Analysis

Education pays, but the growth of educational attainment in Finland is stagnating

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Educational attainment among the Finnish working-age population is still high by international standards. Yet growth in the educational attainment of young adults has already started to slow, and 40–44-year-olds are now the age group with the highest level of educational attainment in Finland. Pursuing education, however, and completing a tertiary degree in particular, still remains financially worthwhile.



Cohorts now in their 40s look to remain the generation with the highest level of educational attainment.

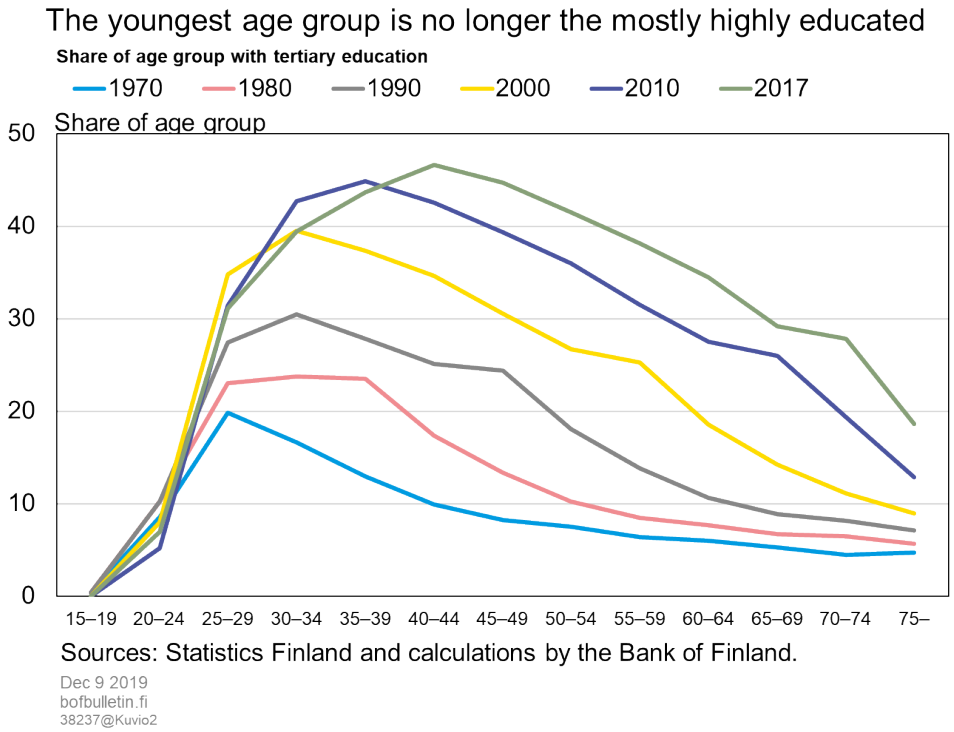
The trend in the level of educational attainment in a population is typically measured as the proportion of individuals that have reached a particular level of education in an age group. In the International Standard Classification of Education (ISCED 2011), education levels are classified roughly as follows: primary education, secondary education and tertiary education. Statistics Finland's classifications are based on ISCED 2011 but include specific national subclasses. Here tertiary education is divided into short-cycle tertiary education as well as lower and higher level university education. The latter two comprise bachelor's, master's, licentiate and doctorate level university degrees, as well as university of applied sciences (former polytechnic) degrees. In addition, tertiary education also includes certain former post-secondary degrees, such as those of a registered nurse or incorporated engineer[1].

The educational attainment of the Finnish working-age population has risen steadily over past recent decades, with the majority of the working-age population having completed at least upper secondary education. As recently as 1980, some 60% of over 15-year-olds lacked an upper secondary degree, and even among young adults (aged 25–29), 33% had not pursued qualifications beyond the lower secondary level. In 2017, only 28% of those aged 15 and above had not completed an upper secondary degree, with only little change in this statistic between age groups. Only in the very oldest age group (59–64-year-olds) was the share of persons without an upper secondary degree significantly higher than in younger age groups. The share of 25–34-year-olds without an upper secondary degree declined to its current levels in the early 1990s and has remained broadly unchanged ever since.

Because the share of Finns with upper secondary qualifications already reached its prevailing level in the mid-1980s, subsequent rises in educational attainment reflect an increase in the share of tertiary degrees. In the 1990s, the number of tertiary degrees in Finland grew significantly, reflecting, in particular, the reform of tertiary education, as a result of which the majority of the former post-secondary degrees were converted into university of applied sciences degrees.

In 2007, approximately 33% of 15–64-year-olds in Finland had completed a tertiary degree, and in 2017, this share was already as high as 41.5% (Chart 1). The rise of educational attainment in OECD countries is generally attributable to younger generations having always pursued higher qualifications than previous corresponding age groups. While adults also participate in education later on during their professional careers, only rarely does this lead to new completed degrees.

Chart 1.

