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This is an accepted version of a paper published in *Journal of Education and Work*. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the published paper:

Nordlund, M., Stehlik, T., Strandh, M. (2012)

"Investment in second-chance education for adults and income development in Sweden"
Journal of Education and Work, : 1-25

URL: <http://dx.doi.org/10.1080/13639080.2012.664633>

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Investment in second chance education for adults and income development in Sweden

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Introduction

The demographic profile of the developed world is changing. Population ageing means that many countries are facing slow growth or even contraction of the labour force.

Coupled with growing numbers of old people this means that a smaller proportion of the population will be of working age, and that they have to support a growing number of economically inactive individuals. This development has potentially negative consequences for living standards with OECD models pointing to living standards by mid-century that are 18% lower in Europe and 10% lower in the United States than what would otherwise be the case (OECD 1998).

The key to mitigating this process is to increase labour utilisation rates as well as trend productivity growth. There is substantial scope for doing this and lifelong learning is here

pointed out as one important route to increase employment rates and productivity over the life course (OECD2005). This need for both better initial education and continuous learning throughout the working life is made even more important in relation to increasing demands for flexibility of the labour force. Increasing international competition has created an increasing need for both firms and workers to be able to adapt to changing technologies and consumer preferences (see Boje and Grönlund 2003). A good basic education and lifelong learning is here probably central for achieving this flexibility both within firms and on the labour market in general.

The importance of education for employability has indeed risen over time and employment rates, staying power on the labour market as well as overall life chances are very strongly related to educational attainment. This increasing role of education for employability and life chances has put an increasing focus on the problem of the low educated, who increasingly have faced poor prospects on the labour market. Increasing competition have left large proportions of low educated not only in dead end jobs but outside the labour market altogether. Increasing the labour market participation as well as the productivity of this group now represents an important challenge for many countries. This is both for the welfare of the individuals, but also for the sustainability of welfare states and standards of living.

Policies and institutions directed at supporting and making Second Chance Education available for low educated adults could here be an important tool for supporting both individuals and a sustainable society. In Sweden it represents an option for the 25-30

percent of students that never finish their upper secondary studies and in many cases face very poor labour market prospects. Despite it being an important policy tool relatively little research has however investigated what impact Second Chance Education actually has on the economic opportunities of those low education individuals who complete their formal education later in life. The evaluations that have been made have also so far tended to focus on relatively short term effects, which raises the question about what the long term effects of Second Chance Education are. As human capital investments, and in particular investments in formal education, are long term investments the long term effects and labour market trajectories are central for any evaluation of Second Chance Education. A second problem with existing evaluations of Second Chance Education is that it has tended to focus on its effects on unemployed individuals. This is natural since a large share of those in Second Chance Education are unemployed and the risk of long lasting negative unemployment scarring is large in terms of human capital losses (Groot et al. 1990); downward occupational mobility (Layte et al. 2000) and wage losses (Björklund 1981; Gangl 2004). However, it is important to recognize that hundreds of thousands of low educated Swedes enter Second Chance Education for other reasons than unemployment, but remarkably few studies pay attention to the overall effects among other groups in Second Chance Education.

In this paper we aim to map the extent to which Second Chance Education directed at low educated adults contributes to the enhancement of income growth in a longer perspective. More precisely, we address the following question: *What is the long term effect on income growth of an increase in formal education for low educated adults?* This is done

using a longitudinal register database LISA (Longitudinell Integrationsdatabas för Sjukförsäkrings- och Arbetsmarknadsstudier) compiled by Statistics Sweden where we follow all low educated individuals residing in Sweden from 1992 over a time span of twelve years.

Second Chance Education in Sweden

Sweden has a long tradition of adult education and the central policy of Second Chance Education is clearly to contribute to social inclusion and cultural development. The Swedish Education Act states that education shall 'provide the pupils with knowledge and, in co-operation with the homes, promote their harmonious development into responsible human beings and members of the community' (Skollagen 1985, 4 §). This act also extends the right of education to adults, which is provided at the municipal level and is known as *Komvux*. In the area of Second Chance Education, it is also argued that Sweden considers access to education as a democratic right available to all citizens and directly linked to the development and maintenance of a democratic society. This is clearly demonstrated in the number of *folkbildning* programs, organizations and networks spread throughout the country and funded directly by local municipalities or *Kommuns*, which is where the term *KomVux* originates, from *Kommunal Vuxenutbildning* meaning adult education sponsored by the *Kommun*. In 1998, 195,000 students participated in such courses, with over 80% accessing them in order to complete their upper secondary school qualification, or learning certificate (Statistics Sweden 1998). This has created

pathway opportunities into higher education for many Swedes who did not complete school.

Second Chance Education exists in many different forms and is organized by a range of different operators. It includes: *Municipal adult education* (Komvux) which offers basic, upper secondary and continuing education programs for adults who have not completed compulsory or upper secondary schooling. As the name suggests, it is organized and funded at the municipal or local level, as the municipality has an obligation to provide basic education for adults who lack compulsory school equivalence. Upper secondary education for adults shares the same curriculum as that taught in upper secondary schools, but with adult learning methodologies including recognition of the skills and knowledge of adult students. *Continuing education* takes the form of continued education in an occupation, or training for a completely new occupation, with programs being 6 – 12 months long and specializing in areas such as tourism or information technology. *Advanced vocational training* has only recently (since 2002) become an alternative post-secondary education path, organized by a new national agency and run by municipalities, training companies and other institutions in cooperation with the workplace, where one third of the training period, which can vary from 1-3 years, is carried out. *Education for adults with learning disabilities* (Särvux) is a form of education on its own, run by municipalities for adults with learning disabilities using a specially adapted curriculum, which can lead to an equivalent compulsory school or upper secondary vocational school certificate. *Swedish for immigrants* (SFI): Municipalities also have an obligation to provide Swedish language courses to newly-arrived adult immigrants. *Adult colleges*

