Long Term Consequences of Being not in Employment, Education or Training as a Young Adult. Stability and Change in Three Swedish Birth Cohorts

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1. Introduction

Across the life span, people enter and move along a sequence of behavioral trajectories. These are long-term, age-graded patterns of development with respect to major social institutions such as education, occupation and family. Success or failure in, and the timing and order of, different transitions into and out of various trajectories can have important consequences for a person's life chances (Elder *et al.* 2004). For most people, the transition from youth to adulthood implies a phase in which schooling is replaced by entry into higher education or work. When young people are not in employment, education or training (NEET), this may be regarded as an indicator of failures in relation to this transition, and the group has received increasing attention in Europe over recent years (e.g. Eurofound 2012). One reason for this is of course the high youth unemployment rates, which mean that the youth-to-adulthood transition has become increasingly complex (e.g. Roberts 2009; Billari and Liefbroer 2010). Another is the link between weak labour market attachment as a young adult and the risk for

subsequent social exclusion. Besides social exclusion, the discussion of the consequences of being NEET has also looked at links to criminality, substance abuse and various health problems (Eurofound 2012). Being NEET may thus not only a problem in its own right, but can be expected to be associated with a range of other negative outcomes in both the short and the longer term.

So far most studies have been restricted to analyses of survey data such as the Labour Force Survey and EU-SILC, presumably with high non-response rates in the target group, and short-term follow-up periods.

In this article, we study the consequences of being NEET in young adulthood. We also examine the extent to which patterns associated with these outcomes change across birth cohorts. We shed light on these issues by analysing unique administrative register data covering three complete Swedish birth cohorts born in 1975, 1980 and 1985, three birth cohorts who made the transition from school to work during periods characterized by different opportunity structures for young adults (cf. Roberts 2009).

1.1. Individual resources and structural constraints

A significant proportion of the youth-to-adulthood transition research literature is concerned explicitly with school-to-work transitions, and in some sense this article could be placed in that vein of research as well. However, our prime concern is not so much the school-to-work transition per se, but rather the consequences of failure in that process, and how these may have changed across time. Brzinsky-Fay (2014) notes that due to the lack of a common theoretical foundation in research on school-to-work transition researchers tend to borrow concepts and theoretical fragments from neighbouring fields and disciplines. Oftentimes various forms of labour market theories are used for this purpose. As emphasised by Brzinsky-Fay these theories are unable to explain the complexity of these processes. He

instead advocates the life-course perspective as tool for understanding individual transitions (Brzinsky-Fay 2014: 217). A paradigmatic principle in life-course theory is that individuals' life-chances are embedded in and shaped by the historical times and events that they experience (Elder *et al.* 2004). In order to assess the prospects for establishing a foothold on the labour market, it is important to focus on conditions in terms of both individual resources and structural constraints. For young adults, individual resources are largely determined by family background, schooling and later educational achievement, but they are also linked to personal social problems such as substance abuse and criminality (Bäckman and Nilsson 2011). The most important structural conditions are linked to the educational system and the labour market. Billari (2004) distinguishes between slowly and more quickly changing factors at the structural level, of importance for the youth-to-adulthood transition (see also Buchmann and Kriesi 2011). Labour market fluctuation is an example of a quickly changing factor, whereas the institutions of educational systems are usually changing more slowly. It goes without saying that labour market entry is smoother when there are plenty of jobs, as is the transition to higher education when levels of enrolment are high. Individual pathways may change as a result of unplanned events, e.g. economic crises. But the members of a birth cohort may differ in their experiences and resources and may consequently be affected in different ways (Elder 1999 [1974]). For example, the effects of an economic crisis and rising unemployment tend to be harsher for those members of society with the lowest levels of resources, i.e. youth, immigrants and those who are already unemployed (Palme *et al.* 2002).

- Figure 1, about here -

There was a substantial increase in the Swedish youth unemployment rate during the economic crisis of the 1990s, when the overall unemployment rate tripled over the course of a few years. Since the crisis, employment levels have increased, but remain much lower than

pre-crisis levels (Bäckman 2011). And as is obvious from Figure 1, the youth unemployment rate has continued to fluctuate quite heavily during the period since the crisis. As a result of these fluctuations, the youth-to-adulthood transitions of the three cohorts occurred in very different youth labour-market conditions.

