

The Expansion of Higher Education in Sweden and the Issue of Equality of Opportunity*

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Abstract

This paper analyzes to what extent the political mean of rapidly increasing higher education in the 1990s in Sweden, have decreased educational inequalities, i.e. the choice of attending higher education have become less dependant on family background in the 1990s than before. Heavily exposed of the expansion was smaller regional colleges. Even though the parental impact on the educational choice of their youth grew stronger in the 1990s compared to the 1980s in Sweden, difference-in-difference estimates show that the association between parents and their youth grew less in the areas of the regional university colleges than in Sweden over all and especially compared to attendance to old traditional university. Some support are given here that most socioeconomic groups in society were gained by the expansion, but not the weakest.

Among the youth that attends higher education, a slight diversion from attending an old traditional university to attending a new university college can be traced for youths from low educated parents than youths from high-educated parents.

JEL Classification: I22, I28, J24

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1 Introduction

A central institution to implement political views of social and distributive justice is through education. The egalitarian vision of decreasing educational inequalities in society, have for the last century been a huge motive for Swedish policy makers to reform the educational system. According to the egalitarian policy maker should, regardless of the family background of an individual, each individual have an equal chance at educational achievement, and a political mean to equalize educational opportunities have been to increase and geographically spread access to education. After reforming the compulsory and the upper secondary education, tertiary education was next in line. For the past thirty years the political focus has been on improving access to higher education.¹

Even though the centrally monitored higher education in Sweden was decentralized in the late 1970s, when the six universities that constituted the higher education were complemented with 12 smaller and geographically more spread regional university colleges, the improved geographical access did not have greater impact on the size of the student body. A change toward the end of the 1980s, however, lead to a rapid expansion of the institutions of higher education that resulted in a rapid growth of the student body. In less than ten years it grew from approximately 150,000 students during the entire 1980s, to about 300,000 students in 1999. Heavily exposed of the expansion were the new regional university colleges, which in some cases, in term of number of students, grew with 400 percent.

The empirical focus in this paper is to investigate (a) to what extent individuals living in the municipalities of the new university colleges of the late 1970s and later, became more inclined to attend higher education in the 1990s.(b) To what extent the choice of attending a university education in general became less dependant on individual background characteristics in the 1990s, i.e did the intergenerational educational mobility increase? The political motivation of improving the educational opportunities within the population is referred to as

¹See SOU (1972:3) for the political motives for the educational expansion.

a *democratization effect* (see Rouse (1995)). (c) Did the new regional university colleges *divert* students from lower socioeconomic background from attending older universities? With mostly shorter vocational oriented programs offered at the new university colleges, did they draw away potential students who might otherwise have attended an old university, i.e. invested in longer educations (e.g. Holm and Häggström (1972), Eriksson and Jonsson (2006), Rouse (1995), and Leigh and Gill (2003, 2004)). This effect is referred to as a *diversion effect*.

We use sample of about 300,000 individuals extracted from the Swedish Longitudinal INdividual DAta panel (LINDA). The sample is divided into 25 cohorts of 18-year olds for the years 1977-2001. The cohorts of 1977-1989 represents the 1980s, and the rest the 1990s. All youths are conditioned of having at least one parent in LINDA, which renders associations between parents and their youth. Two models, one on the democratization effect and on the diversion effect, are estimated.

An increased access and shorter traveling distances decreases the investment cost, which should make the investment more appealing for more groups with limited economic recourses - this talks in favor for the democratization effect. Having access to higher education nearby might decrease the physical traveling distance *and* the social distance. If higher education becomes a natural alternative for more groups in society, then the decision to attend alternative institutions (educations) of higher education than what the local university college offers might become more interesting. The decision to move in order to attend a higher education elsewhere could be interpret as less costly, since the actual decision to attend higher education in the first place has been less dramatized through having access to some territory education locally.

The results show on a positive relationship between social origin and educational choice. The higher the parents are educated, the higher is the probability for the youth to attend higher education. The expansion of the higher education in the 1990s, however, has not decreased this association. Youth from all socioeconomic groups have increased their attendance in higher education, except

for those groups from homes with elementary education as highest education. Though, according to differences-in-differences estimates the areas of the new university colleges this grown association between parents and their youth was only half in the 1990s, than in Sweden overall, indicating that the expansion had a higher tendencies of a democratization effects in these areas. Moreover, no consistent results support that the new university colleges divert students (especially from lower socioeconomic backgrounds) from attending longer education at the old universities are found here. Both that the political mean of expanding and increasing access to higher education only show on modest evidence of decreasing educational inequalities in society and that diversion seem to be less of a problem in Sweden, is very much in line with what earlier research on earlier expansions by Eriksson and Jonsson (2006) found.

In the next section of this paper, a overview of Sweden's higher educational policy is presented, followed by a brief literature overview in Section 3. Section 4 presents the empiric specifications that are being used, and in Section 5 presents the data management. Section 6 reports the results, and Section 7 concludes.

2 Brief History about Sweden's Higher Educational System

A fast growing industry and rapid increased demand for a more and higher educated labor force, forced Sweden, like most industrialized countries after World War II, to put political effort and economical recourses to improve the entire educational system, which was almost entirely financed by the government and offered free of charge. This increasing demand education together with an egalitarian vision of equality of opportunity by the leading Social Democratic Party in Sweden brought about huge reforms in 1950s and 1960s of the entire education system. By both improving and extending years spent in school within the compulsory school and by rapidly increasing the access to the upper secondary school, more youth than ever before chose to attend more schooling, post the mandatory level.² That upper secondary education absorbed such a large part of the students cohorts, made more people qualified for higher education than ever before. This, together with an introduction of a student aid program that provided students with grants and generous student loans (that were independent the financial status by the parents) provided for the few universities in Sweden to become literary overcrowded. The chaotic situation that the institutions of higher education suffered in late 1960s, called for drastic measures to be taken in order to solve the future increasing demand for higher education.³

Whether compulsory school and upper secondary school were offered the Swedish population in their local region, higher education was in late 1970s mainly concentrated to six university areas in Sweden.⁴ In terms of regional policy, local access were sought to favor those who would like to stay, to live, and

²See Eriksson and Jonsson (1993) for a overview of the Swedish higher educational system and an overview of the issue of educational opportunities in Sweden.

³Just during the 1960s the amount of new enrolled students rose from 7800 students in 1960/61 to 27 100 students in 1969/70 (SOU (1972:3, p 84))

⁴Göteborg, Linköping, Lund-Malmö, Stockholm, Umeå and Uppsala. In the same geographical as the universities were three large institutes in Stockholm: the Royal Institute of Technology, the Karolinska Institute of Medicine; and Stockholm School of Economics; and two others: the Chalmers Institute of Technology in Göteborg; and the Institute of Agriculture near Uppsala. All institutions of higher education in the municipalities of the six universities are all included in the definition of 'old universities' in the forthcoming text.

to work locally. A successful regional policy in offering higher education nearby, would not only increase the overall educational level in its region, but would most likely increase the number of job opportunities in its region and promote economical growth to the region.⁵ The future goal for the higher education could be interpreted as a form of regional redistribution.

Through the Swedish Act of Higher Education of 1977, the Swedish university structure changed dramatically. Besides the six old university areas, 12 university regional colleges were established.⁶ Furthermore, the new institutions of higher education were in most cases former schools for teacher training, military training, and nursing schools that through the reform received an upgraded status as tertiary educations. Therefore, the majority of the programs offered at new university colleges had vocational character, and were shorter (less than three years). Most of the new institutions of higher education were only to conduct undergraduate education without any research connections, which also meant that the connection between undergraduate education and research were through the reform taken away.

The increase of students in the 1960s was partly a result of successful reforms of the elementary and upper secondary school, but also a result of the fact that the faculties at the universities was in practice open for anyone who qualified. Without restriction and limitations in admissions, the university became overcrowded. Some restrictions in admissions were made in the end of 1960s to the faculty of medicine and some other specialized educations, but the large change came in 1977. Overall restrictions and limitations in admissions to higher education were implemented in 1979. But, to encourage new student groups to attend higher education, the limited admission was eased with alternatives ways to qualify for higher education. Besides the traditional and most

⁵See SOU (1972:3)

⁶The new university colleges of 1977 were: Borås, Eskilstuna/Västerås, Falun/Borlänge, Gävle/Sandviken, Jönköping, Kalmar, Karlstad, Kristianstad, Sundsvall/Härnösand, Växjö, Örebro, Östersund, Luleå. Later university college establishments were: 1983 Halmstad and Skövde, 1988 Ronneby/Karlskrona, 1990 Uddevalla/Trollhättan, 1995 Södertörn, and 1998 Gotland and Malmö. Observe, Malmö is in this paper never separated from Lund. The areas of higher education from 1977 and later are presented in *Figure ??* in *Appendix*.

common way of qualifying for higher education by having a degree from upper secondary school with Grade Point Average (GPA) scores, applicants with degrees from adult schooling (*folkhögskola*), four year of labor market experience, or good results from a stochastic aptitude test (*högskoleprovet*) became means to qualify to apply to higher education.⁷ Note that Swedish universities cannot choose freely among eligible students. The qualifications the presumptive student have, is the only mean the individual have in order to compete for a student slot at a certain education. The centrally monitored admission system from 1977, are more or less the same today.

Despite the increased amount of institutions of higher education and the overall increased geographical access, the sector of higher education had a very modest development during the first ten years after the reform. In fact, the number of students at the universities and university colleges was roughly the same 1987 as it had been in 1977.

