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Abstract
The Nordic countries share many features as far as welfare state and labour market institutions are concerned. However, the upper secondary school systems differ significantly in how the vocational tracks are organized. In Denmark and Norway vocational tracks are dual, i.e. they combine school based education and work place apprenticeships, whereas in Finland and Sweden they are primarily school based.

We explore the claim that the organization of vocational tracks can provide one important explanation to between country variations in school-to-work transition success rates. By answering the questions "Do dropout rates both in general and in different educational tracks differ between the Nordic countries?" and "Is the labour market effect of dropping out from a vocational track different in Finland and Sweden as compared to Norway and Denmark?" we try to evaluate this claim.

We use annual longitudinal data from public records in the four countries. In Norway and Sweden the data cover the total populations whereas in Finland and Denmark we use large samples of the populations. To measure labour market outcomes we utilise a model prepared particularly for use on public income records and which has been calibrated to enhance comparability across the Nordic countries.

We find the highest dropout rates in vocational tracks in Norway and the lowest in Finland. The results also indicate that the relative effect of dropping out from a vocational track is least detrimental in Sweden and most detrimental in Norway, as far as labour market exclusion is concerned. For those with diplomas from vocational tracks the results confirm previous findings indicating that apprenticeship based systems provides a smoother school-to-work transition process than school based systems.

The smaller risk among Swedish vocational school dropouts is to a large extent explained by the system for adult education in Sweden which seems to be better equipped to embrace dropouts and provide them a second chance than the systems in the other countries.

Sammanfattning
De nordiska länderna har många likheter, inte minst när det gäller välfärdsstatens och arbetsmarknadens institutioner. Länderna skiljer sig dock betydligt åt i hur man valt att organisera yrkesutbildningen på gymnasienivå. I Danmark och Norge är yrkesutbildningen lärlingsbaserad, dvs. utbildningen sker växelvis i skolan och på reguljära arbetsplatser, medan yrkesutbildningen i Finland och Sverige primärt är skolbaserad.

I denna rapport undersöker vi påståendet att det sätt på vilket man organiserar yrkesutbildningen i ett samhälle är en viktig förklaring till hur väl övergången mellan skola och arbetsliv fungerar. Genom att besvara frågorna "Skiljer sig avhopparfrekvensen åt mellan de nordiska länderna?" och "Skiljer sig effekten på chanserna på arbetsmarknaden av att hoppa av gymnasiet åt mellan de nordiska länderna?" försöker vi utvärdera detta påstående.

Vi analyserar longitudinella registerdata i de fyra länderna. För att mäta utfall på arbetsmarknaden använder vi en mätmodell som utarbetats speciellt för att användas på administrativa registerdata och som kalibrerats för att skapa jämförbarhet mellan de nordiska länderna.

Vi finner den högsta avhopparfrekvensen i yrkesutbildningen i Norge och den lägsta i Finland. Resultaten visar också att effekten av att hoppa av från yrkesutbildning på risken att stå utanför arbetsmarknaden är störst i Norge och lägst i Sverige. För dem som gått igenom yrkesutbildning bekräftar analyserna resultat från tidigare forskning på så sätt att övergången skola-arbete fungerar bäst i de danska och norska lärlingssystemen.

Den lägre risken för exkludering på arbetsmarknaden bland svenska avhoppare från yrkesutbildning förklaras i stor utsträckning av att den svenska vuxenutbildningen tycks vara bättre på att fånga upp avhoppare och ge dem en andra chans än systemen i de andra länderna. När vi följer upp eleverna sju år efter skolstart finner vi att en avsevärt större andel av de svenska avhopparna studerar, framför allt på högskola och KomVux.

Introduction

Of the Nordic countries Finland and Sweden were particularly hard hit by the unemployment crisis of the 1990s. And the heritage of this experience is still vivid in these two countries. Norway and Denmark did much better during the recession years. During the crisis unemployment rates sky-rocketed in both Finland and Sweden. This had significant impact on the living conditions for many groups. Unemployment increased across all socio-economic categories. In Sweden most groups could, however, benefit quite well from the economic upswing during the latter half of the decade and the first years of the 2000s (Fritzell et al. 2007). For young adults the unemployment and inactivity rates decreased during the economic upswing as well, but in 2002-03 they started increasing again and now by a higher rate than among the rest of the working age population (Socialstyrelsen 2010). Finland was even harder hit by the 1990 crisis with extreme unemployment levels, in particular for youth (Kautto 2001). In Finland, however, youth unemployment has decreased more or less continuously since 1996 and in 2007 the official unemployment rate for people at 20-24 years of age was below that of Sweden. In Denmark and Norway youth unemployment rates were virtually unaffected by the economic downturn in the 1990s and have remained stable at low levels also in an international perspective (Socialstyrelsen 2010).

Both in academic and political discussions it is often argued that the organisation of vocational tracks is an important institutional dimension as far as the school-to-work transition is concerned. The OECD claims for instance in a recent report that rigid labour markets need to be balanced by a well-developed system of apprenticeship in order to make the school-to-work transition smoother (Scarpetta et al. 2010). And it appears as if such systems also increase the demand for youth labour (Christopoulou and Ryan 2009).

Therefore, much of the debate concerning the high youth unemployment and inactivity rates has in Sweden focused on the upper secondary school and the high dropout rates there. Some political actors have argued strongly for a reform of primarily the vocational tracks and measures in that direction have also been taken (see below). It is not clear on what empirical ground these arguments stand, since both graduate rates and dropout rates have been quite stable the last ten years or so (Socialstyrelsen 2010).

As a consequence of the low level of youth unemployment, problems concerning youth employment have played a less prominent role in the Danish debate. However, since 2008 young people and low-skilled workers have experienced the strongest increase in

unemployment rates (Beskæftigelsesministeriet 2009) and the discussion of youth unemployment has become more intense. Much of the debate concerning youth unemployment has focused on how to increase the proportion completing upper secondary education, and in particular on the qualifications the pupils obtain in compulsory school and on dropout rates from vocational tracks.

In Norway dropouts from secondary school is considered a serious problem by the authorities as well (NOU 2008). It is estimated that the total costs of drop put for each age cohort is close to 5 billion Norwegian Kroner (Hernes 2010). Dropout rates in Norway have been fairly stable over the last decade (Frøseth and Markussen 2009), but the phenomenon has received more attention after introduction of the obligatory secondary education in 1994 (Hernes 2010).

Young people have always been a vulnerable group in the Finnish labour market. They are always the first to be truck by increased unemployment risks at recessions. After the crisis of the 1990s Finland has experienced two, less severe, recessions after the 1990s, at the turn of the century and in 2007-2008. As a consequence and despite the abovementioned decline, unemployment among youth has remained on a high level in Finland in a European comparison. Especially youth with only compulsory education have had severe difficulties in the labour market. Observed problematic turning points in youth's lives are completing compulsory education and dropout from secondary education. Hence, efforts have been made to make the transition to secondary education smoother (Ministry of Education, 2009; Keinänen, Sinivuori 2010).

It is received wisdom, at least in the European context, that at the individual level a diploma from upper secondary school be it from an academic or from a vocational track, makes labour market entry smoother. Likewise, school failure has repeatedly been shown to dramatically increase the risk for unemployment and labour market exclusion both in the long and in the short run (e.g. Gangl et al. 2003; Bäckman and Nilsson 2007; 2011).

In this article we focus not so much on school success and its determinants as on school failure and its consequences. We ask: do different institutional settings of upper secondary school systems affect labour market prospects and risks not only of graduates from these schools, but also, and in particular, of dropouts?

We proceed by evaluating how and to what extent the different upper secondary school systems in the Scandinavian countries contribute to the variation in youth inactivity rates in

these countries. The Scandinavian countries share many features as far as welfare state and labour market institutions are concerned. However, the upper secondary school systems differ significantly in how the vocational tracks are organized. In Denmark and Norway vocational tracks are dual, i.e. they combine school based education and work place apprenticeships, whereas in Finland and Sweden they are school based. This is why we focus particularly on dropouts from the vocational tracks in the forthcoming analyses.

The outline of the paper is as follows: First a short background including previous research on the school-to-work transition issue and social exclusion among young people is presented. This is followed by a brief sketch of the school systems in the three countries with particular focus on upper secondary school. The next sections comprise a description of the data sets, methodological considerations and a detailed report on operationalisations of key indicators. The first part of the results section is descriptive showing the development of dropout rates and inactivity rates across time. The second part provides a multivariate analysis of the risk for labour market exclusion with respect to school performance. This includes some sensitivity analyses. The paper concludes with a discussion of the results.

Background

Since the beginning of the 1990s the concept of social exclusion has offered a means to both researchers and politicians by which to specify the societal consequences of globalisation, migration and industrial restructuration. One of the most signifying of these societal consequences has been the increasing difficulties for youth in the labour markets of Europe in particular. This can be said to reflect the longstanding discussion around labour market restructuring more generally and globalisation's impact on national labour market more specifically. Regarding the former it is sometimes stated that the transition from an industrial to a post-industrial service society *inter alia* have resulted in an exceedingly complicated labour market entry process. Instead of the previously relatively standardized transition from school to factory work, youth nowadays have to search their way through a series of short term insecure jobs often interspersed with periods of unemployment before they hopefully may consider themselves established on the labour market (see e.g. Beck 1992)

Globalisation and industrial restructuration is however also often believed to impact negatively on the employment of the less educated. The starting point is here analyses of the increase in unemployment and income and wage inequality that has taken place in many industrialized countries. The most plausible explanation was believed to be a reduced demand for less educated labour, something in turn explained by the increase in global trade and/or

skill-based technological change. Increased trade between low and high wage countries was assumed to generate an import of 'simpler' labour intensive goods from developing countries, which in turn would imply that this type of production would decrease in the developed economies and that the demand for less skilled labour would diminish (see e.g. Rodrik 1997; Feenstra and Hanson 2003).

