



Education and Fertility in Norway -



A Study of How the Relationship Has Changed Over Time Among Women and Men

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Background

- Thousands of studies of education & fertility
- Little is known about long-term trends in educational differentials in women's completed fertility
- Hardly anything about the relationship between education and completed fertility for men, let alone the trends
- Norwegian register data: can analyse the 1940-64 cohorts, for both sexes
- Educational measure: attainment at age 39

We describe this for women and men:

- Average number of births at age 39
Parity parity progression ratios

Low 2. and 3. birth progression ratios among the better-educated result partly from higher age at first birth. Any relationship beyond that?

Hazard model: Include age and duration in equations for 2. and 3. birth rates; include equation also for 1. birth and a common unobserved factor (to deal with selection)

Why should education be important?

- High education at age 39: must have been to school for many years while a young adult. Low birth rates during enrolment, especially because a child may reduce the chance that the education is completed.
- Most relevant for first birth; weaker effect over time? and for men

Why should education be important?

- For women: High educational level => larger loss of income per time at home with a child ('opportunity cost')
- Becomes less and less relevant as people purchase child care. Besides, this 'direct cost' of child care is almost independent of income
- Therefore: weaker over time
- Men's education does not operate through this mechanism

Why should education be important?

- Stimulating contributions?
- Except for low marriage rates during enrolment, high education among men increases their chance of marrying. Perhaps such effect of women's education also (these days)?
- Better-educated more flexible work schedules?
=> sooner back in full-time work?
- Higher purchasing power ('income effect')

Possible mechanisms

	Women's education	Men's education
Enrolment effect	-	(-)
Opportunity-cost effect	-	
Income effect	+?	+?
Finding a partner	?	+
Knowledge (contraception)	-?	-?
Ideas about sharing housework	+?	+?

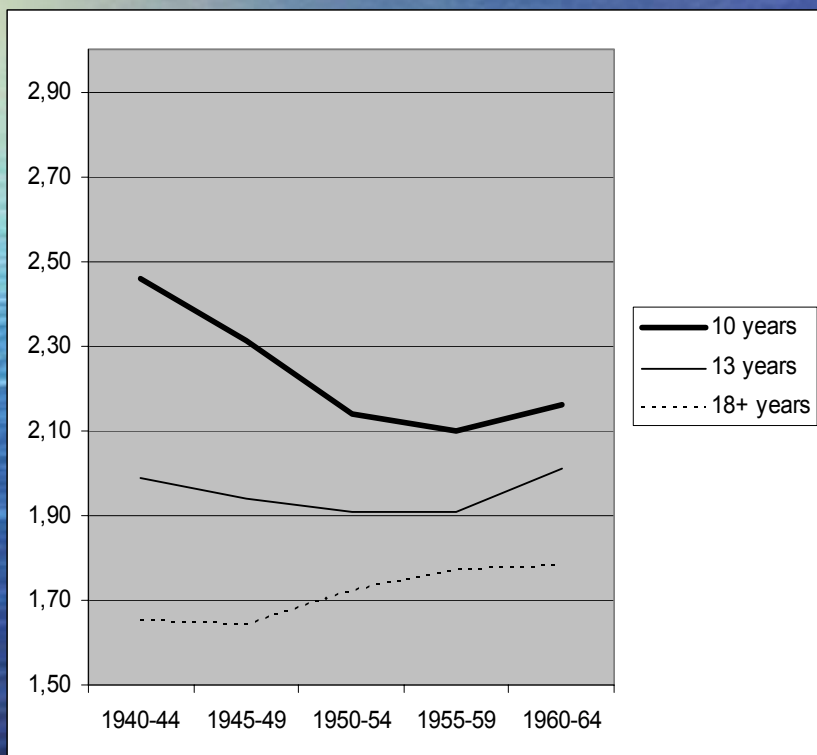
Possibly varying by birth order and changing over time

Educational distributions, women

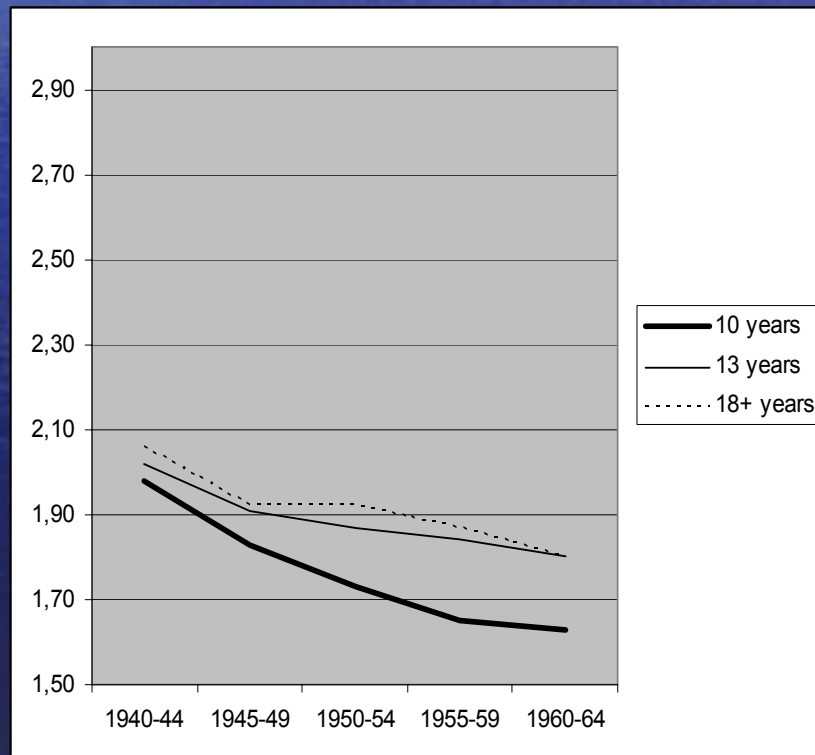
	1940-44	1960-64
Compulsory (10 yrs)	33%	8%
Lower secondary	44%	23%
Higher secondary (13 yrs)	5%	24%
Some college	15%	30%
Master level (18+ yrs)	1%	5%