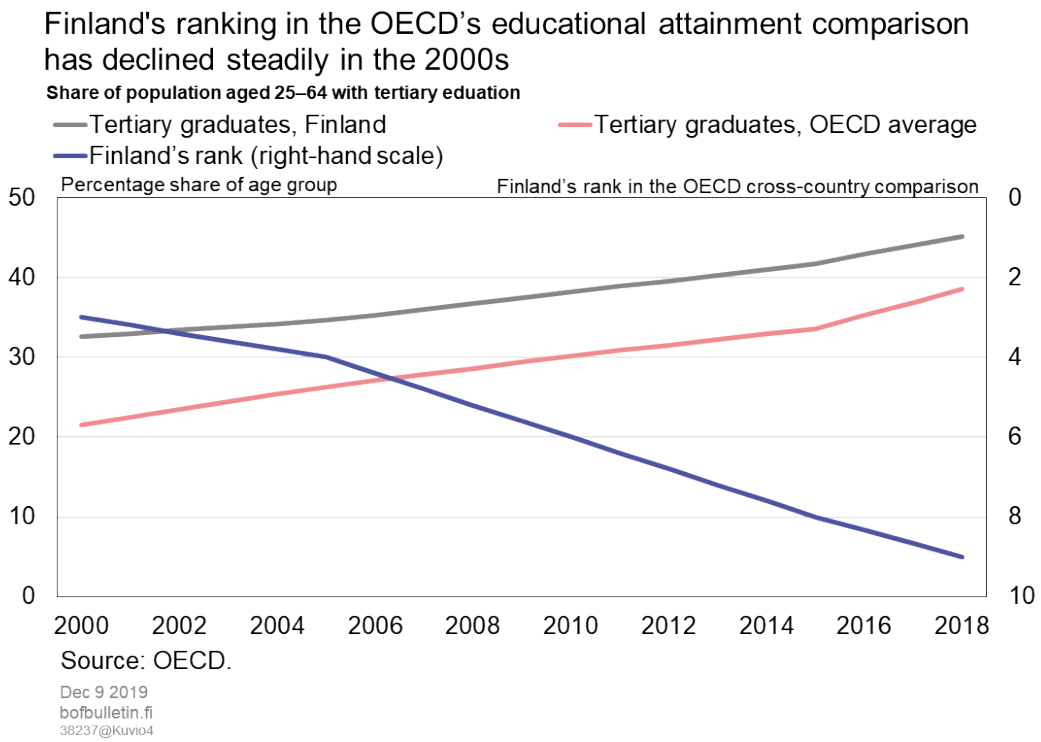


In Finland too, growth in educational attainment was long driven by young adults' graduating with higher qualifications than previous corresponding age groups, year after year. The age group with the highest level of educational attainment, in terms of the relative share of those with tertiary education, were 25–34-year-olds. However, cohort-specific assessments of educational attainment reveal that this growth has stagnated among young age groups. 25–34-year-olds remained the age group with the highest level of educational attainment up to the cohorts born in the late 1970s, but for cohorts born in the early 1980s, this had already started to decline. As it stands, the cohorts born in the late 1970s and now in their 40s look to remain the generation with the highest level of educational attainment.[2]

Despite the decline in the average educational attainment of 25–34-year-olds, educational attainment for the population as a whole will continue to rise for the time being, as older age groups with lower levels of educational attainment are being replaced in the labour force by younger persons with higher qualifications. The older age groups, however, are claiming the position of the age group with the highest level of educational attainment. Already in 2010, 25–34-year-olds were superseded by 35–39-year-olds as the five-year age group with the highest level of educational attainment. In 2017, the very same cohort, born in the 1970s and already in their 40s, held on to this position, with the age group with the highest level of education attainment now becoming the 40-44-year-olds (Chart 2). The rise of the 40–44-year-olds to the

position of the age group with the highest educational attainment is exceptional by international comparison. In the OECD countries, the age group with the highest level of educational attainment are generally 25–34-year-olds, as measured by the share of tertiary degrees.

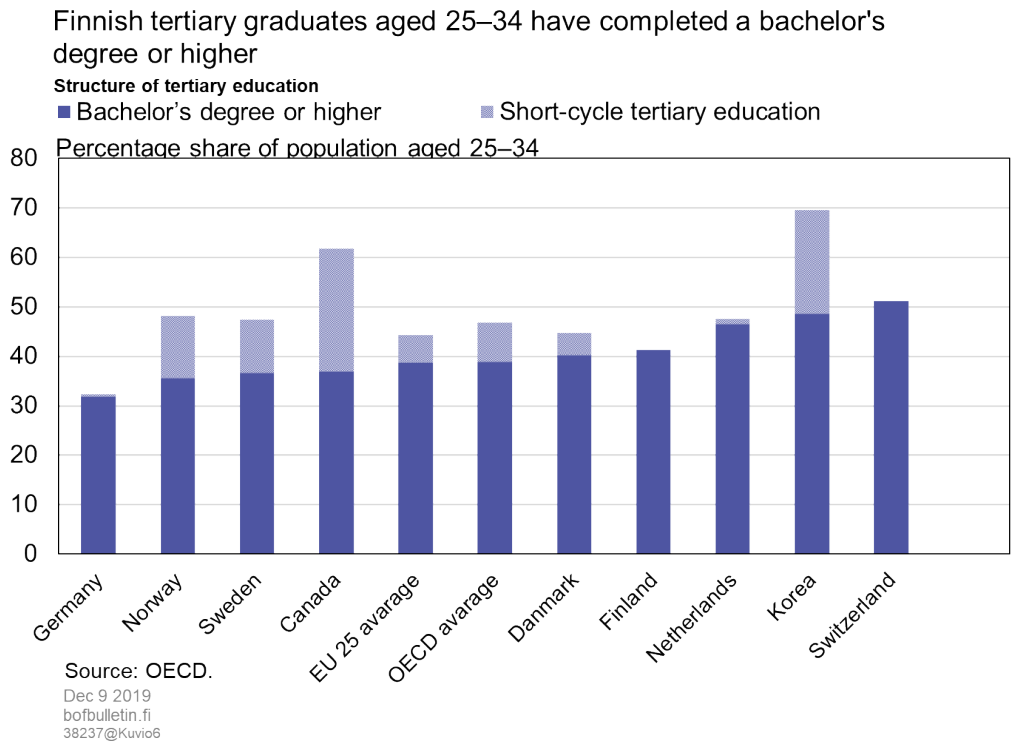
Chart 2.