Undoubtedly, long term unemployment and inactivity are closely linked to the notion of social exclusion. Although a key aspect of social exclusion is multidimensionality, its most central dimensions concern employment and economic resources, both of course intimately connected (e.g. Burchardt 2000). Establishing a foothold in the labour market is in many ways a precondition for gaining a foothold in other areas of importance for societal integration, for instance housing and family formation. Much of the debate around social exclusion therefore concerns the problem of labour market integration. Also lack of education has sometimes been considered a dimension of social exclusion. Atkinson and colleagues, for instance, launch educational attainment as a so called level 1 social indicator in their recommendation to the EU commission on these issues (Atkinson et al. 2002). Burchardt (ibid.), on the other hand, claims that lack of education should not be treated as a dimension of social exclusion, but rather as a risk factor. We argue that both of these stances can be fruitful. As discussed in the previous section educational failure is definitely a risk factor for failure also in the labour market. But once marginalized from the labour market, lack of education is an integrated part of the problem. Thus, educational failure can be treated as part of a process of social exclusion. From such a perspective, how educational failure should be treated in the research process is a decision in the hands of the researcher in each particular analysis. In our case it appears natural to treat educational failure as a risk factor for social (labour market) exclusion, without letting go of the idea that they are both part of the same process and a key element in this process is how the school-to-work transition turns out.

Previous research

There is a vast literature on the school-to-work transition issue. This is not the place to review this whole body of research, but briefly sketched comparative research tend to analyse educational tracks and labour market outcomes in the context of institutional differences across countries' educational systems as well as in the institutions regulating the labour market, including active labour market programmes and activating measures (Smyth et al. 2001). This tradition draws on two research traditions: education research and labour market research and the links between the two.

In comparative education research an important distinction has been made between systems with school based vocational tracks and systems with dual vocational training, often with apprenticeship. In this respect, European countries vary significantly. Comparative research on transition from school to work has also concluded that dual systems are effective. Participation in vocational education/training and work, as in apprenticeships seems to result in smoother transitions to work and more stable employment (Smyth et al 2001). These successful systems are characterised by strong occupational labour markets, standardised track-differentiated education systems and strong links between education and the labour market. In the other end of the continuum we find the Internal Labour Market model where the traits are quite the opposite and which perform less well, e.g. the USA (Smyth et al. 2001:93). It seems as if vocational education, e.g. apprenticeship, gives a fast and smooth attachment to the labour market and hence protects against social exclusion. If one instead looks at income, general tracks pay off more than vocational tracks.

Comparative research on the school-work transition also recognises other institutions, especially the institutions regulating the labour market (Smyth et al. 2001). In a study including 12 European countries, Gangl (2001) found that employment regimes played a role in the school-to-work transition. Rigid labour market institutions, as in Southern Europe, work against young people entering the labour market, whereas the organized and well regulated labour market institutions in Northern European countries result in more favorable outcomes among young people, both in terms of avoiding low-skilled employment and access to employment in the professional sector (Gangl 2001: 5, 34). In the study, Denmark was the only representative from the Nordic countries. The effects of differences in institutional set up between Nordic countries could therefore not be analyzed.

The working group on Redistribution in Norway (NOU 2009:10) claims, broadly speaking, that whether you have an upper secondary school exam or not determines the chances of participation in the labour market, whereas schooling beyond upper secondary school determines the incomes you receive in the long run, and hence your long term life chances and longevity. Low educational level and dropout predict later unemployment and more permanent non-employment patterns (e.g. disability pension) (NOU 2009:10, page 133).

However, as indicated in the introductory section, this article focuses primarily on upper secondary vocational school dropouts and the question to be answered expands on these findings: besides making the school-to-work transition smoother for those with a diploma from a dual vocational track, is it also the case that the contacts with the labour market in

general and employers in particular that students in dual vocational tracks experience make the effects of dropping out less detrimental as compared to dropouts from school based vocational education? This seems a reasonable expectation, but there are indications in the research literature pointing in another direction. Gangl (2003) finds that in countries with well-developed systems of apprenticeships the labour market is more closed to those without formal education or training. The labour markets in such countries tend to be more skill-based than elsewhere and job competition relies more on formally certified skills. In these labour markets those with formal skills can compete with more experienced workers on a more equal basis, whereas those without these skills stand far away from formal employment.

Thus, we consider two competing hypotheses in the analyses below. The first of these maintains that the relative labour market effects of dropping out from vocational tracks in upper secondary school are less detrimental in the dual vocational systems of Denmark and Norway as compared to Finland and Sweden. The mechanism responsible for this effect would be the contact with the labour market that dual systems make available for the participants. It is more likely that late dropouts have benefitted from such contact than it is for early dropouts. To account for this we distinguish between these two categories of dropouts in the analyses. This hypothesis is contested by the hypothesis claiming that labour markets in settings with well-developed systems of apprenticeships would be more closed to those without formal skills. This suggests that dropouts from vocational schools would face greater relative difficulties in the labour market in Denmark and Norway as compared to Finland and Sweden.

Upper secondary school in the Nordic countries

As already mentioned, the upper secondary school systems in the Nordic countries differ significantly in how the vocational tracks are organized. In Denmark and Norway vocational tracks are dual, i.e. they combine school based education and work place apprenticeships, whereas in Sweden and Finland they are school based, although more so in Sweden. Another important difference is that in Finland and Sweden the vocational tracks prepare also for higher education; this is not the case in Denmark and optional in Norway. The country specific sections below provide sketches of the upper secondary school systems and their recent development in each country, with particular focus on the vocational tracks.

Denmark

The Danish upper secondary school system is divided into three branches. The vocational tracks are dual and usually four years long and the students alternate between school based education and apprenticeships at work places. They do not prepare for university studies. The vocational tracks consist of a basic course and a main course. The basic course normally takes place in a school. The main course alternates between practical training in an enterprise (apprenticeship) and education in a school. Approximately 30-50 % of the time is spent in school and 50-70 % in practical training. The pupils in basic courses are expected to find themselves a company that will employ them as apprentices. However, the number apprenticeships fluctuate with the business cycles and not all pupils obtain an apprentice contract. Pupils who cannot find an apprenticeship themselves may take their practice in school (Danish Ministry of Education 2010). The possibility to obtain school-based practice was introduced in the beginning of the 1990s.[1] The dropout rate is 50% higher for pupils in school-based practice than for pupils with an apprenticeship (Jørgensen og Juul 2009).[2]

In addition to the vocational tracks there are academic tracks and technical and business tracks which both prepare for university studies. There is also an optional preparatory tenth year in lower secondary school.

As in most other countries enrolment to upper secondary school in Denmark has increased significantly the past decades. The proportion of young people without upper secondary education in Denmark decreased from 34 per cent in 1980 to 15 per cent in 2005. This alone may contribute to the increased dropout rates in first and foremost the vocational tracks during these years (Helms Jørgensen 2010). There has also been a shift whereby girls are now less prone to drop out as compared to boys. In the 1980s the gender pattern was the opposite.

According to one analysis the effect of the 'social heritage' is stronger in Denmark than in Finland and Sweden, i.e. children to parents with short education are less likely to acquire an educational level beyond compulsory school in Denmark as compared to Finland and Sweden. This study also finds that although family income predicts the likelihood of starting an education, it has no effect on the likelihood of dropping out once started (ibid.).

[1] However the access to school-based practice has been limited in 2005 and 2008.
[2] Only a smaller per centage (about 5%) of the pupils in the main course are in school-based practice (Quaade 2009; Helms Jørgensen 2010). The competences obtained during apprenticeship are in general valued as better than competences obtained during school-based training and the labour market attachment after completion of the education is slightly weaker for those with only school-based training (Helms Jørgensen og Juul 2009).

In 2008 49 per cent of upper secondary students were in academic tracks and 51 per cent in vocational tracks. The average completion age is 20 for academics tracks and 28 for vocational tracks (Danish Ministry of Education, 2010).

Over 95 per cent of Danish compulsory school leavers enter upper secondary school. About 83 per cent enters upper secondary school 3 months after graduation from compulsory school. According to model calculations, 64 per cent of those who completed the 9th year in compulsory school in 2008 were expected to complete an upper secondary education within 5 years (51 per cent an academic track and 13 per cent a vocational track). After 25 years 81 per cent are expected to have completed an upper secondary education (Danish Ministry of Education, 2010).

In the academic tracks 78-81 per cent completes the educational track they started in. The corresponding figure for those in vocational tracks is 51 per cent. The net dropout rate at 25 years of age is 25 per cent (Helms Jørgensen 2010).

Finland

In Finland upper secondary school is integrated, i.e. both academic and vocational tracks are coordinated under the same organisational umbrella and divided into three year academic and vocational tracks. Both types of tracks prepare for university studies. There is possibility for apprenticeship within the vocational tracks. Most of the vocational education is school based although apprenticeship has grown in popularity and in 2006 18 per cent of all vocational education was apprenticeship based (Rinne and Järvinen 2010). As in Denmark, Finland has an optional tenth year as a complement to compulsory school.

Unlike the other Nordic countries in this study the right to upper secondary schooling is not legislated in Finland, but there are discussions going on about making compulsory school twelve years long and there is an ambition that at least 97.5 per cent in each cohort go on to upper secondary education. At present the figure lies at 90-95 per cent (ibid.).

Since 1990 slightly more than 50 per cent of those who each year finished compulsory school moved on to academic tracks and 30-40 per cent chose vocational tracks the same year. Girls choose academic tracks to a greater extent than boys. Every year 2-5 per cent take the optional tenth year of lower secondary education (ibid.).

The annual dropout rates from upper secondary school are comparatively low in Finland. In academic tracks they have fluctuated around four per cent in the 2000s and in vocational tracks they have varied between 10.5 and 13 per cent (ibid.).

Norway

The Norwegian upper secondary school system is integrated as well. In 1994 the right to a three year upper secondary education preparing for tertiary studies was legislated. The vocational tracks do not prepare for university studies automatically, but all students are entitled to such preparation. Academic tracks are three years long whereas vocational tracks are usually four years long. In the vocational tracks students spend two years in school and two years in apprenticeship at regular work places.