Average number of children at age 39

Women



Men



WOMEN

MEN

Completed fertility

- less

0 to +

Ever parent

-

+

Early first birth

-

(-)

Proportion 1-2

- to 0

0 to +

Proportion 2-3

- less

- to 0

Hazard model; control for age at first birth:

Transition rate 1-2

- less

- to +

Transition rate 2-3

- less

- to +

Why sex differences?

- More difficult for women to combine studying with childbearing
- Women most likely to withdraw from the labour market to care for the child;
The better-educated most income to forego
- For men, higher income- \rightarrow want more children (unless spend more on each)

Why sex differences?

- Better-educated men may have higher chance of having a partner, while no such pattern for women.
- Reflect: men still seen as more important as wage earners.
- In these data: more positive relationship between education and the chance of ever marrying for men than for women

A methodological side-step

- Better-educated men tend to be married to/partner better-educated women, and less-educated men tend to be married to less-educated women.
- Therefore: High fertility among better-educated men reflects effects of men's high education (+), that they are married to better-educated women, and the effect of women's higher education (-?)
- "True" effect of men's education even more +; of women's: more -

Why less and less negative relationship among women?

- Easier to combine studies and motherhood

Why less and less negative relationship among women?

- (Easier to combine studies and motherhood)
- Use of non-family child care, generous maternity leave, work place reforms -> resume work earlier -> opportunity costs matter less. Set off against cost of child care

Wage-dependent opportunity costs substituted by fixed child care costs

Why less and less negative relationship among women?

- Less and less negative relationship between partnership and education for women (indicated by ever-marriage). Reflecting also women's increasing engagement in paid work
- Relationship with contraceptive knowledge in the past? Weaker now?

Future...

- May see an even weaker negative education-fertility relationship in cohorts now in mid-reproductive years, who have experienced even more family-friendly environment.

Future... Long term

- Not impossible that the contribution through opportunity costs becomes positive because of more flexible work among better educated (if not already). Similar development in the contribution through marriage.
- Or that any remaining negative effect through these or other mechanisms (enrolment ...) become so weak that they are outweighed by the positive:
- Higher income, more equal sharing of duties

Why more and more positive relationship among men?

- Seen as ever more important for women to have a well-educated partner? (trend in ever-married).

Education more important for income?

Or income more important for partnership?

- Income more important for fertility for other reasons?
- Educated men may help more in the house, but increasing educational differentials in this respect?

Why more and more positive relationship among men?

- Better-educated men are married to better-educated women, whose fertility is less and less different from that of the less educated -> positive contributions from men's education 'become more visible'

Limitations

- A person's education may be a result of individual resources/interests, family/community characteristics also affecting fertility.
- Could control for 4 potential confounders for the youngest cohorts: no impact
- Possible changes over time: Given the general educational expansion, f.ex. men/women with only compulsory have more and more problematic background

Limitations

- Only education measure available for all cohorts: attainment at 39
- Low birth rates at, say, age 23 among women with high education at 39 reflect:
Enrolled at that age, skills/credentials obtained, high ambitions, the fact that they didn't have a child -> could continue education

Limitations

- I.e.: Relationship between fertility and education (at 39) contaminated by reverse causality
- If this is stronger for women than for men and has weakened over time: could explain some of the main patterns

Limitations

- How to remedy?

Include enrolment and educational attainment as time-varying variables, i.e. how do these factors at age x affect birth rate at $x+$. Common strategy.

High education at age x vs low education at age x : higher wage potential, more knowledge.

Also: do not plan to take more education, quick progress

Could be included only for 1964 cohort: + effect for women, just as strong as that for men.

Reflections on methods

- Should we use current or finally achieved education when analysing the importance of education? What do these two measures capture?
- If current: impute from final level/year of graduation (may create serious bias) or collect education histories?
- **WARNING:** Education effects not clear-cut; sensitive to definition/method, vary across setting/time/parity/sex

International perspective

- Norway: 2006 TFR 1.90; 1960-64c: 2.02 (at 39)
- Result of ideologies and policies supporting mothers' work (and allowing cohabitants to have children); facilitated by a good economy, which may also increase fertility for other reasons.
- Reduced work-family incompatibility special advantage for the better-educated:
- 1960-64c: compulsory 2.16 (8%)
 some college 1.96 (30%)
 Master+ 1.78 (5%)

Smaller differences than in many other countries?

Key points

- Relationship between education at age 39 and women's completed fertility in Norway is – but weakening
- Consistent with ideas about diminishing opportunity costs because of more use of non-family child care etc.
- Among men: relationship has become more +

