# Vad förklarar svenska universitetsstudenters höga examensålder*

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* Jag vill tacka Gerard van den Berg, Francis Kramarz och deltagarna i Långtidsutredningen för detaljerade synpunkter på tidigare utkast samt Björn Öckert och Jörgen Moen för hjälp med beräkningar baserade på svenska data.

# Innehåll

# Vad förklarar svenska universitetsstudenters höga examensålder?

*Bilagan följs av en längre fördjupad text på engelska i vilken det finns omfattande forskningsreferenser.*

## 1 Inledning

Genomsnittsåldern för de svenskar som tar examen från svenska universitet och högskolor är 29 år. Det innebär att Sverige har en högre examensålder än alla andra länder i OECD förutom Island. Svenska studenter påbörjar också sina studier sent. Hälften av de nya studenterna på svenska universitet och högskolor är 22 år eller äldre, vilket också är näst högst inom OECD.

Den höga examensåldern innebär ett problem om den leder till minskad sysselsättning, eller till en minskad produktivitet bland de sysselsatta. Det senare kan bli fallet om studenter jobbar före eller under studietiden, men då är mindre produktiva än efter avklarade studier. Inför en framtid med en åldrande befolkning, och den ökade försörjningsbörda detta innebär, söker de flesta europeiska länder efter sätt att öka sysselsättning och produktivitet. Ett möjligt sätt att åstadkomma detta som ofta diskuteras är att höja pensionsåldern. Ett alternativ till detta är dock att försöka sänka den ålder vid vilken ungdomar träder in på arbetsmarknaden. Eftersom de flesta andra europeiska länder har en lägre examensålder än Sverige framstår en sänkt examensålder som ett policyalternativ som kan vara speciellt attraktivt just i Sverige. En sänkning av examensåldern skulle med största sannolikhet leda till en högre sysselsättning och en högre produktivitet.

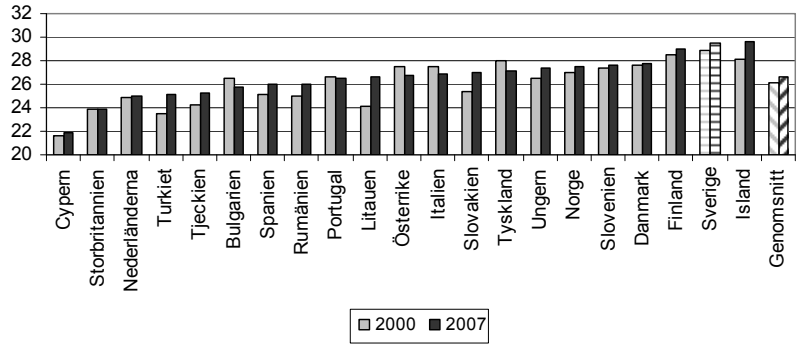
Denna bilaga analyserar olika faktorer som är relaterade till de svenska ungdomarnas höga examensålder. Bilagan börjar med att analysera internationella data från OECD över sysselsättning och deltagande i högre utbildning med syfte att belysa de aspekter av det svenska utbildningssystemet som särskiljer Sverige från andra länder. Därefter går rapporten igenom den utbildningsekonomiska litteraturen och ger en översikt av evidensen kring vilken typ av åtgärder som kan påverka den ålder vid vilken högskolestudenter träder in på arbetsmarknaden. I den svenska kontexten berör detta både åtgärder för att premiera tidigare inträde i den högre utbildningen och åtgärder för att förkorta studietiderna. Slutligen görs en samlad bedömning av för- och nackdelarna med ett antal möjliga åtgärder.

Bilagans bedömningar görs från ett utifrånperspektiv. Syftet är inte att ge detaljerade synpunkter som är väl förankrade i svenska institutioner utan istället att ge en bild av de ekonomiska effekterna av en hög examensålder, och om för- och nackdelar med möjliga åtgärder som kan användas för att sänka examensåldern. I huvudsak baseras rapportens slutsatser på erfarenheter från andra nordiska länder och från den internationella utbildningsekonomiska forskningen.

## 2 Examensåldern i ett internationellt perspektiv

Två aspekter är speciellt anmärkningsvärda när det gäller den svenska examensåldern. Den första aspekten är att examensåldern i genomsnitt är hög. Jämfört med andra OECD-länder tar svenska studenter examen väldigt sent. Under 2007 var den genomsnittliga examensåldern i Sverige 29 år. Detta är den näst högsta åldern bland de 21 OECD länder för vilka data finns tillgängliga, vilket framgår av Figur 1. Skillnaderna mot andra länder är betydande. Examensåldern är ungefär två år högre än i Norge och Tyskland, och ungefär fyra år högre än i Nederländerna. Noterbart är att alla de nordiska länderna har relativt höga examensåldrar, vilket antyder att fenomenet är förknippat med den nordiska modellen generellt och inte är ett unikt svenskt problem.

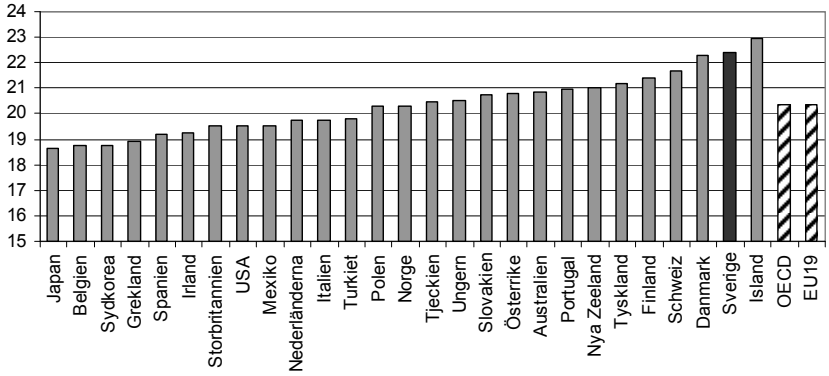
**Figur 1 Genomsnittlig examensålder 2000 och 2007**




Not: Gäller examen från ”tertiary 5A programs” (första examina).
Källa: OECD.

En annan anmärkningsvärd aspekt är att svenska studenter ofta tar sina examina sent eftersom de påbörjar sina studier sent. Hälften av de studenter som påbörjar högre studier i Sverige är äldre än 22 år. Även detta är den näst högsta åldern inom OECD, vilket framgår av Figur 2. Svenska studenter är i genomsnitt två år äldre när de påbörjar sina studier än studenter i ett genomsnittligt europeiskt land. Följaktligen är även andelen inom en ålderskohort som är i utbildning vid 20 års ålder en av de lägsta bland de länder där jämförbara data finns att tillgå. Anledningen är att svenska studenter ofta tar ett flerårigt uppehåll mellan gymnasium och den högre utbildningen. Å andra sidan tar inte svenska studenter exceptionellt lång tid på sig när de väl påbörjat sina studier. I någon mån särskiljer detta Sverige från andra nordiska länder där problemen även omfattar långa studietider. Detta antyder att insatser som syftar till att sänka examensåldern i första hand bör inriktas på att sänka inträdesåldern.

**Figur 2 Medianålder vid inträde i universitets- och högskoleutbildning 2007**




Källa: OECD.

Den höga genomsnittliga examensåldern beror troligen inte på ovanligt många ungdomar väljer att studera. Genomgången visar nämligen att antalet studenter i Sverige är av ungefär samma storleksordning som i andra jämförbara länder. Detta gäller både vid jämförelser av andel högskoleexamina och vid jämförelser av andelen unga personer som studerar. Detta är av betydelse eftersom det indikerar att det är möjligt att sänka examensåldern utan att för den skull minska antalet studenter.

Genomgående är examensåldern högre i de länder där den ekonomiska avkastningen på utbildning är lägre, vilket antyder att det kan vara möjligt att sänka examensåldern genom att ändra de ekonomiska incitamenten. Ett progressivt skattesystem, som gynnar dem som väljer att studera och arbeta parallellt istället för att utbilda sig först och arbeta senare, avsaknad av studieavgifter, och små löneskillnader mellan hög- och lågutbildade är faktorer som tycks vara gemensamma nämnare för länder med en hög examensålder. Sambanden är dock inte speciellt starka och det är svårt att belägga dem med någon större statistisk precision. Dessutom saknas det jämförbara data för andra möjliga förklaringsfaktorer, som studiemedelssystemens utformning, som kan vara väl så viktiga. Därmed får evidensen närmast betraktas som indikationer på samband.

# 3 En ekonomisk tankeram kring valet av examensålder

I den ekonomiska litteraturen betraktas ofta utbildningsbeslutet som en form av investeringsbeslut. Under studietiden betalas en kostnad som ger en avkastning senare och individerna antas välja att utbilda sig om avkastningen är större än kostnaden. I länder som Sverige, där själva utbildningen är gratis handlar kostnaden framförallt om förlorad arbetsinkomst under studietiden. Avkastningen mäts oftast i termer av den högre lön som utbildningen kan ge upphov till efter studietiden, men även andra faktorer, som exempelvis lägre arbetslöshetsrisk eller högre social status, kan räknas hit även om en del av dessa faktorer är svåra att mäta.

Enkla analyser av kostnader och intäkter visar att utbildning bör genomföras tidigt. Det finns två skäl till detta. Om lönepotentialen ökar med åldern är det bäst att utbilda sig när alternativkostnaden (den förlorade arbetsinkomsten) är som lägst. Av större betydelse är dock att de flesta väljer att pensionera sig senast vid 65 års ålder, och den som tar examen tidigare har därmed möjlighet att räkna in positiva intäkter under en längre tid. Detta innebär att en utbildning som är lönsam att påbörja vid 20 års ålder inte nödvändigtvis är lönsam att påbörja vid 40 års ålder.

Resonemanget ovan utgår från individens beslut. En viktig fråga är dock om det finns anledning för samhället att försöka styra dessa beslut genom regleringar eller andra interventioner. Generellt sett gäller att det inte finns någon anledning för offentliga interventioner i utbildningsbesluten om tre villkor är uppfyllda: i) individerna är rationella och framåtblickande, ii) individerna själva bär alla kostnader och intäkter för sina beslut, och iii) individerna utan restriktioner kan låna de medel de behöver under sina studier. Om dessa villkor är uppfyllda finns ingen anledning att intervenera, varken vad gäller beslut om *hur* länge man vill utbilda sig eller beslut om *när* man väljer att utbilda sig.

I realiteten är det osannolikt att villkoren är uppfyllda och det är också därför vi ser ett betydande inslag av offentlig utbildningspolitik i alla länder. Inom den utbildningsekonomiska litteraturen finns en omfattande diskussion om motiven för en offentlig utbildningspolitik, men mycket lite av diskussionen rör betydelsen av när utbildningen bör ske. Litteraturen innehåller relativt lite evidens om hur ungdomar skapar sina förväntningar, men de studier som finns pekar på att ekonomiska incitament är betydelsefulla. De

mest tydliga argumenten för en utbildningspolitik är dock att studenterna inte själva kan låna upp de resurser de behöver under studietiden och att de inte själva får hela den ekonomiska avkastningen av sina utbildningsbeslut. Nedan redovisas skattningar av i vilken utsträckning studenterna får del av den ekonomiska avkastningen som är förknippad med tidigare examina.

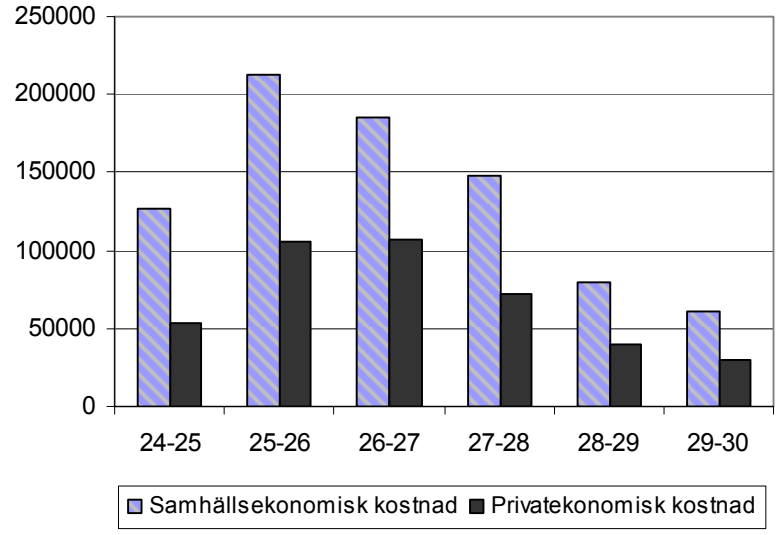
## 4 Skattningar av examensålderns ekonomiska konsekvenser

De ekonomiska konsekvenserna av att utbilda sig skattas ofta som (den diskonterade) summan av de inkomster under en hel livstid som är förknippade med en kort utbildning jämfört med summan av de inkomster som är förknippade med en lång utbildning. På samma sätt kan avkastningen på examensålder skattas som skillnader i livsinkomster beroende på vid vilken ålder personen tog examen. Som diskuterades ovan är avkastningen troligen högre om utbildningen genomförs tidigt eftersom alternativkostnaden är lägre i unga år och det återstår fler år att hämta hem intäkterna på för studenter som tar examen tidigt. Därför finns det en betydande ekonomisk avkastning av att ta examen tidigt.