On the other hand, it becomes difficult to estimate the development of educational attainment over time solely based on the share of persons with a degree, if education classifications have also changed over the years. When most of Finland's post-secondary degrees were converted into tertiary degrees, in many cases, the degree requirements did not increase significantly, at least not in terms of the number of years required for completing a degree.

In addition to the number of persons with a qualification, the educational attainment of a population can be measured with an indicator which looks at educational levels. Statistics Finland's level of education indicator is calculated for each year of birth, and it is a measure of the average length of the highest level of completed education per capita (multiplied by 100). The level of education indicator provides a similar picture of the development of educational attainment as does surveying those with a tertiary degree—that is, the average level of educational attainment in the age groups 25–29 and 30–34 has started to decline, and the 40–44-year-olds are gaining the position of the age group with the highest level of education (Chart 3).

Chart 3.



Educational policy assessments have emphasised increasing vocational education

Kalenius and Karhunen (2018) discuss possible explanations for the decline in educational attainment among the young. The authors start by examining developments in the number of students that have entered general upper secondary education and tertiary education. The share of those who entered tertiary education at the age of 19–25 was at its highest in cohorts born in 1979–1981, but for those born after 1981, the share has been on a trend decline. In the early 2000s, there was also a protracted decline in enrolments in general upper secondary education out of those who had completed lower secondary education, but the share started to rise again in 2013. The survey sample of students that entered tertiary education ends at those born in 1995 and who completed their lower secondary education in 2011. Consequently, the data does not reveal whether or not the slight uptick in general upper secondary enrolment after 2013 is reflected in the popularity of tertiary education.

As a possible explanation for the decline in educational attainment, Kalenius and Karhunen cite changes in the objectives for the provision of education[3]. For the past decade or more, educational policies have emphasised vocational- instead of tertiary education.

In the beginning of the 2000s, it was the Ministry of Education and Culture's objective to increase the share of tertiary education in the age group 30–34-year-olds from 40% to at least 50%. This objective was changed, however, towards the end of the decade. In a new assessment by the Ministry, a stronger need emerged for increasing vocational education rather than tertiary degrees. As a result, in 2007, the objective was to cut the number of places available at universities by nearly 3000, at a time when the size of the cohorts entering secondary and tertiary education was expanding. Nevertheless, the objective was also to promote the efficient use of new study places, but according to the authors, this was not very successful.[4]

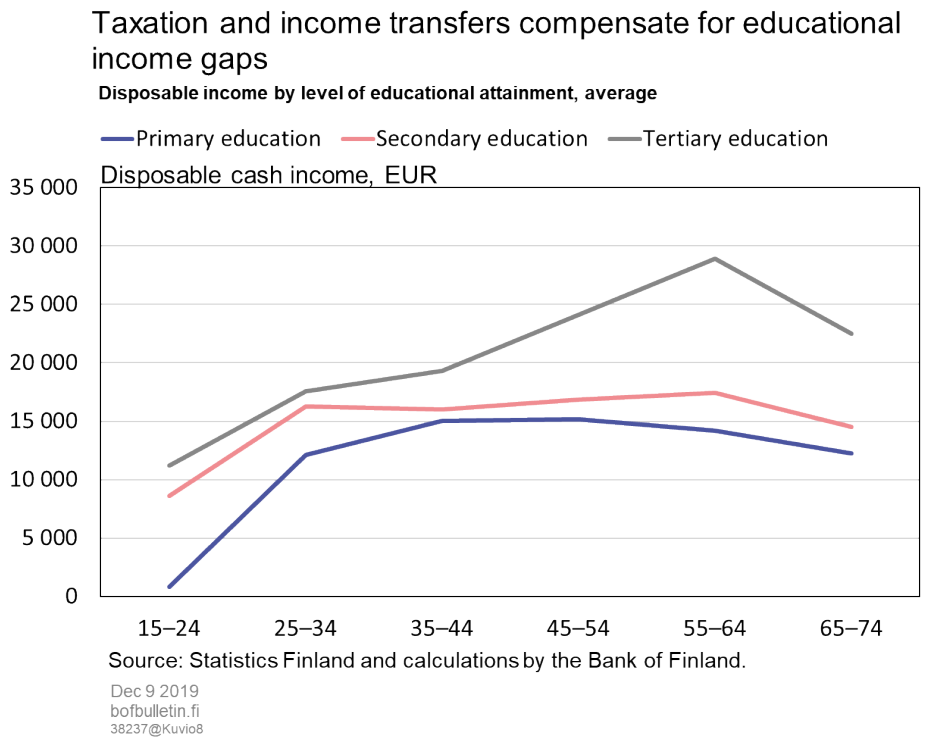
According to the Vision for higher education and research in 2030, published in 2017 and cited by Kalenius and Karhunen, the objective is to increase the share of young adults with a tertiary degree so that by 2030, at least 50% of 25–34-year-olds will have completed a tertiary degree. As stated by the authors too, achievement of the objective will likely require significant policy action.