In the mid-1970s one out of three adolescents (17-19 years of age) in Norway was economically active. In 1990 the employment rate had dropped to 8 per cent. In the same period the proportion of adolescents who went to school rose from 60 to 86 per cent (Grøgaard 1992, p.15). In response to this scarcity of work, work oriented adolescents poured into education in high numbers. A norm to go to upper secondary school developed. The educational system in the late 1980s and the early 1990s, however, did neither have the capacity nor the structure to absorb the growing masses of adolescents who passed through the upper secondary school gates (Markussen 2007). A certain percentage of the younger cohorts were not admitted, and a proportion of those who were admitted to vocational tracks were not granted the opportunity to graduate. The withering of the youth labour market along with rapidly expanding demand for education triggered profound reforms in the educational system in Norway.

The overarching vision of the educational reform launched in the mid-1990s (Reform 94) was thus to get enough skills out of the young population and to enable the individual to exploit his/her talent as far as possible. The practical purpose of the reform was to restructure and rescale the upper secondary school level so that it could absorb all adolescents, put them on the right track and make them able to complete their upper secondary school education and earn a diploma, credentials and competence. The problems were mostly related to the vocational tracks, and it was here the need for new solutions was mostly urgent (Markussen 2007: 90).

Ever since the right to an upper secondary school education was legislated in 1994 there has been a rapid growth in apprentice contracts (Høst 2009:117). Most of these are in traditional professions like manufacturing and handicraft. The number of apprentice contracts offered by the employees each year vary, keeping pace with the business cycles and the employers' need for labour. In good times 80 per cent of the applicants received a contract. When times were sluggish, 65 per cent were offered an apprenticeship (Høst 2009:126). It is also the employers

who pick the apprentices. The fact that employers have this control may of course influence the composition of stock of apprentices and therefore the outcomes (Høst 2009:126). Those who cannot find an apprenticeship post can take one year of school-based education and training (Skule et al. 2002).

Evaluations of the entire reform (Reform 94) conclude that it was successful for the 16 year old students, as intended, but that the older students suffered since the 'youth guarantee', a follow-up service for long-term unemployed youth, did not extend to them. About 20-25 per cent of the cohorts obtained vocational competence, and the share of students in vocational tracks that obtained vocational competence was doubled from 30 to 60 per cent. The success was conditional however, as dropout rates were high from the beginning, as they still are. About 50-55 per cent obtained 'study competence' whereas 20-25 per cent of the cohorts only achieved unplanned competence, or competence on a lower level, either because they failed their exams or dropped out (Markussen 2007:95).

In 2009 49 per cent of upper secondary students were in academic tracks and 51 per cent in vocational tracks (http://www.ssb.no/vgu/tab-2010-05-04-02.html). The same year 90 per cent of the age-cohort 16-18 years was in secondary school (http://www.ssb.no/vgu/tab-2010-05-04-05.html). In each entry cohort close to 100 per cent enrols in upper secondary school. Of these around 70 per cent completes their education within five years (http://www.ssb.no/vgogjen/tab-2010-07-01-01.html).

Sweden

As in Finland and Norway the upper secondary school system in Sweden integrates academic and vocational tracks. All tracks are three years long. The vocational tracks are primarily school based. The right to an upper secondary education is legislated, but access to the regular national tracks is restricted and students need to accomplish a certain grade level in twelve subjects in compulsory school including the so called core subjects Swedish, English and maths. Those who do not reach this level are offered a slot in the so called Individual programme of upper secondary school which aims at preparing students for a transfer to one of the national tracks. Starting in this conventional upper secondary school is only possible for those below the age of 20. For adult education there are other institutional arrangements.

Recent Swedish research has focused much on the effects of the reformation of the upper secondary school system that was implemented during the first half of the 1990s. The reform affected first and foremost the vocational tracks. These were made longer, from two to three

years, and the curricula were made more similar to the academic tracks by expanding the core subjects. By this the graduates from vocational tracks received basic eligibility for university studies. The whole idea of the reform was to make the vocational tracks more comprehensive.

The critics of the reform claimed that increased academic content and an additional year in school in the vocational tracks would increase dropout rates. Many students choosing vocational tracks are not interested in academic studies and will thus fail in this expanded education, it was argued. The proponents of the reform argued instead that the new curricular content would reduce the socio-economic bias in higher education enrolment by keeping the window to higher education open also to students in vocational tracks. The reform was intended as an important piece in the idea of 'life-long learning'.

By analysing the effects of a pilot scheme that preceded the actual implementation in some municipalities Hall (2009) estimates that the introduction of the three-year vocational tracks increased the dropout rate by nearly four per cent. Although any increase of the dropout rate is damaging, the fact that the additional year in vocational tracks increased the dropout risk exposure time by 50 per cent makes it difficult to say whether the four per cent increase is much or not. It is also the case that most dropouts leave school in the third year so that all in all the reform still increased the average time spent in upper secondary school (Murray 2007). However, the mid-1990s was a turbulent period for Swedish schools. Besides the reformation of upper secondary school a new goal oriented grading system was implemented, which probably increased dropout rates as well (Björklund et al. 2010). Moreover, the responsibility for schools was decentralised to the municipal level and the financial crisis implied severe budgetary constraints on part of the municipalities, which had negative effects on school funding and teacher density (Palme et al. 2002).

During the 2000s approx. 50 per cent of upper secondary students were in academic tracks, 41 per cent were in vocational tracks and 8-9 per cent were in the Individual programme. In each birth cohort 98-99 per cent enter upper secondary school and of these 75-80 per cent complete their education within four years (http://www.skolverket.se/sb/d/1717).

Summary: Upper secondary school in the Nordic countries

Table 1 summarizes some of the most important institutional features of upper secondary school in our four countries. For the purpose of our study some of the institutional differences are more important than others. First and most obvious is the apprenticeship component in vocational education since this is what the analyses focus on. As we will see in the sensitivity

analyses the Swedish Individual Programme is important for the extent to which we can make comparisons between the countries. This is also true for the upper age limit for starting the regular upper Secondary School in Sweden.

Table 1. Institutional characteristics of upper secondary school in Denmark, Finland, Norway and Sweden.

	Denmark	Finland	Norway	Sweden
Optional preparatory 10th year in lower secondary school	Yes	Yes	No[i]	No[ii]
Upper secondary school is a legislated right	Yes	No	Yes	Yes
Integrated upper secondary school	No	Yes	Yes	Yes
Apprenticeships in vocational education	Yes	No[iii]	Yes	No[iv]
Vocational programmes prepare for tertiary education	No	Yes	Optional[v]	Yes
Upper age limit for upper secondary school	No	No	No	Yes
Exam tests	Yes	Yes[vi]	Yes	No
Enrolment in upper secondary school (per birth cohort)	Ca 95%	90-95%	Ca 100%	98-99%

[i] Compulsory school is 10 years.
[ii] The Individual programme plays the same role as the optional 10th year does in Denmark and Finland.
[iii] Is available, but few are enrolled.
[iv] In August 2011 vocational programmes with apprenticeships are implemented.
[v] Approx. 20-25 % take this option.
[vi] Only in academic programmes.

Data

For the analyses we use administrative register data from public records in all countries. Data from Norway and Sweden cover total populations, whereas in Denmark and Finland we use large samples. Below follow short descriptions of the data sets from each country.

Denmark

The Danish data used in the analyses are longitudinal administrative register data from Statistics Denmark for the period 1986-2006, including information on the total population of Western immigrants and descendants of immigrants and a 10% representative sample of the population of native Danes. For all these individuals, we have information about their parents, spouses, family members and all others living in the same household. The data contains

information on education (on-going and completed), demography, social security benefits, social assistance, employment, unemployment and income. For the multivariate analyses school starters in upper secondary education 1994-99, who are born in Denmark, were chosen for analysis. We follow up educational and labour market status seven years later, i.e. 2001-06. Each cohort of upper secondary school starters consists of approximately 3,500 persons corresponding to 10% of native Danes and descendants of immigrants.

Finland

The Finnish data stem from longitudinal administrative registers from Statistics Finland, the Social Insurance Institution of Finland, and the National Institute for Health and Welfare. A 20% sample of individuals born between 1967 and 1990 was drawn from the registers in 1990. Foreign born in the same age group who immigrate later are added to the sample. Register information for this sample, and information for their parents and spouses, is available from the years 1980, 1985 and annually from 1987 to 2007. For the purpose of the present study, Finnish born secondary school starters in 1996-2000 are followed up seven years later. Each Finnish age cohort generally consists of more than 60,000 individuals and the five year span of secondary school starters in the analyses total to somewhat more than 60,000 individuals.

Norway

The Norwegian data are collected from Statistics Norway's FD-Trygd database. This is a population based source of data that keeps track of the complete Norwegian population starting from the year 1992. All information is collected from various public registers. Available in this study are data for the period 1993 to 2008, thus, covering a span of 16 years. The available observation window enables us to identify upper secondary education status for all Norwegians seven years after upper secondary school start over the period from 1999-2007. As FD-Trygd contains information from a multitude of different registers it enables us to assemble complete individual trajectories covering several years and life phases. The database contains information on the following areas: demography, social security benefits, social assistance, work activity, unemployment, income, and assets. The latter two are drawn from the official tax and income registers. In addition, we have incorporated into this data set detailed information on educational careers. Each age cohort consists of between 46,000 and 50,000 persons. After exclusion of immigrants, those who never started secondary school, and listwise deletion of missing data, this makes a total of approx. 220,000 persons.

