Educational Inequality and Life Course Trajectories: Trends for Men with Low Education in Early Adulthood

Introduction

Being employed, having a good income and establishing a family are broadly acknowledged as important elements of having a good life. As many other countries, Norway has seen substantial educational gaps in these outcomes as well as changes in these gaps over recent decades (Bennett & Salvanes, 2024; Jalovaara et al., 2019). Taken at face value, these changes might be understood as changes in the effects of education over time. However, less is known about the extent to which these developments have been driven by changing composition of educational groups due to the educational expansion in recent decades.

Arguments supporting changing effects propose that individuals with lower levels of education experience increasingly more difficulties in finding employment – a main condition for having good income, and an important predictor for entering parenthood. An increasing demand for more highly educated employees and increasing competition with more educated individuals for positions with less qualification requirements might contribute to changes in effects of education. On the other hand, changing composition of educational groups can be expected based on large shifts towards higher education in conjunction with the educational expansion. With upper secondary and tertiary education becoming more commonly available in the second half of the 19th century, those who nevertheless still complete lower levels of education might become more and more negatively selected in terms of abilities and individual resources, such as health, over time. Relevant compositional changes might occur in the domains of individuals' cognitive abilities and resources like parental income. Cognitive abilities are an important predictor of educational and occupational outcomes (Bratsberg et al., 2025; Hegelund et al., 2018) as well as with the chances of becoming a parent (Kolk & Barclay, 2019). Therefore, a decline in average cognitive abilities in less educated groups might drive potential changes in life outcomes. The same argument applies to parental income, which has indeed become more strongly linked to a wide range of offspring economic, family and health outcomes in recent decades (Markussen & Røed, 2020).

Against this background, this study has three aims: (1) To describe the development in educational differences in employment, income, and childlessness over time. (2) To examine to what extent increasing educational differences in these outcomes can be attributed to differential composition of educational groups in terms of family background. (3) To examine to what extent increasing differences in these outcomes can be attributed to a changing composition of educational groups in terms of cognitive abilities, and measures of health such as weight and height.

The focus of this study is on men, because women's employment participation and income has undergone large changes in recent decades, introducing the challenge of disentangling changes arising from employment participation and those arising from shifting compositions of educational groups.

Methods

Data and sample

We use register data on Norwegian born men born between 1955 and 1991 or between 1955 and 1983, depending on the follow up time for the outcome measured. Unique personal identifiers are used to match information on annual income, educational attainment and family characteristics from other registers. For some analyses we also use data from the military inscription databases. For these analyses we limit the analytical sample to males born between 1962 and 1990. For these cohort's military service was compulsory and all able-bodied males were given an intellectual ability test and were measured regarding health and weight.

Information on *education* comes from the educational database, which is available from 1970 and onwards. We measure the highest completed level of education in the year individuals turn 30. We distinguish three levels: less than upper secondary education, completed upper secondary and tertiary education.
Employment is measured as a binary variable indicating whether an individuals' income at age 30 is above or below the Norwegian National Insurance Schemes' basic amount (also termed "1G"). Having an annual income of less than the basic amount (approximately 11,000 Euro in 2025) indicates weak attachment to the labor market and the absence of stable employment.
Income is measured as the average annual income after taxes and transfers during ages 30-34. We adjusted income for inflation using the consumer price index with 2022 as the reference year, and report on the median income for those with positive income.
Childlessness is measured as a binary variable indicating whether an individual had at least on child by age 40.
We also include measures of cognitive abilities, height and weight measured that were assessed at military conscription tests (age 18-20). For these measures, we generated percentile ranks within each birth cohort in order to focus on relative differences in these measures across educational groups, controlling for cohort specific trends in their distributions.

Preliminary results

Large compositional changes in educational attainment have occurred across cohorts born between 1950 and 1991. Most strikingly, the share of individuals who had obtained *less than upper secondary education* has declined from around 60% to 20% percent. Complementing that development, the shares of those who completed *upper secondary* and *tertiary education*, respectively, have increased from about 15%-20% to 40%. In cohorts born around 1970 and later, the share of those who had obtained *tertiary education* had become larger than the share who had obtained *less than upper secondary education*.

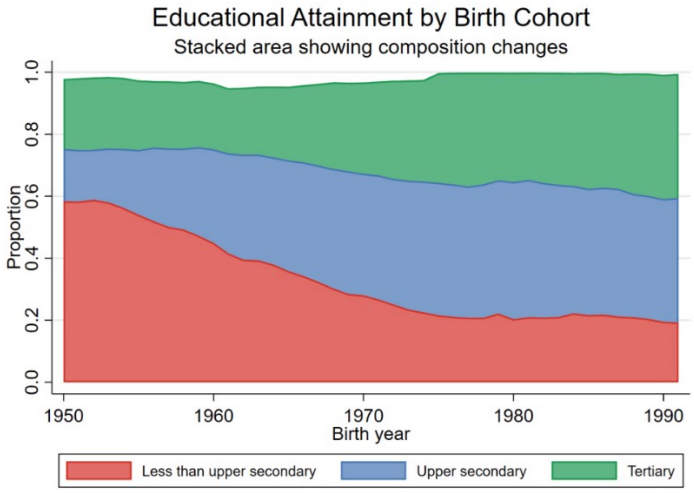

Figure 1: Distribution of educational attainment (age 30) by birth cohort. White areas represent shares with missing educational information.