Finns are still well-educated by international comparison

The Finnish population remains highly educated by international standards. In the OECD's 2019 Education at a Glance report, Finland ranked ninth in average educational attainment, when measured as the share of tertiary graduates among 25–64-year-olds (Chart 4). Finland surpassed many countries in the survey, including all of Europe. The most highly educated populations in the OECD, however, are to be found in countries in North America and Asia. The educational attainment of the population in Asia is improving rapidly. In Canada, which was the top country in the educational attainment comparison, almost 58% of the population has a tertiary degree, which is 10 percentage points more than in Finland.[5]

Although educational attainment among Finns remains internationally high, Finland's educational attainment is rising slower than in OECD countries on average. Between 1999 and 2018, the share of Finnish tertiary graduates aged 25–64 increased from 33% to 45%, while the OECD average increased from 22% to 39%. Thus, while the number of tertiary graduates in Finland still exceeds the OECD average, Finland has dropped from third place to ninth in cross-country comparison, following a rather steady decline since the turn of the millennium.

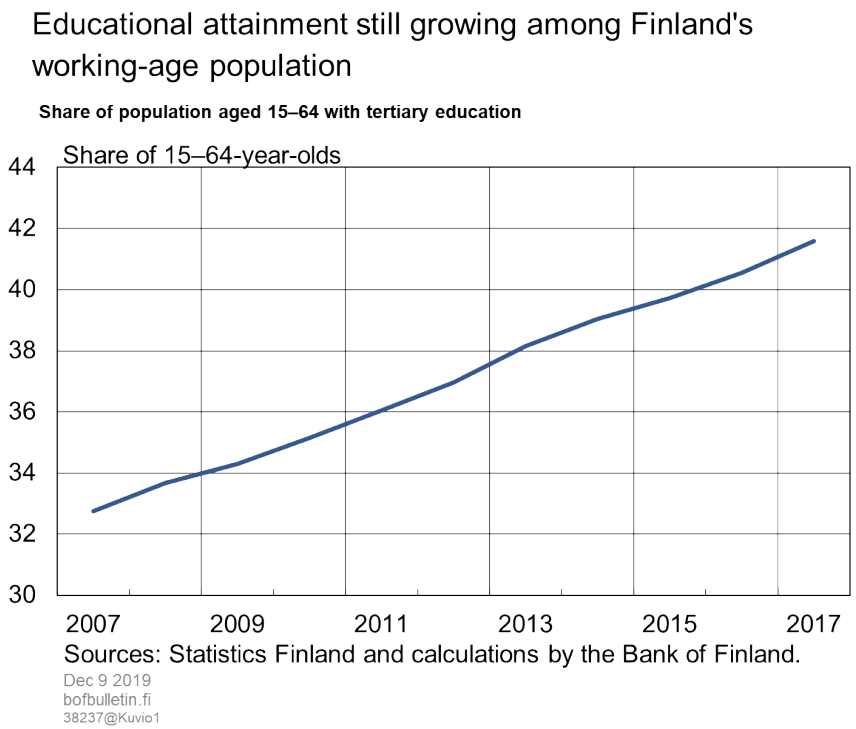
Chart 4.



Finland's declining rank is explained by the slower rise in the educational attainment of younger generations than in the reference countries. Between 2000 and 2018, the OECD average share of tertiary graduates aged 25–34 increased from 26% to 44%, whereas in Finland the corresponding share (41% in 2018) has remained almost stagnant throughout the 2000s and has already fallen below the OECD average. Finland has also gone from being one of the top countries at the turn of the millennium to holding 27th place in 2018 in the cross-country comparison of 25–34-year-olds (Chart 5).

The relatively slow growth of educational attainment among Finnish young adults during the 2000s is likely in part explained by Finland's strong baseline at the turn of the millennium. Many countries have sought to catch up in educational attainment, which has led to a rapid improvement in the average level of educational attainment among young adults.

Chart 5.

