality in educational attainment in which these complicating issues are minimized. The data set used consists of the total cohorts born between 1955 and 1987 in Norway, thus covering the thirty-year period up to the most recent years. A crucial question concerns the impact of economic resources. More specifically, the question raised is whether the impact of relative earnings has changed over time. Are those raised in rich families more or less advantaged compared to those who are poorer in the most recent years compared to earlier years? The impact of parent's education is also assessed. Moreover, all persons are included, also the growing number of people in the Norwegian society who are outside the labour market and primarily live on welfare subsidies.

Economic resources and rational action theory

In an economic perspective, educational choices can be seen as an investment in one's future human capital (cf. Becker, 1993 [1964]). Parental income is crucial for investment decisions, because richer families can more easily pay for their children's education, including the income loss when the children spend time on education rather than work. Accordingly, income inequality would be supposed to be an important cause of inequality in recruitment to higher education. The impact of parental income has also received increasing attention in theoretical accounts of inequality in educational attainment within the sociological tradition. The focus on parental income in this paper thus fits well with central explanatory endeavours within sociology.

Boudon's book *Education, Opportunity and Social Inequality* (1974), is a pioneer work that established within sociology the view that educational choice involves the assessment of costs and benefits of specific routes of education. More specifically, the

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educational career is seen as a number of branching points at which the students, in collaboration with their parents, have to decide whether to continue to the next step or to opt out of the educational system. Mare (1980, 1981) developed and formalised the model of the educational career as sequence of binary choices. Continuing one's educational career clearly involves economic costs, but Boudon emphasises the importance of social costs as well, for example, those that arise when students from lower class origins have to leave their social environment in order to pursue educational goals. He also assumes that the great interest in children's education in the higher classes to some extent is supported by social norms. Gambetta (1987) also calls attention to influence of economic resources on educational choice, and as Boudon he includes non-rational elements in his model of choice. More specifically Gambetta argues that those originating in the lower classes tend to over-adapt to their circumstances, and exaggerate the costs and underrate the benefits of further education, and vice versa in the higher classes.

In the most recent years, the perhaps most vigorous attempt within sociology to establish the importance of economic resources for educational choice is that by Goldthorpe. Even if direct economic costs of education are much reduced in societies in which education is cheap or even free, and there is growing affluence and rising family incomes, he argues, parental income will still affect the probability of choosing secondary and tertiary education (Goldthorpe 1996, cf. also Breen & Goldthorpe 1997). An important reason for class differences in educational choice is the greater economic insecurity of the lower classes, among which the threat of losing one's job is ever present. Moreover, at the age when the children make decisive educational choices, the earnings curve still tends to rise in the higher classes. Their choice situation thus is one in which they may expect future increasing prosperity whereas the earnings curve will typically have flattened out in working classes.

Because education will be expensive in the working classes, many able and talented members of these classes will not obtain higher education.

Goldthorpe relates his contribution to the sociology of social class and education to the tradition of Boudon and Gambetta, but he opposes their inclusions of normative and non-rational elements in models of educational choice and questions the idea of the importance of social costs. Among other things he argues that the potential costs of leaving one's social environment diminish in line with the disappearance of working class communities, and that higher education should be considered a consumption value in the service class rather than as having normative value. Goldthorpe thus espouses a rational action theory of educational choice in which economic resources have vital importance.

Do economic resources matter?

While economic resources play a crucial part in theories of educational choice, especially within a rational action perspective, the empirical support for these theories so far is not so impressive, and especially not within sociology. The impact of economic resources has been a larger issue in the economic literature, although it is disputed whether or not there in fact is a causal relationship between parental income and educational attainment (e.g. Cameron & Heckmann 1998). There is little evidence on temporal change, which is the topic here, also within economics (however see Blanden & Gregg 2004, Blanden & Machin 2004). One reason may be that it is hard to find good measures of the parents' economic situation. Results from studies of economic mobility indicate that the magnitude of inheritance of economic position varies greatly according to measurement procedures, and the estimates of the extent of inheritance tend to be lower when they are based on low quality measures (Solon 1992, Zimmerman 1992, Mazumder 2005). A reasonable assumption is that measurement procedures will affect estimates of the association between parental economic resources and educational attainment as well.

Moreover, whereas economic resources evidently are important for explaining social inequality in educational attainment in developing countries and in a historical perspective, access to economic resources seem less vital in present-day welfare states with free schooling and public economic support for students, such as in the Nordic countries (e.g. Raaum 2003). Alternative explanatory perspectives emphasise the importance of cultural rather than economic resources. A key point in "culturalist" perspectives is that there is an association between social origin and educational performance, and that this association is crucial for explanations of inequality in educational attainment. The link between social origin and performance is explained in somewhat different ways. Those having educated parents tend to perform especially well in school, one argument goes, because parents transmit cultural resources relevant for their school work, such as educational ambitions, good working habits, and an interest in reading (e.g. Lareau 1987, De Graaf, De Graaf & Kraykamp 2000, Farkas 2003). According to Bourdieu's ideas about social reproduction, the link between social origin and educational performance may be considered as discrimination in some sense. The culture of the most powerful classes serves as a "legitimate" culture that can be mastered to varying extents (Bourdieu 1984, 1986, 1996).

Proponents of rational action theory have also cast doubt on the actual empirical strength of the impact of economic costs on educational choice and instead pointed to the relevance of cultural resources. In their discussion on educational inequality in Sweden, Eriksson and Jonsson (1996: 51) conclude that although they have not been able to perform a proper test, economic factors probably are important for the transition to university. But economic resources are not so important for early transitions, they argue. Non-economic factors, such as educational and cultural resources, are more important than economic resources. The argument for this conclusion they find most persuasive is that social class and parental education influences early choices of stream or track in lower secondary school that

do not differ with respect to costs. According to them this suggests that educational and cultural resources have a greater influence on these choices than economic resources. The same holds true for the choice of academic or vocational tracks in secondary school; there is only a slight difference in the economic costs of choosing one of these alternatives instead of the other (Eriksson & Jonsson 1996:2-22).

An argument against their conclusion is that not only the immediate costs are taken into consideration when educational choices are made, but economic costs in a long term perspective. Sociologists following the tradition of Boudon and Mare have tended to analyse the educational career as a sequence of transitions from one stage to the next, and to assume that this also is a good reflection of the actual choice situation. This has been criticised among other things on account of being a "myopic" model of educational choice, as those making the choices do not take into consideration long-term consequences (Cameron & Heckmann 1998).

This line of argument can be exemplified with the early choices in the Norwegian educational system, which is described in Figure 1. Choosing the academic or vocational track in secondary level school makes no difference for the cost of education in the short run, as most students live at home during secondary level school. However, those who choose the vocational track have attained qualifications for entering the labour market after completing their secondary level degree. Those who complete the academic track have not attained qualifications that are attractive for employers; the main value of their secondary level degree is that it serves as an entering qualification for tertiary level education. A short-cycle tertiary level degree is estimated to three years, and a higher level degree at least an additional two or three years. Those who choose the academic track also have to include the costs of tertiary level education in their estimates; the level of the costs depending on the degree they aim at. Moreover, when labour market entry is so many years into the future, the

level of uncertainty with respect to the benefits of their educational choices will be high. This suggests that economic resources should be essential at the early stage of the educational career, even if the immediate costs of choosing different tracks are relatively similar. Having affluent parents should increase the probability of making educational choices with high costs in a long-term perspective.
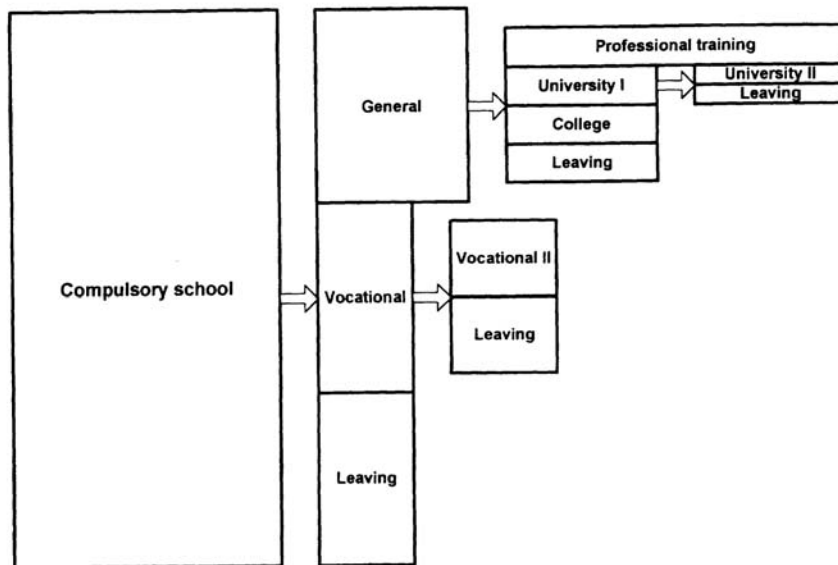
Figure 1 The Norwegian educational system

Change over time

According to the rational action perspective, the decisions about educational investments should be affected both by the size of the expected returns and the costs involved in acquiring educational degrees. This implies that the level of social inequality should be affected by economic developments as well as public measures easing the burden of financing higher education.

