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**Family background and children's schooling outcomes**

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# Chapter 4

## Summary and conclusions

The chapters in this thesis investigate the effect of father's and mother's schooling, the number of children and birth order on children's completed years of schooling. All the results in the chapters are based on the Wisconsin Longitudinal Study, which is a long term study of 10,317 high school graduates from Wisconsin high schools in 1957. These graduates have been followed over time and information has been collected on many topics including schooling outcomes and family characteristics, which makes it a very suitable data set to investigate the impact of family background on children's schooling outcomes.

Chapter 1 investigates the causal impact of father's and mother's schooling on child's schooling. Previous studies have used different identification strategies to estimate the causal impact of parents' schooling. These identification approaches generally put strong requirements on the data and give point estimates which are only informative if the assumptions on which they are based are correct. This chapter uses a different approach to investigate the effect of parents' schooling on child's schooling, a nonparametric bounds analysis. By making relatively weak and testable assumptions this chapter obtains bounds on the effect of increasing parents' schooling on years of schooling of the child and on the probability that the child obtains a bachelor's degree. These bounds are obtained by subsequently adding a monotone treatment response assumption (MTR), a monotone treatment selection assumption (MTS) and a monotone instrumental variable assumption

(MIV), whereby the schooling of the grandparent and the schooling of the spouse are used as monotone instrumental variables.

Although the bounds on the effect of parents' schooling include a zero effect, the analysis obtains informative upper bounds especially for the effect of increasing parents' schooling from a high school degree to a bachelor's degree. Both for mothers as for fathers the MTR-MTS-MIV upper bounds are significantly lower than the OLS estimates. These results show that the effect of parents' schooling on child's schooling is lower than what one would conclude on the basis of simple correlations.

Chapter 2 studies the problem that recent studies that make a distinction between causation and selection when estimating intergenerational schooling mobility, often rely on samples in which information on the child's completed schooling is not always available. This chapter estimates the impact of mother's and father's schooling on child's schooling using censored and uncensored samples of own birth children and adoptees, and investigates the consequences of three different methods that deal with censored observations: maximum likelihood approach, replacement of observed with expected years of schooling and elimination of all school-aged children.

Using uncensored samples, this chapter shows that the estimate of the relation between mother's schooling and child's schooling is significantly smaller when estimated on a sample of adoptees instead of on a sample of own birth children, while the effect of father's schooling is very similar in both samples. Using a sample in which part of the children is still in school gives a small downward bias in the estimates. When the problem of censored observations is tackled by either three correction methods the estimates are no longer downwardly biased. Instead the maximum likelihood approach and the method whereby all school-aged children are eliminated both give a small but significant positive bias in the estimates. The method that treats parental expectations as if they were realizations performs best. This result depends, however, on the degree of censoring. For samples that are largely incomplete the method does give a small (negative) bias. The results suggest

that it doesn't matter (much) whether researchers are patient or impatient: whether we fully rely on parental expectations, or whether we use realizations measured 30 years later, the mobility estimates are not substantially different.

Chapter 3 investigates the impact of family size and birth order on years of schooling. By using twins at last birth and the sex mix of the first two children as instruments, the effect of the number of children on the educational attainment of the oldest child is identified. Although the OLS estimate of the effect of the number of children on child's years of schooling is negative, the IV results show a positive and insignificant effect of the number of children on years of schooling of the oldest child. The effect of birth order is identified by investigating the effect of birth order for two, three, four and five child families separately. Birth order turns out to have a significant negative effect on years of education, for all family sizes examined.

To investigate what is behind the negative birth order effects, this chapter looks at two potential mechanisms, competition between closely spaced siblings and the allocation of parental resources to children. Child-spacing, measured by the average number of months between births, does not affect the birth order patterns that are observed in children's schooling outcomes. This results is robust to including family fixed effect and the use of the presence of twins as instrument. The results on financial transfers to children show a negative birth order pattern just as the results found on children's schooling outcomes. These results suggest that the differential allocation of resources to earlier and later born children is a potential mechanism behind the negative effect of birth order on child's years of schooling.

The main conclusion that emerges from the results in these chapters is that family background is important for children's schooling outcomes, but that simply looking at the association between a specific family characteristic and children's outcomes is not sufficient and can lead to wrong conclusions. The family is a complex structure of various family characteristics and it is important to identify the causal impacts of the different

family background components. Also the method to estimate these effects should be chosen with care since it can generate biased estimates, when the assumptions on which the method is based turn out to be incorrect.