(folk high schools): Sweden has a long tradition of adult education - providing courses that are mostly free, non-accredited and non-formal, study circles and cultural activities for all levels of society in a variety of subjects, organized and regulated by a National Council of Adult Education. There are three major organizations that organize and sponsor adult education - Arbetarnas bildningsförbund (ABF) which is the same as the Workers Education Association, Studieförbundet or 'Study Promotion Association', and Studieförbundet Vuxenskolan. *Labour market training* is targeted at the unemployed, to provide basic or supplementary vocational training, funded by the National Labour Market Board and delivered at the local level by a range of training providers.

One of the main goals in Swedish education policy since the late 1960s has been to unify vocational and general education into a single integrated education system, (Lindell and Abrahamsson 2002) and therefore a second chance at completing the upper secondary learning certificate also means being able to take a vocational pathway as well as step into higher education.

The area of Second Chance Education is often overlooked or undervalued and it is not obvious what type of education should be included as Second Chance Education. Second Chance Education is often 'hidden from view' as it can take many and diverse forms which make it difficult both to identify and measure. Though, for the purposes of this paper, Second Chance Education will refer to a range of activities associated with lifelong learning (adult education, continuing education, adult basic education, adult

community education and labour market training) but only those related to formal educational attainments.¹

As mentioned, the question is not only about how to define different settings of educational activities, it is also about how to best judge the effectiveness of education. One way to judge the effectiveness of a country's educational system is to measure the outcomes, or the number of people who complete schooling, at least in the compulsory years. Another way is to investigate employment rates depending on educational status. This strategy does also give a fair idea of what the effect of Second Chance Education could be but the problem with such an approach is that it only shows the effect of education as such and not the effect of Second Chance Education. The effect of Second Chance Education could actually be quite different, something that the aggregate statistics might hide. Individuals who have participated in Second Chance Education are different from others with the same level of education both in the sense that their educational level of investment is made later in life, which might reduce the dividends, and they face employers that might value their educational route differently from that of others.

Previous research

¹ Education after the regular secondary education is often referred to as FE or adult education, or other similar notions. Sometimes these notions are used synonymously but at some points there are small distinctions. In this article we choose to use the term Second Chance Education since we are interested in the economic effects for individuals that were given a second chance to education later in life. Although, when referring to other authors we use the term used by the author.

Looking to outcomes from Second Chance Education from an international perspective there is some research although the scope is rather scanty. However, one relevant report comes from the US where Jacobsen et al. (2005) found positive effects on income after comprehensive education. Similarly Jenkins et al have studied the effects of FE in the UK but found no effects on wages when focusing on mid-career education (Jenkins et al., 2003), although in a later study Jenkins found positive effects in terms of outflow from unemployment among female unemployed (Jenkins 2004).

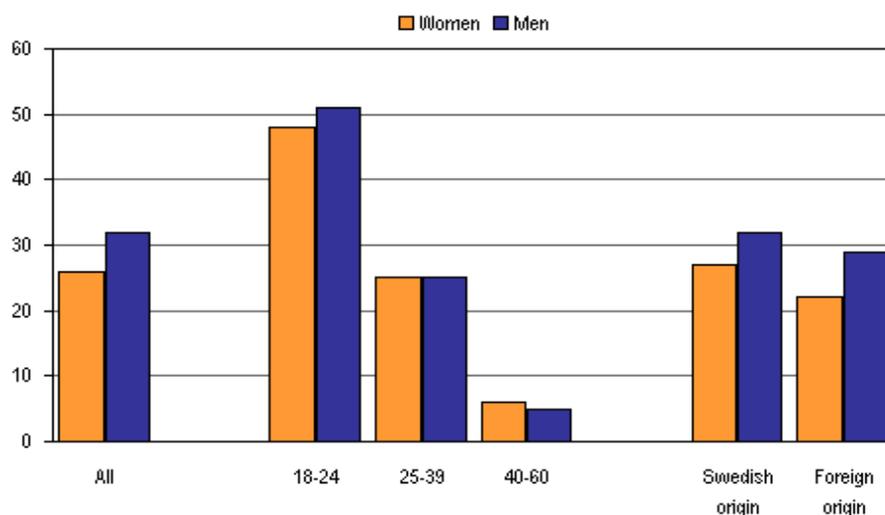
Taking into account the amount of accomplished adult education in Sweden it is surprising how sparse the research is regarding the outcomes from Second Chance Education. Most studies focus on the evaluation of effects of active labour market programmes which in fact showed rather negative immediate effects in the 1990s (OECD, 1996; AMS, 1997; Larson, 2000), while the long term effects from the same time period point toward more positive effects on job chances and wage increases (Strandh and Nordlund, 2008). However, Anders Stenberg has paid a lot of attention to the effects of FE among Swedish participants in a broader perspective rather than to limit the evaluations toward effects of “pure” active labour market policy programmes. One such type of FE is the Adult Education Initiative (AEI) which was introduced by the government in the mid 1990s as part of a strategy to halve the unemployment level by 2000. This contribution is certainly an active labour market policy programme (and is usually treated as one), but the difference at the time was that the AEI aimed to relieve the pressure on traditional active labour market policy programmes by providing unemployed general education within the regular educational system. The main results of

his thesis showed that participants in AEI in the later part of the 1990s had better labour market prospects (in terms of the employment probability and less mobility between branches) as compared with individuals in vocational labour market training. The results on the annual wage earnings showed the opposite effect (Stenberg, 2002; 2003).