Even though the reform of the lower educational levels had brought about that Sweden in the 1980s had one of the highest population rates compared internationally that had upper secondary qualifications, a smaller proportion of the Swedish population made the transition to higher education. In late 1980s several reports stated that Sweden had been falling behind in relevant comparisons concerning national levels of higher education.⁸ By the government centrally monitored higher education, received huge critique that it was under dimensioned the demand. Reports were stating that Sweden were at the risk loosing capacities of several groups of academics if the sector of higher education did not expand its undergraduate education, in order to compensate large scale retirements in the 1990s.⁹

In the 1990s there was again a rapid expansion of higher education. The new university colleges were heavily exposed of the expansion, that in some cases grew with 400 percentage in less than ten years. The growth in enrollment is

⁷See Kim (1998) and Öckert (2001) for a description and discussion about the admission rules of 1977.

⁸See af Trolle (1990), UHÄ (1989)OECD (1993), and Hammarström (1996).

⁹See ?, p 15 for a brief discussion and overview.

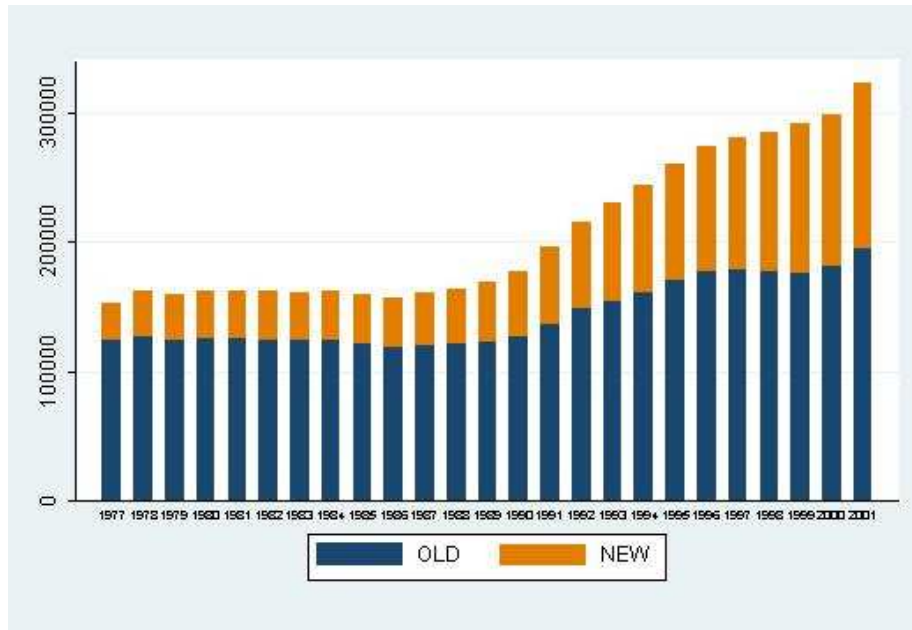


Figure 1: Enrolled students at Swedish higher education 1977-2001.
 Note: The Figure illustrates enrollments at the *old* universities and *new* university colleges for the years 1977-2001.
 Source: Statistic Sweden

presented in *Figure 1*.

The strict diversion between establishment's conducting only undergraduate education and establishment's conducting both undergraduate education and research were eased in the 1990s, which made it possible for the new university colleges conduct research in a larger scale than before. The increased research activities at the new universities together with overall structural changes of educational programs in the early 1990s, made it possible for more of the new university colleges to offer longer educational programs than before. By the end of 1990s four of the university colleges of 1977, were declared universities. This meant that the status of these university colleges was upgraded, and they were permitted to peruse graduate education and research schools.¹⁰ Yet, most of the prestigious educational programs in law, medicine and art, were still in the 1990s restricted to the old universities.

¹⁰Luleå Technical University (1998), Karlstad University (1999), Växjö University (1999), and Örebro University (1999)

3 Previous Literature

Equality of educational opportunity relates to the extensive economic literature on intergenerational mobility, which looks at association between parents' economics outcomes with the future economical outcome of their child. A high intergenerational mobility indicates a low association between parents' economics outcomes with the future economical outcome of their child. A low association between the child and parental characteristics indicates high equality of opportunity in society, saying that children from different origins have similar chances in life (see e.g. Becker and Tomes (1979, 1986), and Solon (1999) for a survey of the literature intergenerational mobility).¹¹

Turning to the issue of expanding and increasing access to higher education in Sweden, only modest economic research have been on how political means like an expansion affects intergenerational mobility. One of few examples is Holm and Häggström (1972) that made cost-benefit analysis on early political attempts to relocate higher education into new areas in Sweden in the late 1960s. They argued that they could detect some positive effects on requiring youth from the new regions from lower socioeconomic groups. This was seen as early indications that increased local access would increase educational mobility and promote social mobility in its region. However, Fasth (1980), who did similar research like Holm and Häggström, found no support that having a more local access, encouraged more different socioeconomic groups from these new areas to invest in higher education in a higher degree than on other areas in Sweden.

The traveling distance as a part of the investment cost, where a longer the distance is associated with higher the cost, which in turn was sought to have a negative impact on the probability to attend higher education, is investigated by Kjellström and Regnér (1999). Students from lower socioeconomic backgrounds are assumed to live more remote from the establishments of higher education, why improving the access should decrease the investment cost for

¹¹See Björklund and Jäntti (1997) and Björklund, Lindahl and Lund (2003) for some Swedish examples.

these groups in particular. When examining the probability to attend higher education on 10,000 individuals in Sweden that were born in 1967, given their distances to nearest higher educational establishment, the authors found that traveling distances had significant negative effect on the probability to attend higher education. Though, the effect was so small that their conclusion was that it most likely was not the strongest determinant for the individual of whether or not to attend higher education.

More extensive research on the effects of expansion of higher education on educational inequalities in Sweden have been made by sociologist like Eriksson and Jonsson (1993, 1994, 1996, 2006) and Dryler (1994, 1998).¹²

Dryler (1994, 1998) uses aggregated data from the population census and data from the Higher Education Register, to follow 17-24 year olds from 1968-1990 on three areas that received establishments of higher education in the 1970s. In any of her attempts to find if the new establishments had increased the probability of enrolments of individuals from lower socioeconomic backgrounds, she found no support to confirm this.

Eriksson and Jonsson (2006) presents an individual-educational-choice model, with which they analyses to what extent expanding higher education have reduced inequalities in education in Sweden. They present three angles on the issue of higher education, concerning how Grade Point Average (GPA) from upper secondary school and social origin affects higher educational attainment; how increased access have affected the association social origin and the educational outcome of an individual have changed for the last century; and how this intergenerational associations were affected of the higher educational reform in the late 1970s. The last question was divided in both how the increased access affect individuals from different social origins, but also if the increased access to shorter tertiary programs diverted individuals from lower socioeconomic groups to attend the shorter educational programs instead of attending the traditional longer university educations. In order to answer their question they used sev-

¹²Referens till Donald Broady och Mikael Palme in här!!!

eral register data, population census for several years, and interviews from living survey of several years, covering cohorts from 1892-1970.

Their key finding is that the association between parents and their child has weakened during the 20th century. Yet, they state that the social mobility may have increased, but not inequalities of educational opportunities in Sweden. The political mean to expand and increase access to higher education were stated having a very modest equalizing affect on educational opportunities in Sweden.

To compare the political outcome of how expansion have struck the inequalities in educational opportunities in Sweden with international comparisment should be made with caution, since the educational system differs among countries. Differences in educational and financial aid systems gives individuals different conditions in each country, why the effect the educational expansion and increased access in one country, may strike differently in another.

Rouse (1995) is one of few example that could be made as a parallel to the Swedish development. She analyses the effect on higher educational attainment the implementation of several regional two-year colleges, as a complement to the four-year colleges, may have caused in the United States. The two-year colleges were to increase the local access to higher education and were sought to promote more people from lower social origins to consider to invest in higher education, an effect she referred to as a *democratization effect*.

Rouse (1995) also discuss how more local access to shorter educational tracks at the two-year colleges might *divert* able individuals from lower socioeconomic backgrounds to settle for shorter educations instead of investing in a longer educational program at the four-year colleges. Even though she found some tendencies of diversion effect the two-year colleges had educational investment, the democratization effect overall was so much larger, giving the overall expansion and increased educational access a positive effect on increasing educational attainments in the United States.¹³

¹³See Kane and Rouse (1999) for an overview of the higher educational system in the United States, and see Kane and Rouse (1995) and Leigh and Gill (2003, 2004) for more research examples.

Though, some examples from the United States indicate that an increase in access to higher education promotes the democratization effect, most of the literatures on the effect of expanding and increasing access to higher education in Sweden give no or very modest support of being an effective means of educational equalization.

4 Empiric Specification

A differences-in-differences methodology is used in order to investigate how higher educational attendance choice behavior and school choice behavior for individuals living in the areas of the new university colleges, differs from the Swedish population in general.¹⁴ This kind of methodology allows us to estimate differences in choice behaviors before and after the expansion of higher education in Sweden during the 1990s, but also to estimate how individuals living in areas of the new university colleges differ in their choice behaviors from the rest of the population. (The areas of the new university colleges will henceforth be referred as the areas of 'NEW'.)

The following latent variable specification is used both for modeling the individual propensity to attend higher education *and* the propensity new university colleges have on diverting students from attending old traditional universities:

$$\begin{aligned}
 A_{ij}^* &= \alpha_0 + \alpha_1 Z_{ij} + \alpha_2 u_j + \alpha_3 NEW \\
 &+ \beta_0 Year + \beta_1 Z_{ij} D90 + \beta_2 u_j D90 \\
 &+ \gamma_0 NEW D90 + \gamma_1 Z_{ij} NEW D90 + \gamma_2 u_j NEW D90 + \epsilon_{ij}, \quad (1)
 \end{aligned}$$

where A_{ij}^* is a binary response variable, defined as:

$$A_{ij}^* = \begin{cases} 1 & \text{if } A_{ij} > c \\ 0 & \text{otherwise,} \end{cases} \quad (2)$$

where c is a threshold. Z_{ij} is a vector of personal and family background characteristics, $Year$ is a vector of year dummies, NEW is a dummy variable for living in a municipality where a new university started in the late 1970s or later, u_j is county youth unemployment rate in the county labor market in which the individual lives, $D90$ is a dummy variable taking the value of zero for the years 1977-1989, and unity for the years 1990-2001, and finally the ϵ_{ij}

¹⁴See Angrist and Krueger (1999) for an overview of differences-in-differences methodology.

is a random error term representing all omitted variables that might effect the individual choice behavior.