För att empiriskt belysa de ekonomiska konsekvenserna av att ta examen vid en högre ålder skattas livsinkomsteffekter av examensålder på svenska registerdata. I skattningarna har betydelsen av kön, invandrarbakgrund och studieinriktning rensats bort.[1] Skattningarna visar att det finns betydande ekonomiska incitament för att utbilda sig tidigt. Beräkningarna som redovisas i Figur 3 visar att en ettårig förskjutning av examensåldern kostar individen ungefär 80 000 kronor i disponibel livsinkomst. Noterbart är att de samhälleliga kostnaderna är ungefär dubbelt så stora. Anledningen till detta är att de som tar examen senare i genomsnitt tar emot mer transfereringar och att ett progressivt skattesystem gör att en del av inkomstvinsten från en tidig examen tillfaller samhället i form av skatteintäkter. Denna betydande skillnad mellan den individuella och den samhälleliga avkastningen innebär att det finns ett starkt motiv för samhället att utforma institutioner som premierar en lägre examensålder.

[1] Se den fördjupade engelska texten för detaljer.

**Figur 3** **Samhällsekonomiska och privatekonomiska kostnader för uppskjutna studier (kronor)**




Källa: Egna beräkningar baserat på uppgifter från IFAU-databasen, se den fördjupade engelska texten för detaljer.

## 5 Möjliga åtgärder för en sänkt examensålder

I denna bilaga ges även en översikt av den utbildningsekonomiska evidensen kring åtgärder som kan sänka den genomsnittliga examensåldern. En detaljerad genomgång finns i den engelska fördjupningstexten. Tyvärr är dock evidensen inte så omfattande som man skulle önska.

Det finns ett antal forskningsrapporter som analyserar vilka faktorer som påverkar hur lång tid det tar för studenter att ta examen. Resultaten i dessa rapporter antyder att studieavgifter förkortar studietiderna betydligt. Forskningsresultaten är mindre tydliga när det gäller effekterna av studiemedelssystemets utformning. Det finns dock tydlig evidens som pekar på att arbete under studietiden förlänger tiden till examen. Men eftersom arbete under studietiden har positiva inkomsteffekter när studierna väl är avklarade kan åtgärder som utformas för att minska omfattningen av arbete under studietiden ha både positiva och negativa effekter.
De studier som finns visar även att den ekonomiska avkastningen på utbildning är lägre om det sker uppehåll under studietiden och

att uppehåll mellan gymnasium och högre utbildning är förknippade med betydande minskningar i livsinkomster. Ett problem är dock att vi vet väldigt lite om varför studenter väljer att göra uppehåll innan de påbörjar högre utbildning och därmed än mindre om vilka åtgärder som kan vara mest effektiva för att snabba på denna övergång.

Det mest direkta sättet att påskynda övergången till arbetslivet är att sänka skolstartsåldern med ett år (till sex års ålder) utan att ändra längden på därpå följande utbildningar. Enligt åtminstone två välgjorda studier skulle detta ha positiva effekter på livsinkomsterna. En nackdel är dock att skolresultaten i allmänhet blir sämre vid en tidigare skolstart.

Som nämnts ovan är evidensen kring vilka effekter olika typer av insatsers har inte är så stark som man skulle kunna önska. Men den evidens som finns pekar ändå i riktning mot att en mer realistisk och ändå effektiv åtgärdsmix för att sänka examensåldern borde innehålla följande fyra komponenter: i) intensifierad studievägledning under gymnasietiden för att minska osäkerheten vid studievalen, ii) extrapoäng i antagningsprocessen för de som ansöker till universitet och högskolor relativt snart efter att de gått ut gymnasiet för att premiera de som väljer snabba övergångar och som därför genererar ett större positivt bidrag till samhällsekonomin, iii) låga studieavgifter, möjligen kombinerade med högre studiemedel, för att ge studenterna incitament för att bli färdiga relativt snart och iv) en finansiering av universitet och högskolor som innebär att de får mer betalt för studenter som tar examen i tid för att ge utbildningsanordnarna stärkta ekonomiska incitament till att bidra till kortare studietider.

# 1 Factor affecting the late graduation of Swedish university students

Swedish university graduates are on average 29 years old when they finish their studies. This is the second highest average graduation age in the OECD countries. Iceland is the only country where the average graduation age is higher than in Sweden. The Swedish university students also start their university-level studies exceptionally late. The median entry age is over 22, which is also the second highest age among the OECD countries.

As in other European countries, the Swedish population is aging rapidly. When a growing fraction of people will reach retirement age and start receiving pensions, the burden to public finances is increasing. Since the pension system is not fully funded, the pension payments need to be financed mainly from social security contributions collected from the working age population. Increases in the life-expectancy are also likely to lead to increases in health care expenditure and therefore create an additional burden on the public purse.

As a response to these challenges many OECD countries have implemented reforms aiming to delay retirement. A sufficiently large increase in the employment rate of the older cohorts could solve the problem that population aging creates for public finances. However, policies with large effects on the average retirement age are hard to implement. In addition, creating stronger incentives to delay retirement would typically require cutting benefits from people who retire early. As early retirement often is caused by various disabilities, such policies may also be harsh to people with diminished work ability and limited chances to affect their retirement age. Since extending the work careers at older ages is difficult, it seems natural to ask whether it would be easier to instead incre-

ase employment rates by getting the youth into the labor market earlier.

Given that most OECD countries manage to get their youth through the higher education system much faster than Sweden, there might be scope to increase the efficiency of the Swedish system and lower the average graduation age. This would most likely also increase aggregate employment rates. However, since many students are employed already during their university studies or before entering a university – at least part time – faster graduation may also decrease employment rates in some age groups. The net effect on employment depends on the relative size of these effects working in opposite directions. However, in addition to the potential effects on employment, the policy makers should be interested in the effects of graduation age on productivity. If lowering the graduation age leads to a decrease in unskilled part-time student employment and a simultaneous increase in post-graduation employment, this is would be beneficial for productivity even if the aggregate employment rate remained constant.

It is also clear that a lower graduation age is a sensible policy goal only if a sufficiently high quality and quantity of education could be maintained. Efficiency is improved if the same amount of human capital is produced faster, but not if lowering the average graduation age would imply a large decrease in the quality of education that the graduates receive.

Though average graduation age in Sweden is exceptionally high, the questions related to the late graduation are not entirely specific to the Swedish education system, nor are they very recent. The problems related to late graduation are currently discussed also in other Nordic countries where graduation ages are almost as high as in Sweden. Interestingly the topic has been discussed for quite some time, also in countries where graduation ages are substantially lower. The earliest example is probably an article written already in 1903 by W. Scott Thomas published in the *Popular Science Monthly:*

> "The belief seems to have become general that the American boy of today takes his first collegiate degree – A.B. or its equivalent – a good deal older than his father took his, and a great deal older than his grandfather." (Thomas, 1903)

In 1925 Arthur Jones wrote about the same issue in *The School Review*. At the time the discussion was focused on the need of

organizing American secondary schools more efficiently but the underlying issues were quite similar:

> "The movement toward the reorganization of secondary education began in the last decade of the nineteenth century (…) One of the chief arguments in favor of this reorganization was the need for shortening the period of preparation for lifework, especially the professions. It was argued that our schools and colleges were organized in such a way as to render it difficult, if not impossible, for a young man to begin his work as a physician or a lawyer before the age of twenty-six or even thirty, that it was advisable to begin professional work at an earlier age, and that some reorganization should be effected that would reduce the number of years necessary for preparation". (Jones, 1925)

The issues discussed in these early examples are surprisingly similar to issues in current policy discussions. Late graduation is a problem mainly because it delays the entry into productive work and lowers the employment rate. The problem is getting increasingly severe as the share of the population in the working age is decreasing. Maintaining the welfare state requires high employment rates. Decreasing average age of entry into the labor market is one of the important margins where the employment rate could potentially be increased.

This report reviews factors related to the progress of the Swedish youth through the higher education system to the labor market. It starts with a comparative analysis that is largely based on OECD data on employment, unemployment, and participation in the education system. The purpose of this comparison is to identify the features of the Swedish system that differ from the other OECD countries. After this comparison the report covers the literature on the effects of policies that affect or may affect the labor market entry age. In the Swedish context these policies are related both to the age of entry into higher education and to the duration of higher education.

In the end of the report I will go through potential policy recommendations that might have an effect on the age of entry into the labor market. In addition to policies implemented or discussed in Sweden, I will also discuss experiences of policy interventions implemented elsewhere, particularly policies implemented in Finland. The Finnish experiences could be useful as the labor market and educational institutions in many are ways similar. Another natural reason is that I am more familiar with Finnish experiences than with effects of policies implemented elsewhere.

This report is an outsider's view on the Swedish higher education system. Conclusions are based on international research, drawing primarily on studies published by economists. Thus, the report will not go into details regarding the Swedish system, and will not include a complete coverage of Swedish studies from other fields. Rather, the report aims to provide a bird's eye perspective on the main features of the Swedish system, and summarize the lessons that can be learned from international economic research on the topic.

# 2 Swedish tertiary graduates compared to graduates in other OECD countries

This chapter compares the progression of the Swedish youth through the higher education system to that of the youth in other OECD countries. In some of the more detailed comparisons the Swedish youth are compared to the youth in Finland, Norway, Denmark, Germany, France, Holland, the UK and the USA. Through comparison to the other industrialized countries, I will try to identify the special features of the Swedish educational system, and to find dimensions where the Swedish higher education system appears to be more or less effective than the systems in other countries.

The data for the comparisons are mainly derived from various OECD databases. The OECD has collected vast amounts of data on the performance of the education systems in the member countries. These data are particularly useful since they make it possible to compare systems with widely varying characteristics. However, comparisons should be made with due care. For example, in some countries graduating from tertiary education typically refers to completing a "short" bachelor level program lasting three years while in others a typical first tertiary level degree is a Master's degree that typically takes five years to complete. Direct comparisons of the duration of university studies in different countries might therefore be misleading. Instead, comparing time spent in education between ages 15 and 29 is probably more informative regarding differences in investments in education.

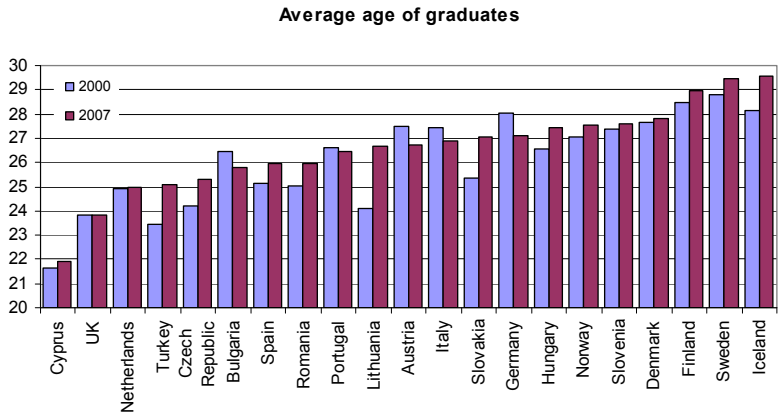
## 2.1 Graduation age

A natural place to start the comparison is to examine the differences in the average university graduation age in different countries.[2] Figure 2.1 reports the results from these calculations. According to the figure, the average age of tertiary-level graduates varies a lot across countries. The average graduation age is lowest in Cyprus where university students typically graduate already at the age of 22. Also, graduates from the UK universities are very young; the average graduation age is below 24. University graduates in all Scandinavian countries are in the other tail of the age distribution. In 2007, the average graduation age in all five Scandinavian countries was over 27. The average graduation age in Sweden was over 29 which was the second highest number among the countries from which data was available; only Iceland had an even higher average graduation age.

Since some graduates are very old in most countries, and this group thus have a large effect on the mean, one could argue that the median graduation age (i.e. the age when half of the graduates have graduated) could be used instead of the mean. In most countries the median age is lower than the average (median graduation age is 27 in Sweden) but the ranking of countries is hardly affected at all if medians are used instead of means. One should also note that changes in the average age of graduates from year to year may not reflect changes in the speed of processing through the system. For example, policies that induce those whose studies have been delayed to complete their degrees would increase the number of older graduates and hence increase the average graduation age. However, as shown in Figure 2.1 below, average graduation ages have been relatively stable over time within countries; the ranking of countries is very similar for the years 2000 and 2007.

[2] Interestingly, such statistics turned out to be hard to find. The most recent publication reporting comparable numbers from several countries is *The OECD Education at a Glance* from 1998. However, the average graduation age can be calculated based on data in the Eurostat database.

**Figure 2.1 Average age of university graduates from tertiary 5A programs (first degrees)**

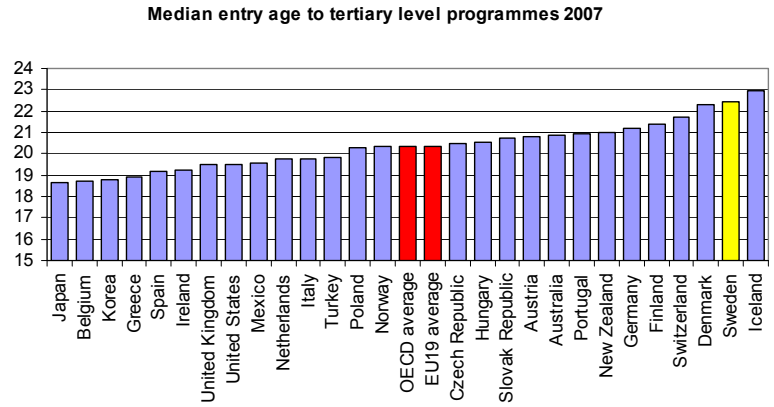



Source: Own calculations based on data from Eurostat
http://epp.eurostat.ec.europa.eu/portal/page/portal/education/data/database.
Note: The original data contain the number of graduates from tertiary (5A) programmes with academic orientation by age. In calculating the average graduation age missing values on number of graduates at a certain age that are zero by default or not available are assigned a value of zero. In cases where only an age interval is given I have used the midpoint of age range and coded age groups 30 – 34 to 32, 35 – 39 to 37 and over 40 arbitrarily to 42.