We follow the three birth cohorts from the age of 22, and the year in which each cohort reached this age is depicted with an arrow in Figure 1. The oldest cohort turned 22 in 1997 (arrow A), a year when the unemployment crisis of the 1990s was still having a substantial effect, but when the economy was nonetheless on the verge of recovery. This means that at age 22, the NEET-risk was high for this cohort, but since the youth unemployment rate declined rapidly over subsequent years, the outflow from the NEET-group was likely to be high. The second cohort, born in 1980, turned 22 in 2002 (arrow B). The unemployment rate was fairly low in this year, at least from a post-crisis perspective, but there then followed a rapid increase in youth unemployment. Thus in this cohort, we would expect to find a lower risk for NEET-status at age 22, but a slower rate of exit from the group. Finally, the youngest cohort turned 22 in 2007 (arrow C), a year with an already fairly high youth unemployment rate, and which was then followed by a rapid further increase in the rate of youth unemployment, suggesting both a high risk for NEET-status at 22 and a slow exit rate from the NEET group.¹

Despite being able to propose expected patterns in this way, it should be noted that the NEET-rate and the unemployment rate are not identical measures. The NEET category we use is based on a model used for measuring labour market attachment that primarily employs information on income sources (see further below), and is comprised of a much more homogenous group than the ‘unemployed’ more generally. The category ‘unemployed’ is largely comprised of short-term job seekers (some of them students) who are not included in our NEET category. In a European perspective, Sweden has above average youth

unemployment rates, but unusually low levels of long term youth unemployment (Eurofound 2012:9). Enrolment into education is also of central importance to the NEET-rate. Since the 1980s, the Swedish education system has been undergoing a process of expansion. This expansion was particularly rapid during the 1990s, first and foremost as a result of a program primarily intended to increase the educational level of the unemployed. In addition, enrolment into higher education also expanded during this period (Korpi *et al.* 2015). Between 1993 and 2003, the proportion of youths aged 20–24 who were enrolled in higher education during the autumn increased from 16 to 26 per cent.² As a result of low levels of long-term unemployment and high educational participation among youths, the NEET-rates calculated on the basis of LFS put Sweden at the lower end of EU-countries (Eurofound 2012), despite its high youth unemployment rate. Thus, even though there is a strong co-variation between the youth unemployment rate and the NEET-rate, it is not possible to perfectly predict the latter from the data reported in Figure 1.

1.2. Risk factors and consequences

There is a vast research literature dealing with the question of how socio-economic background and living conditions during childhood and adolescence influence individuals' life chances. Certain factors have been identified as being particularly detrimental; these include persistent poverty, social problems linked to substance abuse and criminality, ill-health and school failure, which is in adulthood linked to an increased risk for poor qualifications, low income, ill-health and social exclusion (see Bynner 2001 for a review). Similar factors have been reported in research on the risk of becoming a member of the NEET group (Eurofound 2012).

As far as consequences are concerned, previous research has shown that future life chances are affected by both resource deficiencies during childhood and adolescence and a weak labour market attachment in young adulthood (Bäckman and Nilsson 2011). As has already

been noted, this article focuses on the latter of these two, but in order to isolate the effects of labour market attachment we need to account for pre-existing factors that may also affect labour-market experiences in both early and late adulthood. The research literature presents several explanations as to why we would expect early experiences of resource deficiencies to have lasting effects on life chances throughout the life course. One hypothesis focuses on what have been termed social imprints (Bäckman and Palme 1998). The hypothesis argues that experiences of precariousness in childhood make an imprint on the individual, which may then manifest itself later on in life in the form of a reduced ability to cope with difficulties, such as unemployment. As regards outcomes, this hypothesis is similar to what have been labelled ‘scarring effects’. The latter hypothesis is more exclusively concerned with the direct consequences of unemployment, primarily on earnings and the risk for future unemployment (e.g. Gangl 2004, Arulampalam 2001). Other hypotheses have directed their focus at life careers and cumulative processes. Here the idea is that there is a risk that resource deficiencies during childhood will trigger an unfavourable life career, where poverty in the family of origin, for example, is linked to school failure, which in turn increases the risk for failing to establish a firm foothold on the labour market (Bynner and Parsons 2002; Bäckman and Nilsson 2011). In the light of these perspectives, belonging to the NEET group may constitute both a step on an already unfavourable life career and a reinforcing or even triggering factor for social exclusion later in life.