Sweden

The data set used in the Swedish analyses is a combination of information from various official records. The core data come from the LISA-database at Statistics Sweden (SCB 2008), a compilation of various sources which cover income, educational level, employment and sickness insurance information. The LISA-database has then been linked to student records from the Swedish National Agency for Education. From LISA income data are used and from the student records data on enrolment and graduation from upper secondary school. The data available for this particular study cover the Swedish population at ages 16 and older from 1990-2008. The database is continuously updated. For the purpose of the present study Swedish born upper secondary school starters in 1995-1999 with a follow up seven years later have been chosen for analysis. As each age cohort consists of approx. 100,000 persons the total number of subjects in data amounts to approx. 500,000, but with exclusion of immigrants, non-upper secondary school starters and observations with missing data we end up with 404,000 observations.

Dependent variable: NEET-status

To operationalize labour market attachment and its opposite, labour market exclusion, an income maintenance model for social exclusion and labour market attachment (SELMA) developed in Kindlund and Biterman (2002) and Bäckman and Franzén (2007) is employed (see also Socialstyrelsen 2010). The model was developed for the Swedish context and uses information of income sources from public records to categorise people according to their position in the labour market with respect to their distance from the Core work force. The latter consists of those with stable employment and who can support themselves by labour market income. Thus we can identify the whole spectre from this core to the ultimate periphery of the labour market. The basic features of the model are illustrated in Figure 1.

The categorisation proceeds in two steps. First people are categorized according to their annual income sources. The core work force in this annual version of the model consists of those who receive income from work corresponding fairly well to at least the annual income of the least paid jobs in each country. This also approximates what it takes to maintain one adult for one year.

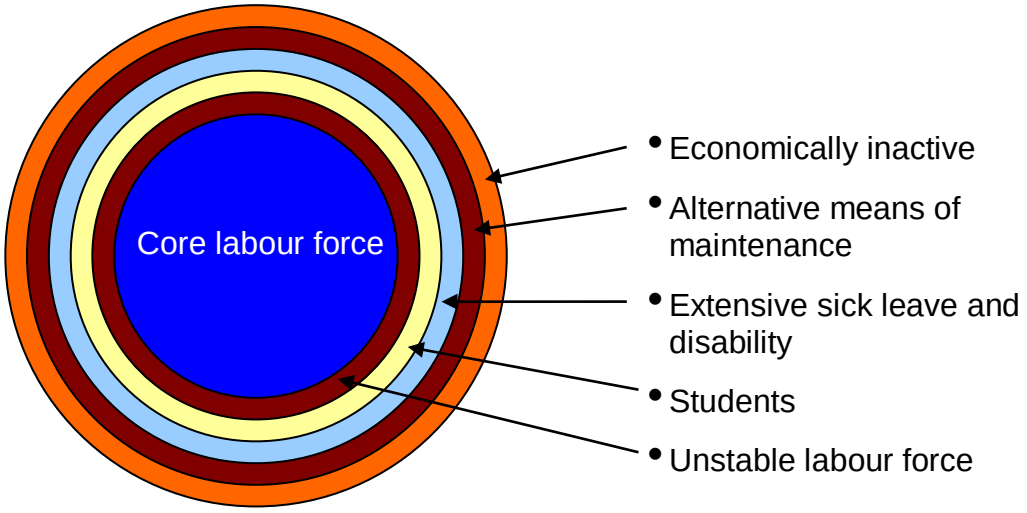

Figure 1. Basic sketch of the SELMA-model for measuring labour market attachment.

An important concept in the construction of the original Swedish version of the model is the so called price base amount (PBA), a tool used by the government to calculate e.g. old age pensions. Since the PBA is valid only for Sweden it had to be replaced in the construction of the Nordic version of the model. This new Nordic base amount (NBA) is set at 25 per cent of the median gross annual income each year. For the mid 1990s this approximates one Swedish PBA. One important difference between the NBA and the PBA is that while the PBA follows the consumer price index the NBA, through its construction, follows the median gross income growth. This means that when real income grows the number of work hours needed to reach one PBA will decline. With the NBA this will not happen and it is thereby more relative in character as compared to the PBA.

The income limit for the core work force is set at 3.5 NBA. Those with incomes below 0.5 NBA belong to the category 'Alternative means of maintenance'. In between these two extremes we find categories such as students, unemployed, long term sick listed etc.

The second step involves creating new categories based on labour market attachment in three consecutive years, i.e. the resulting status in year *t* considers the situation in year *t*, *t*-1 and *t*-2.

In its most elaborate form the model consists of 11 different categories, often however there is reason to collapse some of these in order to make the model more comprehensible (se Table 1). The model is flexible in the sense that it is easy to adjust to specific research questions. Besides collapsing categories it is also possible to create new categories according to the principles in the original construction of the model.

Table 1. Mutually exclusive labour market categories.

Core labour force	Labour market income of at least 3.5 NBA in at least 2 of three consecutive years. No disability pension. Extensive sick leave, some unemployment benefits and labour market income above 0.5 but below 3.5 NBA in one of the three years at the most.
Unstable labour force	Embraces subcategories in between the Core work force and other categories.
	Toward establishment
	Labour market incomes of at least 3.5 NBA the last of three years. No labour market income the first year. Extensive sick leave, disability pension unemployment benefits or labour market income below 0.5 NBA only year 1 or 2.
	Part time work
	Gainful employment without extended periods of extended sick leave, disability pensions or unemployment benefits for at least two of three years. Labour market incomes below 0.5 or above 3.5 NBA in not more than one of the years.
	In the marginal labour market
	Persons in this subcategory have a decidedly weak attachment to the labour market. Their position in relation to working life and the various income maintenance systems differs in each of the three years or labour market income between 0.5 and 3.5 NBA the first of three years and below 0.5 NBA the two following years.
Students	Any income the two first of three years. The third year labour market income below 3.5 NBA and enrolled in education.
Extensive unemployment	Labour market income below 0.5 NBA and registered unemployment for at least 180 days in two of three years. This is one of the NEET categories.
Extensive sick leave	At least 90 days of registered sick leave or part time disability pension in at least two of three years. This is one of the NEET categories.
Disability pension	Disability pension of at least 1 NBA and labour market income below 0.5 NBA for two of three years. This is one of the NEET categories.
Old age pension	Old age pension of at least 1 NBA and labour market income below 0.5 NBA for at least two of three years.
Alternative means of maintenance	Persons who do not belong to any of the categories above and who have labour market incomes below 0.5 NBA for two of three years. This is one of the NEET categories.
Economically incative	Persons who do not belong to any of the categories above and who have labour market incomes below 0.5 NBA for three consecutive years. This is one of the NEET categories.

The rationale behind considering the situation for three consecutive years is that it reduces the effect of temporal changes in the income maintenance situation. The model will in this way capture both processes of change and stability and thereby encompass the dynamic aspect of social exclusion (e.g. Gallie and Paugam 2004). The fact that the model primarily rests on information from public records significantly reduces the problem of non-response which may be particularly challenging in social exclusion analyses. Another advantage of using data from public records is that these are usually annual, allowing for longitudinal studies.

We use a seven year follow-up time from upper secondary school start to construct the dependent variable. The dependent variable in the analyses below aims at capturing those not in employment, education or training (NEETs, e.g. Bynner and Parsons, 2002). As NEETs we categorize those who according to the SELMA-model belong to any of the 'economically

inactive', 'alternative means of maintenance', 'extensive unemployment', 'extensive sick leave' and 'disability pension' categories (see Table 1). The latter two could be questioned on the basis that availability to these social insurance schemes may be considered as a form of inclusion *per se*. However, considering the fact that the subjects of this study are young, being on long term sick leave or in disability retirement is extremely detrimental as far as future labour market prospects are concerned (see Bäckman and Franzén, 2007).

Independent variables

Our key independent variable – upper secondary school status – is measured at a seven year follow-up time from upper secondary school start as well. It contains information on educational track and examination, and consists of six categories: diploma from academic track (ref.), diploma from vocational track, early dropout from academic track (year 1-2), late dropout from academic track (year 3+), early dropout from vocational track, and late dropout from vocational track. For all countries track is determined by the track the student started in, so a person who started in an academic track and changed to a vocational track and thereafter dropped out will be counted as a dropout from an academic track. This might have some impact on comparability since 'track loyalty' differ between the countries with e.g. quite high rate of track changes from Danish vocational tracks and low rates of change in Sweden in both tracks. Other characteristics of data that might affect comparability is that except in Sweden and in vocational tracks in Finland students may go through all years of their education and then fail their exam. In, for instance, Norway eight per cent of those taking the exam test in 2009 failed (http://www.ssb.no/vgogjen/tab-2010-07-01-02.html). In our data we cannot separate these students from those who dropped out before examination. This means that those in tracks with exam tests and who have failed these will be treated as dropouts. As a result, dropout rates in Sweden and in the Finnish vocational tracks will be downwardly biased. And in the analyses of risk for NEET-status the estimates for late dropouts in Denmark, Norway and in Finnish academic tracks will be downwardly biased. Furthermore, the Swedish 'Individual Programme', mentioned above, picks up weak students with poor prospects for succeeding in upper secondary school. In Denmark and Finland, where enrolment to upper secondary school is lower than in the other two countries many of these weak students are probably not enrolled at all. In Norway, on the other hand, where enrolment is at par with Sweden they are probably to a large extent enrolled in vocational tracks. At least as compared to Norway this means that Swedish dropout rates and the effect of dropping out on the risk for NEET-status are underestimated. Unfortunately, grades from compulsory

school are available only in Finnish and Swedish data, a control which otherwise could have compensated for this potential bias. However, we perform some sensitivity tests in order to try and estimate the magnitude of this bias.

In the multivariate analyses we also control for follow-up year by means of dummy variables for observation years, with 2002 as the reference year. Although we analyse only the native born populations (see below) there still remains some ethnical diversity in the samples which could affect the results. Thus, we control for the ethnic origin by including a variable indicating region of birth of parents. It is a categorical covariate with three levels: at least one parent native (ref.); both parents immigrants, but at least one born in a western country; both parents born in a non-western country. We have also run models with control for parent's educational level, but since the inclusion of this variable reduces the number of observation years for Sweden, and since the inclusion of the variable does not affect the results we have chosen not to include it in the final models.