Similarly, Albrecht et al (2004) found no earning effects and Axelsson and Westerlund (2005) reported negative effects on the annual wage earnings. Turning to earning effects from adult education in general Ekström (2003) found mixed results. The results imply negative effects from adult education for men born in Sweden while the earning effects were positive for female immigrants. Further, Stenberg and Westerlund (2008) studied the effects of comprehensive education among one of the most exposed groups on the labour market, the long-term unemployed. To put educational recourses into this group seemed to generate strong positive effects. One semester of education largely increased the post program annual earnings for both men and women.

A central activity within the concept of Second Chance Education is as described previously the Municipal adult education “Komvux”. One intention, among many others, with providing this type of education is to pass participants into higher education. Statistics Sweden (2006) provides statistics showing the pathway from Komvux to higher education (figure 1). Around 30 percent of both the female and male participants in Komvux in 2000 continued to higher education as main activity at some point thereafter. The figure 1 also shows that the youngest age group (18-24) to a larger extent than the older seemed to use Komvux as a way to higher education.

Figure 1, Higher education as main activity at some point after municipal adult education among first-year students autumn 2000 in municipal adult education, by per cent. Source: Statistics Sweden, 2007



If a connection can be drawn between Komvux and higher education in Sweden, and there is a link between higher education and labour market participation as often pointed to, then there is arguably a beneficial effect on employment opportunity for Swedes undertaking the range of courses offered through Komvux. The direct or indirect relation between Komvux and labour market participation is one feasible way to measure the beneficial effect of Komvux. However, to improve labour market chances higher education is definitely not the only way to go and therefore we need complementary measures to evaluate the beneficial effects of Komvux. One such would be to measure unemployment duration or income development after participation. In this paper we focus on the latter, the income trajectory after Second Chance Education.

Data and methods

In order to investigate the effect of Second Chance Education we need access to longitudinal micro level data that allow us to compare large numbers of low education individuals, both those who invest and those who do not invest in Second Chance Education, over an extended period of time. Existing survey based panels would for our purposes be too small for any detailed study of such a small subgroup as the low educated, and even less adequate for the subgroup within the low educated who increase their educational level as adults. In addition to this survey based panels suffer from problems of attrition over time that makes longer-term analysis difficult. Attrition makes long term evaluations of outcomes difficult, something that is especially problematic for our purposes as any dividend from Second Chance Education might only be present in the longer run. Second Chance Education could very well have negative effects in the short and medium term as the participation implies a partial or complete withdrawal from the labour market. Our solution to these problems has been to utilize the longitudinal register database LISA (Longitudinell Integrationsdatabas för Sjukförsäkrings- och Arbetsmarknadsstudier) compiled by Statistics Sweden. LISA is a continuously updated database that contains yearly detailed demographic, education, income and employment/unemployment information, collected from public registers, on all individuals residing in Sweden.

For this study we took as a starting point LISA data that included information on all residents between the age of 16 and 54, living in Sweden in 1992, who are followed yearly from 1991 to 2003, with some additional information, for example on class, collected from the 1990 Swedish census. All in all, the dataset consisted of roughly 4.6 million individuals in 1991, with attrition caused by deaths (which are noted) or emigration, leading to roughly 4.4 million individuals still being followed twelve years later. The dataset suffers from virtually no internal falling off and could be considered to represent all cohorts born 1937-1975 living in Sweden during those years, with the exception that it does not take into account individuals within the age span who immigrated to Sweden after 1992. This database was used to create a sample of low educated Swedes in 1992 that could be followed in relation to further educational attainment and labour market outcomes during the period. The first year with available data, 1991, was used for selection purposes only. The individual should in 1991 be between 21-34 years old and have at most compulsory education. The reason for having the downward age limitation was to limit the sample to adults that had passed the age at which they could complete their secondary education without Second Chance Education. The upward age limitation was used in order to keep the sample relatively homogenous (dividends could vary with age) and within a group that could be expected to be on the labour market for the duration of the study. With these limitations the data set was limited to 263.841 low educated individuals that we from 1992 could follow in LISA until 2003. No limitations were placed on initial incomes, which means that the data set used does include initial zero earners. This choice was made as zero earners represent a not unimportant group among both low educated who do and do not participate in second

chance education. All analyses have however also been run using a dataset excluding the zero earners and the results were very similar to the ones presented in the paper.

The size and the quality of the data create some opportunities for dealing with the possibility of selection bias influencing the results. Selection bias is a possible problem for the evaluation of different forms of treatment, for instance an education investment, in relation to labour market outcomes. In our case it is possible that individuals with certain characteristics that are connected with better labour market prospects self-select into Second Chance Education. Such a selection bias into Second Chance Education could lead us to erroneously concluding that there are positive effects of investment when those effects actually are related to the biased selection. Insofar as biased selection is related to characteristics that are observable this is less of a problem as this can be controlled for in a relatively straightforward way. Selection can however be related to unobserved heterogeneity in our sample, something that is more difficult to deal with.