As was emphasised earlier, however, individual-level circumstances are not the only factors that can be expected to impact on individual life courses. The historical and structural settings in which individuals grow up and in which important life events, such as the transition into adulthood, take place, may also be expected to be important. The age difference between our youngest and oldest cohorts is only ten years, so we cannot reasonably argue that these cohorts grew up in very different historical settings. But as can be seen from Figure 1, they

did enter adulthood at very different phases of the economic cycle and during a period of extraordinary expansion within the education system.

There are reasons to expect that the larger the NEET-group is, the more it will resemble the population as a whole, implying that as the group expands, it becomes more ‘normalized’ (see e.g. Nilsson and Estrada 2003: 664). This has implications for the outcome of comparisons of future developments within this group at different points in time. We would expect that over the long term, life course outcomes will be worse for a NEET-group formed in the context of a flourishing economy, when the group is small, as compared to a NEET-group formed during a recession, when the group is larger. However, this difference in outcomes would be a compositional effect, and in an analysis where we were able to perfectly control for selection into the NEET group, any such effects would disappear. However, the nature of the labour market that the NEET-group members encounter as they try to (re)establish themselves is of course also likely to play an important role, since as we already have argued, structural constraints, in addition to individual resources and choices, are also crucial to individual prospects for labour market inclusion.

We proceed now by describing our dataset and how we have chosen to measure risk factors and outcomes. Thereafter follows a section that presents our methodological considerations. The results presentation begins with a descriptive section in which we report the size of the NEET group across different ages in the three cohorts, and also the extent to which this precariousness appears to be temporary or more permanent. In the final analysis, in which we try to isolate the effect of NEET-status on the risk for social exclusion over subsequent years, we employ the propensity score matching technique. The question we ask in this part of the analysis is: does NEET-status trigger/reinforce the risk for exclusion in subsequent years or is NEET-status merely another step on an unfavourable life career, already set in motion during childhood and adolescence? The article concludes with a discussion of the results.

Throughout, we compare both the three cohorts and the results for men and women respectively.

2. Data and operationalizations

Our data set comprises all persons born in 1975, 1980 and 1985 who were resident in Sweden at the age of 16 ($N \approx 315,000$).³ The data extend through the year 2010 and have been compiled by combining information from Statistics Sweden's LISA database, the In-Patient Discharge Register at the National Board of Health and Welfare, the Convictions Register at the National Council for Crime Prevention, and student registers from the National Agency of Education (Bäckman *et al.* 2014). The data set includes information on incomes, school results, educational level, hospital care (diagnoses), criminal offences (convictions) and demographic variables. Much of this information is also available for the cohort members' parents.

2.1. NEET status

Both in policy documents and the research literature, there are a number of different definitions of young people located outside both the labour market and the education system. Within the European Union, the concept NEET, i.e. 'Not in Employment, Education or Training', is now frequently used to denote this group. This concept has been subject to much criticism since it brings together under the same label a heterogeneous group of individuals with very different needs (see e.g. Yates and Payne 2006). The group comprises individuals who are unemployed, persons in a temporary transitional phase (e.g. between education and job), those outside these systems due to ill-health, and also those who have voluntarily chosen not to work or participate in education. The most central indicator employed within the EU covers individuals at 15–24 years of age. The EU indicator is based on interview data from the Labour Force Surveys and refers to a short period of time (Eurofound 2012:24).

It is a fact that the shorter the reference period, the larger and the more heterogeneous the group will appear to be. This is because when a short reference period is used, the measure will capture those who are only temporarily located outside the labour market and the education system. For some of the 'EU-NEETs' the status has no links whatsoever with problems on the labour market and social exclusion. If we instead extend the reference period, we will capture a less heterogeneous group that includes a stronger concentration of social problems and difficulties establishing a foothold on the labour market and in society.

In this article we use an indicator of NEET which has been used in several Swedish studies. It is based on a model used for measuring labour market attachment that primarily employs information on income sources as a means of categorising the population according to their degree of labour market attachment. The 'Core labour force' is comprised of those who can support themselves by means of labour market income. All those who earn at least 3.5 Price Base Amounts (PBA) during a year are assigned core labour force status. The PBA is a measure used by the government to calculate benefits in various social insurance programs. It is linked to the Consumer Price Index and is thus not eroded by inflation. In 2013 one PBA was equal to SEK 44,500 ($\approx$ € 5,000). The reason for choosing this particular income limit is that it approximates the gross income from one year of full-time employment in one of the lowest paying jobs in Sweden. Besides wages and entrepreneurial incomes, the concept Labour Market Income also includes those incomes from social insurance that are linked to employment, such as sickness allowances and payments from the parental insurance system, but not income sources such as unemployment benefits, student allowances, disability pensions, etc. The 'Unstable labour force', whose labour market income exceeds 0.5 PBA, but does not reach 3.5 PBA has a lower degree of attachment to the labour market. 'Students' are defined as those with labour market incomes below 3.5 PBA who have either received student allowances (loans and benefits) or who were registered as students in higher education.

