

What Shapes Great Expectations?

Gender, social origin and country differences
in students' expectations of university
graduation

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INTRODUCTION

- Gender differences in educational attainment...
 - are “a rare example of a once persistent pattern of stratification” that has disappeared or reversed in many OECD countries (Buchmann & DiPrete, 2006)
- Boys in less affluent families
 - They are now usually at a higher risk of low educational performance (school drop-out, early school leaving...) than girls
- *‘Rumble Fish’ (Francis Ford Coppola), but also ‘Billie Elliot’... →*



The screenshot shows a web browser window with multiple tabs open. The active tab is the New York Times interactive article. The URL bar shows the full URL: <https://www.nytimes.com/interactive/2018/06/13/upshot/boys-girls-math-reading-tests.html>. The article title is "Where Boys Outperform Girls in Math: Rich, White and Suburban Districts" by Claire Cain Miller and Kevin Quealy, dated June 13, 2018. The article text discusses the gender gap in math test scores, noting that in many districts, boys perform better than girls, but there is a notable exception in rich, white, and suburban districts. A search bar for "Find a school district" is visible. The browser's taskbar at the bottom shows various application icons and the system clock indicating 17:08 on 13/06/2018.

THE UPSHOT | Where Boys Outperform Girls in Math: Rich, White and Suburban Districts

Where Boys Outperform Girls in Math: Rich, White and Suburban Districts

By CLAIRES CAIN MILLER and KEVIN QUEALY JUNE 13, 2018

In much of the country, the stereotype that boys do better than girls at math isn't true – on average, they perform about the same, at least through eighth grade. But there's a notable exception.

In school districts that are mostly rich, white and suburban, boys are much more likely to outperform girls in math, according to [a new study](#) from Stanford researchers, one of the most comprehensive looks at the gender gap in test scores at the school district level.

Find a school district

The test score gender gap in about 1,800 large school districts

- <https://www.nytimes.com/interactive/2018/06/13/upshot/boys-girls-math-reading-tests.html>



INTRODUCTION

- Students' educational expectations
 - They are one of the strongest predictors of future educational attainment
- Researching gender differences in educational expectations could thus be a way of exploring poor academic performance in general, more prevalent now among boys of lower social origin:
 - Implications for work productivity at national level

EDUCATIONAL EXPECTATIONS

Individual-level factors

- Gender (what is behind female advantage?)
 - Better academic performance
 - Higher cognitive and social skills
 - Behaviour (better attitude towards the school)
- Family structure
 - Negative effect of single-parenthood (*Rusty James*)
- Parental gender
 - Same-socialization model
 - Time of dedication to children's education

EDUCATIONAL EXPECTATIONS

Individual- and school-level factors

- Social origin
 - Primary and secondary effects
 - Available information, parental expectations, different views about costs and opportunities of further human capital investment
 - Different effect of social origin for girls and boys
 - The effect of social origin has been found stronger among boys than for girls (Buchmann & DiPrete, 2006). In particular, boys of lowly educated parents have been found less prone to develop higher educational expectations than girls of the same social origin (Byrne & Smyth (2010), for early school-leaving)
- Environment:
 - Socioeconomic and/or educational level among the parents of the school

EDUCATIONAL EXPECTATIONS

Country-level factors

- Gender egalitarianism and gender labour market inequality (McDaniel, 2010)
 - Higher gender egalitarianism and labour market equality should improve girls' educational expectations (incentives)
- System of education (Buchmann & Dalton, 2002)
 - More stratified or differentiated systems of education "divert" more students (especially from lower social origin) from academic tracks
- Divorce rate and marriage market
 - Higher divorce rates should favour girls' educational expectations

CONTRIBUTION AND RESEARCH QUESTION

Exploring the role of national-level factors for the explanation of the vulnerability of boys of low social origin in their formulation of educational aspirations

What national-level factors could explain cross-national differences in the extent to which boys of low social origin formulate higher educational expectations, relative to girls of the same origin?