If we consider economic developments first, the willingness to invest should decrease in periods in which the future benefits of education are perceived as low or insecure. Because educational choices are long-term investments, they will in principle always be insecure, as it will be hard to forecast the future benefits of specific educational choices. A

normal strategy might therefore be to assume that today's trend will continue into the future. Today's optimism or pessimism will then be expected influence one's investment decisions, not considerations about the state of the labour market several years into the future (cf. Boudon 1982). Moreover, the educational investments of those from the poorest families should be most affected by economic developments; therefore we can expect the impact of economic resources to be greatest in periods with economic downturns. This will of course not only be because of changes in expectations about future possibilities, but because of present-day financial problems.

There are several reasons to expect the educational investments in the more affluent families to be the least affected by economic developments: Allegiance to social norms emphasising the importance of education and a wish to avoid social degradation, as emphasised by Boudon, or, as Goldthorpe argues, that education is a consumption value in the higher classes. Families with higher education may be supposed to be most unaffected – either because the norms underpinning the value of higher education are especially strong among them, or because the consumption value of education is especially high for those who have grown up in educated social surroundings.

Another factor that will influence changes over time in the impact of economic resources is the size of the costs of higher education. These costs will depend on the family's economic situation as indicated above, but also on the availability of alternative economic support for students. One sort of support is public financing of colleges and universities, fully or partially covering the costs of tuition. Moreover, public or private loans and grants may be available that cover the students' living expenses. In Norway there usually are no tuition fees in higher education, students only have to pay a symbolic fee in addition to books, etc., thus greatly lowering the costs compared to countries in which universities are dependent on large student fees.[i] In addition there is a public loan scheme

providing economic support for students, aimed at eradicating the impact of parental income on educational choice. This scheme works on a universal basis; the students have the same right for support irrespective of the economic situation of their family. The scheme provides grants, but this accounts for a much smaller proportion of the public funding than loans, for which students start paying interest rates after completing their education or dropping out. The interest rates on these loans have varied greatly in the last decades. The size of the interest rate was previously determined by public policy decisions whereas in the present system it is adjusted to the interest rate in the private banking system and set to follow the development of the general interest rate.

Figure 2 illustrates economic developments in Norway during the last three decades by unemployment rates, measured as proportions of the labour force, and unemployed in thousands. The development of the interest rate on the public student loans is also shown. We see that the interest rate increased sharply from 1978 and stayed at the level of nearly 12 percent during the major part of the 1980's and the early years of the 1990's. Unemployment increased in the same period, with the exception of a few years in the mid-1980's.

Figure 2. Unemployment and student interest rate 1972-2005
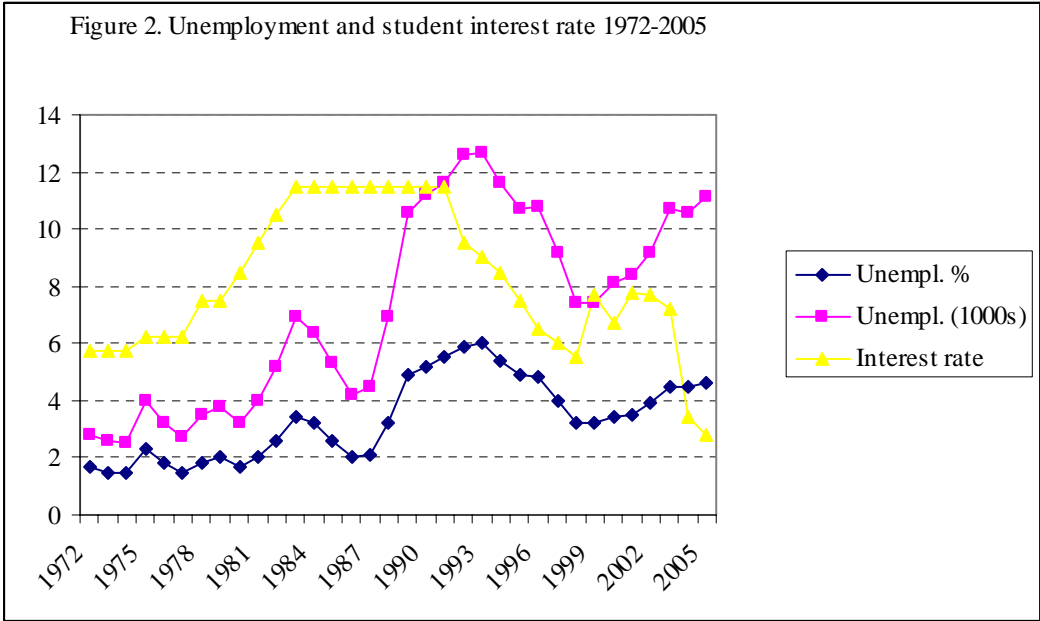
If the developments illustrated in Figure 2 affect educational choice as assumed in the above argument, we must expect the impact of parental economic situation to be greater for the cohorts making their educational choices in the period with high unemployment and high interest rates on the public loans than for the older cohorts. It is not entirely obvious for which cohorts we should expect the impact of economic resources to increase; that would depend on the age at which the essential choices are made. If we assume that decisions about the educational path of children are made some time prior to completion of secondary level schooling, which in Norway is at the age of 16 (cf. Figure 1), we would expect inequality to increase among the cohorts born in the early 1970's. These cohorts were in their early teens in the years when people must have started to grasp that more difficult economic times had started, and parents would be supposed to be increasingly worried about making large investments in children's education. There was a temporary improvement, measured by decreasing unemployment rates 1994 to 1998, something that may have led to decreasing inequality for some years among the cohorts born 16 years earlier – around 1980.

Data, classification and method

The data set consists of the full cohorts born between 1955 and 1984, both native born and those who immigrated before the age of 10. This data set is constructed through the linkage of public registers. Among these is the National Database for Education (NUDB) and the register of earnings used to measure pension rights. The focus is on the educational attainment of the members of these cohorts at two ages - the age of 20 and 28.[ii] The first observation is in 1978 and the latest is 2004, which gives a maximum time span of 26 years. The dependent variable measures the level of education one actually has attained, not the level on which one has started. The value of education must to a greater extent depend on whether one attains a degree rather than whether one embarks on an education for so to drop out. The focus on attainment rather than educational transitions seems preferable as the aim

is to study the impact of parental resources on educational attainment and not the transitions per se. The focus on attainment is not the least an advantage in the Norwegian educational system, with high drop-out rates, and extensive shifts between educational careers. In the period studied here as many as 40-50 percent, varying somewhat over time, of those who started lower level university studies dropped out without completing the degree their education was aimed at (Mastekaasa & Hansen 2005: Figure 1).[iii] To focus primarily on the transition to higher education thus would give a distorted image of what those who commence on university studies actually attain. Because there is an association between social origin and drop-out, the results on the impact of social origin on educational attainment would also be distorted.