‘NEETs’ are defined as those with labour market incomes below 0.5 PBA and who were not defined as students. Those primarily supported by unemployment insurance and those on disability pension form their own categories. A person must have been a Swedish resident and alive during the whole year to be included in the population for that year.

This definition of NEET-status, results in a slightly smaller and less heterogeneous group than for example the EU indicator based on the Labour Force Surveys (see discussion above).

We focus our analyses on young adults. We have chosen to follow individuals who were NEETs at age 22. The reason for choosing this age as starting point is because at this age, most people have finished upper secondary school (in Sweden graduation usually occurs at age 19), and the males have completed compulsory military service.⁴ The youngest cohort can only be followed for three years and the oldest cohort for 13 years, i.e. until the year in which they turn 35.

2.2. Outcomes

The outcome employed in the PSM analyses is social exclusion, which we define as belonging to either the NEET-group or to the disability pension group. Although the addition of those on disability pensions means that we include a health dimension, we make no claims to be fully measuring social exclusion. However, the dimensions that we include – labour market exclusion, educational exclusion, and ill-health – nonetheless constitute three central aspects of the concept (see e.g. Levitas 2000). The outcomes are measured annually from age 23 in all three birth cohorts.

2.3. Risk factors and propensity scores

To obtain the propensity scores used for the matching of NEETs with non-NEETs, we first run logistic regressions. As suggested in the literature (e.g. Khandker *et al.* 2010), these

analyses include a large number of risk factors for NEET-status at age 22. The logistic regression models were estimated separately for each cohort and for men and women.

Firstly, we include a set of factors indicating living conditions in the family of origin. These include immigrant status of both the cohort member and his/her parents, parents' receipt of means-tested social assistance benefits – as an indicator of material deprivation – and the parents' educational level.

Secondly, we include a set of factors intended to serve as indicators of the cohort member's own cognitive ability, educational achievement and behaviour: final grades from compulsory school, success/failure in upper secondary school, and criminality as indicated by convictions at the age of 15–22.⁵

As health indicators, we include variables derived from the in-patient discharge register. We separate between diagnoses linked to substance abuse, mental disorders and other diagnoses (diagnoses related to pregnancy are excluded).

We also include a variable indicating whether or not the cohort member was a parent at age 22. Finally, geographical location must be accounted for (Smith and Todd 2005) since this might affect the likelihood of 'treatment' (in our case NEET-status, see below). For this reason we control for the type of municipality in which the cohort member resided at age 22. The classification of municipalities follows that of the Swedish Association of Local Authorities and Regions, which is based on structural parameters such as population size, commuting patterns and economic structure (SKL 2004).

3. Methodological considerations

The analysis follows three steps. Firstly, we look at the development of NEET-status within the three cohorts. Secondly, we fit a logistic regression model in which risk factors for NEET-

status at age 22 are identified. The aim of the regression analysis is to produce the propensity scores used in the final step, where we analyse the effect of NEET-status on subsequent labour-market risk.

To perfectly assess the effect of NEET status on the risk for future exclusion, we would have needed to randomly assign individuals to NEET-status in early adulthood. Since this is not possible, we instead apply propensity score matching (PSM) in order to produce comparable groups of NEETs and non-NEETs. With PSM we estimate the probability (propensity score) of being NEET at age 22 by means of logistic regression using observed characteristics. The propensity score obtained is then used to match the ‘treatment group’ (i.e. NEETs) at age 22 with ‘untreated’ social twins who, based on observed characteristics, ought to have been members of the treatment group but were not. The pairs of treated and untreated individuals are thus not chosen on the basis of observed characteristics, but on the basis of the estimated probability of being members of the treatment group. In order to maximize the contrast, we compare the NEET-group with those who are either in the core labour force or students, i.e. other categories such as the unstable labour force and those on disability pensions are excluded from the analysis.

