



Early Career Returns to University Entrance and Prior Scholastic Achievement

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Introduction

Expansion of higher education during the last 20 to 30 years

- Who benefits from higher education?
- How are the benefits distributed among the participants?
- Do the benefits outweigh the costs of higher education?

Entrance selection into higher education

- Is prior achievement a good predictor of the returns to college entrance in terms of labour market outcomes?



Purpose

- To study if the income premium between university entrants and non-entrants differs with respect to prior achievement (upper secondary school grades)



Theoretical background

- Students choose higher education participation and the length of university studies to maximize utility
- Students differ with respect to ability and study motivation
- The length of university studies is increasing in student ability for the following reasons
 - a) the productivity per time unit is increasing in ability,
 - b) the return on a given education is increasing in ability,
 - c) the effort "cost" per time unit to a student is decreasing in ability
- The probability of participating in higher education increases with student ability for the same reasons as above



Theoretical background cont.

- The income difference between entrants and non-entrants can be increasing in ability for the following reasons
 - a) high-ability students study programs of longer duration
 - b) high-ability students earn more credits for a given input
 - c) high-ability students have a larger return on a given number of credits
- If not, the association between the income difference and ability may well be negative



Data

- Register data

The sample consists of individuals born 1972-1974 who

- graduated from an academic track program in upper secondary school
- entered university/college before 1996, or
- had not been registered at a university/college up until 2002
- were registered as employed in the autumn of 2002

Out of 127,000 graduates, approximately 93,000 are included in the sample (48,000 females, 45,000 males)



Empirical model

- Wage equations are estimated. The dependent variable is (the log of) income from employment and self-employment.
- The baseline empirical model is

$$\ln y_i = f(ENTR_i, GPA_i) + \delta GPA_i + z_i + \varepsilon_i$$

- the function $f(\cdot)$ captures the interaction between university entrance and upper secondary school grades



Model cont.

Several specifications of $f(\cdot)$ are considered:

- (i) group averages
- (ii) polynomial functions
- (iii) piecewise linear functions

Male and female equations are estimated separately.

z captures influences of covariates commonly used in income studies.



Results

Participation

The proportion of registered students increases with prior achievement.

- More than 90% of the students from the top 40% of the grade distribution entered.
- About 30 to 35% percent of the students from the bottom 20% of the grade distribution entered.
- Participation is slightly higher for females



Results cont.