The average university graduation age depends on the average entry age into universities and on the average duration of university studies. Even if the university studies are efficiently organized, the average graduation age will be high if the students enter university late.

Figure 2.2 displays median age of entry into tertiary level programs in the OCED countries. The entry age is clearly among the highest in Sweden, though Icelandic students appear to start even later. The entry age is also high in Denmark and Finland. Compared to the OECD average the Swedish students enter into tertiary level education about two years later which already explains a large fraction of their comparatively high graduation age.

**Figure 2.2 Median age of entry into tertiary education (2007)**

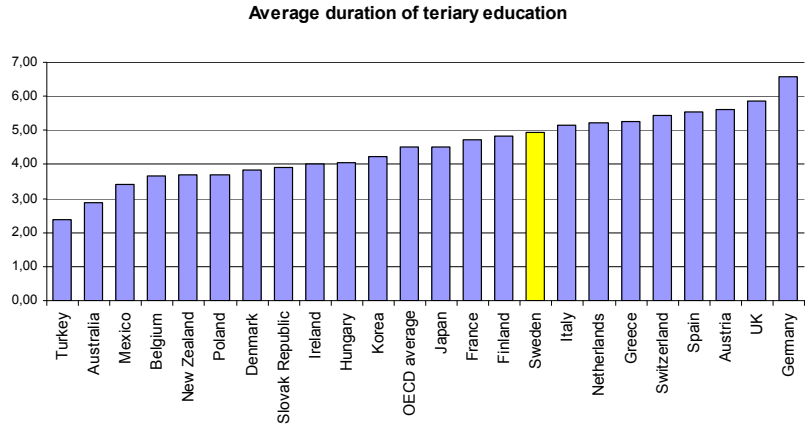



Source: Education at a Glance 2009: OECD Indicators, Table A2.4.

Comparable data on the duration of tertiary education for most countries can also be found in the OECD databases.[3] The latest OECD estimates are displayed in Figure 2.3. According to these data, the average Swedish tertiary student is enrolled in university for slightly less than five years. Note that this figure refers to the average duration of enrolment, including the duration for students who leave their studies without receiving a university degree. The figure shows that average enrolment duration in Sweden is longer than the OECD average, but Sweden does not stand out as extreme in this comparison. Compared to Sweden, the study times are substantially longer in countries such as Germany, Austria and even the UK.

[3] The OECD uses these to estimate cumulative monetary investments in education over the duration of studies.

**Figure 2.3 Average duration of tertiary education (2006)**




Source: Education at a Glance 2009: OECD Indicators, Table B1.3b.
Notes: Data refer to tertiary-type A education and advanced research programmes only. The OECD estimates average duration of tertiary studies for most countries using the "chain method". The method is based on transition rates i.e. the fraction of students in year i-1 that continue to study in year i. The product of these transition rates gives a probability that a student that started i years ago will still be enrolled. Summing these probabilities then produces an estimate of duration of studies. The method measures the duration of enrolment but not time required until degree since all students participating in tertiary education are taken into account, including drop-outs. Still the measure can be used to estimate the average length of time during which students stay in tertiary education until they either graduate or drop out.

## 2.2 Cross-country comparison of factors related to average graduation age

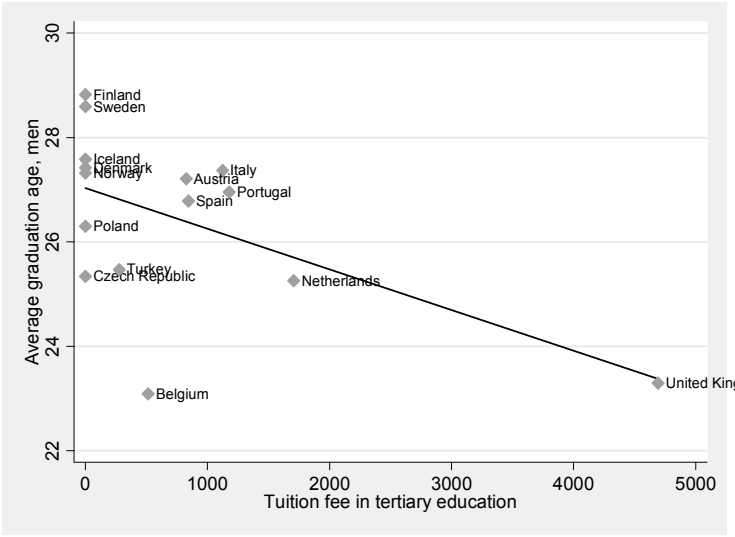
Large cross-country differences in the average graduation age and in the average entry age raise the question of whether one could explain these differences with observable differences in the way the tertiary education systems are organized, or perhaps with the economic incentives that the students and universities have for timely completion of university degrees. I will examine these incentives in more detail in the subsequent chapters; this chapter presents results of an exploratory analysis of the cross-country differences.

Lack of detailed comparable cross-country data makes these comparisons rather speculative. A serious econometric analysis would also require a much larger sample. Therefore, I will only be able to present simple two variable plots on the relationship between the characteristics of the systems and the average graduation age. I have drawn a regression line to each figure to illustrate the direction of correlation between the variables. It should be noted

that these correlations are typically not statistically significant, and since many important features of the systems are left unaccounted for when calculating these bivariate correlations, the regression lines should not be interpreted as causal effects on the graduation age.

One of the obvious explanations for the differences in study times – though not necessarily for the differences in starting ages – is the difference in the tuition fees charged by the universities. In Figure 2.4 I have plotted the OECD estimates of the average tuition fee in tertiary education against the average graduation age in each country. According to the figure these are negatively correlated. Tuition fees are zero in all Scandinavian countries where the average graduation ages are the highest. Similarly, the tuition fees are sizable in the UK, where the average graduation age is low. The high tuition fees and the low average graduation age in the UK has a large impact on the visual impression from the Figure, but the correlation is negative (though no longer statistically significant) even if the UK is dropped from the data.

**Figure 2.4 Average tuition fee and average graduation age**

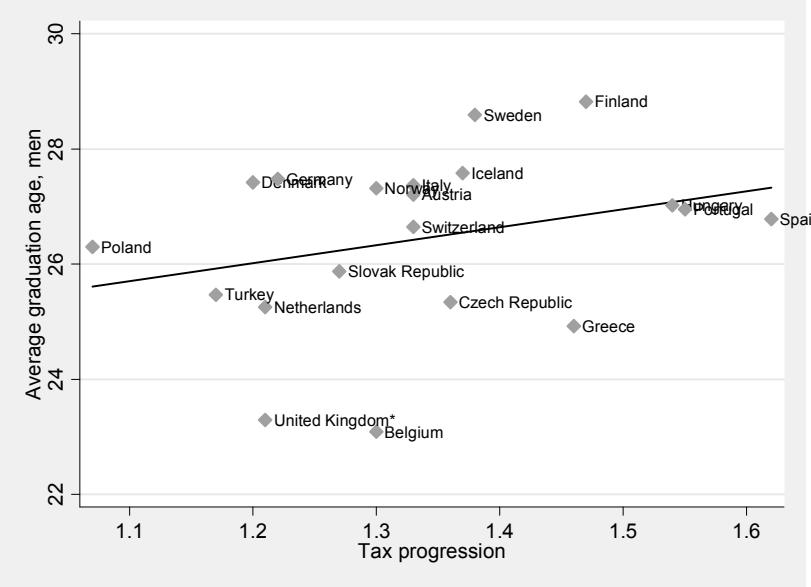



Source: Average annual tuition fees in public institutions or in government subsidized private institutions based on OECD Education at a Glance 2009. Tuition fees refer to fee charged from national students in academic year 2006/2007. Tuition fee from private institutions is used instead if the share of students in private institutions exceeds 50%. These tuition fees exclude membership fees to student unions. The average graduation age is based on authors own calculations as described in footnote to Figure 2.1.

Another potential explanation has to do with the progressivity of the tax system. Tax progression and the fact that taxes depend on annual earnings create an incentive to spread earnings into several years by studying and working part-time for a longer period instead of first concentrating on studies and then entering work with higher earnings. Figure 2.5 plots a simple measure of the progressivity – the difference between the average tax rate of a person earning 133% of average wage and a person earning 67% of the average wage[4] – against the average graduation age. The relationship is positive; the average graduation ages tend to be higher in countries where the income tax system is more progressive. However, the correlation is not statistically significant and even the sign is sensitive to the way tax progression is measured. Furthermore, one should note that according to the measures used here, the Swedish tax system is not particularly progressive and the late graduation age in Sweden cannot really be explained by the (lack of) incentives to graduate due to progressive income taxes. One should also note that the OECD measure of tax progression does not account for income dependent benefits such as student grants or housing allowances. However, general tax deductions for low income workers that make part-time student employment potentially very attractive should be captured in the OECD measure.

[4] These percentiles are picked as rough proxies of average earnings of university graduates and average earnings of students.

**Figure 2.5 Tax progression and graduation age**




Note: Progressivity of the tax system is measured as a ratio of average tax rate of a single person earning 133% of the average wage to average tax rate of a single person earning 67% of the average wage. Taxes include both local and national taxes and compulsory employee contributions but exclude employer contributions.
Source: OECD Tax database Table I.5 from 2008 www.oecd.org/ctp/taxdatabase. Average graduation age based on own calculations as described in the footnote to Figure 2.1.

Finally, in Figure 2.6, average graduation age is compared to the OECD estimates of the private return to tertiary-level education. The OECD calculates these estimates as a net present value of tertiary education accounting both the direct and indirect costs of investments in education and the effect of education on lifetime earnings. Effects of taxes and transfers and the effects on the risk of unemployment are accounted for in this calculation. However, in practice, the private return to education is closely correlated with the raw wage difference between graduates from tertiary and secondary levels of schooling.

According to Figures 2.6a and 2.6b average graduation age tends to be highest in countries where the return to education is low, particularly so in Denmark, Sweden, and Norway. The average graduation age is substantially lower in countries like Portugal, Italy, Poland and the Czech Republic where the return to education is high. The relationship between the return to education and the average graduation age appears to be tighter for women (Fig. 2.6b).

For women the return to education also explains a substantial fraction of the cross-country variance in the average graduation age ($R^2$=0.22), for the men the fraction is only 6%.

**Figure 2.6a Return to education vs. average graduation age, men**

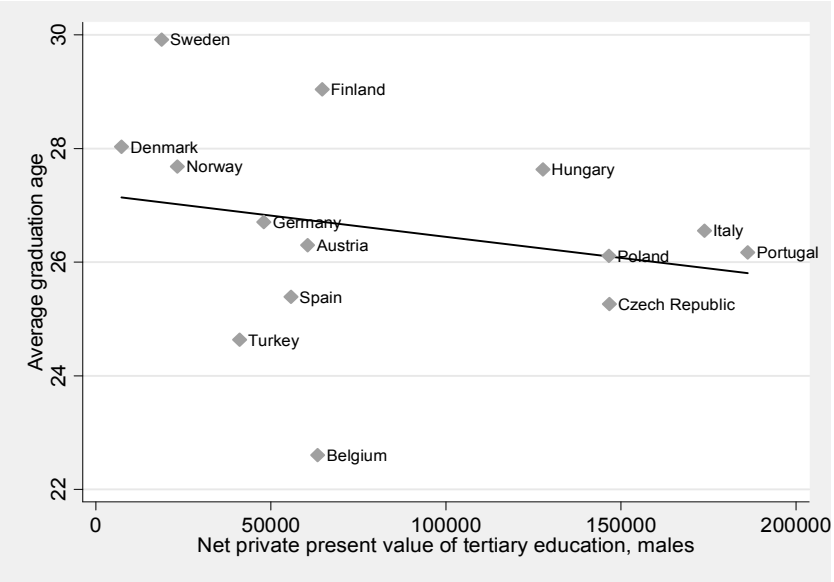
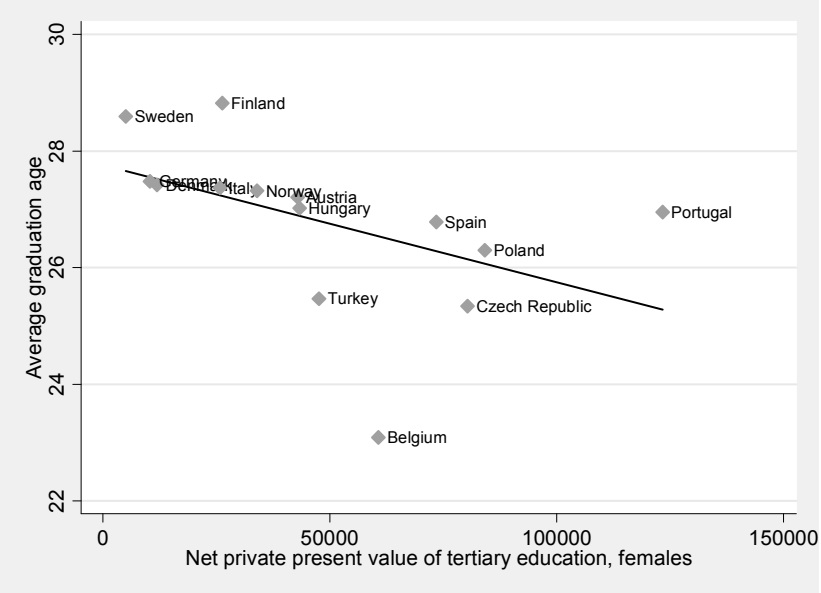


**Figure 2.6b Return to education vs. average graduation age, women**




Source: Private net present value for an individual obtaining tertiary education as part of initial education, ISCED 5/6 in 2005 from OECD Education at a Glance 2009, Table A8.2. Calculated based on OECD estimates of direct costs, forgone earnings while at university assuming standard duration of program, earnings gains, gross earnings gains, income taxes and transfers and effect of education on the risk of unemployment. In calculations for the present value a 4% discount rate is assumed. Average graduation age is based on own calculations as described in the footnote to Figure 2.1.