There are a number of alternative methods of matching and the literature suggests employing several of them in order to investigate the robustness of the results. The technique deemed to be most reliable as far as good matches are concerned is the so called 1-to-1 nearest neighbour matching method, in which the nearest neighbour, in terms of propensity score, is chosen as a match. Nearest neighbour matching is often performed using a caliper, which involves specifying a limit for how much the propensity score can differ within a pair.⁶ The drawback of 1-to-1 nearest neighbour matching is that the use of the technique involves a risk of losing observations, which in some instances makes the results less efficient. Given the fairly large

sample used in this study, however, this risk is reduced (3–4,000 individuals in the treatment group within each cohort and sex).⁷

The propensity score has been described as a ‘balancing score’, which refers to the need for the distribution of observed covariates to be similar between treated and untreated subjects who have similar values on the propensity score. This assumption needs to be carefully investigated to ensure the comparability of cases (Austin 2011).

The most important output produced by PSM methods is most commonly the Average effect of Treatment on the Treated (ATT), which is simply the outcome difference between the matched treatment non-treatment groups (see e.g. Becker and Ichino 2002 for a more formal definition). However, since we believe it suits our purpose better, we have chosen to report the outcomes for the treatment and non-treatment groups instead of the ATT.

Despite the convincing results reported in the seminal article by Rosenbaum and Rubin (1983), indicating that PSM does a very good job of mimicking truly randomized designs, criticism has been directed at the belief that this method can replace randomization. Not least, it has been shown that PSM is sensitive to the set of variables included in the regression analysis used to estimate the propensity scores (Smith and Todd 2005). Thus there is always a risk that the conditional independence assumption (CIA) is violated, i.e. the assumption that there are no unobservables that can bias the probability of treatment and the effect of treatment on outcome. However, there are techniques available to simulate potential confounders and how these may affect the robustness of results (Nannicini 2007; Ichino *et al.* 2008).

4. Results

Figure 2 presents the NEET-rates over time in the three cohorts from age 22. At age 22, we find the highest NEET-rate in the oldest cohort. As is clear from the graphs, and as has

already been mentioned, this cohort turned 22 in 1997 and the effects of the 1990-crisis are obvious, although they also decline rapidly, and over the longer term this cohort is not characterised by any excess NEET-risk by comparison with the other two.

- Figure 2, about here -

The rates in the two younger cohorts at age 22 are fairly similar. However, for the youngest cohort, the effect of the financial crisis in 2008 and 2009 is evident, particularly among the men, where we note a rapid increase in the NEET-rate from age 22 (2007) to 24 (2009). For the middle-cohort, the NEET-rate remains fairly flat throughout the years examined, oscillating around six per cent.

Obviously, the economic crises in the 1990s and in 2008/09 are important for the NEET-risk among young adults. Thus the crises are also likely to affect the composition of the NEET group at various phases of the business cycle. For this reason we need, in order to isolate the effect of NEET-status on subsequent exclusion risks, account for factors determining the NEET-risk.

Although being of crucial importance for the analysis, in PSM the regression analysis is merely a tool for calculating the propensity scores. Thus the results from these analyses are not reported. The aim of the PSM analyses is to determine the extent to which NEET-status at age 22 is a major risk factor *per se* for future exclusion, or whether prior resource deficiencies are more important. As was mentioned in the methodological section above, we employ 1-to-1 nearest neighbour matching. In each analysis 3–4 observations from the treatment group are excluded from the analyses due to an absence of common support.⁸

Following the matching process, a comparison of the distribution of the variables employed in the logistic regression across the treatment and non-treatment groups suggests a good balancing of these factors across the two groups (see Table A1 in Appendix).⁹ In some instances, the differences between treated and untreated subjects are still significant after matching, but in all of these cases the differences are nevertheless very small.

Figures 3 and 4 report how the risk for social exclusion (i.e. NEET status or disability pension) develops among individuals who were NEETs at age 22 and also among those who were instead in the core labour force or were students. We then examine the same outcomes subsequent to conducting PSM in Figures 5 and 6.

Figures 5 and 6 reveal a number of important results. As expected, we find the highest exclusion risk among NEETs in all of the cohorts. Even though there is a minority among the NEETs who remain excluded in all three cohorts, there are significant and sustained gaps in the exclusion risks between NEETs and the control group comprising members of the core labour force and students.

Looking across the cohorts we note an increasing exclusion risk, but only among NEETs. There are no differences across cohorts in the control group for either women or men. Taken together, the male and female patterns are very similar, although the difference in the risk for social exclusion between NEETs in the two youngest cohorts is greater among the men.

