

# The Causal Effect of Early Tracking in German Schools on the Intergenerational Transmission of Education

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## Abstract

Numerous studies have found a high intergenerational transmission of education in Germany which might arise from the relatively early age at which the German school system tracks students into different school types. This study investigates the impact of the time of tracking on educational attainment and intergenerational transmission of education. I overcome limitations of previous studies by using a large German data set which allows to study the heterogeneity of the effect. My identification strategy bases on a 2004 reform in two German states, which changed the time of tracking from after grade six to after grade four. The results of a difference-in-differences approach suggest that earlier tracking increases intergenerational transmission of low educational attainment. Native students appear to drive the effect. The change in the time of tracking does not affect intergenerational transmission of high educational attainment.

## Motivation

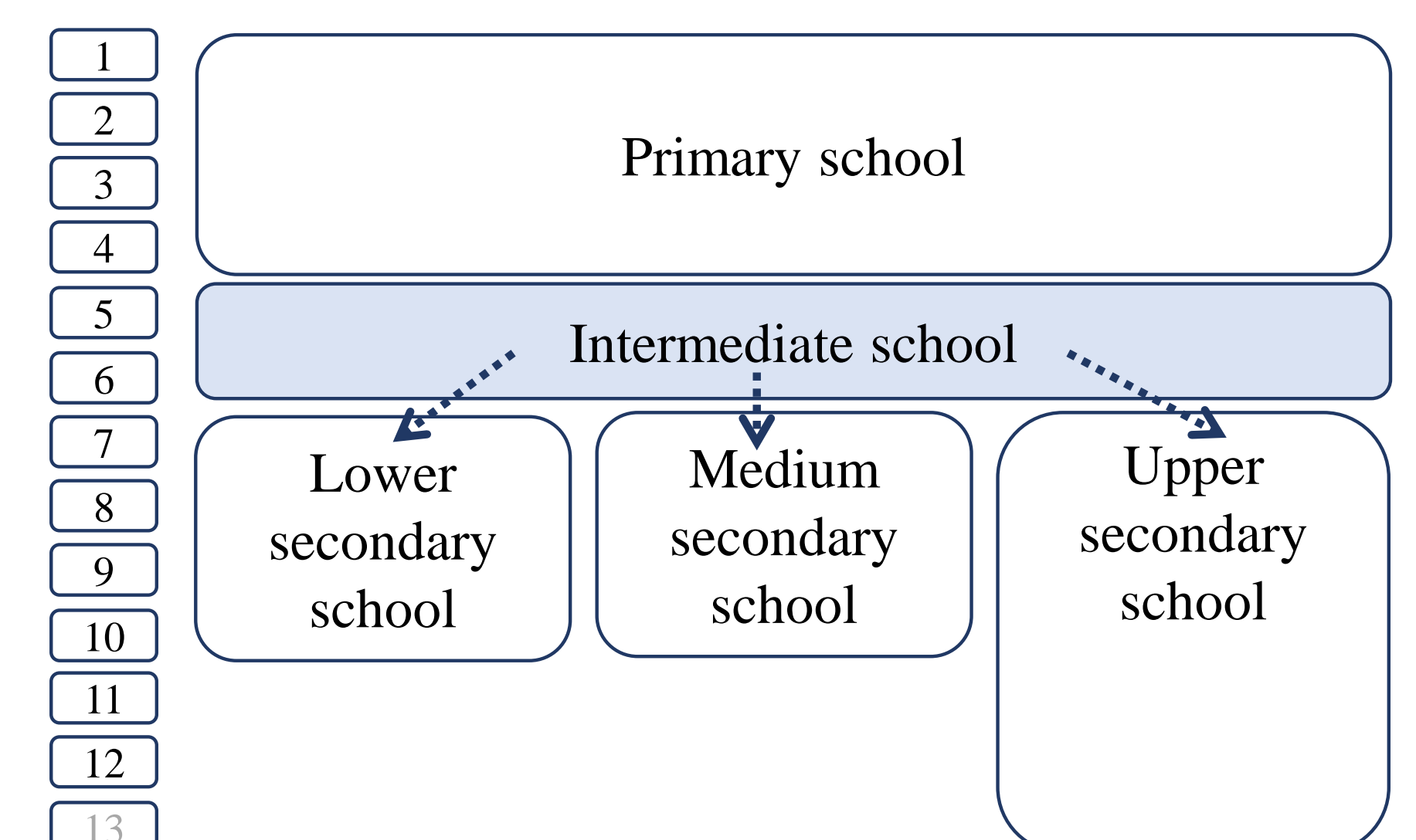
In German schools, students are tracked to different schools based on their abilities at a very early age  
 + increases efficiency, more homogeneous groups  
 - incomplete information increases misallocation, less spillovers  
 → Does the early age of tracking increase intergenerational transmission of education?  
 Literature has found a positive effect of later tracking for children of less educated parent