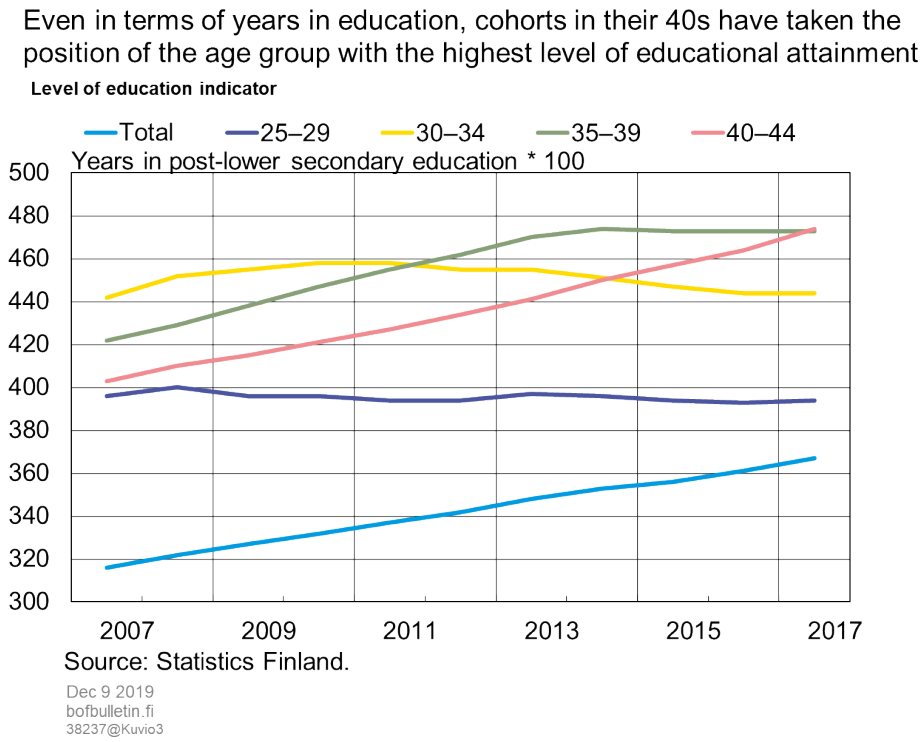


As countries use different classifications for educational levels, with discrepancies, for example, in the duration of the studies, comparisons based on such may overestimate or underestimate a country's level of educational attainment relative to another. According to Kivinen and Hedman (2016), comparisons of education indicators conducted by the OECD underestimate the level of educational attainment of Finns—mainly because since the University of Applied Sciences Reform, almost all tertiary graduates in Finland have completed at least a bachelor's degree. In many other OECD countries, shorter than bachelor-level degrees are also classified as tertiary degrees.

In Chart 6, tertiary degrees are divided into ISCED levels and classified as short-cycle tertiary education, bachelor's and master's degree education and doctoral or equivalent level university education. According to OECD statistics, in 2018, nearly all Finnish tertiary graduates aged 25–34 had attained a bachelor's degree or higher, when taking into account degrees from universities of applied sciences. The share of Finns aged 25–43 with a bachelor's degree or higher was 41%, which is higher than the OECD average of 39%. Comparing the number of these degrees also raises Finland's rank in the comparison between OECD countries from 27th to 13th place.

But while national differences in the durations of tertiary education programmes improves Finland's rank in international comparisons, the conclusion that educational attainment among 25–34 year-olds has started to decline applies nonetheless.

Chart 6.



Returns to education in Finland

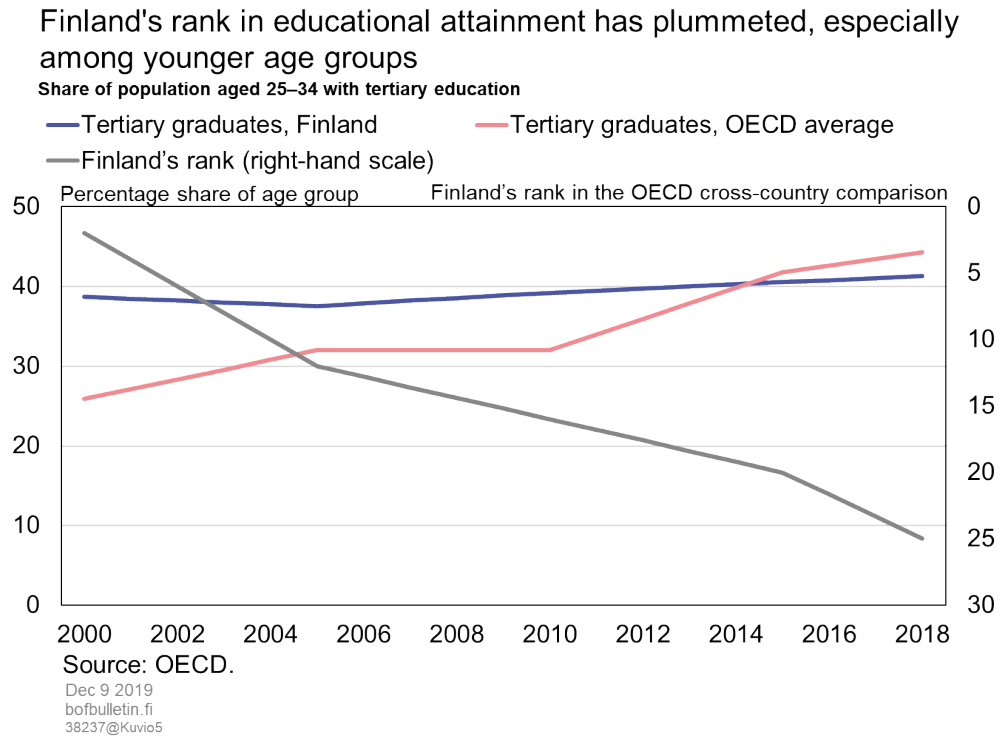
From an individual's perspective, the economic returns to education are determined by how participation in education increases one's lifetime income. Employee productivity typically increases with education, which translates into higher average earnings for the highly educated than for the less educated. In addition to higher earnings, education increases lifetime income by improving labour market attachment, thereby securing more stable careers for the highly educated than for the less educated.

Although it can be shown that the highly educated have higher lifetime incomes than the less educated, it is difficult to measure a direct causal relationship between education and a person's productivity, earnings development and labour market position. A person's lifetime income depends not only on the duration and field of study but also on many individual factors. It is also possible that individuals who are initially more productive than their peers are more likely to be selected into higher education. However, a comparison of average wage- and employment development between groups with different educational backgrounds provides a rough guideline on the returns to education.

Based on a rough descriptive assessment alone, it appears that acquiring a degree in Finland, especially a tertiary degree, is a profitable investment. Chart 7 illustrates a comparison by age

group of the average earnings of people with a tertiary degree, a secondary degree and primary education only. In all age groups, the gross annual income of those with primary education only is clearly lower than that of the more educated. The highest annual income of the least educated in the comparison is around EUR 20,000, achieved at the age of 35–44. Secondary education graduates reach their peak income at the same age, with annual income almost 50% higher than their peers with primary education only. Income growth continues longer for tertiary graduates than for their less-educated peers, so that they reach their peak income at the age of 45–54. At this age, the average annual wage income of tertiary graduates is around EUR 46 000 and the wage gap between them and the less educated is at its widest.

