Inequality and Education: How Family Spillovers Contribute

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Motivation

• Education/human capital policy has been emphasized as key for reducing income inequality (e.g. Heckman & Krueger, 2003)

• DK provides access to heavily (if not fully) subsidized
  - home visiting and parenting support,
  - parental leave,
  - child care,
  - education at all levels...
HC interventions do reduce inequality in educational attainment, also in DK context

• **Preschool**: particularly useful for disadvantaged children (Datta Gupta & Simonsen, 2010, 2012, forthcoming)

• **Teacher aides in the classroom**: similarly (Andersen, Beuchert, Nielsen & Thomsen, 2016)

• **Low cost access to advanced math in high school**: induced girls to take more math and increased earnings and selection into competitive careers (Joensen & Nielsen, 2014)
And yes, income inequality is low (gini) 
(income after taxes and transfers)

Red: DK, 0.25; Blue: OECD, 0.32; Green: US, 0.40
Source: OECD
And intergenerational mobility relatively high (Bratsberg et al, 2007)

Fig. 4. *Log Earnings of Sons and Fathers in Denmark*
Regression line (slope = 0.119(0.011)) and mean log earnings of sons and fathers for each percentile of father’s earnings distribution.
Still: share of 23-year-olds with no upper secondary education is high

Clear negative selection (Epinion, 2015):
- Immigrant boys
- Parents with low education, income, labor market attachment...
- Experiences with bullying...

Source: Statistikbanken, Statistics Denmark
Sources of inequality: what is the role of shocks to individual family members?

Idea:
- negative shocks exarcebated
- and negative shocks more common in disadvantaged families

Spillovers from disabilities and health interventions:
- A disabled child reduces academic achievement of siblings (e.g. Currie & Stabile, 2006; Fletcher & Wolfe, 2008; Breining, 2014; Black et al, 2016)
- A disabled child reduces marital stability and labour supply of parents (Kvist et al, 2013)
- Treatment of low birthweight children benefits siblings (Breining et al, 2015)

School example: Landersø, Nielsen & Simonsen (2016)
School start as a shock to the family

- School start considered pivotal point in child’s life and classified as major stressful life event (Holmes and Rahe Life Stress Inventory: Holmes and Rahe, 1967)
- Considered stressful for child as well as parents

- Existing econ literature shows that
  - A higher school starting age (SSA) increases in school performance in terms of grades and early behavior (Bedard & Dhuey, 2006; Dee & Sievertsen, 2015)
  - Likely because of age at test (Black et al, 2011)
School start as a shock to the family

At the same time:


- Also the case in early tracking system (Dustmann et al, 2014)

→ A higher SSA likely eases transition into school and enhances *in school* experiences, even if it has no or only very small long term consequences for the child himself
Conceptual Framework

- Parents constrained in terms of resources (Becker & Tomes, 1976; Yi, Heckman, Zhang & Conti, 2015)

- Shock to one child’s trajectory (easier transition into school, release of time/mental resources) may affect amount, type, and timing of investments in other children

- Ultimately, how this impacts family is empirical question:
  1. Parental child investments (reinforcing or equalizing?)
  2. Parents’ own relationship and labor market participation
  3. Siblings interact → direct peer effects
Empirical strategy

• Exploit school start age cut-offs dates (RD design as in Elder, 2010, Evans et al., 2010, Black et al., 2011)
• 1st grade in the calendar year in which child turns 7
• School starts in August

• Intuitively:
  - compare children who are 6.6 years old when starting 1st grade
  - to children who are 7.6 years old
  - with the only difference being that they are born a few days apart
  - (appropriately weighted)
Prior to entering school, 95% of all children are enrolled in universal preschool.

9 years of compulsory schooling (no school leaving age laws → no interaction between age at school start and length of education)
Data

DK full population register-based data, informative about

• Focal child sample: children born in December and January 1986(Dec)-2000(Jan) (≈ 132,000 obs)
• Parent sample: Biological parents of children in focal child sample
• Sib sample: Siblings born to same mothers as focal children
Results: later school start...

Impacts transition into school and induces delay of life course for focal child:
- reduces school absences in first year of school
- lives at home longer, delays enrolment into further education

Impacts family:
- delays marital dissolution, especially effective around focal child HS enrolment
- increases maternal employment when the focal child is in lower grades
- decreases age at school start for younger siblings

- Consistent with more resources (time) available
Discussion

• Here: choices made on behalf of one child impact entire family

• More generally: some choices (policies/circumstances) may increase between-family inequality, some may reduce inequality