All four countries have well developed family policy institutions. Still there is at least one important difference in the institutional setup. In Denmark (through 2005), Finland and Norway parents can claim a so called home care leave benefit; a low flat rate allowance aimed at families who prefer a solution where one parent, usually the mother, stay at home for a couple of years to attend pre-school children instead of utilizing public day care service for that purpose. It is well known that these types of benefits maintain traditional family patterns with a male breadwinner (Bäckman and Ferrarini 2010). If this effect is present in our analyses without being controlled for we could mistake higher NEET rates among Danish, Finnish and Norwegian women as an effect of education policy institutions when it in fact is one of family policy institutions. For this reason we control for parenthood in the multivariate analyses, measured as being parent to at least one child in the ages 0-17.

Since the focus of the analyses is not on the effect of the labour market, we run fixed effects regression with fixed effects for regions (counties) as a crude control for labour market effects.

Methodological considerations

The analyses are restricted to native born upper secondary school starters in each country. The reason for restricting the analysis to persons born inside the respective countries is that the composition of the immigrant population differs quite heavily between the countries and that could affect results. Since the focus of the present study is directed at the effect of the

institutional setup of vocational education on labour market outcomes we have chosen to exclude this group from the analyses. Still, the effect of the composition of the immigrant population on school results and labour market outcomes is an important issue that we will address in forthcoming studies.

Since the dependent variable is a binary representation of a latent continuous variable (labour market attachment) we have chosen to run linear probability models (LPM) to estimate the effects of upper secondary school outcomes. It is well known that when the outcome is not a natural dichotomy (e.g. dead/alive) naive comparison of point estimates from e.g. logistic regressions across groups or, as in our case, samples can potentially lead us to completely wrong conclusions (Allison 1999; Mood 2010). This is because differences in the residual variance across e.g. samples affect standardised estimates such as odds ratios. This means that depending on the nature of the residual variance we might arrive at conclusions about differences when there are none, ignore differences that actually exist or even find effects that go in the opposite direction to what actually exists (Williams 2010).

Several ways to confront this problem have been suggested in the research literature (Mood 2010). We have chosen LPM, i.e. OLS-regression on a categorical outcome. In LPM the problem with different residual variances is absent. LPM also run easily on large data sets and the output is comprehensible and easy to interpret. The main arguments against using LPM instead of some type of heterogeneous choice model (see Williams 2010) are two. Firstly, LPM might predict negative likelihoods and likelihoods above unity, which of course is unreasonable. However, as long as we are aware of this and are not constructing examples that produce such outcomes this is not a big issue. Secondly, estimates tend to be less efficient. With the large data sets we use in this study, this is not a big issue either.

Results

Figure 2 shows the development of NEETs among native born persons at 20-24 years of age in the four countries. Sweden starts out in 1995, a year when the unemployment crisis of the 1990s was still vivid, at nearly 8.5 per cent, a level well above that of Denmark and Norway, whose rates in turn are five and six per cent respectively. The Swedish rate then falls to a level below that of Denmark and Finland and near that of Norway at the turn of century. From 2001 and onwards the Swedish rate increases continuously through 2006, the last year for which we have Swedish data. At the end of the period Sweden shows the highest rate of all countries. Although the Norwegian rate starts at the lowest level of all countries it falls slightly the first couple of years following 1995. From 1998 it turns upwards and continuous to increase until

2005, when the trend seems to turn downward again. For Denmark no particular trend can be discerned. The Danish rate fluctuates around six per cent throughout the period. The Finnish rate falls continuously and at the end of the period Finland has the lowest rate of all countries. Taken together it still seems as if the countries are converging across this time period with lower rates in Finland and Sweden and higher rates in Norway at the end of the period, while not much happens in Denmark. Worth noticing however is the fact that Danish and Norwegian rates turn downward again from 2005, which is not case in Sweden where the rate continuous its upward trend. If this is the beginning of a period with diverging trends or just temporal fluctuations is too soon to tell.

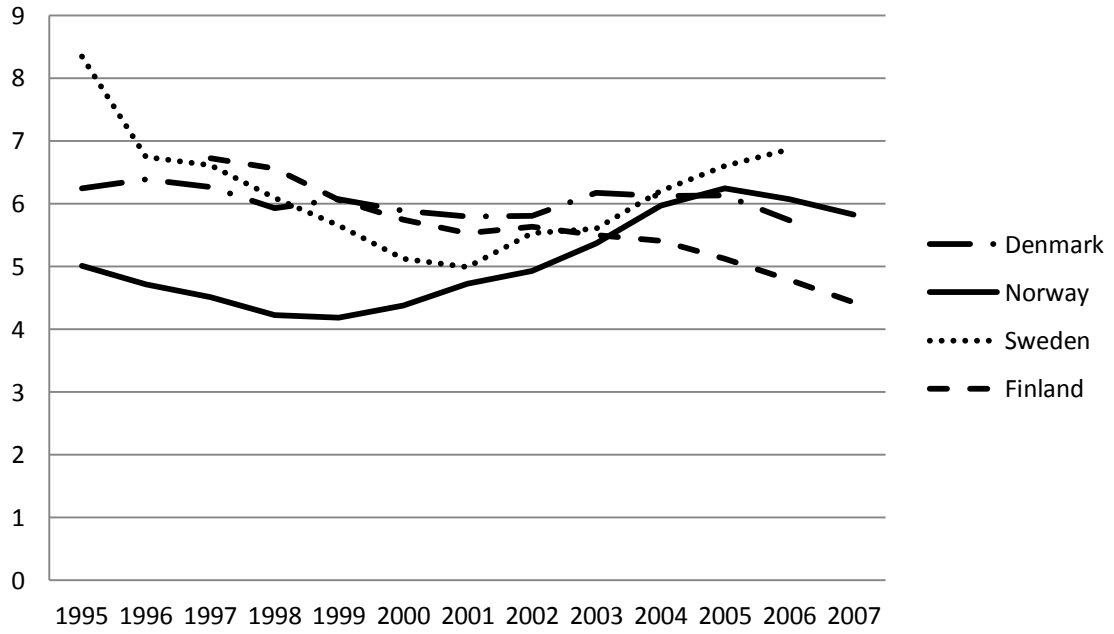

Figure 2. Proportion (%) NEET among native born at 20-24 years of age in Denmark, Finland, Norway and Sweden 1995-2006/07.

As discussed in the introductory section, official youth unemployment rates vary quite heavily between the countries with high levels in Finland and Sweden and low levels in Denmark and Norway, by European standards. Obviously, Figure 2 mediates a quite different picture with small differences between the countries. This has several explanations. Most importantly, the NEET category is based on information from three consecutive years which means that we capture a group which is quite far away from the labour market. The group of officially unemployed is a much more heterogeneous category where a majority can be expected to experience quite short unemployment spells. Comparisons of official unemployment rates across countries are also flawed by the fact that definitions vary slightly between countries. For instance, in a comparison between official Danish and Swedish youth unemployment rates one must keep in mind that students in vocational tracks are treated as employed in

Denmark whereas they in Sweden are not included in the labour force at all, unless they are actively seeking a job.

In Figure 3 the upper secondary school dropout rates among native born in the four countries are shown. It shows total dropout rates and in academic and vocational tracks separately at a seven year follow up from school start. The time periods available varies between countries with the shortest time series for Sweden (2002-2006) and Finland (2003-2007) and the longest for Denmark (1997-2006). Norwegian data cover the period 2002-2007.

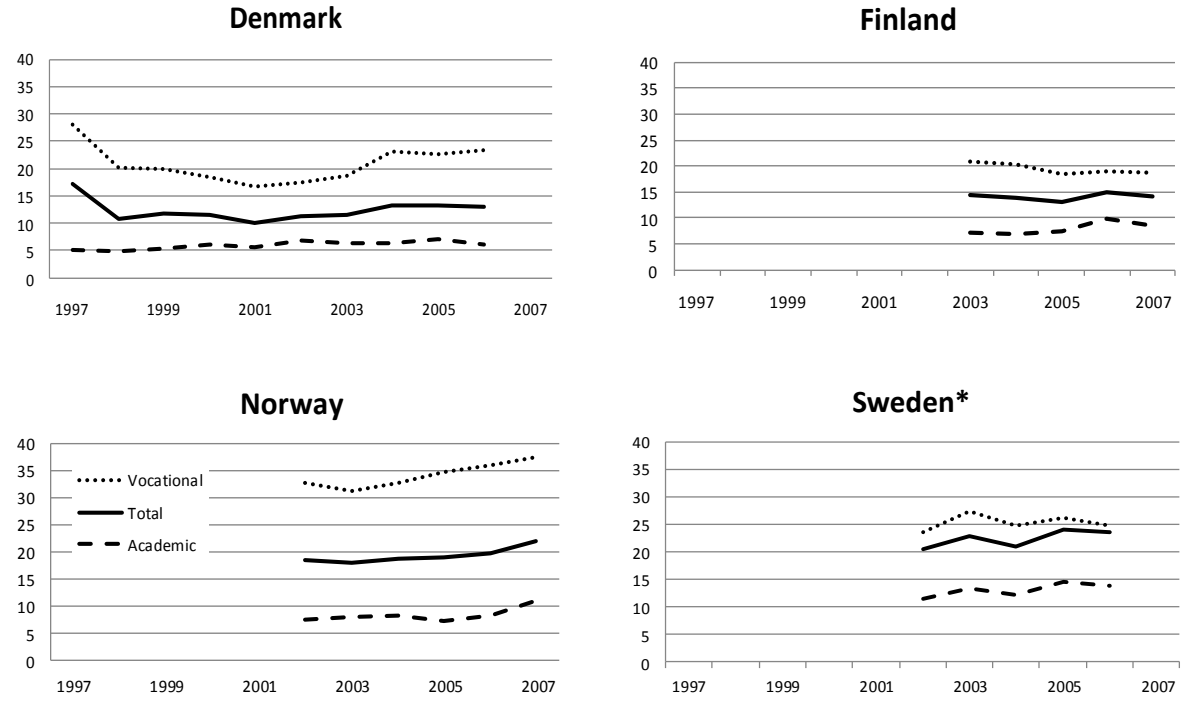

Figure 3. Upper secondary school dropout rates (%) seven years after school start among native born in Denmark, Finland, Norway and Sweden.
* The Swedish Total includes students at the 'Individual programme'.