Chart 7.



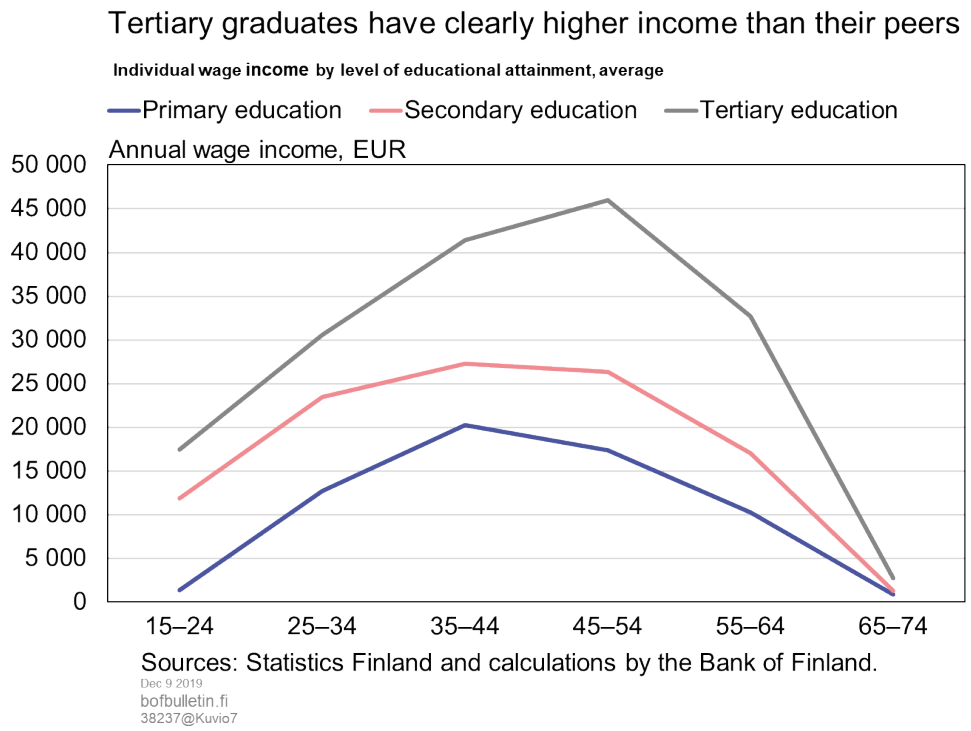
The above comparison only looked at wage development, where the effects of taxation and income transfers on income distribution are not taken into account. Including these factors reduces the returns to education from the point of view of the individual. Instead of wage income alone, Chart 8 compares the disposable income of different educational groups, i.e. take-home income that also includes factor income other than wages and where taxes and transfers are accounted for.

The acquisition of a qualification is linked to higher income also when taking into account taxation and income transfers, but in this comparison, the differences between educational groups are smaller up to the age of 35–44, especially in the younger age groups. However, from the age of

45–54 and above, the advantage tertiary graduates have over both secondary and primary education graduates begins to grow. Moving closer to retirement age, this indicator, too, shows that the income of the highly educated is almost twice the income of those with primary education only.

If taxation and income transfers are taken into account, the economic benefits of secondary education appear to be clearly smaller than when comparing wage differences alone. Especially from the age of 35–44 and above, there is hardly any difference in the disposable income of those with a secondary degree and those with primary education only.

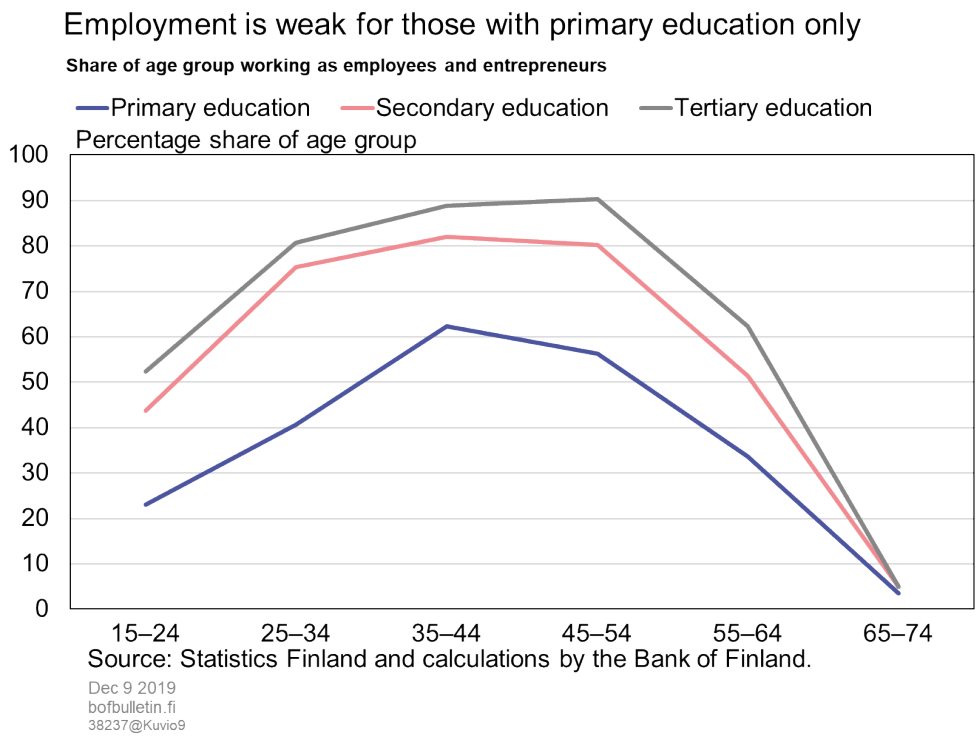
Chart 8.