There are a number of strategies for dealing with this problem and in this study we have used three such strategies. The first such strategy is the relatively simple homogenisation of the study population by age. By only analysing the relatively young we limit the analysis of the group to a more comparable population as the group with low education will be different at different ages. Among young low educated individuals the investment by some in Second Chance Education can be regarded as an initial selection. For old low educated individuals the investment in Second Chance Education by some is only the last among many such selections out of the low educated group, meaning that the comparison

group not opting for further education by then is much more particular and (reversely) selected. The second strategy is related to the fact that unobserved heterogeneity is a problem of missing information, and the best solution to it is providing the information that is missing (Heckman 1999). The LISA data here like many data sets does give us access to a great number of variables that can be used as controls. What is most important however is that it does not only give us access to background data on demographics and so on, but that it gives us access to data on labour market performance prior to the participation in Second Chance Education. It is reasonable to assume that income and unemployment experiences prior to treatment could be related to the same unobserved characteristics as income after treatment. Prior income provides variables that become good estimates of productivity related to possible unobserved heterogeneity and very important to control for (See for instance Heckman 1976; 1979).

A third complementary strategy would be to apply a Heckman two-step procedure. This procedure is theoretically interesting when it comes to the desire of controlling for unobserved selection bias into some kind of treatment. A weakness with this approach is however that it empirically can be difficult to locate a necessary identifying variable that may have impact on investment in Second Chance Education but relatively negligible impact on the dependent outcome variables (for a complete description of this statistical method see for instance Heckman 1976; 1979; Breen 1996). We here located an identifying variable² but the result was weaker than we hoped for and the model without lambda was considerably more robust. This together with the fact that the substantial

² A variable that in this case was related to the selection into Second Chance Education but was unrelated to the wage effect of Second Chance Education.

results from both models were similar made us decide to focus on the model without the control for unobserved heterogeneity. The estimated effects of second hand could thus be somewhat upwardly biased relating to uncontrolled selection effects although this should be a minor problem given the possibility in the data to control for key initial differences between participants and non-participants in second chance education most importantly initial income, unemployment and initial education.

Variables

This study investigates the labour market effects of participating in Second Chance Education. In order to measure labour market performance we have in this study used income as the dependent variable. Income is measured in hundreds of SEK³ from employment or self-employment for each year of the study (1993 to 2003). In order to get a correct picture of income development, yearly incomes have been calculated in 1991 year prices using the Consumer Price Index (CPI). Any dividend of Second Chance Education should from this variable be expressed as increasing incomes over time and in relation to those who do not invest in Second Chance Education⁴.

Second Chance Education has, as described above, for long been an integrated part of the Swedish education system in several forms. In order to measure it we have constructed our central independent variable based on change in recorded level of education in LISA. Low educated individuals who increase the level of education in one year are recorded as

³ 100 SEK equivalent to 10,81 Euro (september 2011)

⁴ The articles uses absolute income and not log income as a not unsubstantial number of low educated individuals have 0 labour market income. All analyses have however also been made with log income and the results are very similar to those currently presented.

having completed Second Chance Education that year. This completion could take place any year of the study and could mean either the completion of compulsory education if it is an individual that has not previously completed compulsory education, or it could mean a completion of secondary education if the individual had already completed compulsory education (that further education could mean different levels of achieved education is in the analyses dealt through controlling for initial level of education). As completion could take place during the entire period studied there is a great deal of variation in the amount of time that is available for studying the effects of further education. For this reason we have subdivided the variable into four categories depending on when the further education was completed, year 1-2, year 3-4, year 5-6, and the final category those who did not increase their education during the period.

In table 1 the frequencies for the central independent variable are presented. While most of the low educated young adults do not complete further education during the period a substantial proportion do so. The completion of further education is however not equally distributed over the years and most complete it during the earliest period. A large number of individuals did also complete Second Chance Education in 1998 or later but since this group have little or no time to be evaluated in relation to the dependent variables they are excluded from the population in order not to be added to the comparison group. In analyses (not included in this paper) where we included individuals in Second Chance Education from 1998 and later as a group they however tend to show the same initial patterns as the groups that have completed Second Chance Education earlier during the period which would suggest that they do not substantially differ in outcomes. With this final restriction the population amounts to 208016.

Table 1. Number of low educated Swedes 21-34 furthering education during 1992-2003

Year 1-2 (1992-1993)	7105
Year 3-4 (1994-1995)	2910
Year 5-6 (1996-1997)	3759
Not increased education during 11 year period	194242

In addition to the central independent variable, a number of other variables are used as control variables. These are variables that have been shown to be related to incomes (see for example Rones 1983; Hjerm 2002; Vilhelmsson 2002; The Swedish integration board 2003; Korpi 2001; Loek 1990; Heckman 1999; Okeke 2001; Åberg 2001). Here, sex (categories man or woman), age (categories <24, 25-29, 30-34), region (categories Stockholm, Gothenburg/Malmö, big town, middle town, small town and country side) and country of birth (categories Sweden, Nordic, EU 15/US/Canada/Australia/New Zealand, Other Europe and Outside Europe) are used as basic background controls. For family situation, there is some problem in creating good variables, as cohabiting couples are noted in register data only once a shared child has been born. This has meant that we have access to a somewhat imperfect variable that differentiates between married and everybody else (categories married and other). There was, however, no problem in the data with the number of children in the household, and two variables are used: the number of preschool children (0-6 years old) and the number of school-age children (7-17 years old) in the household.

The most important control variables are however those that relate to the labour market position and human capital the year before the study period. Here the initial level of

education (categories less than compulsory) could be argued to be an important control as it could impact the possible dividend of completing the next level of education. Income in 1992 (in hundreds of SEK) could as argued above be a good proxy for unmeasured factors relating to human capital and productivity.