- Figure 3 and 4 about here –

Figures 5 (women) and 6 (men) correspond to the graphs in Figures 3 and 4, but after propensity score matching. The matching of course only affects the outcome of the untreated group, and as was described above, the non-treatment group is now almost identical to the treatment group with respect to the independent variables in the logistic regression (see Table

A1 in Appendix). Thus since the untreated subjects are now a risk group with respect to NEET-status, their exclusion risk has increased by comparison with the trajectories shown in Figures 3 and 4, resulting in a much narrower gap between NEETs and core labour force/students over both the short and the longer term. However, there is still a gap between the two groups of approximately 10 percentage points in the oldest cohort, increasing to 20 percentage points in the 1980-cohort and to 30 in the youngest cohort. In formal terms, this is the Average effect of Treatment on the Treated (ATT) mentioned earlier. This pattern is fairly equal across the sexes, and it suggests that NEET-status has an independent detrimental effect on exclusion risks and on chances for inclusion, which increases across cohorts. The differences between treatment and the non-treatment groups, and between the treated subjects across the cohorts, are significant ($p < 0.05$) across all time points in both graphs. Taken together, controlling for selection into NEET-status reduces the exclusion risk gap between the NEETs and the included, but not entirely. Thus, there seems to be an independent effect of NEET on this outcome.

- Figure 5 and 6, about here -

However, this interpretation depends on the conditional independence assumption (CIA) not being violated, i.e. the assumption that there are no unobservables that can bias the probability of treatment and the effect of treatment on outcome. Since this is a rather strong assumption, we have performed the sensitivity analyses suggested by Ichino *et al.* (2008) that test the robustness of our results.¹⁰ These suggest that even though there may be omitted factors that could slightly reduce the effect of NEET status on later social exclusion further, it is highly unlikely that a factor exists that could explain away the effects reported above. These analyses (not shown here) are available upon request.

5. Conclusion

Our main research question has focused on the long term consequences of being NEET: We have analysed the risk for future social exclusion among NEETs, and how this risk varies between three birth cohorts for which the youth-to-adulthood transition occurred in very different labour market conditions.

An analysis of future exclusion risks among individuals with disparate degrees of labour market attachment at age 22 shows that the trajectory of the NEET-group is distinctly worse than that of members of the labour force or students, even over the long term.

The finding that those with weak ties to the labour market also run a higher risk for exclusion from the labour market in subsequent years is in every sense an expected one. However, we have been able to show that this is not primarily driven by earlier resource deficiencies having caused both NEET-status and subsequent exclusion. To isolate the effect of NEET-status, we have utilised propensity score matching. The results show that the NEET-group has an elevated risk for social exclusion over both the long and the short term. Over the longer term, the exclusion risk of the NEET-group was 2–4 times higher than that of the members of the core labour force or students. Thus belonging to the NEET-group in early adulthood seems to have an independent effect on the development of chances and risks on the labour market for both men and women.

The pattern showing an elevated risk for the NEET-group is repeated across the cohorts, but we also find that the effect of NEET-status increases across the cohorts. Thus, NEETs in the younger cohorts run higher risks of exclusion than their counterpart in the oldest cohort. Over the longer term, this is particularly visible among the men.

The fact that degree of labour market attachment has such clear and long-lasting implications indicates that the problem of youths not in employment, education or training cannot be reduced to a transient phase, in which they are, for instance, merely travelling, working

abroad or have *chosen* not to work or to take part in education for a limited period of time for some other reason. Rather, it seems as though being NEET is both a step on an already unfavourable life career and a triggering factor for subsequent social exclusion.

Explanations for NEET-status and labour market exclusion cannot be sought only at the individual level. It is obvious from our results that changes in the risk level are closely linked to the business cycle. This implies that measures to enhance employability among youths risk having only limited chances of success unless measures aimed at influencing the opportunity structures for young adults, primarily the supply of jobs but also access to education, are implemented simultaneously.

The finding that the risk for social exclusion is increased among those who in early adulthood experience problems finding a foothold on the labour market or in the education system is worrying. Although the chances of *not* being subsequently excluded are greater than those of remaining excluded even within this group, the fact remains that they nonetheless experience a substantial excess risk for exclusion later on in life. This implies that unless the labour market situation for youths improves, we risk seeing a future in which large segments of future generations will have severe difficulties finding a foothold on the labour market; not only in the initial phase of the youth-to-adulthood transition, but also over the longer term, which will have a negative effect on their living standard throughout the life course.