The key policy parameters in *Equation (1)* are α_3 , γ_0, γ_1 , and γ_2 . They all measure how the individual choice behavior differs for individuals living in the areas of *NEW* from the Swedish population in general.

4.1 The democratization effect of the expansion

The effects of the increased access to higher education, the *democratization effect*, is modeled in latent variable specification described in *Equation (1)*. Here the binary response variable, A_{ij}^* , takes the value 1 if an individual attends higher education, zero otherwise. The control-group here is the individuals that never attend higher education.

In accordance to standard human capital theory on intergenerational mobility both educational level and income level are to some extent be transmitted across generations within families, i.e. children from high educated homes are more likely to attend higher education themselves.¹⁵ The impact of individual and family characteristics (like gender, level of parental education, and parental income) on higher educational attendance in the 1980s are measured by α_1 .

The increase in the supply of student slots in the 1990s in Sweden occurred to a very large extent at the new university colleges. An underlying idea was that having more local access to higher education should make it possible for more people from different social origin to attend college without moving or making use of long distance communications, which should lead to a smaller investment costs than before. The increased access and decrease investment cost in higher education would then decrease the importance of family background in Sweden, or at least make the impact weaker, on the choice and probability of attendance higher education (e.g Holm and Haggström (1972) and Kane and Rouse (1995)). The over all effects of increased access to the universities and

¹⁵See Becker and Tomes (1986) and Becker (1993) for an example, or Solon (1999) for an overview of the literature.

university colleges on attendance in 1990s, based the same set of individual and family characteristics as before, are measured by β_1 . This parameter measures the differences-in-differences effect the individual and family characteristics have on attendance in the 1990s for those individuals that lives in *NEW*, compared to the population in general, is measured by γ_1 .

The county youth unemployment rate, u_j , is included as a factor of macro economic externality, that, beside parental influence, might influence the educational investment choice by the youth. Poor job opportunities should increase the incentives of investing in education (e.g. Freeman (1980) and Rouse (1995)). Thus, high youth unemployment at the local labor market ought to have a positive impact on attendance. The case of Sweden is tricky in this matter, since the overall rate of unemployment increased very much from the 1980s to the 1990s. The effect the differences in local youth unemployment rates on higher educational attendance in the 1980s, represented by α_2 , is dubious.¹⁶ As for the 1990s, the impact of youth unemployment in the local region, represented by β_2 , is likely to become positive.

Many of the areas of new university colleges belonged to the part of the country most affected by the unemployment crises in the 1990s. The parameter γ_2 measures how youth living in *NEW* were differently affected of unemployment in its region, compared to Sweden overall in the 1990s.

How the propensity to attend higher education differs for individuals living in *NEW* during the 1980s, holding everything else equal, compared to the Swedish population in general, is measured by α_3 . The differences-in-differences coefficient γ_0 , measures how the propensity to attend higher education differs for individuals living in *NEW* from the Swedish population overall in the 1990s, compared to the 1980s.

¹⁶Although, Sweden was hurt by an economic crises in the beginning of 1980s, the overall development in the 1980s was positive. After the devaluation of the Swedish crown in 1982, the economy experienced a rapid recovery and unemployment rate became historically small. If a person was unemployed in the late 1980s, the reason for this was most likely not lack of job opportunities, but had to be looked for, to a considerable extent, in individual characteristics. The corresponding is not valid to the same extent, for the 1990s that became marked by a dramatic loss of job opportunities.

Yearly changes in attendance from the years 1977-2001 is measured by β_0 , using 1989 as a base year. Since the supply of students slots increases over time and the impact of family background probably weakens, we should expect that trend of attendance to stand out as positive.

ϵ_{ij} is assumed to be approximated by a normal distribution. Since the dependant variable is binary, a probit model is used to estimate the model of higher educational attendance.

4.2 The diversion effect of new university colleges

To study how the new university colleges divert students from attending old universities, *Equation (1)* is used again. However, the dependant variable, A_{ij}^* , now take the value 1 if an individual attends an old university, zero for attendance to a new university college. All individuals in this model attend higher education.

The diversion effect the new university colleges in Sweden had on higher educational attendance from old universities in the 1980s, based on individual and family characteristics, is measured by α_1 . How the increase of student slots at the new university colleges may increase the diversion even more in the 1990s, is measured by β_1 . However, the increased and improved educations offered at the new university colleges in the 1990s, should have attracted more youth from higher socioeconomic groups to the new university colleges than before, which in turn would give a contractive effect on the diversion in attendance between some socioeconomic groups.

Living in an expansive *NEW* in the 1990s should have encourage more individual from these areas to attend at its local institutions of higher education, i.e have an expected negative effect on attendance at old universities. How the propensity to attend an old university differs for youth living in *NEW*, due to individual and family characteristics, from youth overall in Sweden, is measured in the differences-in-differences coefficient γ_1 .

The impact of just living in *NEW* in the 1980s, measured by α_3 , is expected

to have a negative effect on attendance at an old university. The expansion of the higher education in the 1990, in which the areas of *NEW* were most exposed, is expected to show on an even higher negative effect on attendance on attending an old university in the 1990s.

How the trend in attendance changes over the years and if increased access at the new university colleges in the 1990s have a negative effect on attendance to an old university is measured by β_0 .

5 Data and Measurement

The empirical analysis is based on data from Longitudinal INdividual DAta for Sweden (LINDA). LINDA contains two panels; one is a random sample of approximately 3 percent of the population of Sweden, the other of approximately 20 percent of the foreign born population. The first dataset is used here. The information is based on income-tax registers, population census and other register based data, see Edin and Fredriksson (2000) for a description. Additional information about the individuals in LINDA is on recorded higher educational activities that are collected from the Swedish Higher Education Register. The additional data is only available from 1977 and onward, which gives this analysis a natural starting point in year of 1977. The last year considered is 2001.

Beside information about the main subjects representing 3 percent of the population, family members and cohabitants that belong to the same household as the main subjects are also included. In total the dataset contains information of nearly one million individuals.

5.1 The Sample

At 18 years of age, most youth in Sweden still live at home and attend the last year of upper secondary school. By conditioning the 18 year old to have at least one parent in LINDA renders intergenerational connections in the dataset possible. All in all 300,226 18-years olds divided into 25 cohorts were extracted from LINDA between the years 1977 and 2001, which is roughly 10 percent of the entire cohorts of 18-years olds in Sweden for the same time period. All cohorts are presented in *Table 1*. The sample of 18-year olds extracted from LINDA are either main subjects in LINDA, i.e. one of the randomly sampled 3 percent of the Swedish population, or in the LINDA-data as a family member to the main subjects. Due to this fact, the amount of 18-year olds can exceed 3 percent of the year cohort.

Extracted information about the 18-year olds include gender and geograph-

Table 1: The Sample of 18 year olds in LINDA 1977-2001.

Cohort	Number of observations	Attends old*	Attends new*	Control group
1977	11,594 (0.47)	1,996 (0.52)	696 (0.69)	8,902 (0.44)
1978	11,118 (0.47)	1,929 (0.52)	686 (0.67)	8,503 (0.45)
1979	11,541 (0.47)	2,001 (0.53)	718 (0.65)	8,822 (0.45)
1980	11,554 (0.47)	1,952 (0.53)	741 (0.61)	8,861 (0.44)
1981	12,157 (0.48)	2,204 (0.54)	769 (0.64)	9,184 (0.45)
1982	12,804 (0.48)	2,281 (0.54)	883 (0.63)	9,640 (0.46)
1983	13,217 (0.48)	2,262 (0.54)	935 (0.62)	10,020 (0.45)
1984	13,254 (0.48)	2,284 (0.54)	1,006 (0.62)	9,964 (0.45)
1985	13,110 (0.48)	2,299 (0.55)	996 (0.60)	9,815 (0.46)
1986	12,285 (0.47)	2,211 (0.53)	1,027 (0.58)	9,047 (0.45)
1987	11,601 (0.48)	2,201 (0.55)	1,164 (0.55)	8,236 (0.45)
1988	11,978 (0.47)	2,388 (0.54)	1,283 (0.51)	8,307 (0.45)
1989	12,253 (0.48)	2,650 (0.54)	1,481 (0.53)	8,122 (0.45)
1990	11,906 (0.48)	2,754 (0.54)	1,683 (0.55)	7,469 (0.45)
1991	12,240 (0.47)	2,982 (0.54)	1,922 (0.54)	7,336 (0.42)
1992	12,550 (0.48)	3,138 (0.55)	2,064 (0.54)	7,348 (0.43)
1993	11,943 (0.48)	3,021 (0.55)	2,067 (0.54)	6,855 (0.43)
1994	11,691 (0.47)	3,057 (0.54)	2,113 (0.55)	6,521 (0.41)
1995	11,508 (0.48)	2,740 (0.55)	2,012 (0.55)	6,756 (0.43)
1996	11,212 (0.48)	2,485 (0.55)	1,904 (0.55)	6,823 (0.43)
1997	11,576 (0.48)	2,404 (0.56)	1,754 (0.56)	7,418 (0.43)
1998	11,709 (0.48)	2,165 (0.57)	1,580 (0.58)	7,964 (0.44)
1999	11,545 (0.48)	1,643 (0.55)	1,019 (0.61)	8,883 (0.45)
2000	11,605 (0.48)	707 (0.54)	478 (0.64)	10,420 (0.47)
2001	12,275 (0.48)	22 (0.59)	4 (0.75)	12,249 (0.48)
N	300,226 (0.47)	55,776 (0.54)	30,985 (0.57)	213,465 (0.45)