Educational attainment at age 28 is divided into five levels. The highest level is a higher level university degree, requiring 17 to 18 years of study. This means that a higher level degree should be completed at the age of 25, given an educational career from the age of 7 with no breaks. This is unusual however, among other things because of extended educational careers, study breaks, and military service for the men. The point of registration is therefore postponed until the age of 28. The second level is a lower-level university degree, either completion of shorter studies or a full bachelor degree, which requires 14-16 years of education. The third category is attainment of a secondary level degree from the academic track. Those whose highest education is the short introductory courses at university are included in this category. The fourth is a secondary level vocational degree and the fifth and final category is no educational degree above primary level. The development of educational attainment at age 28 is shown in Table 1. We see that the change in educational attainment in the period is striking. In the oldest cohorts more than 50 percent had no education above compulsory school. This proportion has steadily declined and is true

for only 20 percent of the 1976 cohort who is 28 years old in 2004. Again note that

completed

Table 1A. Educational attainment at age 28 and age 20

	Highest education at age 28 (%)								Highest education at age 20 (%)					
	No sec.	Voc. Sec.	Gen. Sec.	Tert. Low	Tert. High	Sum	N	% missing	No sec.	Voc. Sec.	Gen. Sec.	Sum	N	% missing
1955	61,3	9,4	7,5	18,1	3,7	100,0	60646	2,5						
1956	59,8	10,6	8,2	17,8	3,6	100,0	61353	2,7						
1957	57,4	12,0	8,9	18,1	3,6	100,0	60319	2,9						
1958	56,1	12,6	9,5	18,2	3,6	100,0	60530	3,0	67,9	3,7	28,3	100,0	59061	5,4
1959	54,1	13,6	10,5	18,3	3,5	100,0	60977	2,7	67,3	4,0	28,7	100,0	60732	3,1
1960	51,7	14,3	12,1	18,1	3,7	100,0	59999	3,5	64,1	4,6	31,2	100,0	59864	3,7
1961	48,1	15,1	14,5	18,3	3,9	100,0	60700	4,8	60,2	4,4	35,4	100,0	60547	5,0
1962	46,0	16,3	14,8	19,0	3,9	100,0	60606	4,8	58,3	5,2	36,4	100,0	60483	5,0
1963	45,2	17,4	13,9	19,6	3,9	100,0	61955	4,7	58,5	6,7	34,8	100,0	61782	4,9
1964	42,7	18,5	14,2	20,3	4,3	100,0	64221	4,8	56,6	7,5	35,9	100,0	64057	5,1
1965	40,0	19,5	14,8	21,1	4,6	100,0	64665	5,0	54,5	8,6	36,9	100,0	64466	5,3
1966	37,7	20,2	15,1	22,0	5,1	100,0	65632	4,7	52,8	9,4	37,8	100,0	65412	5,1
1967	36,0	20,4	15,0	23,3	5,3	100,0	65576	4,5	51,3	10,0	38,8	100,0	65382	4,8
1968	34,4	20,7	14,5	24,7	5,7	100,0	66784	4,3	50,3	10,3	39,4	100,0	66594	4,5
1969	32,6	21,3	13,9	26,1	6,0	100,0	67316	4,4	49,1	10,9	40,0	100,0	67133	4,7
1970	30,9	22,0	13,9	27,2	6,1	100,0	64437	4,3	48,1	11,2	40,7	100,0	64212	4,6
1971	28,4	23,0	13,6	28,5	6,5	100,0	65476	4,2	45,7	11,9	42,4	100,0	65268	4,5
1972	26,5	23,3	13,8	29,4	7,0	100,0	64343	4,1	43,4	12,7	43,8	100,0	64107	4,4
1973	24,5	23,5	14,2	30,6	7,2	100,0	61420	4,1	40,4	13,4	46,2	100,0	61153	4,5
1974	23,0	23,2	14,8	31,8	7,1	100,0	60027	4,0	38,0	14,0	48,0	100,0	59824	4,3
1975	22,1	22,4	15,2	32,4	7,9	100,0	56527	4,1	36,6	14,3	49,2	100,0	56285	4,5
1976	20,9	21,4	16,5	32,7	8,4	100,0	53861	3,9	33,3	14,8	51,9	100,0	53680	4,3
1977									32,9	14,2	52,9	100,0	51188	4,4
1978									36,7	16,5	46,8	100,0	52143	4,5
1979									38,6	14,8	46,6	100,0	52062	4,6
1980									40,0	15,7	44,3	100,0	51798	4,5
1981									39,4	14,8	45,9	100,0	51656	4,5
1982									36,9	14,1	49,0	100,0	51981	4,6
1983									37,7	12,8	49,5	100,0	51035	4,9
1984									40,2	12,1	47,7	100,0	51420	5,0

Table 1B. Distribution of independent variables

	Non-western (%)	Women (%)	No of siblings		Parental education (level 0-	
			Mean	Std. dev.	Mea	Std. dev.
1955	0,2	48,6	2,1	1,5	1,1	1,4
1956	0,3	49,0	2,2	1,5	1,2	1,4
1957	0,3	48,9	2,2	1,5	1,2	1,4
1958	0,3	48,8	2,2	1,5	1,3	1,4
1959	0,3	48,5	2,3	1,5	1,3	1,4
1960	0,3	48,8	2,3	1,5	1,3	1,5
1961	0,4	48,3	2,3	1,5	1,4	1,5
1962	0,4	48,6	2,2	1,5	1,4	1,5
1963	0,5	48,9	2,3	1,5	1,5	1,5
1964	0,5	48,3	2,2	1,4	1,5	1,5
1965	0,6	48,3	2,2	1,4	1,6	1,5
1966	0,7	48,4	2,2	1,4	1,6	1,5
1967	0,8	48,6	2,1	1,3	1,7	1,5
1968	0,9	48,6	2,1	1,3	1,7	1,5
1969	1,1	48,6	2,0	1,3	1,8	1,5
1970	1,3	48,5	2,0	1,3	1,8	1,5
1971	1,5	48,8	1,9	1,3	1,9	1,6
1972	1,8	48,7	1,9	1,2	2,0	1,6
1973	2,1	48,4	1,8	1,2	2,0	1,6
1974	2,4	49,2	1,8	1,2	2,1	1,6
1975	2,6	49,0	1,8	1,2	2,1	1,6
1976	2,9	48,8	1,8	1,2	2,2	1,6
1977	3,5	48,7	1,8	1,2	2,3	1,6
1978	3,9	48,6	1,8	1,2	2,3	1,6
1979	4,4	48,7	1,8	1,2	2,3	1,6
1980	4,8	48,5	1,9	1,2	2,4	1,6
1981	5,6	49,1	1,9	1,2	2,4	1,6
1982	5,4	48,5	1,9	1,2	2,5	1,5
1983	6,0	48,5	1,9	1,2	2,5	1,5
1984	6,2	48,8	1,9	1,2	2,6	1,5

education is recorded. Most of those who are recorded on the lowest level in the most recent years, for example, will have started secondary level schooling for then to drop out without completing a degree. In the column reporting missing data we see that the proportion for which there is no information on education is low. This is especially so because the proportion includes people for which there is no information about education because they have died or emigrated.

The second part of Table 1 shows educational attainment at the age of 20, for the cohorts born between 1958 and 1984. The cohorts born between 1955 and 1957 are omitted in the analyses of educational attainment at the age of 20, due to a larger proportion of missing data in the mid 1970's. Educational attainment is divided into three levels, no secondary degree, vocational secondary degree, and general degree. Those who have embarked on university studies, something that requires a general secondary level degree, are included in this category, irrespective of their later attainments. The main purpose of including an analysis of attainment at the age of 20, is to study the development in the younger cohorts for which we only have data about educational attainment at a younger age. A notable feature when comparing educational attainment at age 20 and 28, is that the proportion without a secondary level degree is lower at the age of 28 than 20. This indicates that many complete secondary level schooling some years after the age of 19 when they were supposed to graduate. We see a clear tendency of growing proportions having secondary level degrees, and declining proportions without degrees. The cohort of 1978 stands out as an exception. The proportion with a secondary level general degree, for example, is about five percentage points lower than for the 1977 cohort. These changes can be related to the reforms in secondary level schooling of 1994, the so called "Reform 94", which among other things introduced a wider range of branches in secondary level schooling. One of the aims of Reform 94 was to make vocational secondary level education

more attractive, something that seemed to be attained to some extent, but we also see that the proportion without a secondary level degree at the age of 20 rises in the years after the reform.

Part B of Table 1 shows distributions of the other independent variables included in the analysis. These are first, proportion with non-western origin, gender, number of siblings and parental educational level. Parental education is divided into six levels, the lowest is compulsory education and the highest doctoral level, and it is treated as a continuous variable in the analyses. Parental education is recorded when the respondents were 16 years old, and the measurement here is based on the parent with the highest educational level. We see that parental education rises systematically in the 30-year period, something that accentuates the point made above about possible changes in the impact of having parents with higher education. The measurement of parental economic resources is based on annual records of mothers and fathers earnings back to the 1960's. The measure of parental earnings used in the analyses is the combined mean annual earnings of mothers and fathers during the five year period before the first educational choice is made when leaving the secondary stage of primary school at the age of 16. The research question concerns relative economic position. To construct a measure of relative economic standing, the earnings distribution is divided into deciles and the earnings decile is used as a continuous variable in the analyses. As the analyses focus on relative earnings within each cohort, they provide answers to whether the advantages or disadvantages of being especially rich or poor, say; changes in the level of affluence in the period is not taken into consideration. The very low proportion of parents with no earnings in the five-year period, usually welfare recipients, is also included.