As a summary of the cross-country comparisons one could conclude that there are signs that differences in the average graduation ages are correlated with the incentives to invest in education which suggest that one could potentially lower the average graduation age by manipulating economic incentives. A progressive tax system, lack of tuition fees and low monetary returns to education weaken the incentives to move into the labor market quickly. However, the evidence is suggestive at best. The correlations are relatively weak and the number of available cross-country observations is so low that it is impossible to make credible claims on the effects of incentives. Lack of comparable data on the other interesting features, such as the student support system, also makes it difficult to examine the reasons for the variation in graduation age with cross-country data.

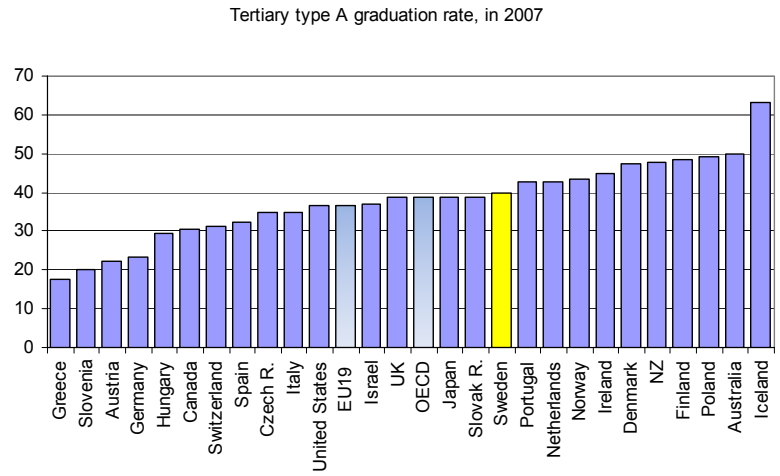
## 2.3 Participation in education and employment rates of youth in the OECD countries

The implications of late graduation age (and late starting age) for the aggregate employment rate depend on how much the students work before graduation, and what the students do before entering into higher education. Below, I will use data from the OECD for cross-country comparisons of youth employment rates and participation in education by one-year age groups.

A useful starting point is to analyse the size of the tertiary education sector in the OECD countries. In Figure 2.7, I plot the OECD estimates for the tertiary level graduation rates in different countries. These figures refer to tertiary type A education that corresponds to the usual first university-level degrees. Tertiary-level vocational programs that are important in some countries (not in Sweden) would be classified as tertiary type B education and are not included in this figure.

The tertiary education sector has expanded rapidly in most OECD countries. For Sweden the OECD estimates indicate that the tertiary-level graduation rate has increased from 24% of the relevant age cohort in 1995 to 40% in 2007. This growth rate seems incredibly high and probably also reflects changes in classification. However, according to the OECD figures tertiary-level graduation rates are not particularly high in Sweden even in 2007. The Swedish tertiary level graduation rate is above the OECD average but clearly lower than in the other Nordic countries, particularly lower than in Iceland. This also suggests that late entry to the labor market is not solely explained by higher rates of participation in higher education in Sweden. This is an important observation since it indicates that there is no automatic trade-off between average graduation age and the rates of participation in higher education. Policies aiming to lower the average graduation age in order to boost employment and productivity are more likely to be optimal in the absence of such a trade-off.

**Figure 2.7 Graduation rates from tertiary education**



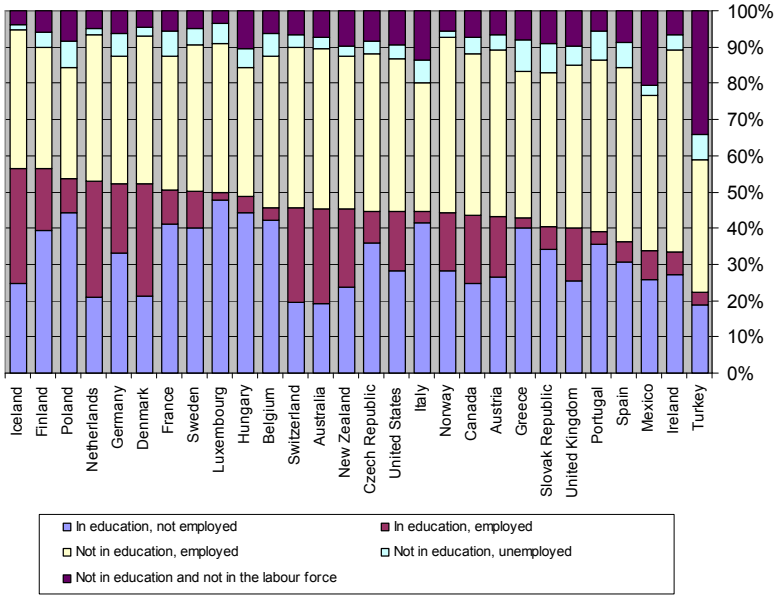

Source: OECD. Education at a Glance 2009 Table A3.1

The tertiary level graduation rate is perhaps not the best indicator for the investments in tertiary level education. Education systems differ across countries so that roughly similar education may be classified as tertiary education in some countries and as secondary education in other countries. However, the OECD also publishes estimates on the expected number of years in the education system. These numbers are based on calculating the fraction of each age cohort between 15 and 29 in education using data from the EU Labor Force Survey. In Figure 2.8 these fractions are added up across cohorts. In addition, the students are classified into a group that is in full-time education and a group that is simultaneously employed. The most natural interpretation of the figure is that it describes both the fraction of youth that participate in education and the number of years they spend in education.

According to Figure 2.8, the Swedish youth spend a larger fraction of their lives in education than the average OECD youth, but slightly less than the youth in Denmark, Finland and Iceland. Another interesting observation is that student employment does not appear to be as widespread in Sweden as in some other countries. Only 20% of Swedish students are classified as employed while this fraction is over 30% in Finland and Norway and close to 60% in Denmark and Iceland. The low student employment rate in

Sweden seems a bit surprising. A partial explanation is that the OECD data is from the first quarter of the year and excludes summer employment. Still according to SCB 60% of Swedish university students were employed during the spring term of 2007. However, only 25% of those who were employed, worked more than 20 hours per week. (UF 57 SM 0701)

**Figure 2.8 Expected years in education and not in education for 15–29 year-olds (2007)**




Source: Education at a Glance 2009: OECD Indicators, Table C3.1a.
Note: Persons in education include part-time as well as full-time students. Non-formal education or educational activities of very short duration are excluded. Data are collected as part of the annual OECD Labour Force Survey and refer to the first quarter of the calendar year, thereby excluding summer employment. The labour force status categories are defined according to International Labour Organisation (ILO) guidelines. Therefore, persons are classified as employed if they did any work for pay or profit for at least one hour during the reference week.

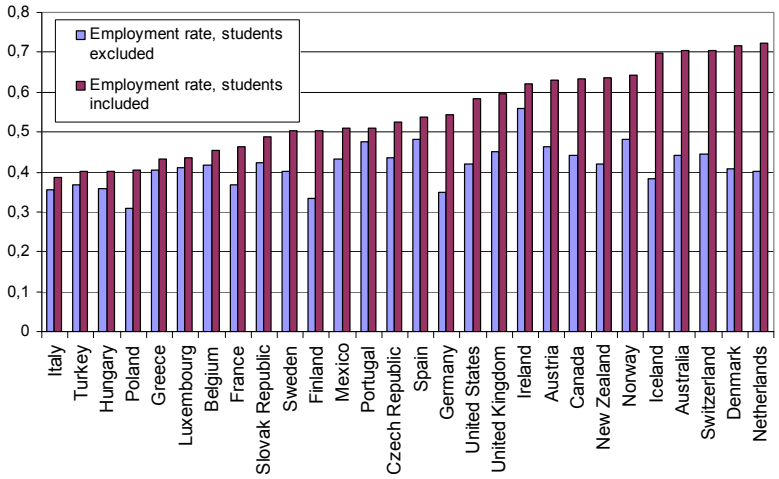
One can also use data presented in Figure 2.8 to calculate employment rates for the age group between 15 and 29.[5] The point of this calculation is that late graduation is more costly if students do not

[5] Given that the numbers were originally calculated by one year age groups and then added up without weighting by cohort size, these are not equivalent to the numbers that one would get by calculating employment rates for the whole age group between 15 and 29 years from a raw data of the Labor Sorce Survey. Employment rates calculated from a Labor Force Survey would automatically weight the age-specific employment rates by the cohort size.

work before graduating. Late graduation would be costless in terms of the aggregate employment rate if student employment and employment before entering into higher education were sufficiently common to compensate for the delay (although productivity differences have to be properly accounted for).

Figure 2.9 displays the youth employment rates in the OECD countries. The ranking of the countries depends on whether the students who are employed while enrolled are included as employed or not. If one excludes the students, the employment rate of Swedish youth was slightly over 40 percent in 2007 which is close to the average employment rates among the OECD countries with available data. This fraction is also close to the employment rates in Denmark or Iceland, but clearly larger than in Finland and smaller than in Norway. As already noted, at least in these data, student employment is less common in Sweden than in other OCED countries. Including employed students increases the employment rate in Sweden to about 50 percent of the age group. However the increase in other countries is much larger and the employment rate in Sweden is therefore clearly below the OECD average if student employment is included in the comparison.

**Figure 2.9 Employment rate, 15–29 year-olds (2007)**




Source: Own calculations based on data in Education at a Glance 2009: OECD Indicators, Table C3.1a.

## 2.4 Timing of education and work

Even if the total investments in education do not seem to be particularly high in Sweden, timing of education appears to be different in Sweden than in the other OECD countries. This can be seen in Figures 2.10a and 2.10b that display the fraction of the cohort in education by one-year age groups. The Swedish youth are first compared to the other Scandinavian countries and the Netherland and then to the large EU countries and to the US. In both figures the fraction in education includes both full-time and part-time students.

In all the countries displayed, except in the UK, almost the entire cohorts are in school up to age 17. This mainly reflects high secondary level participation rates. After age 17 the fraction of the cohort in education rapidly declines in Sweden so that participation rates in Sweden at ages 19 and 20 are lower than in any other country in this comparison, even lower than in the UK. A similar, but not quite as large, decline also occurs in Finland and Norway. In the Finnish case, compulsory military service explains a large part of low participation rates around age 20, but in Sweden the share of the male cohort serving in the armed forces is too small to explain the pattern. Still, the decline in the fraction of the cohort in education is particularly large in Sweden.

In all the Nordic countries the fraction of the age cohort in education increases between ages 20 and 22. This mainly reflects the fact that the entry into tertiary education typically occurs only after a couple of gap years. In Sweden the fraction in education increases until age 22 and remains at a comparatively high level thereafter. Comparison of employment rates in one-year age groups indicates that the time gap between finishing secondary education and entering into the tertiary level is specifically important in Sweden. This again suggests that if one would like to reduce the average tertiary-level graduation ages, the efforts should focus on factors related to the delay in the entry age.

**Figure 2.10a Fraction of age cohort in education**

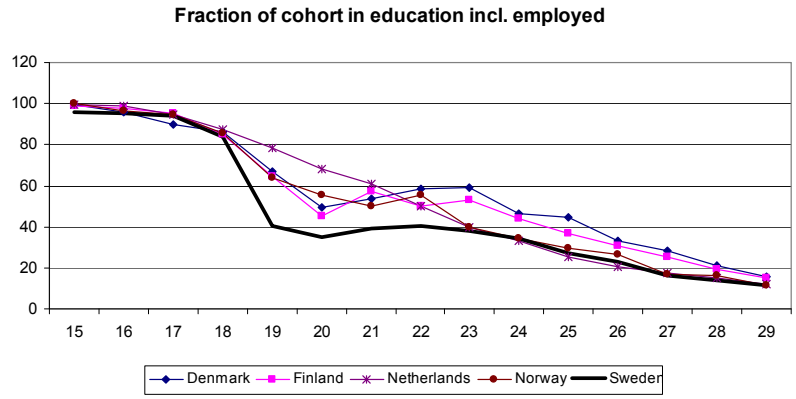
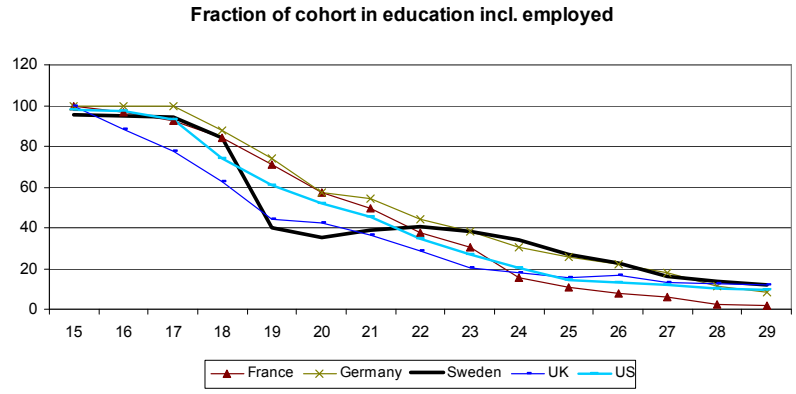



**Figure 2.10b Fraction of age cohort in education**




Source: OECD Employment Outlook 2008, Activity status by single year of age in OECD countries, 2006 (2005 for the United States), OECD Secretariat calculations based on the European Labour Force Survey (EULFS).