Methods

The article uses a relatively simple and robust methodology to investigate the impact of Second Chance Education on incomes. For the analysis of the effect of Second Chance Education we are interested in both gaining understanding of the effect in relation to the initial situation, as well as the effect of participating in relation to those who do not participate in the short and long run. For this reason we have chosen an approach which has a descriptive quality where we have analysed the income with OLS-regression separately for all twelve years of the study. The result was 12 models (actually 24 as all models were run with and without Lambda) that were used to create figures that describe the controlled difference in income for the three categories in relation to those who do not invest in Second Chance Education over the 12 year period. In the figures the income difference for each category can be followed before, during and after the participation in Second Chance Education. In the result section it is these figures that are presented, but all models that these figures are based on are presented in full in the appendix. In the tables the standard errors are presented rather than the significance because the data represent the total population and effects thus are real for the population.

The effect of Second Chance Education on income growth.

This article investigates the impact of Second Chance Education on labour market establishment, in terms of wage development. Figure 2 illustrates the main effects of the twelve OLS regressions that were carried out to catch the relative income development before and after educational efforts compared with low educated not in Second Chance Education. This entails a nice overview of the initial economic situation of participants and how it changes after educational investments. Thus, the figure describes the controlled differences in income of the three categories in Second Chance Education year 1992-1993, 1994-1995 and 1996-1997, in relation to low educated not in Second Chance Education. The aim is to locate and illustrate the wage trajectories and not further investigate what causes income growth more generally and the control variables are therefore not presented and not commented on in the text. Although, all regressions with controls included are attached in the appendix 1.

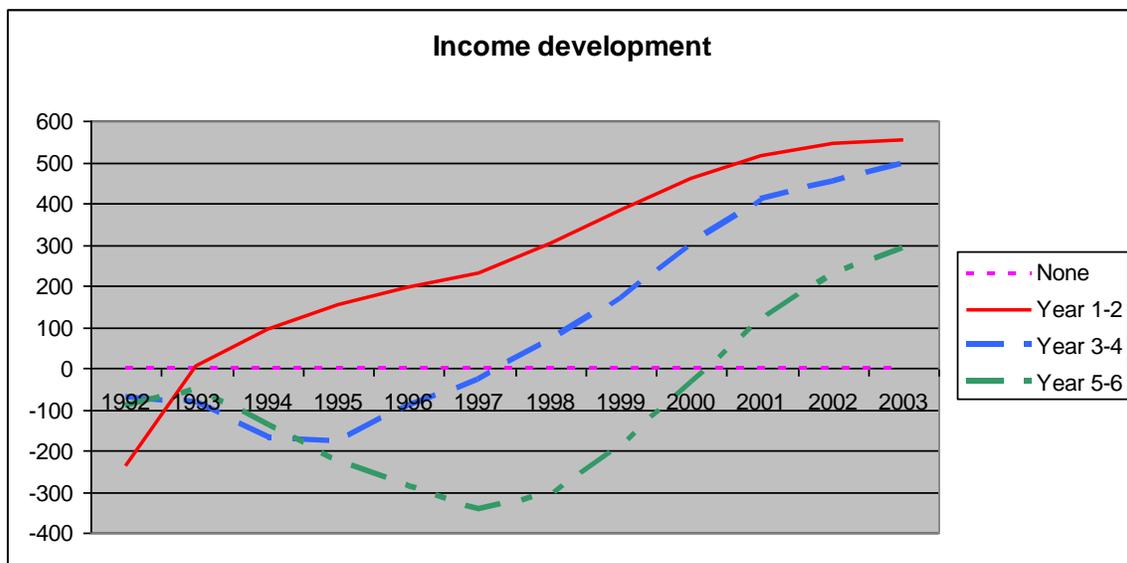
First, the “upper curve” illustrates how the income changes during the eleven years for the initially low educated who in 1992 or 1993 participated in Second Chance Education. Their initial medium income was similar to the income of non-participants but immediately after educational investments their relative yearly income grew from 9100 SEK in 1994 to 55300 SEK in 2003.

At the same time as the group in education in 1992-1993 experienced a positive income take off the incomes of the other two groups (not yet in educational activities) continued in a negative direction. However, as soon as the second group finished education

activities (1994-1995) their relative income also began to grow. The relative income changed from -17200 SEK in 1994 to 6700 SEK in 1998 and up to 49000 SEK in 2003.

Again, a similar pattern is discerned for the last group in education in 1996-1997. The relatively negative wage trajectory continued to a bottom of 34000 SEK but directly after educational investments the trajectory took off in a positive direction, with break even around year 2000, and in 2003 the relative income of this group exceeded the incomes of non participants with almost 30000 SEK.

Figure 2. Yearly labour market income (in 100s of SEK) for low education individuals partaking in further education during 12 year period relative to those not partaking (OLS-regression for each year, controlled for sex, age, region, initial education level 1992, country of birth, presence of young and school age children 1992, unemployment experience 1992 and labour market income 1992).



All groups in Second Chance Education experienced a relatively negative wage development before participating in Second Chance Education. For the first group in education the negative wage trend may largely have to do with the fact that they were in

education. The other groups, that participated in education 1994 or later, however also experienced a relatively negative wage development from 1992 until it bottomed at the end of their respective period in Second Chance Education. This indicates that many of the low educated probably were weakly attached to the labour market and entered Second Chance Education to avoid unemployment. Some were probably on unemployment benefits and therefore experienced a negative wage development while some suffered economically from unemployment spells in the past. Swedish as well as international research points to how rather short unemployment spells begin to cause economic scarring (see for instance Björklund 1981; Bender et al. 1999; Arulampalam 2001; Gregg and Tominey 2005) and it is likely that past unemployment experiences had already made themselves felt through negative wage trajectories.