The development of inequality is first described in bivariate analyses, showing changes over time in the proportions having different social origins that reach specific educational levels. Multinominal logistic regression is then applied to estimate the impact of
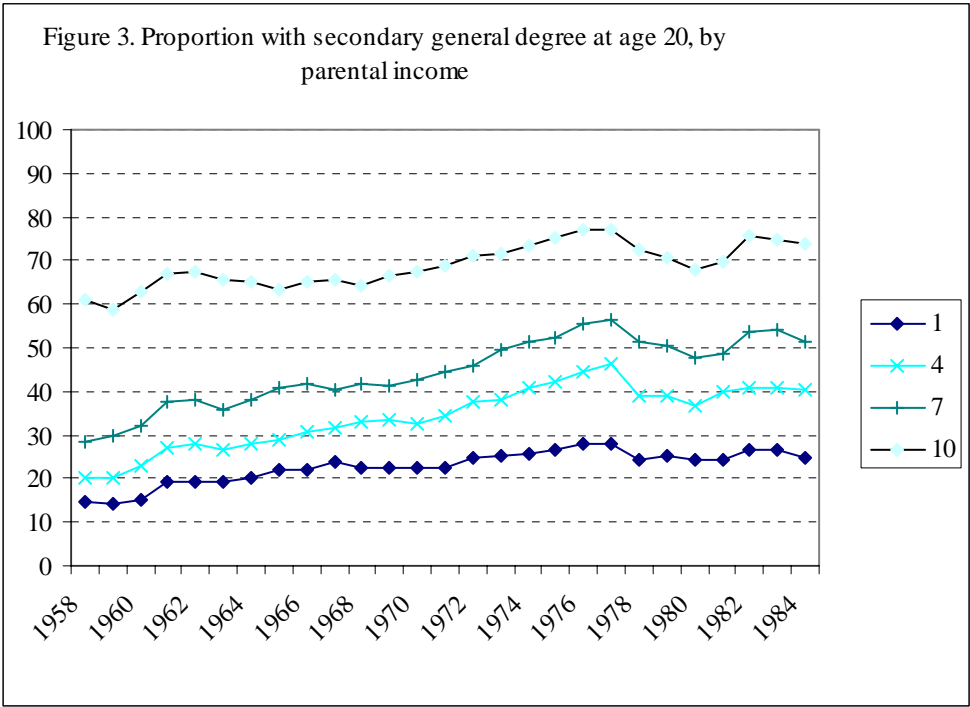
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parental economic and educational resources independent of the other variables. The effect
of the independent variables on the likelihood of having a vocational or secondary level
degree at the age of 20 is estimated relative to the reference category of having no secondary
degree. The model at the age of 28 estimates the likelihood of four alternative educational
levels relative to having only a degree from compulsory education, as described in Table 1.
These analyses are performed on an annual basis.

Results

Proportions reaching specific educational levels

Figure 3 and 4 illustrates the impact of parental economic resources on educational
attainment at the age of respectively 20 and 28. In Figure 3 we see the proportion having
attained a secondary level general degree by the age of 20, for those with parents in the first,
fourth, seventh and tenth earnings decile.

Figure 3. Proportion with secondary general degree at age 20, by parental income

Note: 1 is ten percent poorest, 10 is ten percent richest, etc.

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The lines point to a high level of inequality. The proportion with general education was about four times larger among the richest than the poorest in oldest cohort, whereas it dropped to about three times the size from the mid 1960's and onwards. If the development of inequality is measured this way, then, there is a tendency towards decreasing inequality. If we on the other hand focus on percentage differences between those from the richest and the poorest families, inequality increases in the period. Increasing proportions have attained a secondary level general degree, but the proportion dropped for the 1978 cohort and the level of the cohorts born in the mid 1970's was not reached before the 1982 cohort. The decline in secondary level degree attainment was above connected to the reforms in secondary level education of 1994 ("Reform 94").

Figure 4. Proportion with higher university degree at age 28 by parental economic resources
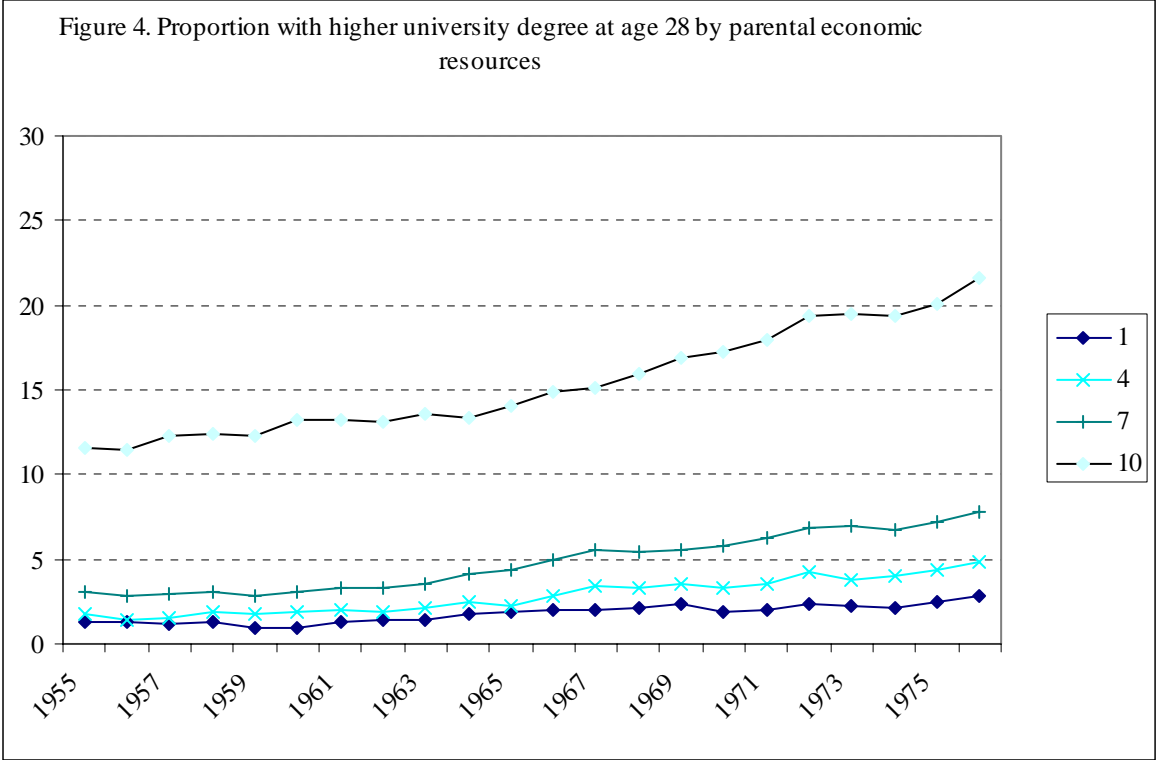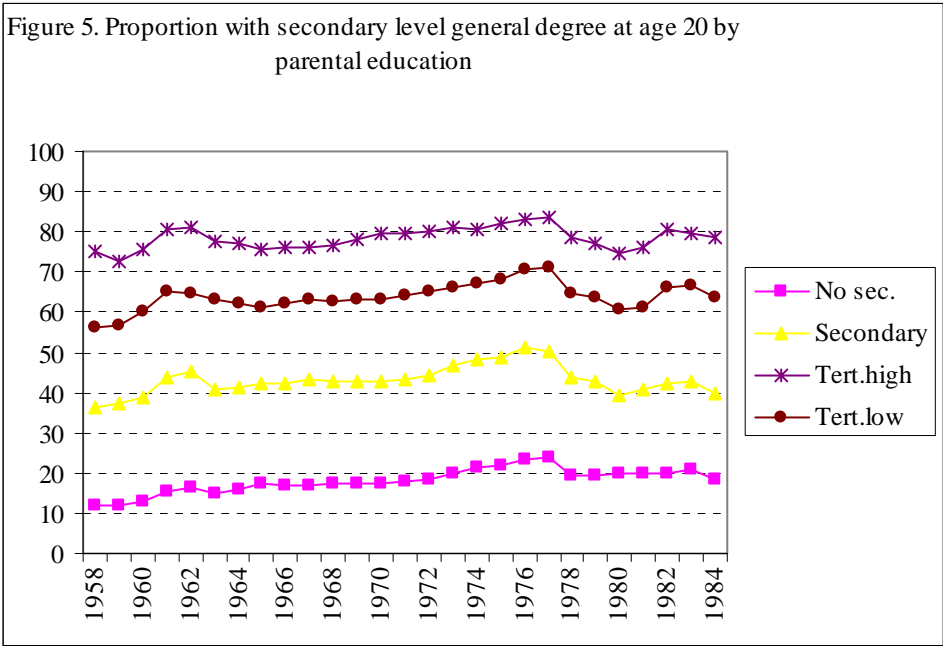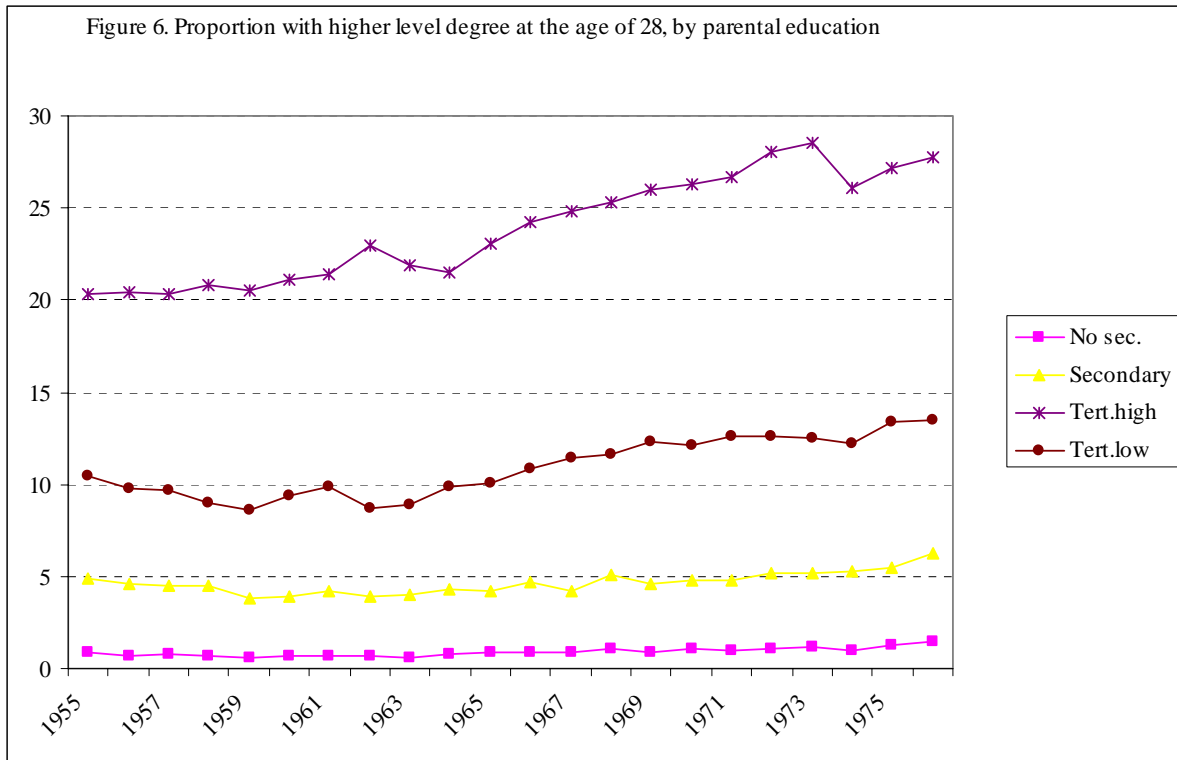
Note: 1 is ten percent poorest, 10 is ten percent richest, etc.