If the students do not enter directly to tertiary level education, an interesting and policy relevant question is what they do in the meantime. If most students are employed during these years, the aggregate employment would not necessarily be affected by a reduction in the entry age. An increase in the employment rate due to earlier graduation would be partially offset by a decrease in employment rate around age 20. A delay in starting tertiary education might still have efficiency effects if tertiary-level graduates are more productive after tertiary education than before entering terti-

ary level education. And, if the gap years imply that students are unemployed or perhaps preparing for the university entrance examinations, the gap years could be regarded as a sign of inefficiency.

Figures 2.11a and 2.11b display employment rates in various countries by one year age groups (excluding those employed while enrolled). These figures indicate that employment rates are comparably high in Sweden around age 20 and decrease later to the level in Norway and the Netherlands. Overall these figures show that the pattern of employment rates in Sweden differs from that observed in other countries, which is consistent with the delay in entry into tertiary level education.

**Figure 2.11a Employment rates by age**

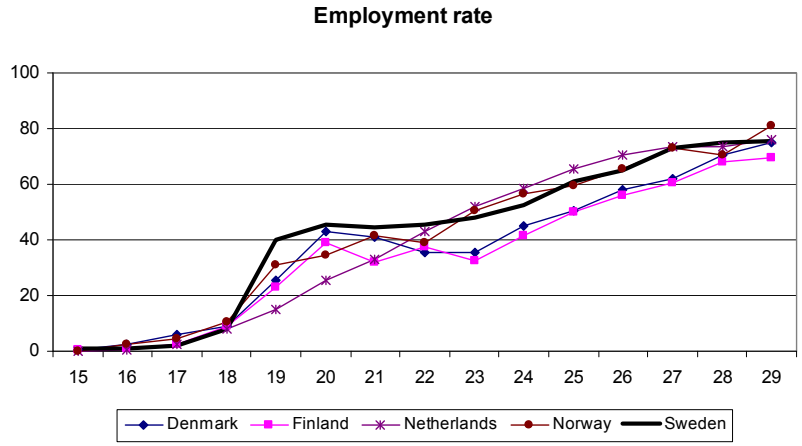
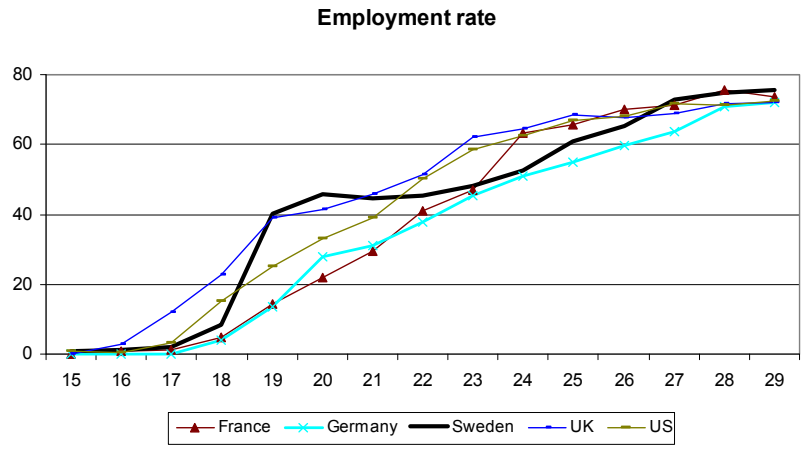


**Figure 2.11b Employment rates by age**




Source: OECD Employment Outlook 2008, Activity status by single year of age in OECD countries, 2006 (2005 for the United States), OECD Secretariat calculations based on the European Labour Force Survey (EULFS).

The OECD also calculates the fraction of the age cohort that is neither employed nor enrolled in school. This NEET rate shows a very distinct pattern in Sweden. At age 19 about 20 percent of the Swedish youth are neither in education nor employed. This number is clearly highest among the countries in this comparison. By age 22 it declines below the level observed in the large European countries and the US but remains higher than in most Scandinavian countries.

**Figure 2.12a Not enrolled and not in employment by age**

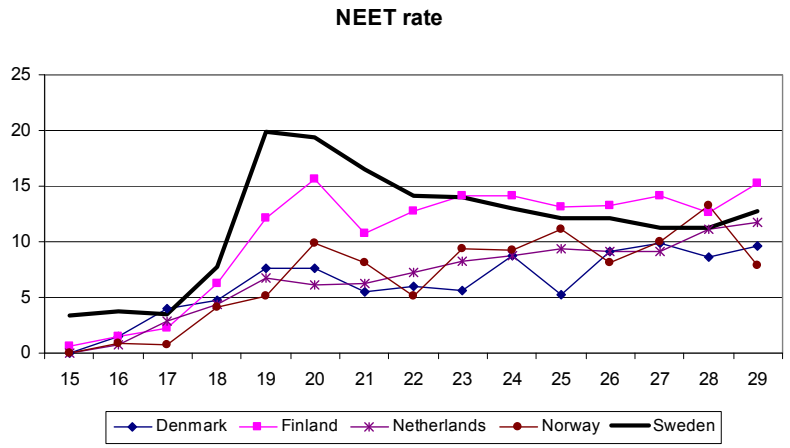
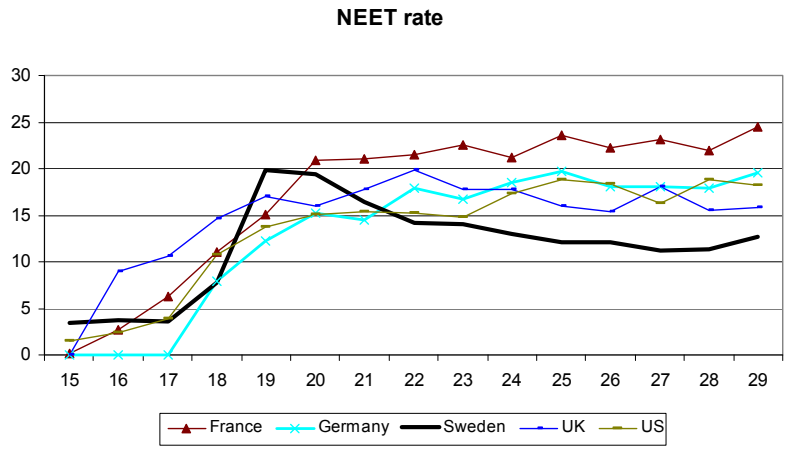



**Figure 2.12b Not enrolled and not in employment by age**




Source: OECD Employment Outlook 2008, Activity status by single year of age in OECD countries, 2006 (2005 for the United States), OECD Secretariat calculations based on the European Labour Force Survey (EULFS).

## 2.5 Summary of the international comparison

To summarize the results from international comparisons presented in this chapter, one could note that the graduation age from university-level studies is indeed very high in Sweden. However, the average graduation age is also high in other Scandinavian coun-

tries and particularly so in Iceland and Finland. High average graduation age in Sweden does not appear to be due to an unusually high fraction of a cohort pursuing university-level studies nor to unusually long duration of studies. Instead, the main reason for the high average graduation age in Sweden appears to be that the Swedish youth enter into university-level education later than the youth in other comparable countries. A delay in average graduation age of 2–3 years compared to the average of the other countries in this comparison can be explained by a 2–3 year difference in the entry age. This also implies that policies aiming to lower the average graduation age should probably put the main emphasis on lowering the entry age rather than on speeding up the studies of the enrolled students.

# 3 An economic analysis of late graduation

Many economic models of education treat education as an investment in human capital. As investments in physical capital, investments in education entail costs during the investment period that can be recouped later if productivity and earnings increase as a result of the educational investment. Rationally behaving profit maximizing investors invest in education as long as these investments are profitable i.e. as long as the (discounted) life-time costs of educational investments are below the (discounted) life-time expected benefits from education.

In countries like Sweden where education is free to the student, the costs of education are mainly opportunity costs, consisting of wages and other incomes that the students could have earned if they were not in school. The returns to the investments in education are typically measured as increases in wages over lifetime due to educational investments. In addition to the monetary returns, it is also possible that education creates non-pecuniary benefits in terms of more pleasant or interesting jobs, lower unemployment risk, higher social prestige or even better chances at the marriage market. These benefits may be hard to measure but nevertheless may be important for the investment decisions.

Simple cost-benefit calculations suggest that investments in education should be completed early in life. There are two main reasons for this. If earnings opportunities increase with age and work experience, the opportunity cost of studying instead of working is lowest in the beginning of the career. Even more important is that the period when the returns to education can be captured is finite and typically ends around age 65. Completing education early in life increases the length of the period when the returns to investments are captured and therefore increases the present value of the return to education. This implies that invest-

ments in education that are profitable if made around age twenty may be no longer be worthwhile at age 40.

## 3.1 Motivation for public involvement in individual choices regarding the level and timing of investments in education

An individual's educational choices would be socially optimal if (i) the individuals making school choices acted rationally and made schooling choices based on expected (monetary) returns, if (ii) the individuals paid all the costs and received all benefits from investments in education, and if (iii) the individuals could freely borrow the funds needed for investments without credit or other constraints. In this case, there would be no need for the government to intervene with individual decision making. Socially optimal decisions would also not only imply that the choices of the educational level would be optimal, but also that the choices of when to invest would be socially optimal. Therefore, the government would have no reason to try to affect the timing of education either.

However, conditions (i), (ii) and (iii) are unlikely to hold in reality and this motivates public interventions in private decisions regarding education. The arguments for public intervention on educational choices have been thoroughly analyzed in the literature. Much less is known about whether private decisions on the timing of education correspond to the socially optimal timing. Below I will discuss the incentives to invest in education early in life compared to the incentives to delay these investments. I will also discuss the possible differences in the privately and socially optimal timing. However, since the motivation for government involvement in the timing of investments are closely related to the motivation of intervening in the choices regarding the level of education it is useful to start by briefly reviewing the main arguments why the governments should try to affect the level of investments in education.

*i) Are decision makers rational and acting based on expected returns?*

Even if one is willing to ignore non-monetary motives for investments in education, lifetime income maximization is a very strong assumption. Essentially it requires that the youth making choices about their education can accurately predict their lifetime outcomes under several alternative education choices and make informed decisions based on this information.

Not that much is known about how the youth who make educational choices form expectations of outcomes related to different schooling options, or how they react to changes in expected costs and benefits. Manski (1993) discusses the problem in detail. Some of the few attempts to measure expected wages for alternative choices of education include Dominiz and Manski (1996) who measure the expectations using surveys to high school students and Brunello, Lucifora and Winter-Ebmer (2004) who provide similar survey-based evidence on wage expectations of college students. Neither of these papers link expectations to actual behaviour.

The effects of monetary incentives on choices regarding education have been examined in only a handful of papers. Fredriksson (1997) examines the effects of changes in return to education on college entry and finds that a decrease in university enrolment in Sweden after the 1960's can be attributed to a dramatic reduction in the (after-tax) university wage premium. According to his study, the later rebound in enrolment can also be explained by an increase in wages of university graduates. The generosity of the study allowance scheme and unemployment are of comparatively less importance.

If the youth cannot form unbiased expectations regarding the outcomes under different educational choices, there is little hope to influence these choices by altering incentives. For the youth that make the decisions about education evaluating the effects of delaying entry into higher education may be even more difficult than evaluating the benefits of pursuing higher education overall. Incomplete information on the effects of the level or timing of investments in education also implies that choices could be potentially influenced by providing information about average outcomes on educational choices to the youth making decisions about education.

The analysis gets a fair bit more complicated if one deviates from standard economic analysis where the decisions are based on

maximising expected benefits by maximizing the discounted sum of lifetime earnings with a constant discount rate and stable preferences. If someone had a high preference for leisure (perhaps travel) when young s/he might well choose to spend time travelling before entering into higher education. Even if postponing higher education would be costly in terms of monetary costs and rewards, the society could not make welfare improving interventions to private decisions.

*ii) How different are private and social returns?*

If schooling has external effects, private decisions on investments in education are not socially optimal. No matter whether the deviation between private and social returns to education are caused by public policies that distort private decisions away from the socially optimal level (e.g. through progressive taxes) or whether the education has intrinsically external effects (e.g. by reducing crime), this creates an argument for public interventions.

It has long been argued that schooling has positive effects also on others than the individual pursuing education. Positive external effects may occur if schooling improves the workings of the democracy or reduces crime. Positive externalities also arise if education spurs innovation and growth and if the benefits from these innovations are not fully captured by the innovators. Since governments subsidize education in all developed countries, one can deduce that the positive external effects are perceived to be important. Schooling may also have negative externalities. The best known example in the signalling model by Spence (1974) where the schooling investments are not productive but only produce a signal that the employers use in selecting employees to demanding jobs. If the signalling model is true, additional investments in education are privately beneficial but socially wasteful. A gain by a person who receives extra education is offset by a loss by someone else who is not selected to a good job.