Post-primary education is linked to higher lifetime income not only because of better earnings development but also because the careers of the highly educated are typically more continuous than the careers of the less educated. The employment rates of both secondary and tertiary education graduates are clearly higher than those of people with primary education only[6] (Chart 9). The margin in employment between those with primary education only and those with a secondary or tertiary degree grows the most in the age of 25–34. In this age group, the employment rate of the least educated peaks at around 40%, while 75–80% of their secondary- or tertiary educated peers are working either as employees or as entrepreneurs. This gap, however, narrows somewhat in the older ages groups. The differences in the employment rates of tertiary and secondary education graduates are at their widest among 45–54 year-olds, at which age the

employment rate of tertiary graduates is around 10 percentage points higher than that of secondary education graduates.

Chart 9.



Education pays off; large variation in returns across fields of study

The preceding descriptive analysis does not yield conclusions about the actual causal effects of education on income and employment. However, some empirical studies conducted in recent years on the returns to education in Finland have measured the causal relationship between education and lifetime income. The findings of these studies support the conclusions from the descriptive analysis above.

Koerselman and Uusitalo (2014) examine the decision of an individual to pursue education as an investment. Hence, in assessing the profitability of education, one must consider not only the expected returns but also the income risk related to the chosen educational path. The authors measure the returns to education by the expected effect of the level of education on the individual's lifetime income and the risk by the variability of lifetime income. Their findings suggest that the return to education increases with the level of education, as does the risk to education. Even considering the risk, tertiary education is still a profitable investment in Finland: lifetime

earnings are about twice as high for tertiary-level graduates as for persons with primary education only, even with a slight downward adjustment in tertiary graduates' lifetime income to compensate for their higher income risk. Even though taxes and transfers reduce the expected returns to education, attainment of a tertiary degree is still profitable.

On the other hand, the benefits of upper secondary education appear to be limited in terms of income and the gains are—instead of better earnings streams—mainly explained by the fact that the working careers of persons with upper secondary education are more continuous on average than the careers of individuals with lower educational qualifications. Asplund and Maliranta (2006) also find that the returns to a tertiary-level degree are high in Finland, while the returns to an upper secondary degree remain limited.

The aforementioned studies focus on the relationship between the level of educational attainment and lifetime income. Suhonen and Jokinen (2018) compare instead the returns to upper secondary and tertiary education across various fields of study. They measure the returns to education by the average level of earnings across the fields of study eight years after graduation. The effects of education on employment opportunities are not analysed. The authors' findings support the aforementioned conclusions about the relatively high returns to education in Finland, especially in the case of tertiary education. There is, however, large variation in the returns across the fields of study, and the difference between the most and least profitable study fields is significant. In the case of certain upper secondary-level study fields, income after tax does not differ from that of individuals with lower educational qualifications[7].

In addition to a cross-sectional analysis, Suhonen and Jokinen (2018) also analyse the evolution of the returns across the fields of study over time, in 1995–2015. They find that the returns to upper secondary and tertiary education have trended up on average, and the returns have also increased for certain low-income study fields. However, there is large variation also in the trend growth rates of the returns across the study fields.

The returns to education across the various fields of study are also analysed in Husa (2019). As Koerselman and Uusitalo (2014), the author uses a lifetime income approach and draws on Statistics Finland's income distribution data. A lifetime analysis is better suited for capturing differences in the continuity of working careers across educational degrees and fields of study than cross-sectional analyses. Income distribution data allows for the measurement of lifetime income based on alternative definitions of income. These lifetime income analyses, too, suggest that education pays off in Finland, also when taxes and transfers are taken into account. As the findings presented earlier, the lifetime analysis also points to significant variation in the returns to education across the fields of study. For example, a nurse's lifetime income is, adjusted for taxes and transfers, one-fifth higher on average than that of an individual with primary education. The

most profitable degree is that of the Licentiate of Medicine, which ensures its holder almost three times higher net lifetime income on average than for a primary-educated person.

The OECD's Education at a Glance report compares the structure, finances and performance of education systems of the group's member countries. The report for 2019 supports the conclusions presented above on the performance of education based on Finnish data. The earnings and employment advantages of persons with upper secondary education, or tertiary education, in particular, are generally notably better than the advantages for individuals without a degree.

The employment rate of 25–64-year-olds with tertiary education in the OECD countries (85%) is about 25 percentage points higher on average than that of persons with primary education. The OECD statistics indicate that the corresponding difference is even larger in Finland, i.e. 32 percentage points[8]. The average employment rate also rises with the level of tertiary educational attainment. As expected, the educational attainment level is also reflected in unemployment and participation rates. The unemployment rate of 25–34-year-olds with primary education is about two times higher than that of individuals with higher educational qualifications. The lowest-educated young adults also have a considerably higher risk of falling outside the labour market.

The employment rates of tertiary-educated individuals in the OECD countries can vary by up to 7 percentage points depending on the field of study. The lowest employment rates are found among those who hold a degree in arts and humanities (83%), the highest among ICT professionals (90%).

Higher levels of education are clearly translated into higher earnings. The average annual earnings of tertiary-educated persons aged 25–64 are 57% higher than those of individuals with primary education. The earnings advantage also increases with the level of the degree and a person's age. Upper secondary-educated persons earn about one-fifth more than individuals with lower qualifications.