Apart from the initial decline between 1997 and 1998 (driven by a steep decline in the vocational track dropout rate) the Danish total dropout rate is fairly stable at 10-15 per cent across the period. The vocational track dropout rate starts out with a steep decline from 29 per cent in 1997 to 17 per cent in 2001. Then it starts increasing again and ends up at rate of 25 per cent, close to that of Sweden but lower than in Norway and higher than in Finland. The dropout rates in academic tracks are stable throughout and well below those of the other countries. Finland has a lower dropout rate in vocational tracks but higher in academic tracks as compared to Denmark. The total dropout rate in Finland remains stable at about 15 per cent, but there is a small increase of dropouts in the academic tracks across the period and a

corresponding decline in the vocational tracks. The Swedish total rate fluctuates between 20 and 25 per cent during these years. Note that the Swedish Total includes those who started in the 'Individual Programme', which is why the Total of Sweden is higher than the average between vocational and academic. In each cohort 6-10 per cent starts the Individual Programme and the dropout rate is as high as 75 per cent. There is a tendency of an increasing trend in the Swedish dropout rates and this is driven by the development of the dropout rate in the academic tracks. The Norwegian vocational track dropout rates are particularly high. After a steep increase from 2003 it nearly reaches 45 per cent in 2007. Because of fairly low dropout rates in academic tracks, the total rate is still at the same level as in Sweden at the end of the period. As already noted, in Norway about eight per centage units of the vocational track dropout rates are students who fail the exam test. Thus, in a Scandinavian perspective the above mentioned Swedish debate about the problems with high dropout rates in vocational education seems slightly misdirected. The Swedish problem seems, in this perspective, rather to be located in the academic tracks where Sweden lags behind its neighbours considerably.[3] In Norway, on the other hand, the dropout problem is indeed a story about vocational education. In a summary of Norwegian dropout studies, parents' income, educational status and work force affiliation was considered of uttermost importance (NOU 2008). These are important explanations, but socio-economic background can hardly explain the large between-country differences found here. The individual programme in Sweden and the lower enrolment rate in Denmark and Finland make it highly likely that the composition of students following vocational programmes in Norway increases the dropout rates compared to the other countries. Part of the explanation can also be found in the lack of new apprenticeship slots for vocational students. Recent figures show that particularly women are overrepresented within educations where there are few new apprenticeship contracts. Traditional female dominated studies such as health, welfare and design, with more than 80% female students, had less than half the number of new apprenticeship contracts compared to male-dominated craft skills (NOU 2008). In Høst (2009) it is estimated that 25% of the dropouts from vocational programmes leave because of the lack of apprenticeship contracts.

In Denmark the discussion on dropout from education has focused on dropouts from vocational educations as well. The explanations in the literature on dropout from vocational tracks may be divided into explanations on three levels: explanations related to the individuals

[3] The greatest problem for the Swedish upper secondary school is of course located in the Individual Programme, which more rightfully has been widely debated as well, and for which a thorough reformation is to be implemented in 2011.

(the pupils), the institutions (schools) and the labor market. Explanations at the individual level has focused on psycho-social factors such as social capital and networks and social problems, but also on educational failures at compulsory school resulting in insufficient reading and mathematics skills (Jensen and Helms Jørgensen 2005; Helms Jørgensen 2010). At the school level the social environment in vocational education has been brought up as an explanation to the dropout problem. A reform of vocational tracks in 2001 made courses more individualised. The aim was to provide the opportunity for pupils to create a programme divided into short blocks that suits personal preferences better. However, according to critics this have inferred the social environment in the sense that it is now more difficult to make friends at school, which in turn may have negative effects on the well-being and sense of security in students and thereby increase the propensity to leave school (Jensen and Jørgesen 2005; Koudahl 2005). Finally, at the labour market level the discussion is very similar to that in Norway and concerns the shortage of apprenticeship posts and how many of those who dropout do so because they cannot find such a post.

To the extent that there is a debate about upper secondary school in Finland it concerns two issues: the comparatively high proportions of teenagers dropping out of the school system immediately after compulsory school and the higher proportion of dropouts in vocational tracks (Rinne and Järvinen 2010).

Some measures have been taken to reduce both types of dropout rates during the last decade. These measures include increasing availability of career guidance in both compulsory and upper secondary school, an increased element of work place apprenticeship in vocational education and paying special attention to 'risk groups' such as immigrant students, students with cognitive disabilities and students with social problems. Remedial teaching has been a comparatively frequent phenomenon in Finnish compulsory schools for long, and this is now more frequently used within upper secondary education as well, within vocational tracks in particular (ibid.). Finally, Finland has implemented a bonus system whereby schools that manage to bring down dropout rates are granted increased funding (Olofsson and Wadensjö 2007).

However, dropping out of upper Secondary School is only a problem to the extent at which it deprives chances in the labour market. If the Norwegian labour market is able to embrace also the dropouts then the high dropout rates from the vocational tracks might not be such a big issue after all. Thus, we turn now to the labour market effects of dropping out from vocational tracks in a bivariate analysis.

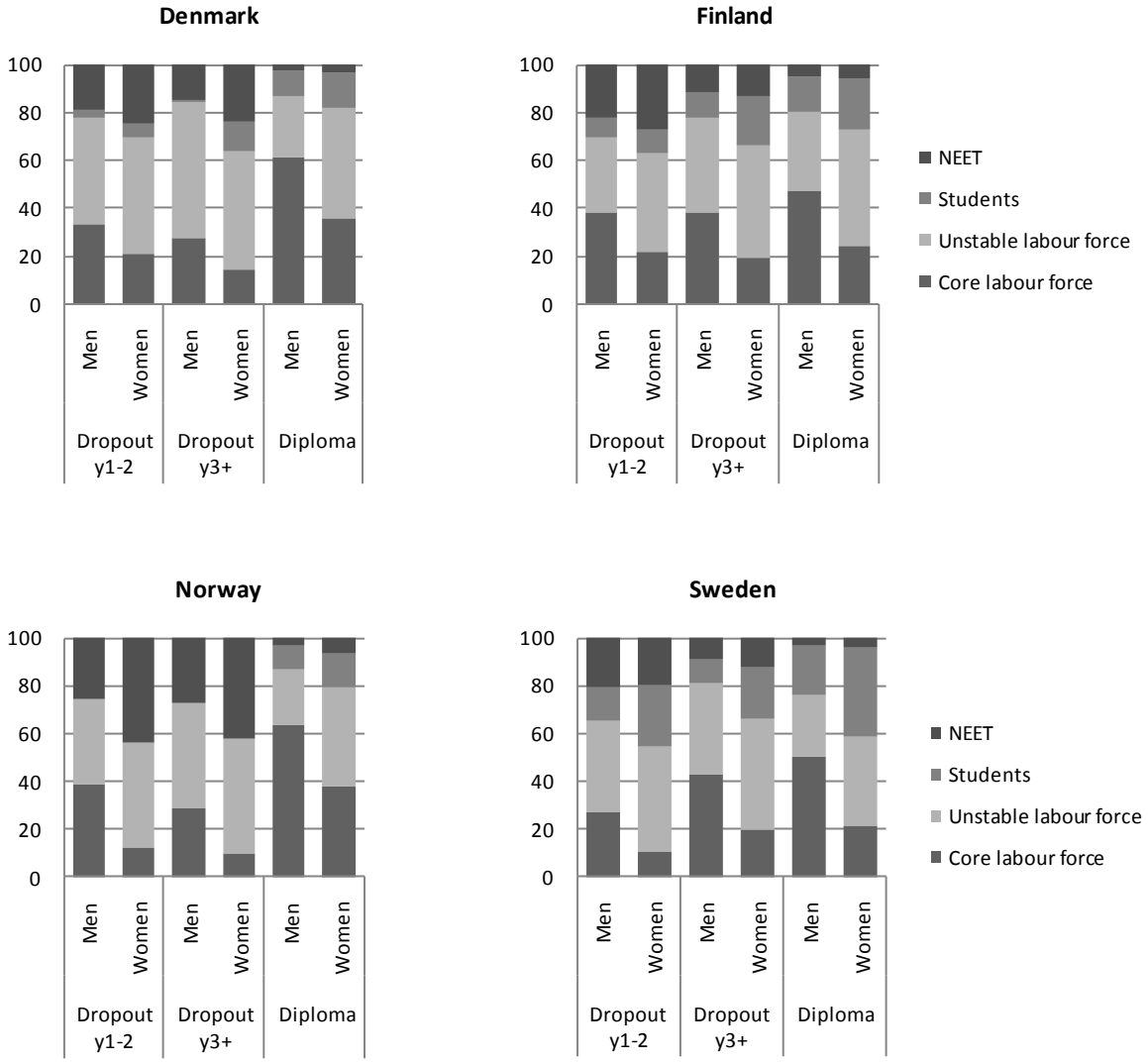

Figure 4. Labour market attachment (SELMA-model) among native born men and women in three educational groups in Denmark, Finland, Norway and Sweden 2006, seven years after school start in a vocational track.

Figure 4 shows labour market status according to the SELMA-model seven years after school start, by sex and school success/failure among those who started in a vocational track. Looking first at those with a diploma from a vocational track we find no differences in the risk for NEET-status between the countries. The rate varies between two and five per cent with slightly higher rates for women in all countries. If we treat membership of both the core labour force and the unstable labour force as an indication of at least some attachment to the labour market we see that, in accordance with virtually all previous research within this area, the school to work transitions is smoother in the apprenticeship systems of Denmark and Norway. Swedish men and women who have graduated from a vocational track are to a less extent in the labour market with Finland falling somewhere in between Sweden and the other

two countries in this respect. On the other hand these former vocational track students are to a greater extent in education in both Finland and Sweden, and particularly so in Sweden. This is why, despite their poorer labour market attachment, there is no more economic inactivity among Finns and Swedes with a diploma from a vocational track than among their Danish and Norwegian counterparts.