Being aware that Sweden during the 1990s was in the middle of a difficult recession with high unemployment rates the positive effects on wages after Second Chance Education appear even more impressive. The result for each group in Second Chance Education in the 1990s indicates that this type of investment can function effectively to change a negative trend for low educated.

A question that remains is however if this effect truly is an effect of the increase in the level of education. To enhance the probability that we draw the right conclusions it is appropriate to in table 2 look at how the highest achieved education impacted labour market income in 2003 in our initially low educated sample.

Table 2. OLS regression analysis of labour market income in 2003.

	Model 1		Model 2	
	B	SE	B	SE
FE year 1-2	554	11	228	30
FE year 3-4	494	16	89	32
FE year 5-6	289	14	-126	31
Region (Stockholm ref)				
Gothenburg/Malmö	-61	6	-59	6
Big town	-66	6	-63	6
Middle town	-37	6	-31	6
Small town	-142	10	-138	10
Country side	-129	10	-122	10
Initial level of education (compulsory ref)				
Less than compulsory	-199	8	,848	27
Unemployment in 1992 (0 day ref)				
1-182 days	51	5	53	5
183-365 days	190	7	199	7
Civil status (married ref) Single	44	6	46	6
Country of birth (Sweden ref)				
Nordic	-79	9	-79	9
EU 15, US/CAN/AUS/NZ	-87	17	-90	17
Other Europe	-115	15	-121	15
Outside Europe other	-146	8	-148	8
Age (-24, 25-29, 30-)	-34	3	-6	,53
Sex (man ref) Woman	-285	4	-282	4
Labour market income 1992	,713	,003	,7	,003
Children (no child ref)				
0—6 years	88	2	90	2
7-17 years	58	3	60	3
Educational level 2003 (elementary school ref)				
Compulsory schooling			185	27
High school 1-2 years			253	47
High school 3 years			445	51

Post-gymnasium shorter than 3 years			630	50
University longer than 3 years			957	50
Post graduate studies			913	137
Constant	852	8	751	32
R ²	,33		,34	

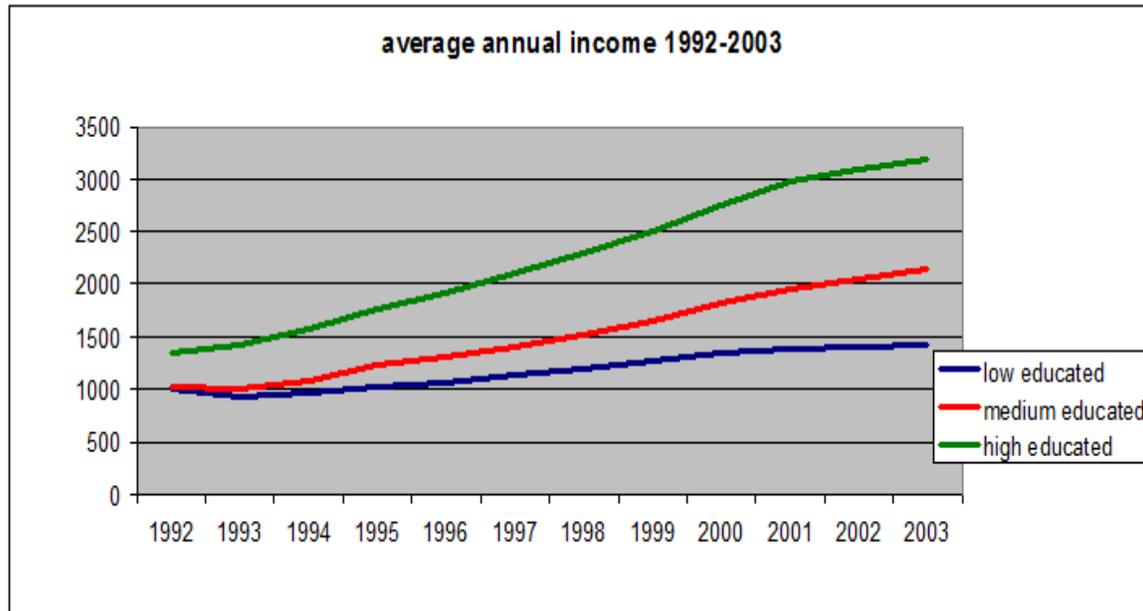
The first model is the same as the one used for figure 2 (appendix 1, year 2003) with the main variables together with the control variables. In the second model we also add the highest achieved level of education in 2003. First, in model one the effect of Second Chance Education, region of residence, initial level of education, unemployment history, civil status, country of birth, sex, age, children, labour market income are controlled for. In 2003, the group in Second Chance Education in 1992-1993 had a yearly work income that was 55400 SEK higher than the reference group (those not in Second Chance Education in the 1990s). Similarly, those in educational activities 1994-1995 earned 49400 SEK more than the reference group and finally, those in Second Chance Education in 1996-1997 earned 28900 SEK more than the reference group.