HYPOTHESES (1)

Economic structure

- Size and growth of manufacturing and construction
 - → higher expectations of university graduation among girls of lower social origin.
 - Mechanism:
 - strongly masculinized low-skilled sectors and occupations would divert working-class boys (rather than girls) away from the academic track

HYPOTHESES (2)

System of education

- A) More differentiated systems of education are positively associated to higher expectations among girls of low social origin
 - Mechanism: higher effect of VET for diverting *working-class boys* from academic track
- B) More differentiated systems of education are negatively associated to higher educational expectations among girls of lower social origin
 - Mechanism: lower *general* effect of social origin where individuals have already been implicitly selected on social grounds by the system of educ.

HYPOTHESES (3)

Gender egalitarianism and labour market performance

- A) Higher gender egalitarianism and labour market equality is positively associated to higher expectations among girls of low social origin
 - Mechanism: higher incentive among working-class girls for further human capital investments
- B) Lower gender egalitarianism and labour market equality is positively associated to higher educational expectations among girls of lower social origin
 - Mechanism: higher educational aspirations as a way of compensating gender adversity situation in the labour market

DATA

Individual and school level (PISA 2003)

- Individual level:
 - Dependent var. 'Which of the following [educational levels] do you expect to complete?' (attention to ISCED5A/6)
 - Independent variables: immigrant background, family structure, academic performance, math & reading abilities, student's attitude towards the school, father's (mother's) educational (occupational) attainment
- School level:
 - Average socioeconomic and educational level among parents at the student's school

DATA

Country level (1)

- ECONOMIC STRUCTURE:
 - Percentage of employment in manufacturing and construction (OECD Stats)
 - Prior five-years change in this rate (OECD Stats)
- SYSTEM OF EDUCATION (Bol & Van de Werfhorst, 2012)
 - Tracking index
 - Index of vocational orientation
 - Based on the % of upp.sec enrolled in VET
 - Index of vocational specificity
 - Percentage of upper secondary vocational who are in a dual system

DATA

Country level (2)

○ GENDER

- Gender equity index (EVS/WVS)
(‘Men should have more right to a job than women’)
- Gender employment gap (DICE)
 - Difference in the gender employment gap between ISCED02 and ISCED56
- Gender wage gap (OECD)

TWO RESEARCH STRATEGIES

- RANDOM INTERCEPT MULTILEVEL LOGISTIC REGRESSION
 - Three levels: individual, school, country
 - Three-way cross-level interactions between gender*social origin*country-level variable
- TWO-STEP APPROACH (Bryan & Jenkins, 2016)
 - In order to account for the relatively low number of cases at the country level (N=28)

1. TWO-STEP APPROACH

- 1) For each country, multilevel logistic regression (two levels: individuals / schools)
- 2) Estimation of the marginal effect of gender for the highest and lowest category of father's education
- 3) Weighted least square regression
([aw = 1/standard error of the contrast between the marginal effect of gender for highest/lowest category of father's education in each country])
 1. Dependent variable: difference in the marginal effect of gender for highest / lowest category of father's education
 2. Independent variable: country-level variable

2. RANDOM INTERCEPT MULTILEVEL LOGISTIC MODEL

- Three-level random intercept multilevel model (individuals, school, country)

$$\text{Log}\left[P_{ijk}/(1-P_{ijk})\right] = \beta_0 + \beta_1 X_{ijk} + \beta_2 Z_{jk} + \beta_3 W_k + \delta_k + \mu_{jk} + \varepsilon_{ijk},$$

- Particular attention to cross level interaction:
 - Gender * social origin * country-level variable