Among male late dropouts we find the highest risk for NEET-status in Norway followed by Denmark. Labour market attachment is highest among Danish men in this category. The difference between Finland and Sweden on the one hand and Denmark on the other in this respect is due to a higher participation in education in Finland and Sweden. Also for female late dropouts the NEET risk is lowest in Finland and Sweden and as compared to Denmark this is again due to higher participation in education among the former. Norwegian women run the highest risk for NEET status in this category.

In general, early dropouts run the highest risks for NEET-status in all countries. However, the difference between early and late dropouts in Denmark and Norway is negligible. In Sweden there is no difference in NEET risk between men and women who dropped out early, but men have a higher level of labour force participation. The greatest gender difference in NEET risk among early dropouts is found in Norway.

A pattern worth noticing that emerges in Figure 4 is that in Sweden gender differences in the NEET risk among dropouts is virtually nonexistent. In Finland there are only small differences whereas in Denmark and Norway in particular gender differences are quite substantive in this respect. There are distinct gender differences in Finland and Sweden as well, but they appear in the other labour market categories where male dropouts participate in the labour market to a greater extent than women, whereas female dropouts to a greater extent participate in education. However, this pattern prevails also in the other countries. As noted above, the flat rate home care leave benefits in Denmark and Norway (and in Finland for that matter) can potentially produce higher NEET rates among women in these countries. To control for this and other potential confounders we now turn to the multivariate analysis.

Multivariate analysis

Table 2 shows the estimates from linear probability regression models with fixed effects for counties on the risk for NEET-status seven years after upper secondary school start in each country, separately for men and women. Note the smaller sample sizes for Denmark and

Finland. This means that greater deviations from reference categories are needed to reach significance in the Danish and Finnish models as compared to the others.

For men in Denmark and Norway there are no difference between having at least one of immigrant parents and having both parents born in a mom-western country. In Norway the estimates are not significant. For Danish women the point estimates are negative and for Norwegian women having at least one parent born in the West seems more detrimental than having both parents born outside the West. This is quite contrary to expectations. In Sweden and Finland the expected pattern prevails, although only one estimate reaches significance in the Finnish model. Having children increases the NEET risk for women in all countries, but the effect is particularly strong for women in Norway. For women the effect of this factor is weakest in Sweden. For men, having children decreases the NEET risk in all countries with the strongest effects in Finland and Norway.

Table 2. Results from linear probability models with fixed effects for county on the risk for economic inactivity (NEET-status) in Finland 2003-07, Denmark 2001-06, Norway 2002-07 and Sweden 2002-06. Estimates where p > 0.05 in brackets. Controlled for year of follow-up.

	Finland		Denmark		Norway		Sweden	
	Men	Women	Men	Women	Men	Women	Men	Women
Dropout voc. year 1-2	0.22	0.25	0.15	0.19	0.23	0.35	0.18	0.16
Dropout voc. year 3+	0.15	0.13	0.11	0.16	0.21	0.31	0.06	0.08
Dropout acad. year 1-2	0.14	0.17	0.10	0.10	0.36	0.41	0.14	0.11
Dropout acad. year 3+	0.08	0.13	0.08	0.09	0.22	0.24	0.04	0.04
Diploma vocational	0.03	0.03	0.01	0.00	0.01	0.02	0.02	0.02
Diploma academic	0	0	0	0	0	0	0	0
1-2 parents native	0	0	0	0	0	0	0	0
Immigr. parents, 1-2 west	(-0.01)	-0.01	0.01	(-0.03)	(0.02)	0.06	0.03	0.02
Immigr. parents, 0 west	(0.04)	(0.07)	0.01	-0.03	(0.02)	(0.00)	0.05	0.03
No children	0	0	0	0	0	0	0	0
1+ children 0-17 years	-0.04	0.05	(-0.01)	0.06	-0.05	0.12	-0.02	0.03
N	32,123	30,772	15,476	14,230	107,581	103,468	206,690	197,656

Despite the significant effect of the child factor, the pattern of greater gender differences in Denmark and Norway that was shown in Figure 4 remains in the regression analyses at least as far as vocational track dropouts are concerned. Throughout, early dropouts tend to fare worse than late dropouts. Danish academic track dropouts constitute the exception to this pattern where the difference is negligible. In the regression models, where also academic tracks are included, we can also see that the gendered pattern is more salient in vocational tracks than in academic tracks. The regression analysis also reveals that in Norway dropping

out is particularly detrimental. Of all dropouts categories in Table 2 Swedish late dropouts seem to run the lowest risks for ending up in economic inactivity.

Above, we discussed two hypotheses about the effects of dropping out from vocational tracks in the four countries. The first of these claimed that dropping out would be less detrimental in Denmark and Norway since dropouts in these countries have come in contact with the labour market to a greater extent than in Finland and Sweden. This also suggests that the hypothesised pattern would be particularly distinct in the comparison of late dropouts. Obviously, no such pattern emerges. Instead, it is in Sweden that the risk increase of dropping out late from vocational tracks late is at its lowest. The highest risk increase from dropping out late is found in Norway with Denmark and Finland somewhere in between. The other hypothesis instead maintained that the effect of dropping out from vocational tracks would be highest in Denmark and Norway, since apprenticeship based vocational education also tend to coincide with labour markets which are more closed to job seekers without formal skills. On this point the evidence is unclear. Although we find the strongest effects of dropping out from vocational school in Norway the difference between early male dropouts in this country and in Finland is negligible. Also the differences between Denmark and Sweden are mixed. Early male vocational dropouts do better in Denmark than in Sweden whereas the opposite is true for women.

Sensitivity analyses: the Swedish upper age limit and the Individual programme

The finding that especially late dropouts in Sweden do best compared to other countries is a bit surprising. However, there are two peculiarities in the Swedish upper secondary school system that confuse the comparisons we have made so far. First, as already mentioned, the Individual programme does not exist in the other countries. Of the (Swedish born) upper secondary school starters in 1999 eight per cent started the individual programme. Of these 53 per cent dropped out in the first or the second year, while another 22 per cent dropped out during the third year or later. This is very likely to produce bias in the results. Not least since the effect of dropping out from vocational tracks appears least detrimental in Sweden. This is particularly salient when Sweden and Norway are compared and it is in this comparison that we would expect this potential bias to be most important. In Denmark and Finland enrolment is lower than in Norway and Sweden and it is thus likely that those who never are enrolled in these two countries would have been in the Individual programme, had they lived in Sweden. In Norway this group of students are enrolled, most likely in vocational tracks. At least as

compared to Norway, Swedish dropout rates will be biased downwards, vocational tracks dropout rates in particular.

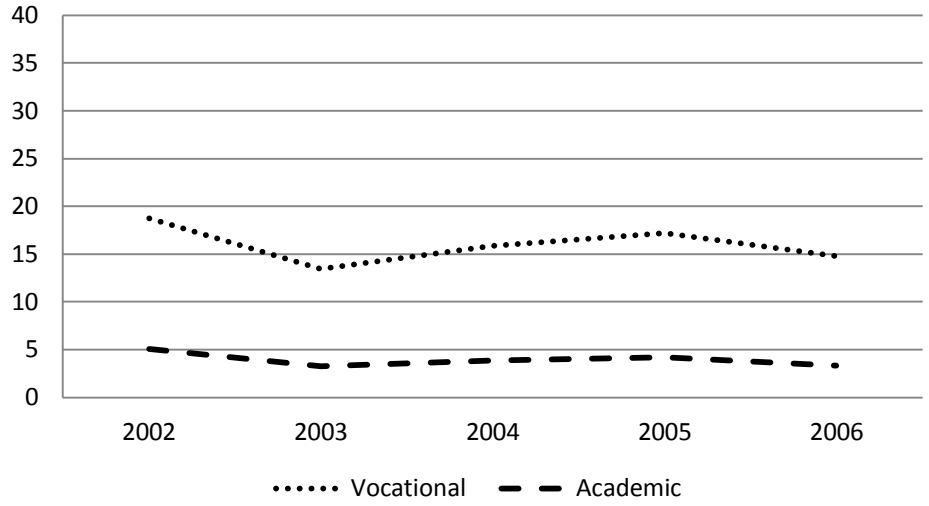

Figure 5. Swedish dropout rates (%) 2002-06 when individual programme has been coded as vocational and those with a diploma from upper secondary school and those registered in adult education have been re-coded.

The other peculiarity is the upper age limit. It is not possible to enrol in the conventional upper secondary school after the age of 20 in Sweden. A large part of those who drop out only to take up their education again do so in other school bodies, such as adult education (KomVux) or so called Folk Schools (Folkhögskola). It turns out, when we look at the educational level of the dropouts as they are defined above, that many of them have three years of upper secondary school as their highest educational level at the seven year follow up. Of the dropouts defined as students in the Swedish graph in Figure 4 nearly half are enrolled at the university level and nearly half are enrolled in KomVux. During our seven year follow up the former has managed to drop out from the conventional upper secondary school, to receive a diploma from e.g. KomVux and to take up university studies. In the other countries where the age limit does not exist, those who drop out and start again will do so within the same school system and will not be categorised as dropouts. As opposed to the problem caused by the Individual programme the upper age limit will bias Swedish dropout rates upwards.

In Figure 5 the Swedish dropout rates have been recalculated to correct for these sources of bias. Those enrolled in the Individual programme has been coded as if they started a vocational track. It is not very likely that all students in the individual programme would have chosen a vocational track if they would have had a chance to do so. But for the sake of the argument we make that assumption here. Moreover, those categorised as dropouts in the

analyses above, but who have an upper secondary school diploma are now recoded into the 'diploma' category. And those who are enrolled in the adult educational system are coded as still in upper secondary school as they would have been in the other countries. As is evident from Figure 5 the Swedish dropout rates fall dramatically when we have made these re-codings. The dropout rate in vocational tracks is now well below that of the other countries, and in academic tracks the rate is down at the Danish level. Thus, when we take the whole upper secondary school system into account the Swedish rates are comparatively low.