In Figure 4 we see the proportion having a higher level tertiary degree at the age of 28. Again we see that parental economic resources have a large impact on the likelihood of attaining higher education. Moreover the pattern takes the form of the form of an elite

structure: The difference between those from the poorest ten percent and those in the fourth earnings decile seem far less marked than the difference between those with their origins among the ten percent high earners and those with parents in the seventh earnings decile who are moderately rich. Figure 4 does not give an impression of decreasing inequality, if we consider the difference between the proportions of the richest and poorest, for example, there is a clear trend towards increasing inequality. If we use relative figures, the highest levels of inequality are found for the 1959 and 1960 cohorts, for which the proportions attaining a higher level university degree decreased compared to older cohorts, whereas the proportion of the richest increased. After that relative figures would indicate increasing equality.

Figure 5 and Figure 6 show similar analyses on the basis of parental educational level. The main impression is again of a continuing high level of inequality in educational attainment. The proportions reaching the highest educational levels are somewhat greater for those having parents with higher tertiary level degrees than those from the ten percent richest families in the previous figures, something that accentuates the strong impact of parental education on educational attainment.

Figure 5. Proportion with secondary level general degree at age 20 by parental education

Figure 6. Proportion with higher level degree at the age of 28, by parental education

Results of multivariate analyses

To do a more systematic analysis of the relative impact of parental economic and
educational resources, two multinominal regression analyses were performed. These
analyses are shown in detail in the Appendix, whereas the main results are illustrated in the
following figures that show the development of the regression coefficient pertaining to a
specific effect. Figure 7 shows the effects of parental economic resources on the likelihood
of reaching a specific level relative to having no educational degree above compulsory level.
The top line pertains to a tertiary level higher degree, the second to a tertiary level lower
degree, the third to a general secondary level degree and the final to having a secondary
level vocational degree. This pattern thus clearly indicates that parental economic resources
are most important for reaching the highest educational levels. Your parents' economic
standing is not so important for whether you attain a secondary level vocational degree or
have no degree attainment above compulsory school.

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Figure 7. Impact of parental income on educational attainment at age 28
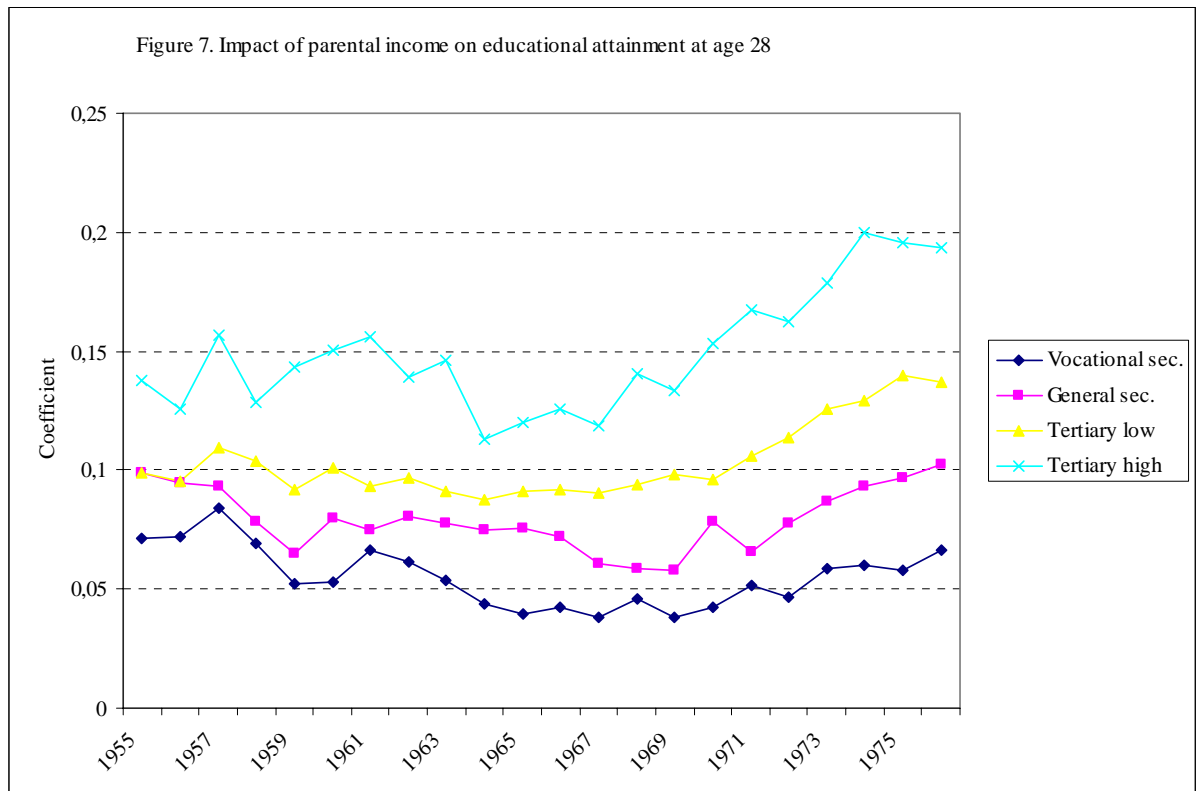
Figure 7 also indicates that the impact of parental economic resources have changed over time. In the beginning of the period there was a certain decline, whereas the impact increased from the cohorts born in the late 1960's and onwards. For a higher level tertiary degree the lowest point was reached for the 1965 cohort (0.12) whereas it increased with about 70 percent to 0,20 for the 1974 cohort and staid on this level for the two youngest cohorts. Above inequality in educational attainment was expected to increase among the birth cohorts born in the early 1970's, due to the economic recession of the 1980's that lasted into the 1990's. This would imply increasing inequality among all the youngest cohorts included in the analyses shown in figure 7. We see that the pattern fits well with these expectations.