Note: The proportion women in the sample is presented in the parentheses. *Attendance is divided in attendance to an old university or attendance to a new university college. Control group is the 18-year olds that never attends a Swedish university before the age of 26 years. The majority of the attending youth attend higher education at an age of 20-22 years. It may appear that attendance decreases for the cohorts after 1994. This, however, is more due to the fact that the study-period of this paper ends at 2001, I can not follow their whereabouts up the age of 26 years.

ical location of the household the youth were registered at the age of 18 years, both county and municipality. The only information available about the youths after the age of 18 years are *if* and *where* they attend higher education (at which university or university college) before age of 26 years.¹⁷

Family background information is based on information about the parents that is registered in LINDA. The financial status of the household is represented

¹⁷There have been an outspoken wish by policymakers that they want to encourage young adults to attend higher education at an early age, in fact the political goal is to encourage 50 percent of an age-cohort to enter higher education before the age of 26 years. See Government-bill (2000/01:72) In line with this goal, this study will be restricted to study youth up to the age of 26 years.

by income by the parents, measured by disposable income after taxes and received benefits. The nominal income of the household has been transformed into a relative income of the household compared to all households the year their youth turns 18 years.¹⁸ To have some indicator if the parents have economic problems, two financial aid forms, social welfare and unemployment benefits, are included. Both social welfare and unemployment benefits are transformed into dummy variables.

Moreover, the highest educational level by the parents is also included, divided into four educational levels: ¹⁹ compulsory school of a maximum of nine years, upper secondary school of three years or more, a smaller university education of less than three years, a longer university education of three years or more.²⁰

To incorporate the possibility of external influences in this analysis, county youth unemployment rates have been attached to this data. The youth unemployment rate holds for the year and county in which the individual lived in at age 18 years.²¹ All explanatory variables are presented in *Appendix Table ??*.

5.1.1 Descriptive Statistics

In the descriptive statistics on the explanatory variables presented in *Table 2* we can see that the sample of 18-year olds have been presented in three sections, showing the mean value of all explanatory variables of the cohorts summarized

¹⁸In the two-parent household case, the income have been divided with 1.7, in order to compare one-parent households with two-parent households providence capacity of the 18-year old. OECD - not in här!!!!

¹⁹The educational history is based on the SUN-code and it is a standard used in classifying individual educational programs.(See MIS (2000)) In this study all levels of compulsory schooling have been merged into one, the same goes for upper secondary school. In case the parents have a graduate degree as highest educational level, this is included in the highest university level.

²⁰I have kept the two university levels separated, due to the fact that they give a relatively good signal of what sort of university education the parents have. As mentioned briefly in the policy section, numerous vocational educations received university status late 1970s that was less then three years. Longer university educations, i.e. three years or longer, are dominated by traditional university degrees in philosophy, science and art.

²¹According to Björklund et al. (2004) it was an outspoken wish by the Swedish politicians in early 1990s that the increased student slots were to encourage more youth to consider higher education. Notable here is that this political wish came in a time period in which youth unemployment rose by 400 percent, in early 1990s.

Table 2: Descriptive statistics the sample of 18-year olds

The table is divided into three sections; the first describes the mean values of all characteristics of the entire sample, also divided into 1980s and 1990s, the second sections describes the characteristics of the youths that attend higher education in the 1980s or 1990s, compared to youths that never attends higher education at all (the control group), the third section describes the characters of the youths that attend an old university and those attending a new university college, also divided into 1980s and 1990s.

Variables	All	1980s	1990s	1980	Control	1990	Control	1980s	Attend	1990s	Attend
	Mean (Std.dev.)	Mean (Std.dev.)	Mean (Std.dev.)	Attend Mean (Std.dev.)	Group Mean (Std.dev.)	Attend Mean (Std.dev.)	Group Mean (Std.dev.)	Attend Old Mean (Std.dev.)	Attend New Mean (Std.dev.)	Attend Old Mean (Std.dev.)	Attend New Mean (Std.dev.)
The 18 year old:											
Female	0.48 (0.50)	0.47 (0.50)	0.48 (0.50)	0.57 (0.50)	0.45 (0.50)	0.54 (0.50)	0.44 (0.50)	0.54 (0.50)	0.63 (0.48)	0.54 (0.50)	0.54 (0.50)
NEW	0.22 (0.42)	0.22 (0.41)	0.22 (0.42)	0.25 (0.43)	0.21 (0.41)	0.25 (0.43)	0.21 (0.41)	0.20 (0.40)	0.37 (0.48)	0.17 (0.38)	0.36 (0.48)
Mother's Education:											
Compulsory	0.38 (0.49)	0.46 (0.50)	0.30 (0.46)	0.31 (0.46)	0.50 (0.50)	0.17 (0.37)	0.39 (0.49)	0.28 (0.45)	0.33 (0.47)	0.15 (0.35)	0.22 (0.42)
Upper Secondary	0.38 (0.49)	0.36 (0.48)	0.40 (0.49)	0.36 (0.48)	0.37 (0.48)	0.38 (0.49)	0.41 (0.49)	0.34 (0.48)	0.35 (0.47)	0.35 (0.48)	0.37 (0.48)
University < 3 years	0.10 (0.30)	0.07 (0.26)	0.12 (0.33)	0.14 (0.35)	0.06 (0.23)	0.19 (0.39)	0.09 (0.28)	0.15 (0.35)	0.08 (0.27)	0.19 (0.39)	0.11 (0.31)
University ≥ 3 years	0.09 (0.29)	0.06 (0.24)	0.12 (0.32)	0.17 (0.38)	0.04 (0.18)	0.22 (0.42)	0.05 (0.23)	0.20 (0.40)	0.12 (0.32)	0.27 (0.44)	0.15 (0.36)
Father's Education:											
Compulsory	0.33 (0.47)	0.39 (0.49)	0.28 (0.45)	0.25 (0.43)	0.42 (0.49)	0.18 (0.38)	0.34 (0.47)	0.21 (0.41)	0.36 (0.84)	0.15 (0.35)	0.19 (0.40)
Upper Secondary	0.32 (0.47)	0.31 (0.46)	0.32 (0.47)	0.35 (0.48)	0.30 (0.46)	0.33 (0.47)	0.31 (0.46)	0.35 (0.48)	0.38 (0.48)	0.31 (0.46)	0.44 (0.49)
University < 3 years	0.06 (0.24)	0.05 (0.22)	0.07 (0.26)	0.09 (0.28)	0.04 (0.20)	0.11 (0.31)	0.05 (0.22)	0.09 (0.29)	0.11 (0.32)	0.11 (0.31)	0.17 (0.38)
University ≥ 3 years	0.10 (0.29)	0.07 (0.26)	0.12 (0.32)	0.20 (0.40)	0.04 (0.19)	0.23 (0.42)	0.05 (0.22)	0.23 (0.42)	0.11 (0.31)	0.28 (0.45)	0.15 (0.36)
Economy of the Household:											
Household income	1.04 (0.99)	1.03 (0.49)	1.05 (1.31)	1.20 (0.54)	0.99 (0.46)	1.15 (0.86)	0.99 (1.51)	1.24 (0.60)	1.09 (0.36)	1.20 (0.99)	1.06 (0.62)
Social Welfare	0.05 (0.21)	0.03 (0.17)	0.06 (0.24)	0.01 (0.08)	0.04 (0.19)	0.03 (0.16)	0.09 (0.28)	0.01 (0.07)	0.00 (0.06)	0.03 (0.16)	0.02 (0.16)
Unemployment Benefit	0.10 (0.30)	0.06 (0.24)	0.14 (0.35)	0.04 (0.19)	0.07 (0.25)	0.11 (0.31)	0.17 (0.37)	0.03 (0.17)	0.03 (0.18)	0.09 (0.29)	0.13 (0.33)
Macro variable:											
Youth Unemployment	4.09 (2.54)	2.54 (1.10)	5.59 (2.63)	2.61 (1.09)	2.52 (1.11)	5.39 (2.88)	5.71 (2.47)	2.48 (1.05)	2.55 (1.11)	5.15 (2.85)	5.76 (2.55)
Number of Observations:	300 226	147 001	153 225	29 578	117 423	57 183	96 042	21 142	8 436	34 634	22 549

*The household income is defined as relative income the year the youth turns 18 years. See *B Appendix* for a description.

into 1980s and 1990s, respectively.

The first section in *Table 2* shows that the entire sample of 18-year olds used in this analysis. From this first section we can see that the data contains slightly more men than women. Comparing the mean values of educational levels of the parents in the 1980s with the values of the 1990s, the share of parents having only compulsory schooling declined with roughly 11-15 percentage points. The share having upper secondary schooling increases, as do the share of parents having one of the two university levels.

In terms of family finances, the relative income has increased over time. Sweden went through a turbulent macroeconomic period in early 1990s, with high unemployment and low economic growth. That the households were affected by the harsh financial times in the 1990s can be seen in the amount of household that were social welfare and unemployment benefit receivers, or both, doubled.

In the second section of *Table 2* the youth who attends higher education before the age of 26 years are compared to youth that never attends higher education, for each decade respectively. In section three we can compare youths that attends an old university with youths that attends a new university college, for each decade respectively.