However, it is very likely that the low risks of economic inactivity for Swedish dropouts that prevail in Figure 4 and Table 2 are artefacts produced by the fact that the Swedish dropout category, as operationalised in the initial analyses, is a group with stronger educational and cognitive resources as compared to the other countries. This also seems to be the case when we look at the results from the new regression model presented in Table 3. Here the categories have been re-coded as in Figure 5 and obviously the coefficients are now closer to those of the other countries. For male early vocational dropouts the Swedish estimates are now well above those of Denmark and at parity with those of Finland and Norway, whereas for late male vocational dropouts the estimate is still below those of Finland and Norway but at about the same level as in Denmark.

Table 3. Results from linear probability models with fixed effects for local labour markets on the risk for economic inactivity (NEET-status) in Sweden 2002-06 where individual programme has been coded as vocational and those with a diploma from upper secondary school and those registered in adult education have been re-coded. Estimates where $p > 0.05$ in brackets. Controlled for ethnic origin, parenthood and year of follow-up.

	Sweden	
	Men	Women
Dropout voc. year 1-2	0.24	0.25
Dropout voc. year 3+	0.09	0.13
Dropout acad. year 1-2	0.18	0.18
Dropout acad. year 3+	0.07	0.10
Diploma vocational	0.02	0.03
Diploma academic	0	0
N	217,939	205,599

For female vocational dropouts in Sweden the point estimates now end up at exactly the same level as in Finland and the increased risk for early female vocational dropouts passes that in the Danish model. However, it is still well below the Norwegian estimates. For late academic dropouts the Swedish estimates now resemble those of Denmark and Finland. For early academic dropouts the risk increase is higher in Sweden than in Denmark and Finland, with exception of Finnish women, but still lower than in Norway.

The results from these sensitivity analyses do not alter the conclusions on the hypotheses made above, but they do point at the importance of taking whole systems into account when comparing educational institutions.

Discussion

A problem that has become evident in recent reports on throughput and dropout rates in Nordic upper secondary schools is the shortage of comparable statistics across the countries (e.g. Olofsson and Wadensjö 2007; Markussen 2010). In this report we have tried to come closer to a solution to this problem by calibrating data from official records in four of the Nordic countries. Although some difficulties still remain we believe that the results presented here represent a step forward in this respect. We have also managed to create a model for measuring labour market attachment and social exclusion on data from public records. Since the availability and quality of data from public records in the Nordic countries is unique from an international point of view this model, or at least this approach to using these types of data, has the potential of becoming useful in future research.

The results of the analyses above confirm previous findings claiming that dual vocational education with extensive apprenticeship components make the school to work transition smoother. Although differences are fairly small the general picture mediated here says that the transition works best in Denmark followed by Norway, Finland and finally Sweden. Apparently this follows the extent of the apprenticeship component in the vocational education in the respective countries. However, the focus of the present study was directed at school failure rather than school success and it turns out that the apprenticeship based systems in Denmark and Norway are no better than the school based vocational education in Finland and Sweden when it comes to making participants complete their education. On the contrary, it is in Norway where we find the greatest problems in this respect. Not only are the dropout rates in vocational tracks particularly high in Norway, but also the risk for economic inactivity among upper secondary school dropouts. Not least the latter might seem surprising considering the fact that many young people from the other Scandinavian countries, Sweden in particular,[4] move to Norway to work in unskilled jobs primarily in the service sector, jobs that should pick up Norwegian low educated youth as well. However, this labour market is primarily located in the Oslo region. There are indications in the literature that the NEET risk varies regionally in Norway (Falch and Nyhus 2011).

[4] The Swedish contingent in Oslo has been estimated to 60-100,000 persons, depending on season, in a city of approx. 1 million.

Another reason why the analyses do not come out quite as might have been expected is that we analyse the NEET risk rather than the unemployment risk. As briefly discussed in the results section the NEET category is probably a much more homogenous group as compared to the unemployed. Obviously the between country difference in the size of this group is much smaller than when we compare official unemployment rates among youth. By our operationalisation we are likely to capture a group of people that stand so far away from the labour market that many of them probably do not belong to the labour force in official statistics, and therefore do not even contribute to unemployment numbers. Thus it seems as if the economically inactive, as captured by the NEET category, is a 'condensed' group and when we reach that level of concentration of labour market related problems the difference between countries apparently are small.

Seen in light of an institutional innovation – "the follow up services" that was launched as a part of Reform 94, the comparatively high dropout rates and NEET risk among dropouts in Norway are noteworthy and perhaps disappointing. The intention of the "follow-up services" was to prevent dropout and to ensure the right for all to get a three-year upper secondary school education by offering all adolescents an educational slot or a job. An evaluation of the follow up service concluded that the success was conditional primarily because the service had few effective means at its disposal (Markussen 2007). In particular, for young people who are tired of going to school the follow up services have only a limited number of jobs or apprenticeships to offer. This again is related to the organisation of apprentice contracts. As indicated above there is a general shortage of such contracts also among those enrolled in conventional vocational schools, in economic downturns in particular. The relatively weak performance of the Norwegian system, then, may to some extent be related to these organisational traits of vocational education in Norway.

The Swedish system, on the other hand, performs better than expected. In the sometimes heated Swedish school debate, one might get the impression that upper secondary school is a complete failure, at least as far as the Individual and the Vocational programmes are concerned. The Individual programme has undoubtedly been a failure with a dropout rate at 75 per cent and is now being replaced by a new system which hopefully will do better. At least in the light of the other Nordic countries the Vocational education does, on the other hand, not seem to be in such a great crisis as is sometimes ascribed to it. Even when we do not take into account the upper age limit the Swedish dropout rates in vocational tracks do not stand out as particularly high; at the same level as in Denmark, below the Norwegian rates,

but higher than in Finland. When we do take the upper age limit into account and rather than looking at throughput in the youth upper secondary school in isolation and ask how many of those who started in a vocational track a particular year had received a diploma seven years later Swedish vocational track starters come out best of all four countries. It seems as if the available options for a "second chance" in Sweden are better equipped to embrace dropouts, particularly as compared to Denmark and Norway. Yet, the total dropout rate in youth upper secondary school is higher than in the other countries (except Norway) and although second chances seem to work well it is not optimal when students drop out in large numbers. From a societal point of view the second *chance* options are also the second *best* options since it postpones labour market entry. To reduce dropout rates in the conventional youth upper secondary school is thus still a great challenge to Sweden. However, considering the dropout rates in the Danish and particularly Norwegian vocational schools it seems unlikely that the new apprenticeship based vocational education that is being implemented in Sweden in the fall of 2011 will answer to this challenge the way the proponents of the reform claim it will.

The Danish flexicurity model of labour market organisation has been admired and envied for several years in many European countries. The model combines liberal employment protection legislation with high replacement rates in the unemployment insurance and extensive active labour market policy measures. It has been launched as one important explanation to the Danish labour market success story (e.g. Lykketoft 2009). Not least, it has been used as an explanation to low youth unemployment rates.[5] The liberal employment protection rules make it easy for employers to "hire and fire" and this is particularly beneficial for youth, it is argued. Since it is more difficult for employers to judge the productiveness of inexperienced workers as most young people are, the liberal rules reduce the risk associated with hiring young workers. Thus, it is likely that the flexicurity policy helps up the employment rate among those with a diploma from vocational tracks in this study since it probably makes job competition easier for them. However, the policy does not seem to help much in reducing the NEET rate in Denmark. This could again be due to the fact that this group stands far away from the labour market; flexicurity or not, their employability is so low that these types of policy measures do not seem to help much.

An important result from the analyses is the variation in magnitude of gender differences in NEET risk among vocational school dropouts in particular, with very large differences in

[5] http://www.jobkompetence.net/artikel/tre-bud-pa-hvorfor-ungdomsarbejdslosheden-er-meget-lavere-i-danmark-end-i-sverige

Norway, whereas they are virtually non-existent in Sweden, with Denmark and Finland somewhere in between. A working hypothesis was that this could be due to variations in parental insurance legislation, but the differences remain when we control for parenthood. Thus we cannot come up with a reasonable explanation to the observed pattern without dwelling into pure speculation. This question definitely urge for further research.

The results presented in this report point at an important challenge to the Nordic countries. Undoubtedly, vocational schools with an extensive apprenticeship component provide a smoother school-to-work transition process for those who manage to receive a diploma. However, the dropout problem in these types of schools cannot be neglected, particularly not in Norway. Taking these observations into consideration the shift in Finnish and Swedish vocational education toward more apprenticeship based educational programmes is likely to have two disparate consequences: a smoother transition to the labour market for those who accomplish their educational programmes, but simultaneously a higher dropout rate in vocational programmes as a whole.

We have not analysed development across time in this report, but if it is true that globalisation and industrial restructuration are significant processes going on in the world, and that these processes have made the labour market entry process exceedingly complicated one scenario is that the positive effects of apprenticeship based programmes on labour market entry will decline across time. This could happen if the standardised transition from school to work is on its way out and is being replaced by a process in which establishment on the labour market is made through a series of insecure jobs in various branches (Beck 1992). The school-to-work transition from apprenticeship based programmes hinges very much on the old standardised transition and the positive effects we see in this and other studies may thus only reflect how such systems manage to hold back the labour market effects of globalisation. In such a scenario the more general competences provided by the school based systems in Finland and Sweden may provide a better preparation for the labour market. On the other hand it could be that globalisation does not have these effects at all and that the standardised transition will continue to be an important route into the labour market. In that case apprenticeship based programmes will continue to provide the smoothest way to the labour market. Irrespective of which scenario prevails, the first challenge is to reduce dropout rates.

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