Extended Abstract

Life Cycle Economic Returns to Educational Mobility in Denmark

Jesper F. Birkelund, University of Copenhagen, jfb@soc.ku.dk.
Kristian B. Karlson, University of Copenhagen.
Meir Yaish, Haifa University.

Preference: Oral presentation.

Background

The vast and growing research on social mobility has repeatedly shown the importance of education in facilitating social mobility. Nonetheless, this literature appears to neglect systematic examination of the intergenerational educational mobility process and its long-term economic consequences. We aim to bridge this gap in the literature by asking: How do experiences of intergenerational educational mobility and immobility shape the life courses of individuals and families? While existing research on stratification has paid some attention to this question, only few studies examine the full life cycle consequences of mobility experiences (cf. Gabai-Egozi and Yaish, 2017 for Israel; Hallsten and Yaish, 2019 for Sweden; Yaish et al., 2019 for the US). We contribute to the literature by examining the economic returns to college mobility of a unique sample of Danes born around 1954, more specifically long-term earnings and disposable income profiles by college mobility groups. We follow individuals’ from age 26 through age 59 and we seek to explain the by-mobility-group differences in these trends by introducing measures of cognitive skills measured in adolescence.

Economic Consequences for Intergenerational Educational Mobility: Short and Long-Term Effects

When examining economic returns to education, human capital theory comes to the fore (Becker 1964). According to this theory, remuneration from employment is tied to productivity, which is a function of human capital – mainly education. Here, the productivity of one's parents is irrelevant, and therefore, parental education and other origin effects should not determine one's remuneration from employment. This also suggests that intergenerational educational mobility should not affect returns to education. Although the human capital model has important implications for income trajectories over the life course (see table 1 below), its application is mostly associated with studies of economic returns to education at
fixed points in time. In contrast, we take here a life course perspective and study individuals’ earnings trajectories over a long time. This perspective is rare in the field of stratification and inequality, because of its demand for data (cf. Song and Cheng 2016), but it nonetheless carries many advantages, as discussed by Manzoni, Härkönen, and Mayer (2014: 1285-6).

Differentiations in income trajectories, like many other dimensions of social inequality, are path-dependent. This concept is often used interchangeably with the notion of cumulative advantage (Bernardi 2014), which suggests that an initial advantage in access to a particular resource tends to grow over time (Merton 1988; DiPrete and Eirich 2006). If success begets success, parents with more resources at their disposal may help their offspring launch a career with higher income, thereby leading to a long-term advantage of their offspring over their peers from less fortunate origins. Following Gabay-Egozi and Yaish (2017), we propose four possible scenarios to illustrate the ways in which, ceteris paribus, intergenerational educational mobility might shape life-course income trajectories. These four scenarios are discussed extensively by Gabay-Egozi and Yaish (2017), and are presented in Table 1 below.

Table 1. Expected Effects of Intergenerational Educational Mobility on Income

<table>
<thead>
<tr>
<th>Theoretical Mechanism</th>
<th>Parental Education</th>
<th>Respondent Education</th>
<th>'Snapshot' Income</th>
<th>Income Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human capital</td>
<td>Irrelevant</td>
<td>High</td>
<td>High</td>
<td>High start, steep upward curve</td>
</tr>
<tr>
<td>Human capital</td>
<td>Irrelevant</td>
<td>Low</td>
<td>Low</td>
<td>Low start, moderate upward curve</td>
</tr>
<tr>
<td>Cumulative advantage</td>
<td>High</td>
<td>High</td>
<td>NA</td>
<td>High start, steep upward curve</td>
</tr>
<tr>
<td>Offsetting advantage</td>
<td>Low</td>
<td>High</td>
<td>NA</td>
<td>High start, less steep curve</td>
</tr>
<tr>
<td>Compensatory advantage</td>
<td>High</td>
<td>Low</td>
<td>NA</td>
<td>Low start, moderate upward curve</td>
</tr>
<tr>
<td>Cumulative disadvantage</td>
<td>Low</td>
<td>Low</td>
<td>NA</td>
<td>Low start, flattest curve</td>
</tr>
</tbody>
</table>