Solid empirical evidence on external effects of education has turned out to be hard to find. Some studies have made attempts to measure external effects by examining the effect of the average education level in a certain area (e.g. Rauch, 1993; survey by Moretti 2004). These studies have reported positive estimates on external effects though the comparability of areas with different education levels is clearly problematic. There is also some evidence

on the negative external effects noting that earnings depend not only on one's own absolute level of education but also on the relative level of education. Hence investments in education by one person have negative effects on other persons whose relative position is weakened (Kroch and Sjöblom 1994; Hämäläinen and Uusitalo, 2008).

Also, the society affects the costs and benefits of education in several ways. In most countries education is free or at least heavily subsidized by the society. The students also get direct support in terms of interest subsidized loans and student allowances that lower the costs of education and make private investments more profitable. On the other hand, progressive taxation decreases the private returns to investments in education by taxing away a part in the wage increase due to education.

The OECD estimates the effects of government intervention by calculating the social and private returns to education separately. In these calculations the external effects refer to the effects of education on tax revenue and to the direct costs not paid by the students themselves. A similar calculation can easily be performed by comparing the social and private returns to the timing of education. I will present results of such calculation in the next chapter after first surveying existing evidence on the returns to early vs. late graduation.

*iii) Constrained choices*

A common argument for public support for education is that the youth are credit constrained and cannot invest in education as much as if credit was freely available. Human capital cannot be offered to private banks as collateral for the loans. A similar argument could possibly be made for the timing of investments. Working while enrolled at university may be necessary if the students cannot get large enough loans to cover their expenses while at school.

Empirical relevance of credit constraints is questionable at least in countries that have well developed student support systems and where tuition fees are negligible. Note also that removing credit constraints calls for government guaranteed loans rather than direct grants.

More important constraints for investments in education are admission requirements by universities. In the countries where

direct costs of education are small university slots are almost always in excess demand. Entry requirements create important constraints that cannot be ignored when evaluating the effects of delayed entry into university level education. This is clearly a difficult question that is hard to fit into economic models. I will return to this issue when discussing potential policies for lowering the average graduation age.

# 4 Empirical research on economic incentives affecting the graduation age

I will discuss specific policies that the government might use to induce earlier graduation in the final chapter. Before that, it is useful to analyse what kind of financial incentives already exist in the current education systems, and how they might affect the graduation age. Below I first review studies that have examined the financial returns to the timing of investments in higher education by comparing the earnings of people who enter into higher education directly after secondary school to earnings of those who enter into higher education at later stages in life. After that I review studies that analyse the effects of studying and working in parallel by examining the effects of work experience while at school. Finally, I calculate the private and social returns to late graduation using Swedish data.

## 4.1 Financial incentives for early vs. late graduation

The most natural way of analysing the effects of timing of investments is to compare lifetime earnings between those who complete higher education early in life to those who graduate later. However, most existing studies only analyse the effects of graduation age at earnings in a single point in time or at a certain age.

The earliest analysis on the effects of graduation age that I am aware of is reported in an article by Jones (1925).[6] The study analyses data on age at graduation of college graduates from Who's Who in America 1922–23 and compares the age of graduation of those listed in Who's Who to the general age distribution of college

[6] Apparently, the analysis was actually done by one of his students, Adele Rudolph.

graduates reported by Thomas (1903). The study shows that the median age for graduation from college of 1080 people selected at random from Who's Who was 22 years and 3.3 months. In comparison Thomas (1903) had reported that the median age of all graduates for the same age cohorts (mainly from the New England colleges) was 22 years and 9.3 months. Jones concludes that *"there is very little difference between the two groups but whatever difference there is indicates that, so far as inclusion in Who's Who is a measure of success, those who graduate from college under the median age have a somewhat greater chance of success than those who are of median age or older."*(Jones 1925, p. 190).

In a somewhat more recent study, Light (1995) examines the effects of interrupted schooling on wages based on National Longitudinal Survey of Youth (in the US). She finds that men who delay their schooling receive 'wage boosts' that are smaller than those received by their continuously schooled counterparts. She notes for example that individuals who wait two years before advancing from 12 to 16 years of school (i.e. from high school to college) receive a 20 percent wage boost upon completing their re-enrolment spell. This reward is considerably smaller than the 40 per cent wage gap in starting wages between individuals who attain these two schooling levels prior to starting their careers. However, the wages grow rapidly during the first years in the labor market. Therefore, if an individual attends school for 12 years, works continuously for four years and then attends school for four more years, his starting wage is 17 percent lower than the wage of a person that attended school for 16 years and then worked continuously for four years. This gap diminishes over time and virtually disappears in four years.[7]

A more serious attempt to evaluate the effects of college timing was performed by Holmlund, Liu and Nordström Skans (2008) who estimate the effects of postponing higher education on lifetime earnings using Swedish data. They note that over 25% on new university entrants have a 2–4 -year gap and 40% of entrants more

[7] A related study by Monks (1997) uses an expanded version of the same data, including also women and minorities, to address the issue. He also makes an attempt to control for the differences across individuals by focusing on within-individual earnings growth instead of comparing earnings across individuals who have graduated at different ages. Unfortunately, this also wipes away all variation in age of college completion since each person in his data graduates only once. Apparently he also uses information on wages prior to graduation which effectively drops all persons who enter college directly after high school from the analysis and hence the estimates provide no information on the key issue, whether a delayed entry has an impact on earnings.

than a five year (!) gap between completing high school and entry into university. They then estimate the effect of gap years on annual earnings after graduation. According to their estimates, one additional gap year is associated with 2% lower earnings at age 35. This is actually a very large estimate given that the return to education in Sweden is comparatively low. The effect of gap years declines over time and disappears by age 40. The main reason is that earnings growth is rapid during the first years after completing a university degree. The first years of work experience is valuable and those who graduate when they still are relatively young have obtained more experience by age 35. By age 40 late starters have caught up as small differences in experience become less important after the first few years.

The data used by Holmlund et. al (2008) is based on Swedish administrative registers. The sample size is much larger and the information much more detailed than in the previous studies. This allows controlling for a large set of covariates including high school GPA as well as the field and duration of university education. Still their estimates could be affected by unobserved individual characteristics that affect earnings and the likelihood of entering university directly after high school. As an attempt to identify causal effects of gap years they also try to use variation in admission policies to identify the effects but unfortunately the results are rather imprecise. Perhaps the strongest argument that the study still identifies causal effects of timing is that no effects on earnings are found after age 40. So if the delay in entry is due to some unobserved factors, these factors apparently have no permanent effects on earnings. The problems of estimating the effect of delayed entry into higher education are also discussed in a recent paper by Humlum (2007). She notes that the age of entry is likely to be correlated with a number of individual characteristics that may have direct effects on earnings. Her proposal is to use variation in entry age due to admission requirements, student grant system, compulsory military service or distance to schools to identify causal effects of entry age. In practice, this has proven to be rather difficult, and attempts to follow such strategies have not been very successful.

Due to the caveats listed above, the results in Holmlund et. al should be interpreted with care. However, at the moment they probably present the best available estimate regarding the effects of gap years on earnings. The study also estimates the effects of gap years separately on annual earnings at each age between 20 and 44.

According to the results those who take gap years have higher earnings until age 23 (because many are working during the gap). After that the effect of gap years is negative (first reflecting later graduation and then lower experience). Using these estimates, and assuming a 4% discount rate, they calculate that two gap years reduce the present value of lifetime earnings by 40–50% of annual earnings at age 40. This is also a very large effect and indicates that there are substantial social costs of delaying entry into tertiary education.

## 4.2 Financial incentives to study and work in parallel

A large fraction of students work while enrolled in a university. This raises several issues. Spending more time at work may imply that less time is spent on studying which may delay graduation. On the other hand, work experience while at university may improve chances of getting a job after graduation and potentially increase wages. Still not much research exists on the effects of working while enrolled.

An article by Ehrenberg and Sherman (1987) is probably one of the first (economic) studies on the effects of employment while in college. They use US data from the National Longitudinal Survey of Youth (NLSY) and examine the effect of hours of work during the academic year on academic achievement and post-college outcomes. According to their results weekly hours of work during college had almost no adverse effects on grade point average or post-college earnings. However, according to their results, increasing hours worked increased the dropout rates and reduced the probability of graduating on time.

Light (2001) analyses the effects of in-school work experience. She notes that in the US a typical college graduate gains over 5000 hours of work experience by the time he leaves school. Light estimates that an individual who accumulates 2 years of experience while completing 16 years of school (typical college graduate) begins his post-school career earning about 10% more than his counterpart who gains no in-school experience. She also finds that return to education is much lower if in-school experience is controlled for. Hence, part of the return to education really is return to work experience acquired during enrolment.

Hotz, Xu, Tienda and Ahituv (2002) analyze the effects of working while in school on wages after school also using the NLSY data from the US. Compared to previous papers they make a more serious effort to separate causal effects of in school work experience from spurious correlations caused by unobserved factors that affect both working and later earnings. They also find that the correlation of working while in college (or high school) and later wages is positive, which is consistent with previous research on the topic. However, they find that men who worked while in school differed in many ways from those who did not work. For example, their scores on ability tests and their mothers' educational attainment were both substantially higher. Therefore, the results suggest that the men who worked while is school were more advantaged than those who did not acquire work experience while in school. Controlling for this selectivity led to much smaller estimated returns to working while enrolled. They conclude that "policies to increase a young man's skills via full-time schooling will have greater payoffs to subsequent wage attainment than will policies that promote employment of enrolled youth".

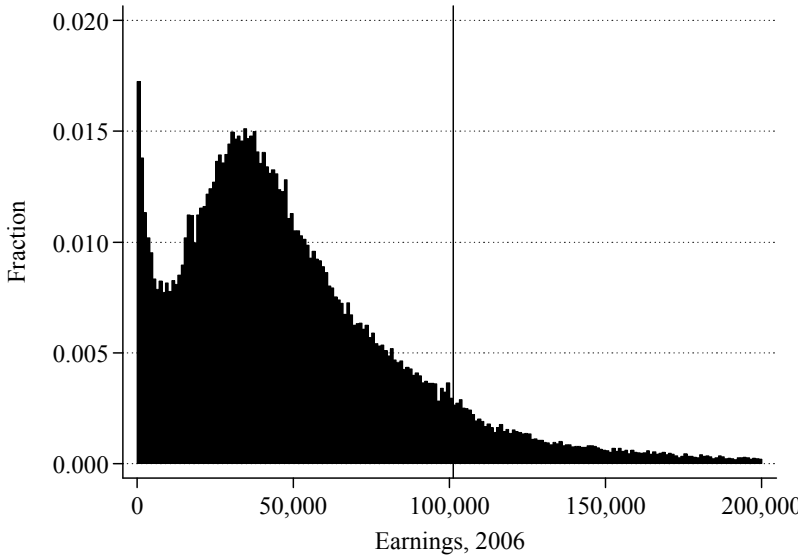
Häkkinen (2004) studies the effects of work-experience on post-school outcomes using data on Finnish university students. She also finds that work-experience acquired during university studies has a positive effect on earnings after graduation. The effect is largest immediately after the graduation date, and decreases over time. Importantly however, the result only holds conditional on duration of studies (time-to-degree). Working while enrolled typically increases the duration of studies and those who spend more time in school accumulate less experience after graduation. Accounting for the effect through the duration of studies leads to the conclusion that student employment has no significant effects of later earnings.

All the studies that have reviewed the effects of working while at school on later incomes have analyzed the effects on gross income. However, private profitability of in-school employment also depends on the tax treatment of earnings. Earned income tax deductions and progressive taxes that are based on annual earnings increase the incentives of spreading earnings to several years by working and studying in parallel.

One should note that the effective tax rates for students may also be quite high if study grants are reduced when earnings increase. In the Swedish case the students who work and study at

the same time may keep the full amount of the study support if their income does not exceed the exempt amount which is currently SEK 107 000 per year for full-time studies. When income exceeds this amount, study support decreases by half of what the student earns over the exempt amount. In practice, this implies that the effective tax rate is low up to the exempt amount, but is 50% plus the income tax rate for students that earn more than 107 000 per year. However, at the current level the exempt amount does not seem to matter much. As shown in Figure 3.1 below, most university students earn much less. Also, there is no bunching of earnings just below the exempt amount which suggests that the students are not strategically planning their earnings to maximize the amount of student aid.

**Figure 4.1 Annual earnings of full-time students in 2006**




Source: Calculations by Björn Öckert based on data from the IFAU database
Notes: Annual earnings include labor income, income from self-employment, allowances for sickness absence and parental leave but exclude student aid. Data contains university students that were studying full-time both in the spring and fall terms of 2006 and were receiving student aid (197,769 individuals). Those with zero income in 2006 are excluded (about 15%). The vertical line shows the exempt amount (101,250 in 2006).

## 4.3 Social vs. private costs of late graduation

To my knowledge no existing studies have compared the private and social costs of delayed graduation. Below, I present cross-sectional calculations based on Swedish data.