In a European perspective Sweden has been successful at keeping the NEET-rate at a low level. This has implications as far as generalizability is concerned. Firstly, the low levels of long term youth unemployment and the high levels of educational participation imply that Sweden may serve as a conservative test-case: if we find such clear cut effects of NEET-status on future exclusion risks in Sweden, they are likely to be present in most other European countries. Secondly, the generosity and universalism of Scandinavian welfare states

have been shown to mitigate effects of precariousness on the labour market, in particular generous unemployment insurances seem to promote effective job search and greater mobility among workers which creates vacancies which both insured and uninsured unemployed can benefit from (Burdett 1979; Gangl 2004). Still, there are indications that older rather than younger job seekers benefit more from these potential effects (Gangl, 2004), let alone the expectation in main stream economic theory that generous unemployment benefits tend to increase the duration of unemployment periods. Thus, the generalizability of Swedish/Scandinavian example is not so obvious. Instead the disparate potential effects that the generous welfare state model may point to the need for further comparative studies to unfold the impact of the stable welfare state institutions which in a single country study like this one are more or less constant and not possible to disentangle.

Notes

¹ In 2007 Statistics Sweden changed its definition of unemployed in order to comply with the ILO-convention. Previously, students who were also job seekers were not coded as unemployed. Since 2007 they have been. However, in Figure 1 we have excluded students from the unemployed category in order to make the figures from before and after this shift comparable.

² <http://www.scb.se/uf0507-en/>, accessed March 17, 2014.

³ Born 1975 = 107,000; born 1980 = 103,000; born 1985 = 106,000.

⁴ Since the 1990s, the number of persons in compulsory military service in Sweden has gradually declined, and it was finally abolished in 2010.

⁵ The age of criminal responsibility in Sweden is 15.

⁶ However, the results presented below are insensitive to matching with or without caliper.

⁷ We have employed the psmatch2 module in STATA to perform PSM (Leuven and Sianesi 2003).

⁸ In matching with common support, treated observations with propensity scores outside the range of propensity scores found among the untreated observations are excluded from the analysis.

⁹ Due to space limitations, Table A1 only reports the balance scores for the 1975 cohort. Balance scores for the other two cohorts are very similar to those of the oldest cohort and are available upon request from the authors.

¹⁰ This test has been implemented in Stata with the programme 'sensatt' (Nannicini 2007).

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Appendix

Table A1. Balance table. 1975 cohort.ⁱ

Variable		Men			Women		
		Treated	Mean Control	% bias	Treated	Mean Control	% bias
<i>Immigrant background (ref=both parents Swedish):</i>							
Native, both parents immigr.	Unmatched	0.05	0.03	11.7***	0.06	0.03	12.7***
	Matched	0.05	0.05	3.9	0.06	0.05	1.4
Immigrant	Unmatched	0.11	0.05	22.4***	0.11	0.05	21.1***
	Matched	0.11	0.10	1.9	0.11	0.10	3.1
<i>Parents' means tested social ass. receipt (ref=none):</i>							
Parents: social assist. 1-2 yrs	Unmatched	0.12	0.09	12.3***	0.13	0.08	16.1***
	Matched	0.12	0.12	1.6	0.13	0.13	-0.2
Parents: social assist. 3+ yrs	Unmatched	0.25	0.09	43.7***	0.27	0.09	46.9***
	Matched	0.25	0.25	-1.2	0.27	0.26	1.8
<i>Parents' educational level (ref=compuls. school):</i>							
Parents: no info. of educ.	Unmatched	0.08	0.08	2.3	0.07	0.06	4.9**
	Matched	0.08	0.08	1.7	0.07	0.06	2.9
Parents: upper sec. educ.	Unmatched	0.48	0.45	6.0**	0.50	0.44	12.1***
	Matched	0.48	0.48	-1.1	0.50	0.53	-6.1**
Parents: tertiary educ.	Unmatched	0.22	0.34	-25.7***	0.19	0.37	-40.4***
	Matched	0.22	0.23	-2.2	0.19	0.19	0.9
<i>School grades compulsory school (ref=3rd quintile):</i>							
No info.	Unmatched	0.03	0.00	19.5***	0.03	0.00	18.9***
	Matched	0.03	0.02	4.3	0.03	0.03	-2.8
1st quintile	Unmatched	0.50	0.21	62.5***	0.39	0.09	73.9***
	Matched	0.50	0.52	-4.8	0.39	0.40	-1.6
2nd quintile	Unmatched	0.19	0.19	-0.9	0.20	0.12	21.3***
	Matched	0.19	0.18	2.7	0.20	0.20	0.4
4th quintile	Unmatched	0.09	0.19	-29.2***	0.13	0.23	-25.8***
	Matched	0.09	0.09	0.1	0.13	0.13	1.1
5th quintile	Unmatched	0.07	0.20	-39.1***	0.09	0.36	-68.0***
	Matched	0.07	0.06	0.8	0.09	0.09	0.9
<i>Upper secondary school (ref=graduated):</i>							
Never started	Unmatched	0.04	0.01	24.4***	0.04	0.00	25.5***
	Matched	0.04	0.03	6.2*	0.04	0.04	1.9
Dropout	Unmatched	0.22	0.06	49.0***	0.24	0.06	51.7***
	Matched	0.22	0.23	-2.3	0.24	0.24	-0.7
<i>Criminal convictions (ref=none):</i>							
1 conviction age 15-21	Unmatched	0.17	0.14	10.5***	0.10	0.05	20.2***
	Matched	0.18	0.16	2.9	0.10	0.10	-0.1
2+ convictions	Unmatched	0.21	0.06	47.0***	0.03	0.01	16.5***