As can be seen in both *Table 1* and *Table 2*, women are in majority among the youths that attends higher education. This result is totally in line with the overall trend in Sweden for the same time period.

Furthermore, we can see that the parents to the attending youths are on average more educated than the parents to the not attending youths. Those who attend an old university have on average higher educated parents than those that attend a new university college. In the 1990s the overall educational level of the parent rose. However, the pattern from the 1980s can be traced in the 1990s also. Lowest educated parents are the parents to the youths that never attend higher education, followed by the parents to the youths that attend a new university college.

Similar pattern like the parental education on the three subgroups of 18-year

olds can be traced in the variables of the household economy. Lowest incomes, on average, have households of youths that never attend higher education. The family finances are on average lower in for households whose 18- year old attends a new university college, compared to households whose youths attend an old university college.

6 Results

The main results are presented on form of marginal effects in *Table 3* and *Table ??* respectively.²² The first column tells us how the explanatory variables affects the probabilities to attend higher education in the 1980s; the second column tells us how the effect of the explanatory variables changed in its influence on the probability in the 1990s; and the third column tells us the differences-in-differences in the marginal effect of the explanatory variables on individuals living in *NEW*, compared to youths living elsewhere in Sweden in the 1990s. The marginal effects are to be read additively from left to right.²³

6.1 The democratization effect of the expansion

From *Table 3* we can see that living in a municipality with a new university college had no significant effect on attendance in higher education in the 1980s, but rose rapidly to 40 percent in the 1990s. This results showing that the expansion of the new institutions of higher education had a significant effect on attendance to higher education for youth living in these areas.

In the 1980s it made hardly any difference whether the parent had elementary schooling or upper secondary schooling as highest education for their youth's probability to attend higher education. However, if the parents had shorter university degree it had a positive impact on the probability to attend higher education, and the impact rose if the parents had a longer university degree.

²²The outcome of the estimated models rests upon the assumption that all 18-year olds that desire to attend higher education before the age of 26 years are qualified to do so. Through the Act of Higher Education of 1977 alternative ways to qualify for higher education was introduced; for applicants lacking upper secondary qualifications (which is the most frequent way to qualify higher education) or who were 25 years or older, and had more than four years of work experience, a stochastic aptitude test was introduced, offering them a chance to qualify for higher education. (See Kim (1998)) Moreover, according to Statistic Sweden roughly 80-85% had upper secondary school qualification of the cohorts before 1990 at the age 26 years, and correspondingly 90% of the cohorts from 1990s and after had upper secondary school qualifications. For adults that did not attend or perhaps did not finish upper secondary school in their early youth, Sweden had and still have very generous possibilities to attend local adult education (komvux) to help them receive the qualifications upper secondary school bring. Those attending local adult education were also given finical support by the government. This, all in all, strengthen the assumption about university qualifications of the 18 year olds made above.

²³The entire regression is presented in *Appendix Table ??*

Table 3: Democratization Effects

The table shows the probability to attend higher education in Sweden in the 1980s, changes in the 1990s, and the differences-in-differences in change for those living in *NEW* in the 1990s, compared to Sweden overall. The effects are presented as marginal effects.

Variables:	Marginal-effects	Changes in the 1990s	Differences-in-differences of living in <i>NEW</i>
Female	0.050 *** (0.005)	0.110 *** (0.005)	-0.053 *** (0.007)
Living in <i>NEW</i>	0.009 (0.013)		0.401 *** (0.028)
Mother's Education:			
Upper Secondary	0.070 *** (0.003)	0.155 *** (0.007)	-0.077 *** (0.007)
University < 3 years	0.179 *** (0.007)	0.140 *** (0.009)	-0.073 *** (0.009)
University ≥ 3 years	0.330 *** (0.008)	0.108 *** (0.010)	-0.072 *** (0.009)
Father's Education:			
Upper Secondary	0.017 *** (0.005)	0.068 *** (0.005)	-0.042 *** (0.008)
University < 3 years	0.162 *** (0.007)	0.065 *** (0.008)	-0.046 *** (0.010)
University ≥ 3 years	0.294 *** (0.010)	0.013 (0.009)	-0.047 *** (0.009)
Economy of the Household:			
Household income	-0.041 *** (0.009)	0.074 *** (0.009)	-0.027 *** (0.005)
Social Welfare	-0.172 *** (0.006)	0.171 *** (0.018)	-0.033 ** (0.016)
Unemployment Benefit	-0.053 *** (0.006)	0.044 *** (0.008)	-0.002 (0.009)
Macro variable:			
Youth Unemployment	-0.051 *** (0.007)	0.090 *** (0.008)	-0.024 *** (0.002)

Note: Robust standard errors are shown in the parenthesis. ***, **, * denote significance at 1, 5, and 10 percent, respectively.

This indicates that the intergenerational mobility, i.e. that student attends more and higher education compared to its parents, in Sweden seem to have been very low in the 1980s. This is very much in line with previous findings by Eriksson and Jonsson (1993,?) and Dryler (1998).

It is notable that the parents is that the impact the characteristics the mothers are significantly different from and larger than the impact the fathers on the on the probability for their child to attend higher education. These findings are comparable to those of Ekberg and Rooth (1993), when analyzing the parental

impact on second generation immigrants chances on the labor market and their economical outcome in Sweden.

The impact parental education has on the probability to attend higher educations does not seem to have decreased through the increased student slots in the 1990s. All levels above compulsory schooling, as highest level of schooling by the parents, became more important. For youth with parents with upper secondary schooling as highest education, their probability more than doubled, compared to those youths who's parents only has compulsory schooling as highest education. This could indicate that the increased student slots in the 1990s have improved the intergenerational educational mobility at least for one of two groups of low educated parents. Yet, the largest increase in probability was for youths from high-educated parents, showing that the importance of parental education grew even stronger in the 1990s.

The corresponding differences-in-differences effect of living in *NEW* all show on a negative effect. The negative values means that the impact of parental education have a smaller, yet positive, effect on the probability of higher educational attendance for youth living in the areas of the new university colleges, than in Sweden overall.²⁴

In the 1980s most income factors seem to affect higher educational attendance as one could expect. If any of parents in the household were social welfare receivers, the impact on the attendance probabilities were strongly negative. If any of the parents were unemployed and received unemployment benefits, this had a slight negative effect on attendance.

Looking at the marginal effects the financial factors had on probabilities to attend higher education in the 1990s, it is tempting to believe that the increase of students slots changed the explanatory power of the income factors. But, the 1990s was a turbulent macro economic decade. The rate of unemployment rose dramatically, and more people than ever before in modern time were declared

²⁴For instance, the probability of a youth attending higher education in the 1980s who's mother only had upper secondary school was 7 percentage points, in the 1990s the corresponding probability was $((7.00) + (15.5) =) 22.5$ percentage points, and $((7.00) + (15.5) + (- 7.7) =) 14.8$ percentage points if the youth lived in *NEW* in the 1990s.

poor. Taking this dramatic macro economic situation in Sweden in consideration, it might be more understandable that the impact of social welfare and unemployment benefits more or less naturalized in the 1990s. i.e circled around a zero effect. Parental income, on the other hand, rose from a small negative income effect in the 1980s to a small positive effect on the probability to attend higher education in the 1990s.

The differences-in-differences effect of the household factors for youth living in the areas of the new university colleges had a slight smaller impact overall on higher educational attendance.

Turning to the characteristics of the youth, the descriptive data in *Table 2* show that more women than men attended higher education, both in the 1980s and the 1990s. The marginal effects on higher educational attendance indicate the probability to attend higher education is larger for women than men. In fact, the probability to attend higher education if the individual was a women tripled in the 1990s compared to the 1980s. For the individuals in the areas of *NEW* the increase was half, i.e doubled from the 1980s

The result of the marginal effect of the external effects, here represented by county youth unemployment rates, on the probability to attend higher education is negative in the 1980s. A possible explanation for this is that the existing unemployment was probably caused, to a relatively large extent, by individual characteristics rather lack of job opportunities. In the 1990s on the other hand, much of the high unemployment observed was for sure caused by the sustained loss of job opportunities, making the dramatic crises of the early 1990s the positive marginal effect youth unemployment rate had on the probabilities to attend higher education.

What can be said about the trend of higher educational attendance? 24 dummy variables, using 1989 as the base year, shows that the probability to attend higher education has gone from a strong positive trend in the 1980s to a strong negative trend in the 1990s for reasons not explained in the model. In fact, this negative effect drives the entire net effect of the estimation to become

negative in both the 1990s and slight less negative for youths living in *NEW*.²⁵

The changes in probability to attend higher education during the 1980s and 1990s, this is illustrated in Figure ?? for Sweden and Figure ?? for the youth living in the municipalities of *NEW*. The figures illustrate the changes in probability for youth attending higher education based on the mean characteristics the parents have given that they have the same highest educational level.²⁶ Shown clearly in both figures is that all groups have increased their probabilities in attending higher education, all but those youths who have parents with elementary education as highest education. According to the presented results, their situation has become worse. Notable though, is that this lower socioeconomic group have during the 1990s become a slightly more selective group than was the case before. This can be seen in the descriptive statistics presented in earlier sections of this paper.

²⁵In additional analysis not presented in this paper some other variables have been analyzed also: The direct neighbor municipalities to the municipalities of the new university colleges have been included in the dummy *NEW*, showing on somewhat weaker results to what is presented here. Variables of family and individual wealth have also been estimated, showing on non-significant results. Kilometer distances to nearest old university and nearest new university college, gave significant estimations but the marginal effect were extremely small.

²⁶Alternative combinations, like highest education in the household or separated between parents, show on similar developments as pictured in Figure ?? and Figure ??.