I calculate the social costs of delaying graduation based on estimates of the effects of delays on gross lifetime income, which serves as a proxy for the productive contribution of the worker. The private costs of delay are calculated based on estimates of the effects delayed graduation on lifetime disposable income, which is a fairly accurate measure of the economic well being of the individual. The difference between social costs and private costs are externalities, i.e. costs carried by society. Thus, government intervention aiming to lower the graduation age would (only) be beneficial for society if the social costs of delayed graduation are larger than the private costs.[8]

My basic data includes all Swedes that have completed a university-level education by 2007 drawn from the LOUISE database. I use these data to calculate lifetime gross and net incomes, and social transfers by age of graduation.

I estimate lifetime earnings profiles from a cross-section data. To be able to calculate average earnings also from years before graduation, I take data from 1996 and merge to these data the age of graduation as recorded in 2008. For those who graduate after 1996, this naturally refers to a future date. I restrict the data to persons between 19 and 50 in 1996 and to persons who have graduated or will graduate between ages 24 and 30.

To remove some observable differences across students that graduate at different ages, I regress earnings separately at each age on gender, immigration status and field of education (17 different fields) and calculate average earnings adjusted for these covariates by setting them to the sample averages.[9] It would be useful to

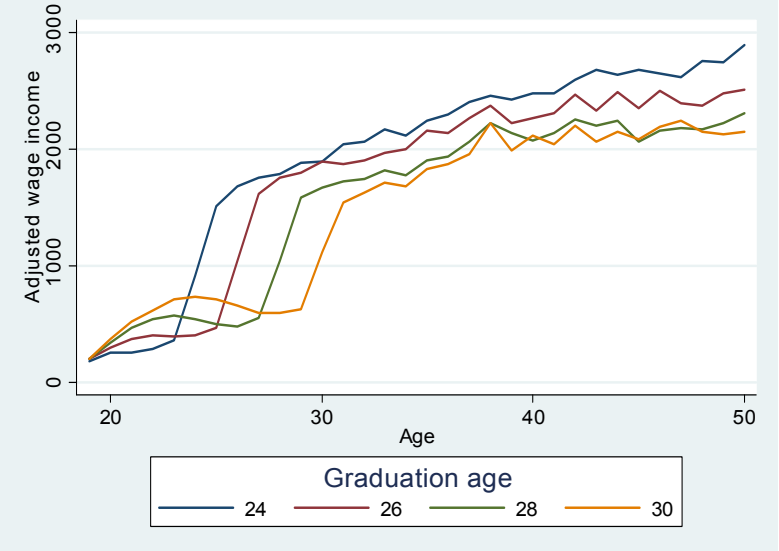
[8] Due to lack of data direct costs of education are not included in these calculations. It may not cause major problems, since it is far from clear that students who graduate later use more university resources.

[9] I do this adjustment somewhat unconventionally with levels rather than log earnings. There are two main reasons for this. First, data includes persons with zero earnings and having no earnings is relevant information (using logs would drop these observations). Second, I need levels of earnings to calculate discounted lifetime earnings. Naturally, predicted values (i.e conditional means) from regression on log earnings can be converted to levels using the exponential function, but since logarithmic and exponential functions are nonlinear, this would create biased estimates for levels (unless one properly accounts for variances). To lessen the influence of extreme values on the estimates, I drop all observations with annual earnings or annual disposable income over one million krones. (0.24% of the data).

account also for other differences across students, for example high school grades. However, since graduation years in the data range from 1970 to 2007, this would require much more intensive data work than was possible within this project.

Figure 4.2 presents the results of these calculations for average annual gross wage earnings. I have plotted earnings in 1996 at each age separately for those who graduated (or will eventually graduate) at ages 24, 26, 28 and 30. The pattern is expected. Those who graduate at a later age have somewhat higher earnings between ages 20 and 25, because they work more, e.g. during gap years. Earnings increase quickly after graduation and the large part of the cost of delay in graduation age is apparently related to the earnings lost during the first few years after graduation. However the gap in earnings seems to be persistent. Those who graduate earlier have higher earnings through most of their lifetimes compared to those who graduate from the same fields at an older age. This difference should naturally not be interpreted as a causal effect. Fast graduation is likely to be correlated with student ability that has independent effects on earnings.

**Figure 4.2 Gross annual wage earnings by age and age of graduation**




Regression adjusted estimates for average annual gross earnings by age and eventual age of graduation based on cross-sectional micro data for 1996.Amounts in 100 kr. Source: The IFAU-data base. For details see text.

In Figure 4.3 I have repeated the calculation using disposable incomes as the income measure instead. This income concept accounts for income taxes and all transfers and benefits including e.g student grants. Student loans are also counted as income and repayments of these loans after graduation are deducted from earned income. Transfers for families are individualized by Statistics Sweden.

The pattern in Figure 4.3 looks similar to Figure 4.2 but the differences across persons graduating at different ages are smaller. This mainly reflects the effects of progressive taxes. Interestingly also the differences before graduation are small indicating that those graduating earlier do not suffer much in terms of forgone earnings – or that these losses are compensated by the student support system.

**Figure 4.3 Disposable income by age and age of graduation**


Regression adjusted estimates for average disposable income by age and eventual age of graduation based on cross-sectional micro data for 1996. Amounts in 100 kr. Data source: The IFAU-data base. For details se text.

Finally in Figure 4.4 I have calculated average social transfers by age of graduation. This is a summary measure used by Statistics Sweden and includes student support and all other benefits that are

paid during absence from the labor market (e.g unemployment benefits and benefits during sickness absences). Here the results are quite striking. The society clearly pays much larger subsidies to persons who enter the labor market later.

**Figure 4.4 Income transfers received by age and age of graduation**


Regression adjusted estimates for average combined transfer incomes by age and eventual age of graduation based on cross-sectional micro data for 1996. Amounts in 100 kr. Data source: The IFAU-data base. For details see text.

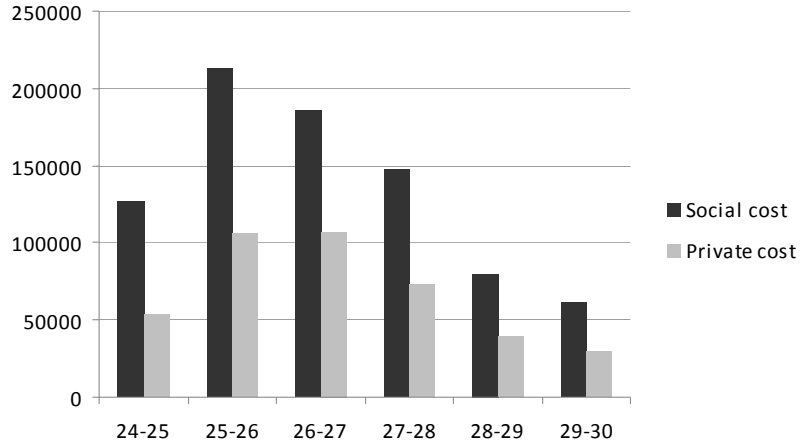
I used the earnings profiles displayed above to calculate discounted present value of lifetime earnings by age of graduation. I did this separately for gross earnings and disposable income. In these calculations I assumed a 3% discount rate and calculated the present values of earnings streams between 19 and 50 discounted to age 19. As noted before my calculations were based on 1996 data. Below I have deflated the results to the level of 2009 SEK using the consumer price index[10]. In addition to groups displayed in the figures above I repeated these calculations for those who graduated at age 25, 27 and 29. As a result I was able to calculate an average cost of a

[10] Alternatively, this could be done with wage index which would imply multiplying the 1996 values by 1.60 instead of CPI deflator that is 1.17.

one year delay in the graduation age and compare the social cost and cost to the individual.

I have plotted the estimated costs in Figure 4.5. According to the estimates a one-year delay in graduation may cost up to 250,000SEK in terms of lost lifetime labour earnings, Average cost of a one year delay within the age range used in calculations in 160,000. The number is close to median annual earnings of employed university graduates at the time of measurement. This estimate may be biased upwards if the students that graduate earlier are somehow more productive at work. However, even if the estimates for the gross cost of delaying graduation would be biased, it is instructive to compare the costs for the individual to the social costs. According to the Figure 4.5 the individual pays only about half of the cost for the delay. This implies that delay in graduation age has substantial external effects suggesting that government actions aiming at a lower average graduation age are well motivated.

**Figure 4.5 Social and private costs of delaying graduation by one year, in 2009 SEK**




Source: Own Calculations based on cross-section data from 1996 deflated to 2009 price level. For details, see text.

## 4.4 Summary of research on economic incentives

According to the studies reviewed above delaying entry into tertiary education is costly in terms of lifetime earnings. The costs for the society are even larger than the private costs borne by the stu-

dent. The results regarding the incentives to work and study in parallel are more mixed. Work experience acquired while at school appears to have positive effects on earnings after graduation, but also postpones the graduation date.

If one is willing to take the estimates in the existing studies as representing the causal effects of delaying entry into higher education, one has to conclude that delayed entry has substantial effects on lifetime earnings. This also implies that there already are substantial financial incentives to enter higher education immediately after completing secondary education.

Since the gap years are common despite of financial incentives to enter university directly after high school one has to find alternative explanations to the observed behaviour. At least the following could be a part of the story

(i) The students perceive the incentives in a different way. Predicting future incomes after higher education is difficult and it may be even more difficult to understand the costs of delaying entry into higher education. Lack of information leads to decisions that are not optimal for the individual.
(ii) Making decisions about schooling and occupational choice is difficult, and delaying the decision may be a rational response to uncertainty about ones own schooling preferences.
(iii) The youth have a strong preference for leisure when young and free from family commitments. Another way of stating this is that the youth are short-sighted so that their subjective discount rates are higher than the 3% that was used in the calculations referred above. This may induce taking a gap year even if there are financial costs later in life.

Given that the social cost of late graduation appears to be larger than the private cost borne by the student there would be a case for government intervention. The government could influence the schooling decisions by creating stronger incentives to invest in education earlier in life by altering the incentives by reforming the tax and student support systems. Such reforms should aim at aligning private incentives with social objectives and removing the distortions created by the taxation and social benefits. However, if

delay in entry is primarily due to non-monetary reasons chances of inducing more rapid entry with stronger incentives may be limited.

# 5 Potential policies to lower the graduation age

In this chapter I will review policies that have been proposed or implemented in order to lower the average graduation age. The intention is not to present specific policy conclusions but rather evaluate the pros and cons of potential reform options.

## 5.1 Start school at 6

One of the simplest and yet most radical ways to lower average graduation and labor market entry age would be to lower the school starting age without extending the duration of schooling. This would naturally affect not only the university graduation age but also the graduation age of those competing lower degrees. Sweden is one of the few countries where compulsory schooling starts at the age of seven. Naturally, these differences may be somewhat artificial, since over 90 per cent of Swedish six-year-olds participate in some form of pre-school where to curriculum may not be very different from school curriculum in countries where the six-year-olds attend school.

**Table 5.1 Compulsory school starting age in various countries**

| | |
|---|---|
| Four | Northern Ireland |
| Five | England, Malta, Netherlands, Scotland, Wales |
| Six | Austria, Belgium, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Liechtenstein, Luxembourg, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey , |
| Seven | Bulgaria, Estonia, Finland, Latvia, Lithuania, Poland, Sweden |

Source: Eurydice: http://www.nfer.ac.uk/eurydice/briefingseurope/schoolstarting-ages.cfm.

## Effects of early school start

Effects of school starting age have been evaluated in several recent studies. Most of these rely on within-country data and variation in school starting age caused by the cut-off dates in first grade enrolment. For example, in Sweden the children typically start school in the year when they turn seven. This creates an eleven month difference in the school starting age between children who are born in January and the children who are born in December. In addition, some children are held back and start school when they are eight and some children start school earlier, in the year when they turn six. Since these decisions are not random, a comparison of children starting a year earlier or a year later to the children who start in the usual age would be misleading. However, as long as month of birth is uncorrelated with child ability, a comparison of children born early or late in the year can provide reliable information on the effects of school starting age.

Bedard and Dhuey (2006) use this approach and examine the effects of school starting age in 19 OECD countries including Sweden. They use data from the Trends in International Mathematics and Science Study (TIMSS) that measures mathematical skills at ages 9 and 13. They find that the oldest students score 4–12 percentiles higher than the youngest students at the fourth grade level, and 2–9 percentiles higher at the eighth grade level across a wide range of countries. They also report that the effects are long-lasting: in the US students that are older when starting school are more likely to participate in pre-university academic programs during the final years of high school, and are more likely to enter flagship postsecondary institutions.

A problem with TIMSS data is that students that start school later are automatically older when taking a test given at a certain grade. If age at the test date has independent effects on test scores, the differences between students born early and late in the year may reflect age at test rather than age at school start. Solving this problem requires data that measures the effect of age at school start at a given point in time rather than at a given grade. Even this is problematic, since those who are younger when they start school have completed more schooling by any given age. However, measuring outcomes after compulsory schooling is over may solve this problem. This approach has been used by Fredriksson and Öckert (2006) and Black, Devereaux and Salvanes (2008).

Black, Devereaux and Salvanes (2008) use Norwegian data on military tests and find a small positive effect of early school start on IQ scores measured at age 18. They also note that age at test has a large effect on the test scores. They find little effect on educational attainment of boys or girls. Interestingly they report that beginning school at a younger age has a short-run positive effect on earnings. This effect disappears by age 30. This pattern could be explained by the effect of school starting age on the labor market entry age and the effect of labor market experience on earnings. If educational attainment remains constant, those who are older when they start school are also older when they finish, and have hence less labor market experience at any given age. However, the effect of small differences in labor market experience becomes less important as individuals get older.