Figure 8. Impact of parental income on educational attainment at age 20.

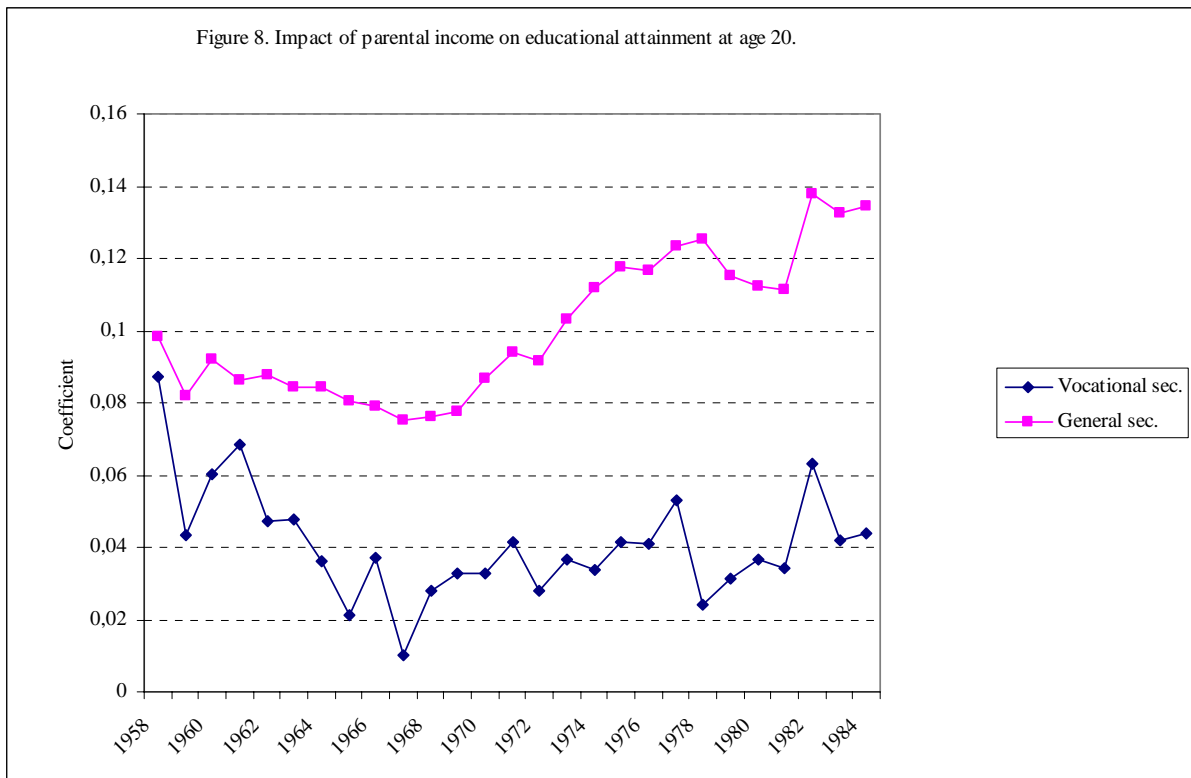Figure 8, which summarizes the results on educational attainment at age 20, supports conclusions about an increasing impact of parental economic resources for the attainment of a secondary level general degree. Among the cohorts born in 1970 and onwards, the impact of parental economic resources rises for about a decade, for then to drop somewhat but then reaches it highest point for the 1982 cohort. These results may suggest that the impact of parental economic resources have declined for some of the cohorts that are younger than the cohorts included in the analyses shown in Figure 7 who had reached the age of 28 in 2004. However, high scores for the final cohorts in Figure 8 would seem to indicate only a temporary decline in the impact of parental economic resources. The pattern seen in Table 8 is consistent with expectations based on the economic developments when the birth-cohorts were around the age of 16, as unemployment rates decreased in the period 1994-1998 (cf. Figure 2).

Figure 9 and 10 summarises the results on parental educational resources in a similar fashion. In Figure 9 we see somewhat disparate tendencies for the different educational

levels. Whereas the impact of parental education has declined for the lowest educational levels versus no educational degree above compulsory school, the effect is stable for the likelihood of attaining a higher level tertiary degree. This clearly indicates that there has been some equalisation with respect to the impact of parental educational resources, but only on the lowest educational levels and especially for the vocational secondary level degrees. This is also apparent in Figure 10, which summarises the results for educational attainment at the age of 20. The impact of parental education in fact drops from a high of 0.20 for the oldest cohorts to below zero for the youngest cohorts in the period.

Figure 9. Impact of parental education on educational attainment at age 28

Figure 10. Impact of parental education on educational attainmment at age 20
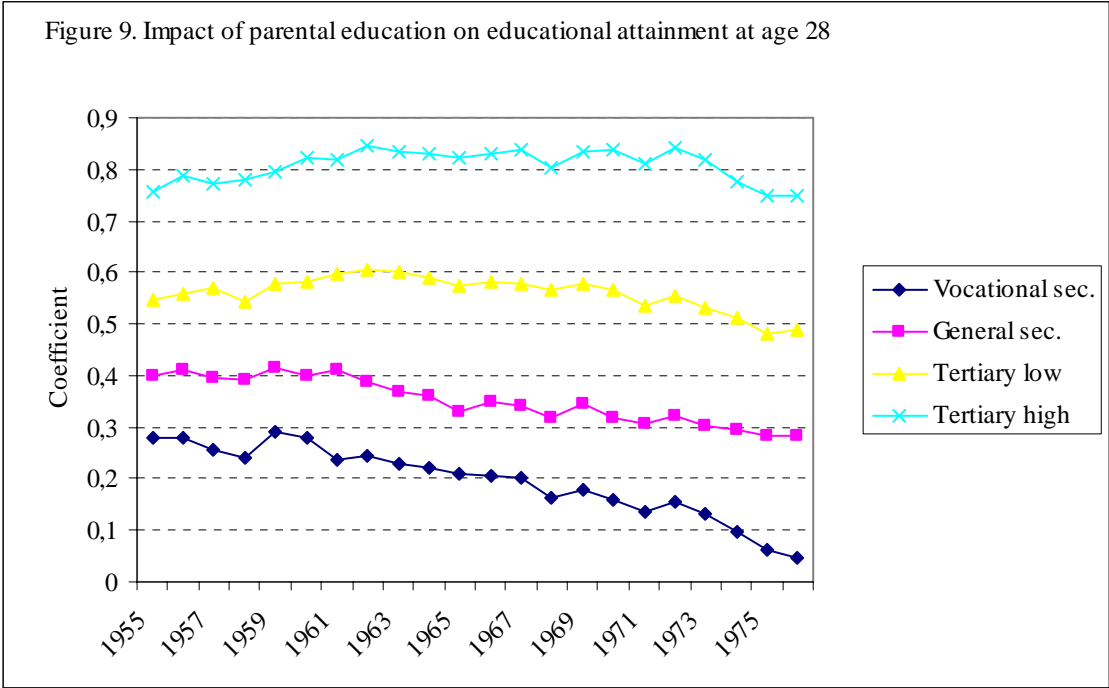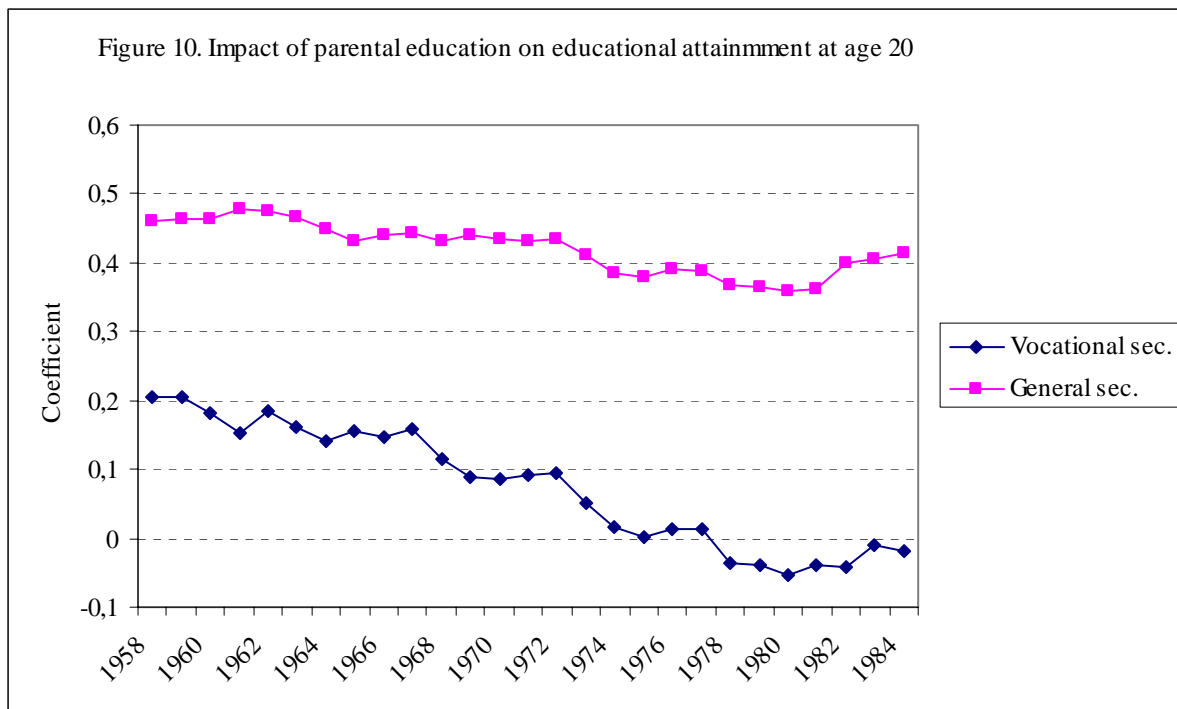
Conclusion and discussion