## Contribution

- Clean identification strategy allows identification of causal effect of tracking
- Recent reform takes political efforts to increase intergenerational mobility into account
- Analysis of subgroups provides further evidence for inconclusive literature

## "Orientierungsstufe"

- Intermediate school in Lower Saxony
- Introduced between 1971-1981, abolished in summer 2004
- Mostly comprehensive school form (exception: Mathematics and foreign language in grade 6)



## Data and Method

### Data and sample

- German microcensus 2011 and 2013 (survey data)
- Individuals observed around the time of potential graduation from highest track

	Pre-treatment		Post-treatment	
<b>Birth cohort:</b>	1990/1991, 1991/1992 (observed in 2011)		1993/1994, 1994/1995 (observed in 2013)	
<b>Treated:</b>	LS	Tracking after grade 6	Tracking after grade 4	
<b>Untreated:</b>	BW, BY	Tracking after grade 4	Tracking after grade 4	

Notes: Lower Saxony (LS), Baden-Württemberg (BW) and Bavaria (BY) all introduced G8 reform between pre- and post-treatment period and have a 3-track system.

### Difference-in-differences approach

$$educ\_attained_i = \beta treat_i + \gamma post_i + \delta(treat_i * post_i) + \lambda(treat_i * post_i * educ\_par_i) + x'_i \alpha + \epsilon_i$$

<i>educ_attained</i>	1. Lower secondary degree or dropout 2. Upper secondary degree
<i>treat</i>	Treatment identifier
<i>post</i>	Post-reform identifier
<i>educ_par</i>	Academic parents (at least one parent has higher sec. degree)
<i>x</i>	Male, migration background, <i>educ_par</i> , months since school enrollment cutoff, <i>treat*educ_par</i> , <i>post*educ_par</i> , constant

## Main Results

### General reform effect

	Upper sec. degree		Lower sec. degree	
	(1)	(2)	(3)	(4)
Post*treat	-0.021 (0.022)	-0.029 (0.026)	0.047 *** (0.016)	0.057 *** (0.021)
Post*treat*educ_par		0.035 (0.048)		-0.048 * (0.027)
N	9,862	9,862	9,862	9,862

Notes: Controls: male, migration background, *educ\_par*, months since school enrollment cutoff and a constant (and in column 3 and 4: *treat\*educ\_par*, *post\*educ\_par*). Standard errors are robust. Significance level: \*<0.1, \*\*<0.05, \*\*\*<0.01. Source: German microcensus 2011 and 2013, own calculation.

### Reform effect by gender

	Upper sec. degree		Lower sec. degree	
	Females (1)	Males (2)	Females (3)	Male (4)
Post*treat	-0.007 (0.040)	-0.051 (0.035)	0.079 *** (0.027)	0.037 (0.032)
Post*treat*educ_par	-0.063 (0.067)	0.123 * (0.069)	-0.051 (0.032)	-0.043 (0.043)
N	4656	5206	4656	5206

Notes: Controls: migration background, *educ\_par*, months since school enrollment cutoff, *treat\*educ\_par*, *post\*educ\_par*, and a constant. Standard errors are robust. Significance level: \*<0.1, \*\*<0.05, \*\*\*<0.01. Source: German microcensus 2011 and 2013, own calculation.

## Potential Threats to Identification

- Common trend assumption holds
- Treatment and control group do not differ in their intertemporal variation on the observed variables
- Stable rate of enrollment to comprehensive schools before/after the reform in Lower Saxony
- Most students in last year of upper secondary school graduate from that track

## Robustness Checks

- Stronger reform effects for families with less educated parents (both parents do not have more than a secondary degree)
  - No reform effect for migrants, only natives are affected
  - Inclusion of cohorts from other states with comparable schooling system supports findings
- Findings will be reviewed with additional microcensus waves

## Conclusion

- Results support prior findings of a negative effect of early tracking on children of less educated parents
- No significant general effect on the probability to obtain an upper secondary degree
- Females from less educated parents suffer, while males from educated parents benefit from earlier tracking