In the second model we add the level of education in 2003. It should help to explain the extent to which the positive effects of Second Chance Education were related to the actual increase in education level. Referring to this model it is evident that level of education is strongly related to the effect of Second Chance Education since the inclusion of this variable takes away much of the effect of Second Chance Education (from model 1). This outcome indicates that the positive effects to a large extent were related to the actual increase in education level and not mainly to other mechanisms relating to Second Chance Education. As much as up to 60% of the effects related to the increase in

education level and this certainly proves that a second chance of schooling in life has the power of improving long-term labour market chances and economic opportunities for low educated people.

Finally, the results in this section have been presented in absolute terms in relation to those low educated who did not participate in second chance education. This tells us relatively little about the magnitude of the effect as it does not show the income levels of low educated nor the income levels of those with higher education.. To put these effects into perspective figure 3 gives an overview of the income development for individuals aged 18-34 in 1992, split for educational attainment. The educational groups present in the figure are the low educated (those who have not completed secondary education), the medium educated (those with completed secondary education) and the high educated (those with completed tertiary education).

Figure 3. Average annual labour market income (in 100s of SEK) for low educated, medium educated and high educated individuals 18-34 years, in Sweden 1992-2003.



What we can see in figure 3 is firstly the well-known story of increasing income difference between educational groups as the population ages. There are differences between the educational groups at the beginning of the period, but these differences are however much larger by the end of the period. The differential income development is however not an effect of the low educated having no increase in income, which they do, it is rather an effect of the medium educated and the high educated having much steeper increases in income. What is interesting in figure 3 is that it indicates that the effects on income development of participation in second chance education are quite substantial. Those who participate in second chance education have a steeper income development in relation to at least the medium educated. By the end of the period those who participated in second chance education in year 1-2 have all but caught up with the medium educated while those who participated in year 3-4 and year 5-6 are rapidly catching up with the medium educated. This is despite increasing income differences between low educated and medium educated over time.

Conclusions

The results of this study clearly indicate that low educated Swedes who participated in Second Chance Education in the 1990s experienced a rather immediate as well as a long term positive income development compared with individuals not in Second Chance Education. The immediate positive income development can probably be derived from increases in skill and thus quick transfers to jobs on the regular labour market. The impressive long term income development is probably a result of switching educational group and thus labour market career. The connection between “Komvux” and higher education is here probably of importance. In line with previous research there is a clear connection between Second Chance Education and higher education in the first step and in the next step there is a beneficial effect of higher education and labour market participation (and usually also economic advantages). To catch these types of long term effects extensive data series are needed and thanks to the data used in this study we have been able to catch the positive long term economic effects from Second Chance Education in the 1990s.

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Appendix

Table 3. The effect on income after FE among 21-34 year olds with low initial education in 1992-1995

	OLS regressions for Labour Market Income							
	1992		1993		1994		1995	
	B	SE	B	SE	B	SE	B	SE
FE year 1-2	-242,04	7,72	3,38	4,77	91,3	5,98	154,85	6,67
FE year 3-4	-76,57	11,85	-84,31	7,31	-172,52	9,14	-177,15	10,2
FE year 5-6	-94,66	10,54	-55,48	6,48	-139,17	8,11	-231,30	9,02
Region (Stockholm ref)								
Gothenburg/Malmö	-55,5	4,06	-15,30	2,52	-10,43	3,16	,974	3,53
Big town	-61,4	4,1	,10,21	2,53	-9,81	3,18	-7,25	3,55
Middle town	-37,31	4,68	-12,87	2,88	6,87	3,62	26,7	4,04
Small town	-106,56	7,42	-19,3	4,57	-19,65	5,74	-15,86	6,41
Country side	-80,36	7,23	-19,88	4,46	-13,84	5,6	-10,65	6,2
Initial edu-level (compulsory ref)								
Less than compulsory	-225,03	5,78	-33,3	3,60	-47,16	4,54	-54,05	5,09
Unemployment in 1992 (0 days ref)								
1-182 days	-467,68	3,69	-204,6	2,37	-121,6	2,98	-56,38	3,33
183-365 days	-796,27	4,85	-116,5	3,19	-40,78	4,01	48,56	4,48
Civil status (married ref) Single	90,94	4,1	16,68	2,53	22,08	3,17	36,14	3,54
Country of birth (Sweden ref) Nordic								
	-62,24	6,4	-32,7	4,03	-35,159	5,13	-34,41	5,78
EU 15, US/CAN/AUS/NZ	-276,89	10,79	-76,81	6,80	-105,5	8,66	-118,45	9,86
Other Europe	-183,75	10,9	-37,97	6,76	-74,1	8,51	-107,03	9,53
Soviet Union	-391,25	77,37	-10,36	48,78	-80,27	61,98	-115,81	69,57
Outside Europe other	-314,57	5,48	-69,85	3,43	-127,71	4,3	-166,61	4,85
Age (-24, 25-29, 30-34, 35-39, 40-)	100,66	1,94	26,63	1,21	28,34	1,52	17,08	1,7
Sex (man ref) Woman	-420,91	2,98	-62,64	1,93	-118,9	2,419	-147,66	2,7
Labour market income 1992			,80	,001	,751	,002	,736	,002
Children (no child ref)								
0—6 years	34,0	1,73	9,07	1,07	18,778	1,35	25,51	1,50
7-17 years	-12,13	2,11	1,31	1,31	11,91	1,64	18,96	1,83

Constant	1181,94	5,53	149,94		215,86	4,74	296	5,30
R ²	,30		,74		,62		,55	

Table 4. The effect on income after FE among 21-34 year olds with low initial education in 1992-1995