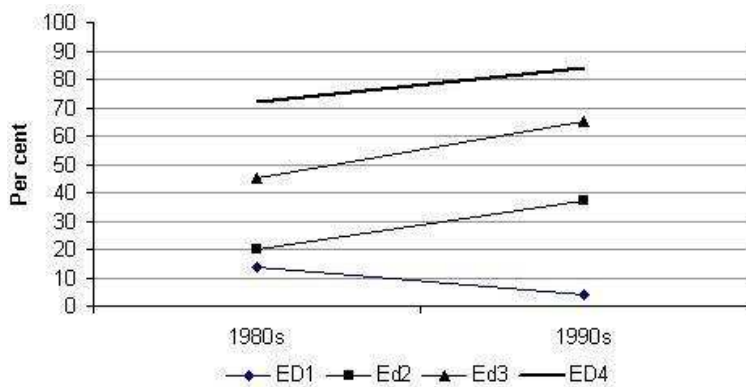


Figure 2: The probability to attend higher education in the 1980s and 1990s.
 Note: The probability shown in the figure are based on the mean value for all explanatory variables given the educational level of the parents. ED1=elementary education, ED2=upper secondary school, ED3 = shorter tertiary education, ED4 = longer tertiary education.

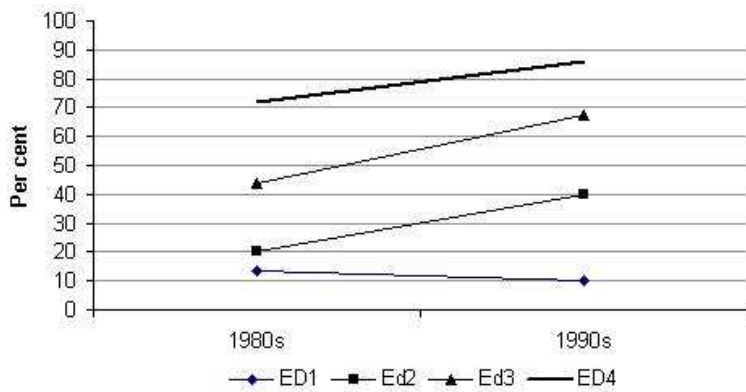


Figure 3: The Probability to attend higher education in the 1980s and 1990s for those living in the municipalities of the new university colleges.
 Note: The probability shown in the figure are based on the mean value for all explanatory variables given the educational level of the parents. ED1 = elementary education, ED2 = upper secondary school, ED3 = shorter tertiary education, ED4 = longer tertiary education.

6.2 The diversion effect of new university colleges

In *Table ??* we can see that the overall strongest of the explanatory variables for those included in the estimation of how the new university colleges may divert students from attending old traditional universities, is the fact of living in a municipality that received an institution of higher education in the late 1970s or later. The probability to attend an old university living in *NEW* in the 1980s had a 20 percent lower probability, than if the youth lived elsewhere. This give some indications that the regionalization effect of higher education in the late 1970s have succeeded in encouraging youths to consider higher education in the areas of *NEW*, and perhaps even consider attending the local new university colleges.

However, the effect of the rapid expansions of the new university colleges in the 1990s, points on no significant changes in the in the probability for youth living in *NEW* to attend an old university in the 1990s.

The intriguing question is, off course, which youth-groups did the increased access appeal. Looking at the effects that parental educational levels had on the probability to attend an old university in the 1980s, the probability (no surprisingly) increased with parental education, i.e. the higher educated the parent were - the higher were the probability for their child to attend an old university, all compared to youth who's parents only had compulsory education as highest education.

The trend in the 1990s seem to be that there are no (or very modest) significant changes, and it also hold for youth living in *NEW*. The probability for youth who's parents have upper secondary education as highest education to attend an old university slightly weakens in the 1990s, meaning that it increases to the new university colleges. In terms of a diversion effect, these are the only explanatory variables that might indicate some socioeconomic diversion.

Table 4: Diversion Effects

The table shows the probability to attend an old university in Sweden in the 1980s, changes in the 1990s, and the differences-in-differences in change for those living in *NEW* in the 1990s, compared to Sweden overall. The effects are presented as marginal effects.

Variables:	Marginal-effects	Changes in the 1990s	Differences-in-differences for living in <i>NEW</i>
Female	-0.062 *** (0.008)	0.062 *** (0.008)	0.008 (0.011)
Living in <i>NEW</i>	-0.204 *** (0.058)		-0.021 (0.071)
Mother's Education:			
Upper Secondary	0.043 *** (0.008)	-0.021 * (0.011)	0.032 * (0.015)
University < 3 years	0.051 *** (0.012)	-0.015 (0.015)	0.026 (0.018)
University ≥ 3 years	0.116 *** (0.011)	0.022 (0.014)	0.039 ** (0.019)
Father's Education:			
Upper Secondary	0.015 ** (0.008)	-0.039 *** (0.009)	-0.006 (0.013)
University < 3 years	0.060 *** (0.010)	-0.020 (0.015)	0.007 (0.014)
University ≥ 3 years	0.092 *** (0.011)	0.007 (0.013)	0.001 (0.014)
Economy of the Household:			
Household income	0.107 *** (0.011)	-0.074 *** (0.014)	-0.020 ** (0.011)
Social Welfare	0.006 (0.039)	0.047 (0.039)	0.019 (0.028)
Unemployment Benefit	-0.064 *** (0.017)	0.032 * (0.017)	-0.015 (0.017)
Macro variable:			
Youth Unemployment	-0.082 *** (0.015)	0.033 *** (0.009)	-0.001 (0.005)

Note: Robust standard errors are shown in the parenthesis. ***, **, * denote significance at 1, 5, and 10 percent, respectively.

7 Conclusion and discussion

Is expansion to higher education a successful political mean to decrease educational inequalities in society? Of all explanatory variables on the democratization effect of higher education, the fact of living in the same municipality seem to be the strongest. Individuals that lived in the municipalities of the new university colleges show on a 40% increase in probability to attend higher education in 1990s than in the 1980s, compared to individuals living elsewhere in Sweden. This result does give some support to the theory that nearby access have important features in encouraging more people into higher education

In terms of 'socioeconomic justice', the effect of *just* increasing student slots can be illustrated as a pyramid of glasses. Each layer represents a socioeconomic group (in my case measured by parental education and income). If student slots are a liquid, the lowest situated glasses will only be filled once the other glasses above are full. This is basically what happened in Sweden. Youths from high educated parents increases in probability to attend higher education in the 1990s, to an even higher level than in the 1980s. Individuals, who's parents have a shorter tertiary education or a upper secondary education, were the groups most affected of the expansion. However, individuals from homes with elementary education as highest education by the parents show on no positive change in probability to attend higher education in the 1990s. In fact, their situation seems to have become even worse than before.

That youth to parents that had upper secondary education as highest education increased with almost 20 percentage points could indicate that the expansion of higher education to some extent have succeeded in improving the equality of educational opportunities for that group. Showing on tendencies on some intergenerational educational mobility in the 1990s. But, a questioned raised in Eriksson and Jonsson (2006) and here now is if there is an intergenerational mobility that we see, or an illusion? An illusion caused by the fact that the definition change of higher education in the 1977, where several vocational

and semi vocational educations were upgraded as tertiary educations. Is it intergenerational mobility we see if the youth follow the footsteps of their parents, but due to a changed definition become first generation academics and imposed a higher educational level than their parents?

Compared to the 1980s, the impact of family background only had roughly half the size on the individuals living in the areas of the new university colleges. This findings are very much in line with what Eriksson and Jonsson (2006) found, i.e. social origin seem weaker among the youth attending new university colleges. Though, the total net-effect of the expansion illustrated in Figure ?? and Figure ?? show on similar development overall in Sweden.

On the issue if the expansion of new university colleges divert students from lower socioeconomic backgrounds to attend shorter educations than longer educations, no consistent support is brought in this paper. The probability to attend an old university increases with parental education in the 1980s. However, the overall increased student slots in the 1990s, showed on no (or very modest) changes. This also holds for youth that grew up in the areas of the new university colleges.

Again, the greatest impact on attendance to an old university is where the individuals' home is situated. If the individual lived in a municipality of a new university colleges, the probability to attend an old university was roughly 20% lower than in Sweden overall. Indicating that new university colleges have succeeded in absorbing youths from its region and making them see their education offers as a good alternative to the educations offered at the old universities.

Political impact on the educational system plays indeed an important role in affecting and improving the social mobility in society. Yet, more evidence would be useful both because it could reveal important features of a nations equality of educational opportunity and a comparison of equality of educational opportunities within the educational system may lead to a better understanding on how different educational policies strike. If expanding and increasing the access to higher education, alone, is a successful political mean in order to

achieve social justice is questioned here and must be analyzed more. Some support are given here that most socioeconomic groups in society were gained by the expansion, but not the weakest.

References

- af Trolle, Ulf. 1990. *Mot en internationellt konkurrenskraftig AKADEMISK UTBILDNING*. Lund: Studentlitteratur.
- Angrist, Joshua and Allan B. Krueger. 1999. Empirical Strategies in Labor Economics. In *Handbook in Labor Economics*, ed. Orley C. Ashenfelter and David Card. Vol. 3A Amsterdam: North-Holland: Elsevier Science Publishers.
- Becker, Gary S. 1993. *Human Capital*. 3 ed. Chicago: University of Chicago Press.
- Becker, Gary S. and Nigel Tomes. 1979. "An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility." *Journal of Political Economy* 87:1153–89.
- Becker, Gary S. and Nigel Tomes. 1986. "Human capital and Rise and Fall of the Families." *Journal of Labor Economics* 4:1–39.
- Björklund, Anders and Mikael Jäntti. 1997. "Intergenerational Income Mobility in Sweden Compared to the United States." *American Economic Review* 87:1009–1018.
- Björklund, Anders, Mikael Lindahl and Krister Lund. 2003. "Family background and school performance during a turbulent era of school reforms." *Swedish Economic Policy Review* 10(2):111–136.
- Björklund, Anders, Per-Anders Edin, Peter Fredriksson and Alan Kreuger. 2004. *Education, equality, and efficiency - An analysis of Swedish school reforms during the 1990s*. Uppsala, Sweden: IFAU. 2004:1.
- Dryler, Helen. 1998. *Educational Choice in Sweden: Studies on the Importance of Gender and Social Context*. Stockholm University, Stockholm: Swedish Institute for Social Research No 31. (Doctor Theses).