As expected, the earnings advantage varies considerably by the field of study. Even though the differences in earnings advantages across fields are also notable in Finland, country-specific comparisons indicate that they are, in fact, among the smallest of the OECD countries.

On average across the OECD, the highest-earning persons are those with a degree in ICT, manufacturing and construction. In some fields of study (arts and humanities and social sciences), tertiary graduates earn even less than adults with an upper secondary qualification.

Conclusions

The average level of educational attainment is still high in Finland and bears international comparison. However, the educational attainment of young age groups has started to decline and

there is a risk that persons born in the late 1970s will remain the age group with the highest educational qualifications. Since the universities of applied sciences reform, there have been no reforms to the Finnish educational system that would have succeeded in increasing the share of tertiary graduates among the young age cohorts. There are some assessments that, after the early years of the 2010s, the Finnish educational system has focused on increasing the number of places available in vocational institutions instead of universities. However, it is difficult to determine a direct causal link between the Ministry of Education's goals and the number of degrees completed.

Measured by tertiary degrees completed, young Finns aged 25–34 are rapidly falling behind young adults in the other OECD countries. However, comparisons based on rough categories of educational degrees tend to underestimate the level of educational attainment in Finland. Namely, tertiary degrees of the young in Finland are now, as a rule, at least bachelor degrees, whereas in other countries the category can also include degrees of shorter duration. A comparison of the number of these degrees across the OECD countries raises Finland's ranking from 27th place to 13th. Even though the consideration of the duration of tertiary-level studies improves Finland's ranking in international comparisons, the conclusion that the educational attainment level of 25–34-year-olds is declining in Finland holds true.

Despite the decline in the educational attainment level of the young age groups, education is still a profitable investment from the perspective of an individual. The attainment of an upper secondary degree alone markedly improves a person's labour market prospects, and a tertiary degree is also distinctively reflected in wages. There is also evidence of a clear relationship between the level of a tertiary degree and its returns, measured by both employment and earnings. However, the returns vary considerably across the different fields of study.

References

Asplund, Rita – Malinen, Mika (2006) **Koulutuksen taloudelliset vaikutukset** ('Economic effects of education'). Sitra reports 60.

Husa, Tomi (2019) **Koulutus ja elinkaaritulot** ('Education and lifetime income'). Akava Works Article 10/2019.

Kalenius, Aleksi (2018) **Koulutustason kehitys Suomessa** ('Developments in the level of educational attainment in Finland'). Background report for the Economic Policy Council.

Kalenius, Aleksi – Karhunen, Hannu (2018) **Miksi nuorten koulutustaso laskee?** ('Why is the educational level of the young declining?'). Yhteiskuntapolitiikka 83 (2018:5-6).

Kivinen, Osmo – Hedman, Juha (2016) **Suomalaisen korkeakoulutuksen kansainvälinen taso on väitettyä parempi. Mahdollisuuksien tasa-arvo ja korkea osaaminen** ('International level of Finnish tertiary education better than alleged. Equality of opportunities and high educational attainment'). Yhteiskuntapolitiikka 81 (2016:1).

Koerselman, Kristian – Uusitalo, Roope (2014) **The Risk and Return of Human Capital Investments.** Labour Economics, Vol 30, October 2014, p. 154–163.

OECD (2019) Education at a Glance 2019: OECD Indicators. http://www.oecd.org/education/education-at-a-glance-19991487.htm/?refcode=20190209ig

Suhonen, Tuomo – Jokinen, Juha (2018) **Mikä on tutkintotodistuksesi tuotto?** ('What is the return on your degree?'). Talous ja Yhteiskunta 2/2018.

Statistics Finland (2018) **Educational qualifications highest among persons aged 40 to 44 in 2017**. Press release of 2 November 2018. http://tilastokeskus.fi/til/vkour/2017/vkour_2017_2018-11-02_tie_001_fi.html

Notes

1. Incorporation of longer-cycle post-secondary degrees into tertiary education is justified, because the contents of the studies required for the degrees are more or less equivalent to the university of applied sciences degrees that replaced them. When tertiary education is defined this way, the replacement of post-secondary degrees with university of applied sciences degrees mainly of the same length does not erroneously appear in statistics as a strong increase in tertiary education. ↑
2. The decline in the level of educational attainment among the younger cohorts in Finland has been examined by e.g. Kalenius (2018) and Statistics Finland (2018). ↑
3. Kalenius and Karhunen analyse the changes in the objectives for the provision of education mainly based on the expectations for future educational needs by the Ministry of Education and Culture. ↑
4. The report however does not show the actual trend in the number of places available in universities, nor was this information available from Statistics Finland. ↑
5. Canada's high educational attainment is partly explained by the prevalence of short-cycle tertiary programmes. Tertiary graduates in Finland, especially in younger age groups, usually have at least a bachelor's degree. ↑
6. Figure 10 is based on household-specific and individual data in the income distribution data collected by Statistics Finland. The data on employment in Statistics Finland's labour force survey cannot be categorised by both age and level of education. ↑
7. In the case of tertiary education, the impact of a degree on the level of income was negative only in the case of arts. ↑

8. Calculated based on the income distribution data (used in Chart 9), the differences in employment by the level of educational attainment are of a similar magnitude. ↑

The opinions expressed in this article are those of the authors and do not necessarily represent the views of the Bank of Finland.

Keywords

comparisions of educational attainment, education attainment, employment, return on education, tertiary education qualifications