	OLS regressions for Labour Market Income							
	1996		1997		1998		1999	
	B	SE	B	SE	B	SE	B	SE
FE year 1-2	195,9	7,37	230,53	7,85	300,31	8,68	383,21	9,14
FE year 3-4	-94,18	11,22	-31,26	11,95	66,98	13,22	171,68	13,93
FE year 5-6	-288,26	9,94	-343,55	10,55	-306,03	11,68	-189,19	12,34
Region (Stockholm ref)								
Gothenburg/Malmö	-2,512	3,91	-13,61	4,16	-29,11	4,61	-52,57	4,87
Big town	-10,6	3,92	-22,32	4,18	-38,69	4,63	-59,23	4,89
Middle town	27,5	4,47	14,13	4,76	-1,63	5,26	-28,0	5,55
Small town	-34,5	7,08	,54,14	7,53	-94,49	8,33	-121,04	8,78
Country side	-36,23	6,91	,68	7,36	-80,81	8,14	-114,85	8,57
Initial edu-level (compulsory ref)								
Less than compulsory	-68,01	5,64	-77,57	6,036	-104,27	6,71	-133,18	7,1
Unemployment in 1992 (0 days ref)								
1-182 days	-55,78	3,68	-27,32	3,93	-21,32	4,35	4,67	4,59
183-365 days	48,36	4,96	83,45	5,29	94,51	5,86	124,75	6,2
Civil status (married ref) Single	41,83	3,9	36,87	4,15	44,48	4,59	38,68	4,83
Country of birth (Sweden ref) Nordic								
EU 15, US/CAN/AUS/NZ	-40,81	6,45	-45,64	6,93	-61,11	7,71	-71,89	8,17
Other Europe	-110,65	11,02	-116,54	11,88	-131,54	13,33	-123,9	14,24
Soviet Union	-112,75	10,55	-118,86	11,24	-134,49	12,46	-146,32	13,15
Outside Europe other	-48,71	77,92	-43,95	82,74	12,18	91,22	33,3	96,77
Age (-24, 25-29, 30-34, 35-39, 40-)	21,03	1,87	14,41	2,0	7,51	2,21	-2,25	2,33
Sex (man ref) Woman	-190,39	2,99	-194,16	3,18	-243,62	3,32	-256,3	3,72
Labour market income 1992	,729	,002	,729	,002	,741	,002	,741	,003
Children (no child ref)								
0—6 years	28,92	1,66	37,75	1,77	44,36	1,96	54,36	2,06
7-17 years	29,86	2,02	37,03	2,15	44,03	2,38	52,07	2,51
Constant	345,9	5,86	424	6,25	513,82	6,92	617,25	7,31

R^2	,51		,48		,44		,42	
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Table 4. The effect on income after FE among 21-34 year olds with low initial education in 1992-1995

	OLS regressions for Labour Market Income							
	2000		2001		2002		2003	
	B	SE	B	SE	B	SE	B	SE
FE year 1-2	460,98	9,81	515,57	10,44	554,03	10,7	553,6	10,51
FE year 3-4	301,62	14,92	409,84	15,86	452,55	16,24	493,88	15,99
FE year 5-6	-32,48	13,26	120,73	14,14	229,58	14,47	288,99	14,23
Region (Stockholm ref)								
Gothenburg/Malmö	-74,15	5,23	,91,64	5,56	-72,42	5,7	-61,16	5,61
Big town	-85,79	5,25	,95,66	5,58	-81,36	5,7	-65,57	5,63
Middle town	-52,46	5,96	-65,47	6,34	,45,83	6,49	-37,03	6,38
Small town	-144,78	9,42	-168,46	10,02	-162,24	10,25	-141,9	10,08
Country side	-148,27	9,2	-168,2	9,79	-149,39	10,03	-129,35	9,86
Initial edu-level (compulsory ref)								
Less than compulsory	-156,28	7,63	-175,63	8,13	-190,99	8,34	-198,57	8,2
Unemployment in 1992 (0 days ref)								
1-182 days	33,6	4,93	42,9	5,25	37,26	5,37	50,72	5,29
183-365 days	157,77	6,66	173,5	7,09	171,15	7,27	190,14	7,15
Civil status (married ref) Single	39,11	5,18	38,78	5,51	44,39	5,64	43,82	5,54
Country of birth (Sweden ref) Nordic								
	-78,06	8,8	-80,4	9,36	-78,92	9,6	-78,84	9,46
EU 15, US/CAN/AUS/NZ	-106,23	15,39	-107,98	16,48	-115,51	17,0	-86,62	16,8
Other Europe	-129,7	14,14	-125,7	15,07	-137,9	15,45	-114,94	15,21
Soviet Union	-32,59	101,9	118,53	112,0	145,03	113,6	31,9	114,6
Outside Europe other	-213,49	7,31	-188,07	7,79	-164,66	7,99	-146,1	7,87
Age (-24, 25-29, 30-34, 35-39, 40-)	-15,31	2,51	-24,18	2,67	-26,91	2,73	-34,04	2,67
Sex (man ref) Woman	-284,21	3,99	-293,1	4,25	-295,69	4,35	-285,16	4,28
Labour market income 1992	,750	,003	,738	,003	,737	,003	,713	,003
Children (no child ref)								
0—6 years	64,52	2,21	73,39	2,35	81,13	2,41	87,54	2,37

7-17 years	58,06	2,7	60,88	2,87	62,29	2,94	57,84	2,89
Constant	729,06	7,86	,803	8,36	817,56	8,57	851,82	8,43
R ²	,39		,35		,34		,33	