The aim of this paper has been to address the question of change over time in the impact of social origin on educational attainment, with special emphasis on the impact of parental economic resources. Has the impact of being raised in especially rich or poor families changed over time? This should be expected if economic resources are important for educational attainment, which is a basic assumption in rational action theory. The post-war period has been a period of growing affluence. Many countries have experienced economic problems during the most recent decades however, something that may be expected to be evident in patterns of social inequality in educational attainment. Also the relatively prosperous Norwegian society has seen more difficult economic times, evident in among other things the rising, and somewhat fluctuating, unemployment rates that were shown in Figure 2. In the first period with rising unemployment rates the conditions of the State Loan Bank for students, which is intended to be the major instrument for achieving equal educational opportunities in Norway, also deteriorated.

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Above it was expected that these economic developments would affect the level of equality of educational attainment. More specifically, the impact of parental economic resources was expected to increase starting with the cohorts born around 1970. It must be emphasised that it is hard to make very precise estimates about when and how economic developments influence educational choice. Among other things that would depend on the age at which important educational decisions are made, on whether or not an economic setback is experienced as long-term or temporary, and on beliefs about developments in specific parts of the labour market for example the impact of economic recession on the labour market for higher educations graduates. Nevertheless, the results presented above are consistent with the expectation about the time at which to expect increasing economic inequality. In the analyses of educational attainment at the age of 28 the impact of parental economic resources started to increase in cohorts born at the end of the 1960's. In the analysis of educational attainment at the age of 20, we have seen that the impact of parental economic resources on attainment of a general level graduate degree increased for about a decade, for then to decline somewhat for the cohorts around 1980 and then again rise. The pattern for the youngest cohorts is thus also consistent with expectations based on economic developments when the members of these cohorts were about 15-16 years old.

The similarities of the trends over time at the higher and lower levels of education may seem to support the view that important educational decisions are made in a long-term perspective (cf. Cameron & Heckmann 1998). The choices of the cohorts who were university level students in the end of the 1980's, and who for example had to decide whether or not they wanted to continue to the higher degrees, do not seem to be affected by the economic recession. Economic inequality related to attaining tertiary higher level degrees is at its lowest points for the cohorts 1963-1967, who were in their early twenties when the unemployment rates were rising and the interest rate on the student loans was

extremely high. Economic recession could of course mean that it would be difficult to find jobs, so university level studies would seem as an attractive alternative to being unemployed. On the other hand, it is interesting to note the development of the impact of economic resources on educational choice: A reasonable interpretation is the general economic situation influences students and their families especially at the age when the most important long-term decisions are made. This is so, even if the choices, i.e. the choice of vocational or general secondary level studies, make no difference with respect to costs in the short rum (cf. Erikson & Jonsson 1996).

All in all it does seem reasonable to conclude that the evidence on the impact of economic resources presented here support the view that economic resources are important for educational choice. This does of course not imply that cultural or educational resources are unimportant. On the contrary we have seen that the impact of parental educational resources have a strong impact, and especially on the likelihood of obtaining higher tertiary level degrees. When parental economic resources are controlled, the impact of the parents' educational resources on whether on whether or not one obtains lower level tertiary degrees or secondary level degrees have steadily declined. The reduction of the impact of parental educational resources on the lower educational levels has led some observers to the conclusion that the impact of social origin on educational attainment in general is declining in Norway (cf. Raaum 2003), a conclusion that seems misleading in light of the evidence presented here. An alternative explanation for the change in the impact of parental educational resources was touched into in the introduction: After massive expansion in the educational system, having university level education becomes a less clear signal than before of an elevated social position.

A recent overview of research on inequality in educational attainment concludes that the empirical evidence from many countries points to a general trend towards equalisation

(Breen & Jonnson 2005). The results here based on a large data set, including young cohorts, and using very good measures of parental economic resources, does not support this conclusion. True, there has been a reduced impact of parental educational resources on the lower educational levels, but this impact is stable for attainment of higher level degrees. The impact of parental economic resources decreased in the beginning of the period that was studied, for then to increase to a higher level. There hardly is reason to believe that these developments are special for the Norwegian society. On the contrary, features such as relative prosperity and general economic support for students would seem to suggest that the impact of economic resources on educational attainment in Norway should be less influenced by economic developments than in many other countries.

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Appendix A. Effects of non-western origin, gender, number of siblings, parental education and economic resources on educational attainment at age 28. Multinominal logistic regression.

	Vocational secondary						General secondary					
Cohort	Intercep	Non-	Woma	No.	Parent	Parent	Intercep	Non-	Woma	No.	Parent	Parent
1955	-2,038	0,178	-1,176	-0,095	0,278	0,071	-2,496	-0,186	-0,151	-0,162	0,399	0,099
1956	-2,482	0,749	-1,218	-0,082	0,278	0,072	-2,629	0,094	-0,210	-0,157	0,410	0,094
1957	-1,372	-0,254	-1,143	-0,082	0,254	0,084	-2,079	-0,363	-0,137	-0,146	0,396	0,093
1958	-1,173	-0,303	-1,116	-0,086	0,242	0,069	-1,570	-0,777	-0,010	-0,147	0,393	0,079
1959	-1,179	-0,120	-1,140	-0,091	0,291	0,052	-1,928	-0,191	-0,046	-0,153	0,415	0,065
1960	-1,411	0,229	-1,127	-0,096	0,278	0,053	-1,937	-0,063	-0,004	-0,163	0,400	0,080
1961	-1,100	-0,007	-0,988	-0,102	0,235	0,066	-1,903	0,136	0,048	-0,157	0,410	0,075
1962	-0,953	-0,063	-0,998	-0,084	0,243	0,062	-1,288	-0,434	0,162	-0,181	0,388	0,081
1963	-1,413	0,488	-0,872	-0,084	0,227	0,054	-2,142	0,296	0,240	-0,147	0,369	0,078
1964	-0,956	0,168	-0,755	-0,090	0,220	0,044	-1,620	-0,257	0,400	-0,138	0,362	0,075
1965	-1,135	0,435	-0,684	-0,079	0,210	0,039	-1,758	-0,027	0,456	-0,133	0,331	0,075
1966	-1,332	0,677	-0,680	-0,064	0,205	0,043	-1,726	-0,012	0,532	-0,147	0,350	0,072
1967	-0,949	0,357	-0,707	-0,053	0,200	0,038	-1,799	0,193	0,452	-0,141	0,340	0,061
1968	-1,041	0,555	-0,732	-0,069	0,162	0,046	-1,926	0,354	0,417	-0,125	0,318	0,059
1969	-0,925	0,496	-0,693	-0,059	0,180	0,038	-1,956	0,348	0,406	-0,120	0,344	0,058
1970	-1,080	0,719	-0,625	-0,060	0,159	0,043	-2,168	0,444	0,432	-0,088	0,320	0,078
1971	-0,789	0,549	-0,567	-0,079	0,135	0,051	-1,448	-0,055	0,399	-0,119	0,308	0,066
1972	-0,795	0,588	-0,508	-0,070	0,155	0,047	-1,506	-0,043	0,394	-0,108	0,324	0,078
1973	-0,656	0,522	-0,523	-0,076	0,131	0,059	-1,475	0,015	0,360	-0,098	0,304	0,087
1974	-0,890	0,763	-0,446	-0,049	0,097	0,060	-1,426	0,057	0,335	-0,102	0,294	0,093
1975	-0,586	0,566	-0,418	-0,078	0,062	0,058	-1,083	-0,150	0,265	-0,129	0,282	0,097
1976	-0,770	0,669	-0,310	-0,059	0,048	0,067	-1,222	0,053	0,262	-0,105	0,284	0,102