Figure 2 displays the association between educational level at age 30 and three life outcomes: employment, income and childlessness. Panel A illustrates that employment rates at age 30 were above 90 percent for those born in 1955, irrespective of educational level. However,

employment rates have continuously declined to about 65% in the 1991-cohort for individuals with less than upper secondary education. In contrast, rates for those with completed upper secondary or tertiary education have remained stable at above 90%.
Panel B reveals that median income has increased across birth cohorts for individuals with upper secondary and tertiary education, particularly among those born in 1965 and later. In contrast, median income for those with less than upper secondary education has increased only slightly and largely stagnated for those born after 1965. In sum, these developments have led to an increase in income inequality between educational groups.
Panel C shows that rates of childlessness at age 40 have increased for all educational groups. Childlessness is almost equally common for those with upper secondary and tertiary education, and both groups show a parallel development with shares rising from less than 20% in the 1955-cohort to around 25% in the 1983-cohort. In contrast, a stronger increase from 20% to 40% was observed for those with less than upper secondary education during the same period.

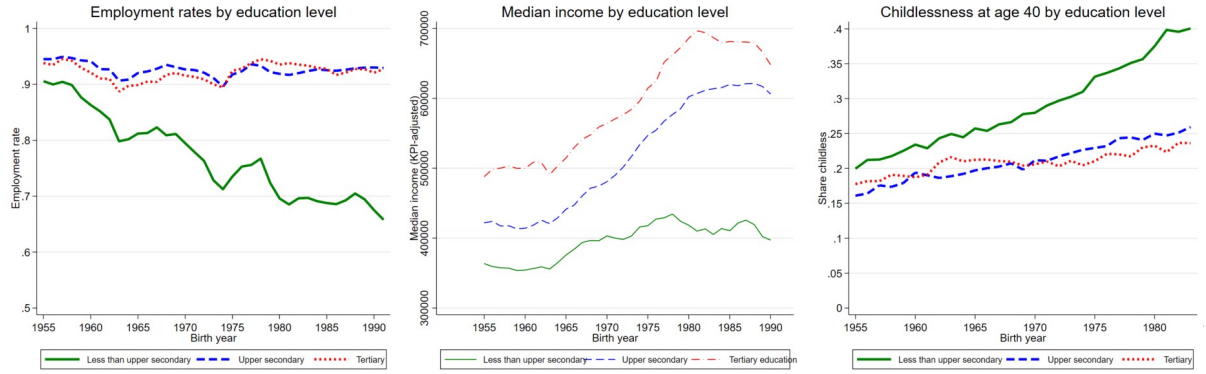

Figure 2: Education-specific development in employment, income, and childlessness across birth cohorts.

Next, we examined whether the increasing educational gaps in life outcomes were driven by changes in the composition of educational groups over time. Panel A in Figure 3 shows trends in *cognitive ability scores* by educational groups. These measures are percentile-ranked within birth cohorts and thus capture relative differences between educational groups for each birth cohort. The figure illustrates that the mean rank for cognitive abilities for those with less than upper secondary education remains stable or slightly increases across birth cohorts, albeit at a lower level than for other educational groups. In contrast, mean cognitive ability rank declines for those with completed upper secondary and tertiary education. This pattern probably reflects educational expansion, where those with tertiary and upper secondary education became more heterogeneous over time, also in terms of cognitive abilities. The convergence of cognitive abilities over time contrasts with the growing gaps in life outcomes and is thus unlikely to explain the divergence. For the conference, we will present a formal test of the contribution of cognitive abilities to life outcomes and additionally examine changes in the composition by *family background*.
For height a similar pattern emerges where the percentile rank for individuals with less than upper secondary education is stable (again albeit lower), while it declines for the other education groups. Lastly for weight the trends differ. At the beginning of the period, those with tertiary education ranked higher in the weight distribution. However, by the end of the period, individuals with less than upper secondary education and those with completed upper

secondary education surpassed the tertiary group in weight-percentile, reflecting changing health trends.

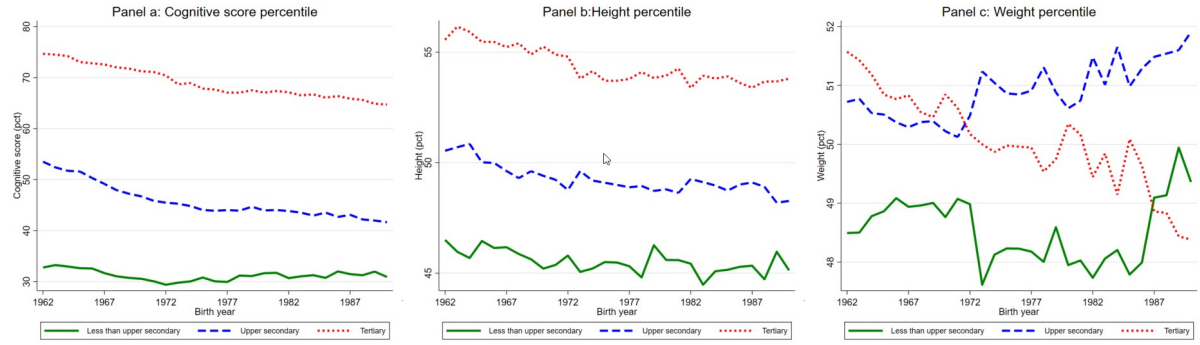

Figure 3: Education-specific development in cognitive abilities, height, and weight across birth cohorts.

Intermediate conclusion and next steps

Our preliminary results suggest a growing divergence in early adulthood outcomes between educational groups born in the second half of the 19th century in Norway. While educational *gaps in employment, income and childlessness have widened*, educational groups have *converged* in their cognitive abilities. These preliminary findings suggest that individual traits *did not* drive the growing disparities in early adult outcomes. This makes other explanations more likely, including the hypothesis of increasing educational demands in the labor market driving the widening of gaps in life outcomes.

By the conference, we will include family background (parental income) in our analysis and develop formal models that test to what extent gaps in life outcomes are attributable to individual and family resources.

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