Data and Methods

We analyze data from the Danish Longitudinal Survey of Youth (DLSY), a probability sample of Danish children attending grade 7 in May 1968. The survey contains very rich information on educational careers, family background, and cognitive skills measured at age 14. In addition, we link the respondents to the Danish administrative registers, which contain a wide range of annually updated information on all persons in Denmark from 1980 through today. This allows us to examine year-by-year trends in earnings and income from age 26 through 59. Our final sample comprises 2,516 respondents out of the 3,151 children in the original sample, and we correct all analyses for the survey design.
We analyze two measures of income: *earnings and disposable income*. Disposable income is a measure used by Statistics Denmark that combines net-of-tax income and estimated rent value of a person’s residence. We measure both income measures in Euros deflated to 2015 prices. Our main independent variable is a *college mobility indicator* with four categories:

1. **ImmobCol**: College graduates whose parents were college graduates.
2. **Upw**: College graduates whose parents were not college graduates.
3. **Dnw**: Non-college graduates whose parents were college graduates.
4. **ImmobNoCol**: Non-college graduates whose parents were non-college graduates.

To measure college attainment for the parents, we use the highest education reported by any of the two parents in the first wave of the survey, and we use the education registers to measure the respondents’ educational attainment by age 35. In addition, to measure cognitive skills, we include three cognitive test scores administered to the respondents at age 14. We moreover draw on additional information from the registers.

We model the income trends using OLS models with cluster robust standard errors (accounting for the clustering of respondents). We use a nonparametric year-by-year specification of the income profiles. We subsequently add to the models the measures of cognitive skills and report the implied year-by-year trends from this specification of the models.

### Results

Figure 1 shows the gross life cycle trends in earnings and disposable income for the four educational mobility groups. For earnings, there is a very strong effect of college attainment net of parental college attainment, but no direct effect of parental college attainment. This result suggests that educational mobility in itself has very little effect on the long-term economic prospects of Danes born around 1954. For disposable income (i.e., after tax and transfers), results are somewhat different. While the partial effect of college attainment net of parental college attainment is much weaker (owing to the large degree of redistribution by the Danish welfare state), there appears to be a direct effect of parental education, particularly among the college educated, although the gap is at the border of statistical significance. This gap begins growing from about age 45, suggesting that the family background advantage kicks in beyond

---

1 We also conduct analyses with polynomial fits, but we do not report those results here. They are substantially similar.
occupational maturity. Analyses not reported here suggest that men, not women, exclusively drive the growing gap by parental college attainment among the college educated.

To explain the widening gap, in Figure 2 we report for men gross and controlled disposable income profiles, controlling for cognitive skills at age 14. We include cognitive skills to investigate the extent to which the primary effects of social origin account for the gap. However, controlling for cognitive skills leaves the gap unchanged, suggesting that other mechanisms might be at play. Still, further analyses (not reported here) suggest that the gap cannot be explained by a measure of wealth, which potentially taps bequests or family wealth.

**Discussion/Conclusion**

These results suggest that mobility trajectories in the Danish labor market does not follow a pattern of cumulative advantage, but are instead explained by attainment of human capital. This result is similar to that found in Sweden (Hallsten and Yaish, 2019), but different from estimates from Israel (Gabai-Egozia nd Yaish, 2017) and the US (Yaish et al., 2019), where patterns of cumulative advantage appear strong. One reason for these differences might be related to differences in welfare regimes between Sweden and Denmark, on the one hand, and Israel and the US, on the other hand. By contrast, we have identified an association between mobility experiences and long-term disposable (net-of-tax) income profiles, finding that family background boosts the income trajectories of college educated individuals from around age 45 and onwards. Nonetheless, the returns to family background among the college educated cannot be explained by differences in cognitive skills measured early in life, suggesting that other mechanisms may be a play.
References


Gabay-Egozi, L. and Yaish, M. 2017, "Intergenerational Educational Mobility and Life Course Earnings." Presented at the Annual Meeting of the Population Association of America (PAA), April 2017, Chicago, IL, USA.


Yaish, M. Shiffer-Sebba, D. Gabai-Egozi, L. and Park, H. 2019. "Intergenerational Educational Mobility and Life Course Income in the US". To be presented at the Annual Meeting of the Population Association of America (PAA), April 2019, Austin, TX, USA.
Figures

**Figure 1.** Life-cycle earnings and income profiles by educational mobility group.

a. Earnings  
b. Disposable income

Note: Earnings are measured in 1,000 Euros and deflated to 2015 prices.

**Figure 2.** Life-cycle disposable income profiles by educational mobility group, unadjusted and adjusted for cognitive skills at age 14. Men.

a. Unadjusted  
b. Adjusted for cognitive skills at age 14

Note: Earnings are measured in 1,000 Euros and deflated to 2015 prices.