Cohort	Tertiary low						Tertiary high					
	Intercep	Non-	Woma	No.	Parent	Parent	Intercep	Non-	Woma	No.	Parent	Parent
1955	-2,127	-0,065	-0,037	-0,121	0,548	0,099	-4,192	0,309	-1,655	-0,169	0,757	0,138
1956	-1,868	-0,350	0,027	-0,130	0,560	0,096	-3,899	-0,017	-1,535	-0,179	0,788	0,126
1957	-1,756	-0,519	-0,030	-0,117	0,569	0,109	-3,432	-0,621	-1,457	-0,192	0,773	0,156
1958	-1,571	-0,632	0,048	-0,133	0,541	0,104	-3,646	-0,400	-1,261	-0,149	0,782	0,128
1959	-1,923	-0,223	0,053	-0,131	0,578	0,092	-3,906	-0,241	-1,142	-0,172	0,794	0,143
1960	-1,948	-0,243	0,085	-0,134	0,583	0,101	-4,605	0,445	-1,117	-0,186	0,823	0,150
1961	-1,709	-0,383	0,115	-0,138	0,595	0,093	-3,945	-0,182	-0,843	-0,202	0,817	0,156
1962	-2,038	-0,003	0,132	-0,151	0,605	0,097	-3,756	-0,322	-0,823	-0,194	0,847	0,139
1963	-2,006	-0,058	0,215	-0,137	0,600	0,091	-4,227	-0,004	-0,735	-0,162	0,832	0,146
1964	-1,747	-0,245	0,261	-0,133	0,588	0,087	-3,612	-0,281	-0,595	-0,187	0,830	0,113
1965	-1,936	-0,002	0,303	-0,132	0,576	0,091	-3,983	0,131	-0,520	-0,190	0,822	0,120
1966	-1,841	-0,038	0,323	-0,129	0,583	0,092	-3,933	0,068	-0,400	-0,161	0,831	0,126
1967	-2,065	0,291	0,307	-0,129	0,578	0,090	-3,904	0,058	-0,390	-0,137	0,838	0,119
1968	-2,032	0,350	0,280	-0,132	0,566	0,094	-3,942	0,134	-0,398	-0,143	0,805	0,141
1969	-1,982	0,297	0,350	-0,119	0,576	0,098	-4,315	0,473	-0,185	-0,131	0,834	0,134
1970	-1,871	0,276	0,345	-0,113	0,566	0,096	-4,670	0,614	-0,078	-0,122	0,840	0,153
1971	-1,716	0,229	0,474	-0,153	0,537	0,106	-4,292	0,369	-0,039	-0,157	0,810	0,168
1972	-1,750	0,204	0,475	-0,119	0,554	0,114	-3,885	-0,032	0,036	-0,147	0,840	0,162
1973	-1,530	0,040	0,551	-0,127	0,530	0,126	-4,022	0,123	0,038	-0,139	0,820	0,179
1974	-1,888	0,383	0,672	-0,108	0,511	0,130	-4,223	0,219	0,247	-0,147	0,776	0,200
1975	-1,728	0,252	0,695	-0,108	0,482	0,140	-3,839	0,116	0,205	-0,173	0,749	0,195
1976	-1,962	0,512	0,817	-0,121	0,488	0,137	-4,018	0,422	0,253	-0,185	0,747	0,194

Appendix B. Effects of non-western origin, gender, number of siblings, parental education and economic resources on educational attainment at age 20. Multinominal logistic regression.

	Vocational secondary						General secondary					
Cohort	Intercep	Non-	Woma	No.	Parent	Parent	Intercep	Non-	Woma	No.	Parent	Parent
1958	-2,350	-0,729	-0,623	-0,132	0,205	0,087	-1,232	-0,649	0,166	-0,146	0,461	0,098
1959	-2,675	-0,033	-0,759	-0,134	0,204	0,043	-1,848	0,056	0,221	-0,149	0,464	0,082
1960	-2,504	-0,088	-0,715	-0,125	0,180	0,060	-1,611	-0,072	0,224	-0,163	0,462	0,092
1961	-2,631	0,030	-0,551	-0,142	0,152	0,069	-1,372	-0,118	0,297	-0,168	0,478	0,086
1962	-2,958	0,600	-0,642	-0,113	0,184	0,047	-1,422	-0,007	0,353	-0,191	0,475	0,088
1963	-2,686	0,611	-0,484	-0,145	0,160	0,047	-1,527	-0,039	0,406	-0,163	0,466	0,085
1964	-2,429	0,463	-0,336	-0,120	0,140	0,036	-1,335	-0,224	0,492	-0,157	0,449	0,084
1965	-2,425	0,622	-0,237	-0,110	0,155	0,021	-1,588	0,125	0,536	-0,163	0,431	0,080
1966	-2,705	0,843	-0,153	-0,083	0,148	0,037	-1,403	-0,063	0,606	-0,167	0,442	0,079
1967	-1,962	0,297	-0,080	-0,090	0,158	0,010	-1,576	0,177	0,554	-0,161	0,443	0,075
1968	-2,160	0,527	-0,177	-0,083	0,114	0,028	-1,626	0,249	0,487	-0,146	0,432	0,076
1969	-2,069	0,490	-0,217	-0,058	0,089	0,033	-1,615	0,232	0,501	-0,154	0,442	0,078
1970	-2,145	0,601	-0,165	-0,063	0,086	0,033	-1,834	0,350	0,543	-0,126	0,434	0,087
1971	-1,915	0,448	-0,129	-0,078	0,090	0,041	-1,618	0,197	0,582	-0,149	0,430	0,094
1972	-1,784	0,485	-0,170	-0,068	0,094	0,028	-1,511	0,110	0,561	-0,124	0,435	0,092
1973	-1,550	0,480	-0,331	-0,082	0,051	0,037	-1,327	0,008	0,571	-0,120	0,410	0,103
1974	-1,736	0,832	-0,391	-0,058	0,017	0,034	-1,424	0,171	0,576	-0,113	0,384	0,112
1975	-1,331	0,498	-0,402	-0,075	0,003	0,041	-1,335	0,157	0,515	-0,124	0,381	0,118
1976	-1,573	0,800	-0,344	-0,050	0,014	0,041	-1,385	0,340	0,504	-0,118	0,392	0,116
1977	-1,676	0,761	-0,241	-0,048	0,013	0,053	-1,354	0,255	0,571	-0,120	0,389	0,123
1978	-1,588	0,750	0,144	-0,024	-0,037	0,024	-1,723	0,232	0,741	-0,098	0,368	0,125
1979	-1,682	0,663	0,154	-0,033	-0,040	0,031	-1,779	0,216	0,828	-0,085	0,366	0,115
1980	-1,721	0,744	0,002	-0,007	-0,053	0,037	-1,795	0,131	0,846	-0,085	0,358	0,112
1981	-1,518	0,501	0,070	-0,030	-0,040	0,034	-1,657	-0,010	0,857	-0,066	0,362	0,111
1982	-1,689	0,527	0,089	-0,020	-0,042	0,063	-1,878	0,051	0,935	-0,049	0,400	0,138
1983	-1,949	0,721	0,126	-0,025	-0,011	0,042	-1,736	-0,033	0,926	-0,083	0,406	0,132
1984	-1,942	0,601	0,136	-0,032	-0,019	0,044	-1,939	-0,058	0,966	-0,069	0,413	0,135

Notes

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[i] A major exception is a private business school, and in recent years some private higher level schools in arts and public relations.

[ii] As the age of completion of higher level university degrees is relatively high in Norway, one might want to study attainment at a higher age, for example 30. The unfavourable consequence of this would be that the two youngest cohorts would have to be omitted from the analysis. However, analyses have been performed at the age of 30 as well. The results are very similar as those reported below and therefore not shown here.

[iii] A large proportion of those who drop out move to other sorts of studies, i.e. from university studies to nursing college. This means that the drop-out figures seem less dramatic, but the point that to solely focus on transitions would give a distorted view still remains.