age 15-21	Matched	0.21	0.21	-0.2	0.03	0.02	7.3**
<i>Hospital diagnoses:</i>							
Substance abuse	Unmatched	0.03	0.01	16.7***	0.02	0.00	15.7***
	Matched	0.03	0.02	8.1**	0.02	0.02	5.2
Mental disorders	Unmatched	0.04	0.01	20.5***	0.07	0.02	25.9***
	Matched	0.04	0.03	2.6	0.07	0.06	5.7*
Other	Unmatched	0.24	0.19	13.4***	0.27	0.20	17.7***
	Matched	0.24	0.23	2.6	0.27	0.24	6.6**
<i>Cohort member parent at age 22 (ref=no):</i>							
Yes	Unmatched	0.03	0.02	6.1***	0.37	0.05	85.3***
	Matched	0.03	0.03	4.3	0.37	0.37	-0.8
<i>Municipality type (ref=Metropolitan):</i>							
Suburban	Unmatched	0.12	0.13	-3.9*	0.11	0.12	-3.4
	Matched	0.12	0.11	0.5	0.11	0.11	1.1
Large cities	Unmatched	0.28	0.36	-16.0***	0.30	0.38	-16.9***
	Matched	0.28	0.27	2.4	0.30	0.29	1.3
Commuter Municipality	Unmatched	0.05	0.06	-2.2	0.06	0.04	8.8***
	Matched	0.05	0.05	-0.9	0.06	0.06	-0.5
Sparsely Populated	Unmatched	0.05	0.02	14.8***	0.04	0.02	9.8***
	Matched	0.05	0.06	-3.3	0.04	0.03	3.6
Manufacturing munic.	Unmatched	0.05	0.07	-9.1***	0.06	0.05	5.2***
	Matched	0.05	0.04	1.3	0.06	0.06	-0.2
Other, > 25,000 inhab.	Unmatched	0.16	0.12	8.8***	0.15	0.11	11.7***
	Matched	0.15	0.16	-1.4	0.15	0.17	-4.5
Other, < 25,000 inhab.	Unmatched	0.12	0.08	14.1***	0.12	0.07	16.9***
	Matched	0.12	0.13	-1.6	0.12	0.13	-4.4

ⁱ Balance tables for cohorts 1980 and 1985 available upon request.

*** p<0.001; ** p<0.01; * p<0.05

Figures

Figure 1. Youth unemployment rate (%). 1980-2007: 16–24-year-olds; 2005–2012: 15–24-year-olds.

Source: Statistics Sweden, LFS.

Note: Arrows A to C indicate the years in which the three different birth cohorts (1975; 1980; 1985) reached age 22.

Figure 2. Proportion (%) NEETs in three birth cohorts.

Figure 3. Proportion (%) excluded at different ages among NEETs and core labour force (CLF)/Students at age 22.
Women.

Figure 4. Proportion (%) excluded at different ages among NEETs and core labour force (CLF)/Students at age 22.
Men.

Figure 5. Exclusion risk for treated (NEET at age 22) and controls after PSM. Women.

Figure 6. Exclusion risk for treated (NEET at age 22) and controls after PSM. Men.