For the Swedish case the paper by Fredriksson and Öckert (2006) which uses Swedish data is naturally the most relevant. They use a similar strategy based on variation in age at school start due to differences in the month of birth. According to their results, those who are older when they start school do better in all subjects in school. They also note that this is mainly due to absolute age, not age relative to the other children in the same class. Those who are older when they start school also obtain more education and are more likely graduate from college. The effect age at start on earnings is negative up to age 35 mainly because those who are older when they start have obtained less work experience at a given age. This effect turns positive at later ages but remains small. Over the lifecycle the net effect of starting school later is negative implying that the loss due to entering the labor market later outweighs the long term gains due to better school performance.

The results by Fredriksson and Öckert seem to indicate that starting school earlier would lower the graduation age and increase the aggregate employment rates. At the same time early starting age may have negative effects on school performance. However, if increasing the employment rate and lowering the average graduation age is considered to be sufficiently important, changing the school staring age to six would be potentially effective policy change.

## 5.2 Impose restrictions to UI benefits for high school graduates

The incentives to enter into higher education also depend on the opportunity costs of schooling. Good employment prospects or generous unemployment benefits lessen the incentives to enter into tertiary level education directly after high school. One possible policy option for inducing earlier entry into higher education would therefore be limiting the options for receiving unemployment benefits for youth without vocational education. Such reforms were implemented in Finland in 1996 and 1997.

The Finnish unemployment benefits consist of earnings-related UI-benefits and flat-rate labor market support. Receiving earnings-related benefits requires membership in a UI-fund and fulfilling an employment condition i.e. having been employed for ten months prior to entry into unemployment. Hence, most recent high school graduates are not eligible for earnings-related UI benefits but the unemployed youth may receive labor market support.

In 1996 the eligibility for labor market support was restricted so that youth below age 20 were no longer eligible unless they had completed vocational education (general high school education is not classified as vocational education). In 1997 this age limit was lifted to 25 years. The intention of the reform was to activate the youth pushing them into jobs or into further education. The 1996 reform was never evaluated, but Hämäläinen (2005) has examined the effects of the 1997 reform. According to her results losing the eligibility for labor market support increased employment and participation in formal education, but the effects were small. For example, the fraction in education only increased by 1.6 percentage points.

## 5.3 Increase guidance for students in high school

To the extent that delay in entry into higher education is related to lack of information on potential schooling options or lack of information on one's own skills, a natural solution would be increasing information for the high school students so that they would be better prepared to make career choices. Unfortunately, little research exists on the impact of providing information, but

since increasing career counselling at high schools is likely to be a low cost intervention, such policies could be experimented with.

An interesting example of the experiment on the effects of information is a study by Vuori et.al (2008) where a randomly chosen group of Finnish ninth graders were offered a one-week career counselling workshop to help them in the transition to upper secondary level. Though the study could not demonstrate significant effects on secondary-level schooling choices the authors argue that the intervention was beneficial for students with high drop-out risk and had more generally positive effects on measures of career-choice self-efficacy. They also argue that similar experiments among the upper-secondary school graduates who are in the process of making choices for tertiary education could be very useful.

## 5.4 Reform the admission system

Swedish university admissions are based on high school grades and a general scholastic assessment test (Högskoleprovet). In addition, some slots are allocated using special admissions criteria. According to calculations by Björklund et al (2010) about half of the slots are allocated using high school grades and one quarter each by the two other systems.

The goal of the admission system should be to select students who benefit most from university education, or to select students that have the best chances to successfully complete university education (note that these are not necessarily the same groups). Other possible criteria for a good admission system include providing equal opportunities for all applicants irrespective of gender, place of residence, ethnicity or family background.

Admission systems may have an effect on graduation age, if they provide favourable treatment to those who do not apply to universities immediately after high school. The worst option is to introduce entrance exams that require a long preparation period, as is the case in e.g. Finland. Also, giving credits for previous work experience is likely to increase the fraction of older entrants and hence delay the average graduation age. The Swedish system is reasonably efficient since it has a centralized admission system and a large part of students are selected based on high school grades. However, increasing the fraction of students admitted based on grades further might improve efficiency. Björklund et al (2010)

also note that the test scores in scholastic achievement tests increase when the test is taken repeatedly. Therefore, students that have just finished secondary schooling and are taking the test for the first time have a slight disadvantage in the university admission relative to older competitors who may have taken the tests repeatedly.

Häkkinen (2004) analyses the predictive value of entrance exams vs. high school grades in Finland. In Finland most universities admit students using a combination of the two criteria but the weights given to grades and entrance exams vary across universities. Häkkinen uses data on three cohorts of applicants to Helsinki University of Technology and University of Jyväskylä. As an achievement measure she uses the number of study credits accumulated over four years and likelihood of graduating within seven years from the entry date. Interestingly, she finds that entrance exams are better predictors of academic achievement than past school performance in engineering, social sciences and sport sciences. In contrast, past school performance is a better predictor of achievement in education. She also notes that grades and exam results are strongly correlated which implies that a large fraction of admitted students would be admitted no matter which admission criteria were used. Comparing marginal students that would be admitted using grades but not using exam results, or vice versa, reveals that a reform abolishing entrance exams would change the pool of admitted students in a way that would reduce academic achievement. Naturally, this loss should be compared to the cost imposed by the entrance exams in terms of delayed entry.

A potentially effective way of shortening the gap between completing secondary education and entering university-level education would be to give extra entry credits to students who apply to a university directly after completing high school. A report by Commission on Higher Education Admission (SOU 2004:29) takes a very negative view on quotas and supplementary credits for the younger students. The report argues that general credits would not work well since the heterogeneity of university programs is large. Some programs are dominated by young and some by much older students. The committee also argues that the potential for increasing direct transition from secondary to tertiary level varies across high school programs noting that: *"Among the traditional higher education preparatory programmes– Natural Science and Social Science –*

*direct transition within three years is about 70 per cent. For other national programmes, it is a mere 14 per cent."*

Strict quotas may be difficult to impose given very different age structure of applicants to different programs. However, simply giving extra admission credits to those applying directly from secondary education could be a feasible policy option. It is also highly questionable whether starting university education within three years after completing secondary school can be called a direct transition. Shortening the gap between secondary and higher education from three or two years to one or zero years would be a major improvement in terms of employment and productivity.

## 5.5 Reform student support system to reward faster graduation and to discourage working while enrolled

The characteristics of the student support system may have important implications for the graduation age, though not much research on the topic exits. Important features include the size of the support, whether the support is given as a subsidized loan or direct support and how own labor income affects student aid. The Swedish Fiscal Policy Council suggests in its 2009 Fiscal Policy Report increasing the support stating that *"Study support should be at a level at which students can manage on their own without parallel incomes, to prevent students from working too much during their study time."* They also suggest lowering the exempt amount, i.e. the maximum labor earnings that students can earn before student support is lowered, as well as a limit on the number of years that support can be collected. Perhaps the most interesting proposal of the Council is to make student support more generous for younger students (in higher education). The motivation is to encourage students to begin their studies soon after completing secondary education.

In Häkkinen and Uusitalo (published in Häkkinen 2004) we examined the effects of Finnish student support reform implemented in 1992. The reform replaced an old system that was mainly based on loans with direct grants that were about three times larger than prior to the reform. At the same time, the maximum duration of the support period was cut from seven years to 55 months. The intention of the reform was to shorten graduation times by pro-

viding more aid at a faster rate, allowing the students to concentrate on studies instead of working part-time.[11]

Unfortunately, the reform took place just before a major recession and it is hard to argue that changes in student employment or in times-to-degree after the reform would be entirely due to the student support system. Still our results suggest that the reform did not have the intended effects on student employment or graduation times. Removing the interest subsidy made the loans unpopular. Also, student employment increased rapidly after the reform (though part of this was no doubt due to the business cycle). However, the graduation times shortened in fields where they used to be very high. Our interpretation was that this to a large extent was due to the lower maximum duration over which student aid can be received. Our results also indicated that employment opportunities (measured by variation in local unemployment rates) had important effects on times-to-degree implying that working while enrolled in a university did delay graduation.

Overall, it seems that if student employment is to be discouraged, increasing the study support could be a wise policy change. A cost effective way of implementing this would be to increase the loan component of study support while keeping the direct grant constant. This would be in line with treating education as an investment and would retain the incentives to take into account the profitability of the investment in the choices of education. The loans could be income-contingent spreading the risk of unemployment more evenly. An even more effective way would probably be to lower the exempt amount that the students can earn without having their student support decreased. This would increase the effective marginal tax rate for student incomes and discourage students from working while receiving student aid. A modest decrease in the period over which student support can be received to match the normal time to degree could also be implemented.

[11] In practice, an important reason for the reform was also that the banks were unwilling to grant student loans with a regulated interest rate when the market rates were much higher.

## 5.6 Create incentives for students for timely graduation

As argued in the previous chapters, there are already substantial monetary incentives to graduate at a younger age. This is mainly due to the difference between average earnings of graduates and average earnings of during or before studies. Still, the private returns to graduating quickly are apparently lower than the social returns and the society would therefore benefit from faster graduation. A direct way of internalizing the externalities is to attach incentives to faster graduation.

A recent tax allowance introduced in Finland present an example of how such reforms can be implemented. The allowance, applying to students that started their studies after 2005, grants graduates 30% of the student loan exceeding 2500€, but only if the degree was completed within target time. However, so far there are no evaluations of the effectiveness of the system.[12]

## 5.7 Introduce tuition fees alongside increased student support

A market solution that could solve the problem related to long study times and high average graduation age is to make the students pay for the resources they use. Long enrolment periods are costly, and when education is free to the student she only pays a part of this cost (in terms of forgone earnings). Introducing tuition fees could align the private and social costs of extensive study times, and potentially increase efficiency of the system.

Cross-country correlations reported earlier suggest that graduation age is highest in the countries with no tuition fees and considerably lower in countries that charge substantial fees. However, little credible micro-level evidence on the effects of tuition fees exists.

One of the few convincing studies of the effects of tuition fees was performed by Garibaldi et. al (2009) who estimate the effects of tuition fees on graduation times at Bocconi university in Italy. At Bocconi, the tuition fees depend on family income according to a step function so that students just above each threshold pay

[12] However, a recent report by the Ministry of Education indicates that take-up of student loans has remained unaffected by the introduction of the new system (OPM 2009).

higher tuition than the students just below the threshold. Comparing students that differ in tuition but that are almost identical on all other respects, the authors can identify the direct effect of tuition fees. The results suggest that increases in tuition for the years beyond the standard program length have a substantial effect on the likelihood of finishing on time.

To ensure that introducing tuition fees would not prevent students from poor families from entering tertiary education, student support could be increased by means of larger student loans. An alternative is to introduce a voucher system. In a voucher system, each student that is admitted to a tertiary program would be granted a voucher that would cover tuition fees for a standard duration of the program, but not beyond that. Effectively this would introduce a heavy tax on studies that delay beyond the standard length.

A simple voucher system that would grant the right to study for a given number of semesters would however still not create incentives to graduate sooner than the standard length of the program. Therefore, ideally the vouchers should be tradable so that the students that are not using there full entitlement could sell their unused vouchers to students that need more than the standard time to complete their degrees. Such a system would resemble the cap-and-trade market for carbon dioxide emissions that is in place in the EU and would be an effective solution as it would create incentives to shorten study times for those of the students who can do so at a low cost.

A potential problem with tuition fee / voucher systems is that entry into tertiary education may be delayed further if students are risk averse and uncertain about their preferences. In such cases the students may be hesitant to use their vouchers for potentially wrong schooling choices. Given that the main reason for late graduation in Sweden seems to be a delay in entry into the tertiary level, tuition fees may not be as effective in Sweden as in countries where late graduation is related to extensive student employment and long average enrolment periods.

## 5.8 Increase incentives to universities

Creating strong incentives for students may not help much if the universities lack incentives to organize studies in a way that makes rapid progression possible. Creating incentives to universities is a policy route taken by other Nordic countries. In Finland universities get about a third of their basic funding based on output. The number of degrees has the largest weight in these funding rules but funding also depends on reaching other targets such as the number of students that graduate within seven years, and the number of students that attain at least a given number of credits per year. A working group appointed by the Finnish Ministry of Education suggests further increasing targets that are related to timely graduation. The funding rules of the Danish system have also been reformed in 2009 so that universities get completion bonuses for each degree, but only if the degree has been achieved within targeted time (OPM, 2010).

# 6 Concluding comments

Swedish university students graduate exceptionally late compared to students in other European countries. This creates a substantial monetary cost of which only part is borne by the students themselves. Hence, effective policies that would lower the average graduation age would be called for.

Ideally, previous research should provide the foundation for a list of policies that have proven to be effective elsewhere and that could be easily implemented in Sweden. Unfortunately that is not the case. Too little research exits on the effects of policies with this aim, and the quality of existing research leaves much room for improvement. In general one can conclude that creating stronger incentives to graduate quickly would be beneficial for society but, in practice, pinpointing exactly how such policies should be designed is a difficult task.

Still, acknowledging the uncertainty created by lack of credible research, the evidence reviewed in this report suggests that policies aiming towards a lower average graduation age probably should contain the following elements:

- increased career counselling at the high school level aiming to provide more information on further schooling options and preparing the students for decisions regarding their education
- favourable treatment of recent high school graduates in university admissions
- introduction of modest tuition fees alongside a corresponding increase in student support effectively, creating a voucher system
- increased incentives to universities by tying their funding further to completion rates and graduation times.

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