- Dryler, Helene. 1994. Etablering av nya högskolor - ett medel för minskad snedrekrytering. In *Skola och Sortering. Studier av snedrekrytering och utbildningens konsekvenser*, ed. Robert Eriksson and Jan O. Jonsson. Stockholm: Carlssons Förlag.
- Edin, Per-Anders and Peter Fredriksson. 2000. *LINDA - Longitudinal INdividual DATA for Sweden*. Uppsala, Sweden: Department of Economics, Uppsala University.
- Ekberg, Jan and Dan-Olof Rooth. 1993. "Unemployment and earnings for second generation immigrants in Sweden. Ethnic background and parent composition." *Journal of Population Economics* 16:787–814.
- Eriksson, Robert and Jan O. Jonsson. 1993. *SOU:1993:85 Ursprung och utbildning*. Stockholm: Fritzes.
- Eriksson, Robert and Jan O. Jonsson. 1994. *Sortering i skolan*. Stockholm: Carlssons Bokförlag.
- Eriksson, Robert and Jan O. Jonsson. 1996. *Can Education be Equalized; The Swedish Case in Comarative Perspective*. Boulder and Oxford: Westview Press. Social Inequality Series.
- Eriksson, Robert and Jan O. Jonsson. 2006. Why educational expansion is not such a great strategy for equality: Theory and evidence for Sweden. In *Stratification in Higher Education*, ed. Adam Gamoran Yossi Shavit, Tichard T. Aurum and Gila Menahem. Stanford, CA: Stanford University Press. Forthcoming.
- Fasth, Eva. 1980. *Aspects on Relocalization of Higher Education*. Göteborg: UHÄ National Board of Universities and Colleges. (Doctor Theses).
- Freeman, Richard B. 1980. "The Facts about the Declining Economic Value of College." *Journal of Human Resources* 15:124–142.

- Government-bill. 2000/01:72. *Vuxnas lärande och utvecklingen av vuxenutbildningen*. Stockholm: . Proposition 2000/01:72.
- Hammarström, Margareta. 1996. *Varför inte Högskola?* Göteborg: Universitatis Gothoburgensis. (Doctor Theses).
- Holm and Häggström. 1972. *SOU:1972:85 Högre utbildning - regional rekrytering och samhällsekonomiska kalkyler*. Stockholm: Fritzes.
- Kane, Thomas J. and Cecilia E. Rouse. 1995. "Labor Market Return to Two- and Four Year College." *American Economic Review* .
- Kane, Thomas J. and Cecilia E. Rouse. 1999. "The Community College: Educating Students at the Margin Between College and Work." *Journal of Economic Perspectives* .
- Kim, Lillemor. 1998. *Val och urval till högre utbildning: en studie erfarenheterna av 1977 års tillträdesreform*. Uppsala: Uppsala Universitet. (Doctor Theses).
- Kjellström, C. and Håkan Regnér. 1999. "The Effect of Geographical Distance on the Decision to Enroll in University Education." *Scandinavian Journal of Education Research* .
- Leigh, Duane E. and Andrew M. Gill. 2003. "Do community college really divert the students from earning a bachelor's degree?" *Economic of Education Review* .
- Leigh, Duane E. and Andrew M. Gill. 2004. "The effect of community colleges on changing students' educational aspirations." *Economic of Education Review* .
- MIS. 2000. *Utbildningsklassificering*. Örebro: . 2000:1.
- Öckert, Björn. 2001. *Effects of Higher Education and the Role of Admission Selection*. Stockholm University, Stockholm: Swedish Institute for Social Research No 52. (Doctor Theses).
- OECD. 1993. *Education at a Glance*. Paris: OECD.

Rouse, Cecilia E. 1995. "Democratization or Diversion? The effect of community colleges on educational attainment." *Journal of Business and Economic Statistics* 13:217–224.

Solon, Gary. 1999. Intergenerational Mobility in the Labor Market. In *Handbook in Labor Economics*, ed. Orley C. Ashenfelter and David Card. Vol. 3A Amsterdam: Elsevier Science Publishers.

SOU. 1972:3. *U68 - Högskolan*. Stockholm: Fritzes.

UHÄ. 1989. *Högskoleutbildningens framtida dimensionering*. Stockholm: UHÄ1989:17.

A APPENDIX

A.1 Map over Sweden



Figure 4: Location of institutions of higher education in Sweden.
Note: The *old* university areas are written in uppercase letters. The rest are areas that received a university college 1977 or later.

A.2 Descriptive Statistics

Table 5: Descriptive Statistics - Explanatory Variables

Variable	Description
The 18-year old:	
Female	1 if female, 0 otherwise
NEW	1 if the youth lives in the municipally that received local access to a higher education through a university college in the late 1970s or later, 0 otherwise.
Mother's highest education**:	
Compulsory School \leq 9 years	1 if it is compulsory schooling, 0 otherwise.
Upper Secondary \leq 3 years	1 if it is upper secondary school, 0 otherwise.
University <3 years	1 if it is less than 3 years of university, 0 otherwise.
University \geq 3 years	1 if it is 3 years or more of university, 0 otherwise.
Father's highest education**:	
Compulsory School \leq 9 years	1 if it is compulsory schooling, 0 otherwise.
Upper Secondary \leq 3 years	1 if it is upper secondary school, 0 otherwise.
University <3 years	1 if it is less than 3 years of university, 0 otherwise.
University \geq 3 years	1 if it is 3 years or more of university, 0 otherwise.
Family Economy:	
Income	Relative income of the household*
Social Welfare	1 if the household household social welfare, 0 otherwise.
Unemployment Benefit	1 if the household household unemployment benefits, 0 otherwise.
Macro variables:	
Youth Unemployment	County unemployment rate for the age group 16-24 years.
Year/Cohort dummies:	
L1977	1 if the the 18-year old is 18 years in 1977, 0 otherwise.
L1978	1 if the the 18-year old is 18 years in 1978, 0 otherwise.
....	
L2001	1 if the the 18 year old is 18 years in 2001, 0 otherwise.
D90	1 for the years 1990-2001, 0 for the years 1977-1989.

* The relative income for the household:

$$Income_{it} = \frac{FAMink_{it}}{\sum_{i=1}^z FAMink_{it} / \sum_{i=1}^z Household_{it}},$$

where $FAMink_{it}$ stands for the nominal income the household of the i :th 18-year old at time t . $t=(1977, \dots, 2001)$ indicate the year youth turns 18 years. The sum of all nominal incomes year t if divided by all households year t . In the two-parent household case the nominal income has been divided with 1.7, in order to compare one-parent households with two-parent households providence capacity of the 18-year old.

** Information about individuals' educational history in LINDA starts in 1990. Due to this lack of information for the cohorts prior to 1990, is all information on parental educational level based on the educational level that is registered in census of 1990.

A.3 Estimations

Table 6: Probit estimates of 'The democrtatization effect of the expansion'
 Estimating the probability to attend higher education in Sweden in the 1980s, changes in probabilities in the 1990s, and the differences-in-differences effect of living in a municipally in which a new university colleges was established in late 1970s or later.

Variable	Coefficient	(Robust Std. dev.)	Marginal effects	(Robust Std. dev.)
Youths in the 1980s:				
Female	0.161 ***	(0.016)	0.050 ***	(0.005)
Living in NEW	0.029	(0.042)	0.009	(0.013)
Mother's Education:				
Upper Secondary	0.219 ***	(0.010)	0.070 ***	(0.003)
University < 3 years	0.509 ***	(0.019)	0.179 ***	(0.007)
University ≥ 3 years	0.903 ***	(0.019)	0.330 ***	(0.008)
Father's Education:				
Upper Secondary	0.055 ***	(0.014)	0.017 ***	(0.005)
University < 3 years	0.467 ***	(0.018)	0.162 ***	(0.007)
University ≥ 3 years	0.811 ***	(0.025)	0.294 ***	(0.010)
Economy of the Household:				
Household income	-0.131 ***	(0.029)	-0.041 ***	(0.009)
Social Welfare	-0.746 ***	(0.037)	-0.172 ***	(0.006)
Unemployment Ben	-0.181 ***	(0.020)	-0.053 ***	(0.006)
Macro variable:				
Youth Unemployment	-0.166 ***	(0.021)	-0.051 ***	(0.007)
Changes in the 1990s:				
Female	0.336 ***	(0.016)	0.110 ***	(0.005)
Mother's Education:				
Upper Secondary	0.461 ***	(0.020)	0.155 ***	(0.007)
University < 3 years	0.406 ***	(0.024)	0.140 ***	(0.009)
University ≥ 3 years	0.318 ***	(0.027)	0.108 ***	(0.010)
Father's Education:				
Upper Secondary	0.210 ***	(0.015)	0.068 ***	(0.005)
University < 3 years	0.197 ***	(0.024)	0.065 ***	(0.008)
University ≥ 3 years	0.043	(0.027)	0.013	(0.009)
Economy of the Household:				
Household income	0.239 ***	(0.029)	0.074 ***	(0.009)
Social Welfare	0.486 ***	(0.047)	0.171 ***	(0.018)
Unemployment Ben	0.135 ***	(0.023)	0.044 ***	(0.008)
Macro variable:				
Youth Unemployment	0.291 ***	(0.025)	0.090 ***	(0.008)
Cont.				