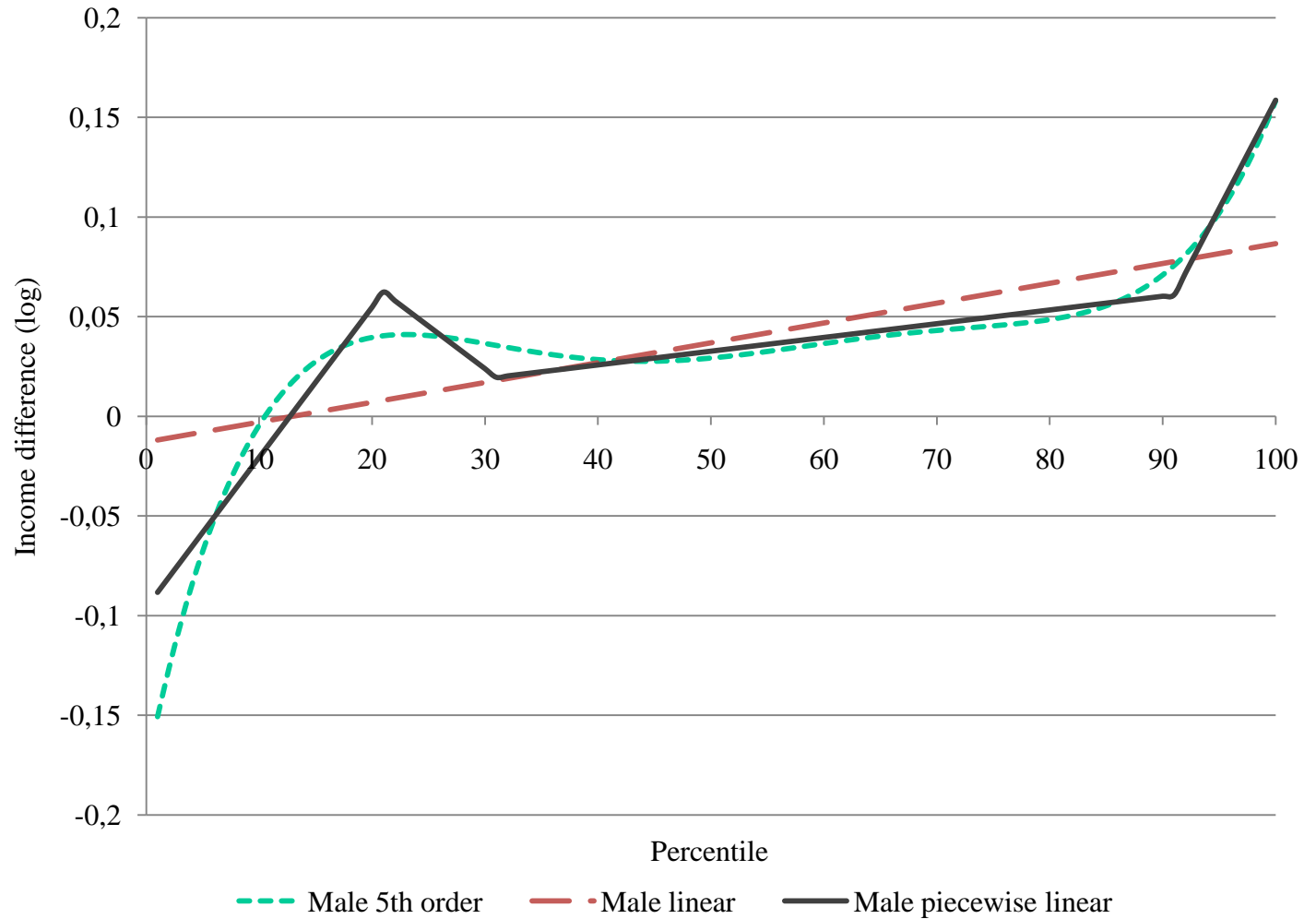
Group averages

- Female entrance non-entrance income differences increases with prior achievement
- We cannot reject the hypothesis of no differences in the bottom 60% of the grade distribution
- Male differences are much smaller, although still increasing in prior achievement
- Cannot reject the hypothesis of no differences in the bottom 60% of the grade distribution

Other specifications



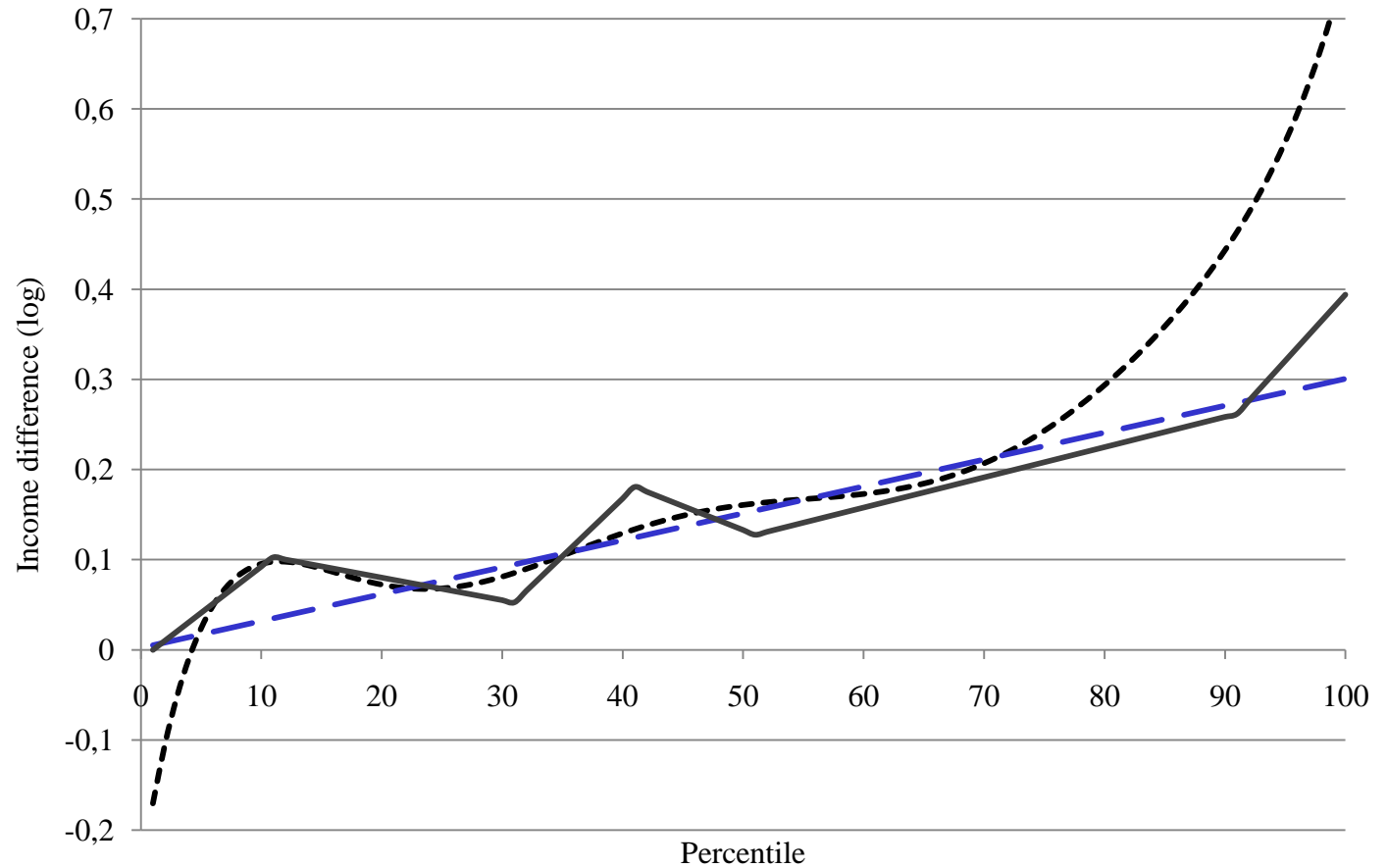
Estimated income differences over the grade scale; males



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Estimated income differences over the grade scale; females



--- Female 7th order - - - Female linear — Female peicewise linear

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Extensions

Similar results are obtained if

- Sample is restricted to include only incomes above SEK 120,000
- Sample is restricted to include only the bottom half of the prior grade distribution



Conclusions

- The income premium increases with prior achievement
- The differences are larger for females than for males
- The income premium is relatively constant at the lower parts of the grade distribution

Future studies

- Longer follow-up period
- Study the weakest students
- Include credits obtained