Democratization (cont.)

Variable	Coefficient	(Robust Std. dev.)	Marginal effects	(Robust Std. dev.)
Differences-in-differences: for youth living in NEW in the 1990s				
Female	-0.183 ***	(0.026)	-0.053 ***	(0.007)
Living in NEW	1.102 ***	(0.076)	0.401 ***	(0.028)
Mother's Education:				
Upper Secondary	-0.273 ***	(0.030)	-0.077 ***	(0.007)
University < 3 years	-0.259 ***	(0.037)	-0.073 ***	(0.009)
University ≥ 3 years	-0.254 ***	(0.036)	-0.072 ***	(0.009)
Father's Education:				
Upper Secondary	-0.143 ***	(0.027)	-0.042 ***	(0.008)
University < 3 years	-0.156 ***	(0.037)	-0.046 ***	(0.010)
University ≥ 3 years	-0.159 ***	(0.035)	-0.047 ***	(0.009)
Economy of the Household:				
Household income	-0.087 ***	(0.015)	-0.027 ***	(0.005)
Social Welfare	-0.111 **	(0.055)	-0.033 **	(0.016)
Unemployment Ben	-0.006	(0.028)	-0.002	(0.009)
Macro variable:				
Youth Unemployment	-0.078 ***	(0.007)	-0.024 ***	(0.002)
Year/Cohort dummies:				
L1977	0.396 ***	(0.022)	0.137 ***	(0.008)
L1978	0.471 ***	(0.027)	0.165 ***	(0.010)
L1979	0.453 ***	(0.026)	0.158 ***	(0.010)
L1980	0.399 ***	(0.028)	0.138 ***	(0.011)
L1981	0.527 ***	(0.032)	0.187 ***	(0.013)
L1982	0.646 ***	(0.047)	0.233 ***	(0.019)
L1983	0.675 ***	(0.052)	0.244 ***	(0.020)
L1984	0.584 ***	(0.044)	0.209 ***	(0.017)
L1985	0.474 ***	(0.036)	0.166 ***	(0.014)
L1986	0.384 ***	(0.037)	0.132 ***	(0.014)
L1987	0.252 ***	(0.025)	0.084 ***	(0.009)
L1988	0.140 ***	(0.021)	0.045 ***	(0.007)
L1990	-0.765 ***	(0.031)	-0.174 ***	(0.005)
L1991	-0.843 ***	(0.031)	-0.185 ***	(0.004)
L1992	-1.070 ***	(0.050)	-0.212 ***	(0.005)
L1993	-1.362 ***	(0.085)	-0.234 ***	(0.006)
L1994	-1.292 ***	(0.084)	-0.229 ***	(0.007)
L1995	-1.364 ***	(0.083)	-0.234 ***	(0.006)
L1996	-1.468 ***	(0.091)	-0.239 ***	(0.006)
L1997	-1.579 ***	(0.086)	-0.245 ***	(0.005)
L1998	-1.558 ***	(0.069)	-0.244 ***	(0.004)
L1999	-1.786 ***	(0.058)	-0.253 ***	(0.004)
L2000	-1.644 ***	(0.057)	-0.248 ***	(0.003)
L2001	-3.393 ***	(0.094)	-0.284 ***	(0.004)
Contant	-1.041 ***	(0.034)		

Note: Robust standard errors are shown in the parenthesis. ***, **, * denote significance at 1, 5, and 10 percent, respectively. M = Mother. F = Father.

N = 300226

LR chi2(74) = 65568.35

Wald chi2(59) = 34915.47

Prob > chi2 = 0.0000

Log pseudolikelihood = -142557.04

Pseudo R2 = 0.2102

obs. P = 0.2889856

pred. P = 0.2388721 (at x-bar)

Table 7: Probit estimates of 'The diversion effect of new university colleges'
 Estimating the probability to an old university 1980s, changes in probabilities in the 1990s,
 and the differences-in-differences effect of living in a municipality in which a new university
 colleges was established in late 1970s or later.

Variable	Coefficient	(Robust Std. dev.)	Marginal effects	(Robust Std. dev.)
Youths in the 1980s:				
Female	-0.169 ***	(0.021)	-0.062 ***	(0.008)
Living in NEW	-0.537 ***	(0.153)	-0.204 ***	(0.058)
Mother's Education:				
Upper Secondary	0.117 ***	(0.021)	0.043 ***	(0.008)
University < 3 years	0.141 ***	(0.034)	0.051 ***	(0.012)
University ≥ 3 years	0.329 ***	(0.031)	0.116 ***	(0.011)
Father's Education:				
Upper Secondary	0.041 **	(0.021)	0.015 **	(0.008)
University < 3 years	0.166 ***	(0.028)	0.060 ***	(0.010)
University ≥ 3 years	0.258 ***	(0.030)	0.092 ***	(0.011)
Economy of the Household:				
Household income	0.292 ***	(0.032)	0.107 ***	(0.011)
Social Welfare	0.017	(0.107)	0.006	(0.039)
Unemployment Ben	-0.171 ***	(0.044)	-0.064 ***	(0.017)
Macro variable:				
Youth Unemployment	-0.224 ***	(0.042)	-0.082 ***	(0.015)
Changes in the 1990s:				
Female	0.171 ***	(0.022)	0.062 ***	(0.008)
Mother's Highest Education:				
Upper Secondary	-0.056 *	(0.030)	-0.021 *	(0.011)
University < 3 years	-0.041	(0.041)	-0.015	(0.015)
University ≥ 3 years	0.061	(0.038)	0.022	(0.014)
Father's Highest Education:				
Upper Secondary	-0.104 ***	(0.025)	-0.039 ***	(0.009)
University < 3 years	-0.053	(0.040)	-0.020	(0.015)
University ≥ 3 years	0.018	(0.037)	0.007	(0.013)
Economy of the Household:				
Household income	-0.200 ***	(0.040)	-0.074 ***	(0.014)
Social Welfare	0.132	(0.113)	0.047	(0.039)
Unemployment Ben	0.088 *	(0.048)	0.032 *	(0.017)
Macro variable:				
Youth Unemployment	0.091 ***	(0.025)	0.033 ***	(0.009)
Cont.				

Diversion. (cont.)

Variable	Coefficient	(Robust Std. dev.)	Marginal effects	(Robust Std. dev.)
Differences-in-differences: for youth living in NEW in the 1990s				
Female	0.021	(0.029)	0.008	(0.011)
Living in NEW	-0.057	(0.192)	-0.021	(0.071)
Mother's Highest Education:				
Upper Secondary	0.087 *	(0.043)	0.032 *	(0.015)
University < 3 years	0.072	(0.050)	0.026	(0.018)
University ≥ 3 years	0.108 **	(0.054)	0.039 **	(0.019)
Father's Education:				
Upper Secondary	-0.017	(0.036)	-0.006	(0.013)
University < 3 years	0.019	(0.038)	0.007	(0.014)
University ≥ 3 years	0.001	(0.039)	0.001	(0.014)
Economy of the Household:				
Household income	-0.055 **	(0.028)	-0.020 **	(0.011)
Social Welfare	0.051	(0.079)	0.019	(0.028)
Unemployment Ben	-0.040	(0.046)	-0.015	(0.017)
Macro variable:				
Youth Unemployment	-0.002	(0.014)	-0.001	(0.005)
Year/Cohort dummies:				
L1977	0.328 ***	(0.047)	0.111 ***	(0.016)
L1978	0.429 ***	(0.054)	0.142 ***	(0.016)
L1979	0.398 ***	(0.050)	0.133 ***	(0.016)
L1980	0.332 ***	(0.050)	0.113 ***	(0.016)
L1981	0.516 ***	(0.059)	0.166 ***	(0.017)
L1982	0.617 ***	(0.073)	0.192 ***	(0.019)
L1983	0.639 ***	(0.088)	0.198 ***	(0.022)
L1984	0.488 ***	(0.067)	0.159 ***	(0.019)
L1985	0.439 ***	(0.062)	0.145 ***	(0.018)
L1986	0.344 ***	(0.054)	0.117 ***	(0.017)
L1987	0.143 ***	(0.040)	0.051 ***	(0.014)
L1988	0.064 **	(0.033)	0.023 **	(0.012)
L1990	-0.045	(0.029)	-0.017	(0.011)
L1991	0.097 *	(0.054)	0.035 *	(0.019)
L1992	0.380 ***	(0.127)	0.128 ***	(0.038)
L1993	0.773 ***	(0.223)	0.231 ***	(0.048)
L1994	0.717 ***	(0.219)	0.218 ***	(0.050)
L1995	0.644 ***	(0.205)	0.200 ***	(0.050)
L1996	0.677 ***	(0.212)	0.208 ***	(0.049)
L1997	0.681 ***	(0.214)	0.209 ***	(0.049)
L1998	0.481 ***	(0.160)	0.157 ***	(0.044)
L1999	0.478 ***	(0.138)	0.156 ***	(0.037)
L2000	0.503 ***	(0.128)	0.162 ***	(0.032)
L2001	1.018 ***	(0.282)	0.266 ***	(0.043)
Contant	0.456 ***	(0.108)		

Note: Robust standard errors are shown in the parenthesis. ***, **, * denote significance at 1, 5, and 10 percent. respectively. M = Mother. F = Father.

N= 86761

Wald chi2(59) =2680.98

LR chi2(74) = 10932.43

Prob > chi2 = 0.0000

Log pseudolikelihood =-51614.927

Pseudo R2 =0.0872

obs. P = 0.6428695

pred. P = 0.6510832 (at x-bar)