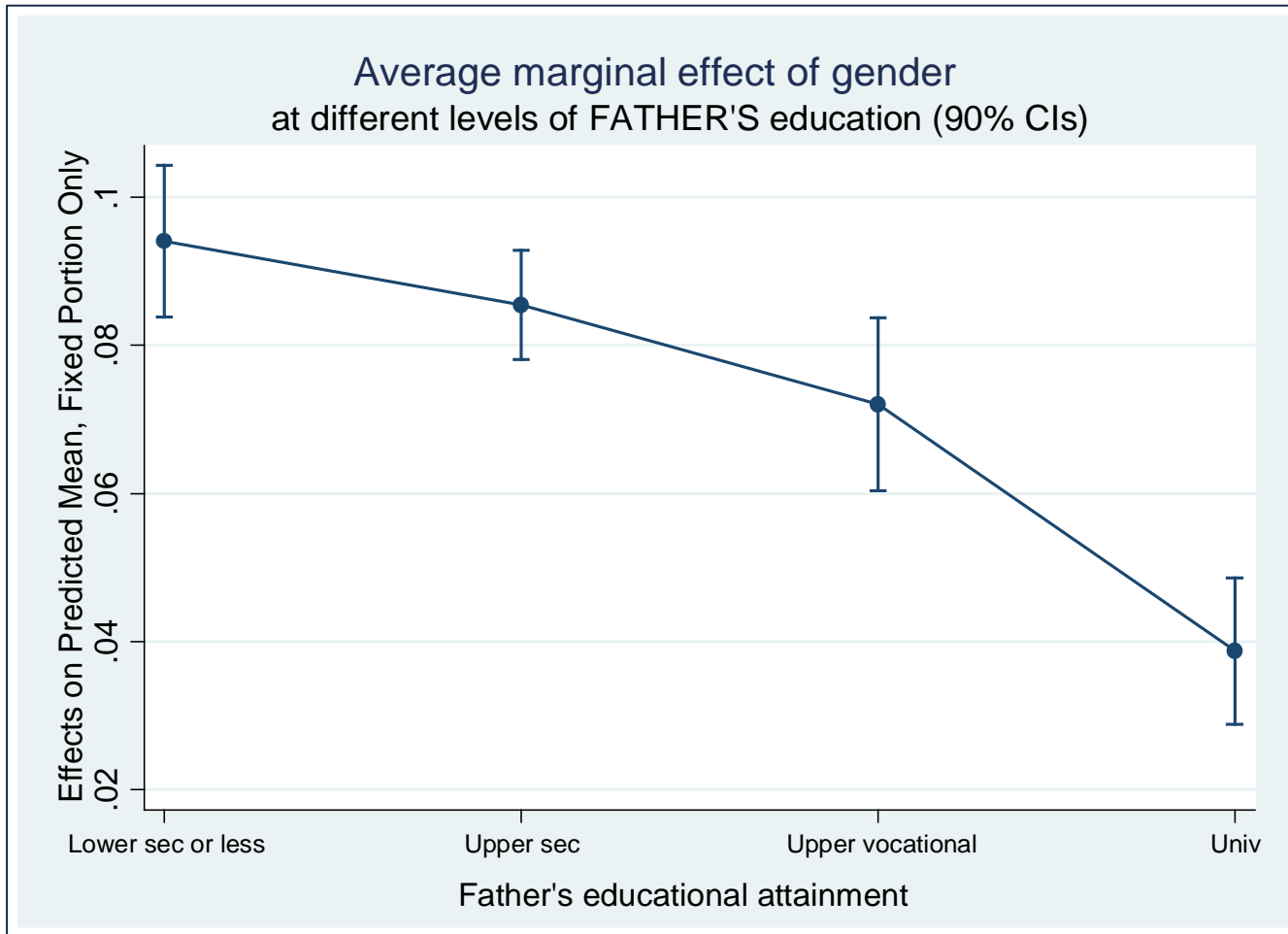
RESULTS

Effect of gender and father's education

	Model without mediator variables		Model including mediator variables	
	Coefficient	SE	Coefficient	SE
Immigrant	.304**	(.027)	.755**	(.029)
Single-parent	-.246**	(.015)	-.083**	(.016)
Grades above mode (ref.cat: modal category for the country)			.035	(.029)
Grades below mode			-.367**	(.023)
Math ability score			.006**	(.000)
Reading ability score			.004**	(.000)
Student's attitude			.123**	(.003)
Gender (female)	.558**	(.027)	.533**	(.030)
Father's educ: upper secondary (ref.cat.: lower secondary or less)	.387**	(.025)	.229**	(.027)
Father: upper vocational	.604**	(.033)	.477**	(.035)
Father: university	1.63**	(.029)	1.36**	(.032)
Female * father's upper sec. educ (ref.cat.: lower second or less)	-.062+	(.033)	-.060+	(.036)
Female * upper vocational	-.059	(.044)	-.140**	(.047)
Female * university	-.251**	(.040)	-.315**	(.043)
Parents' educational level (school average)			.279**	(.028)
Parent's socioeconomic level (school average)			.042**	(.002)
Constant	-11.21		-11.57	(.279)
N	144619		139414	
N schools	6012		5985	
N countries	27		27	

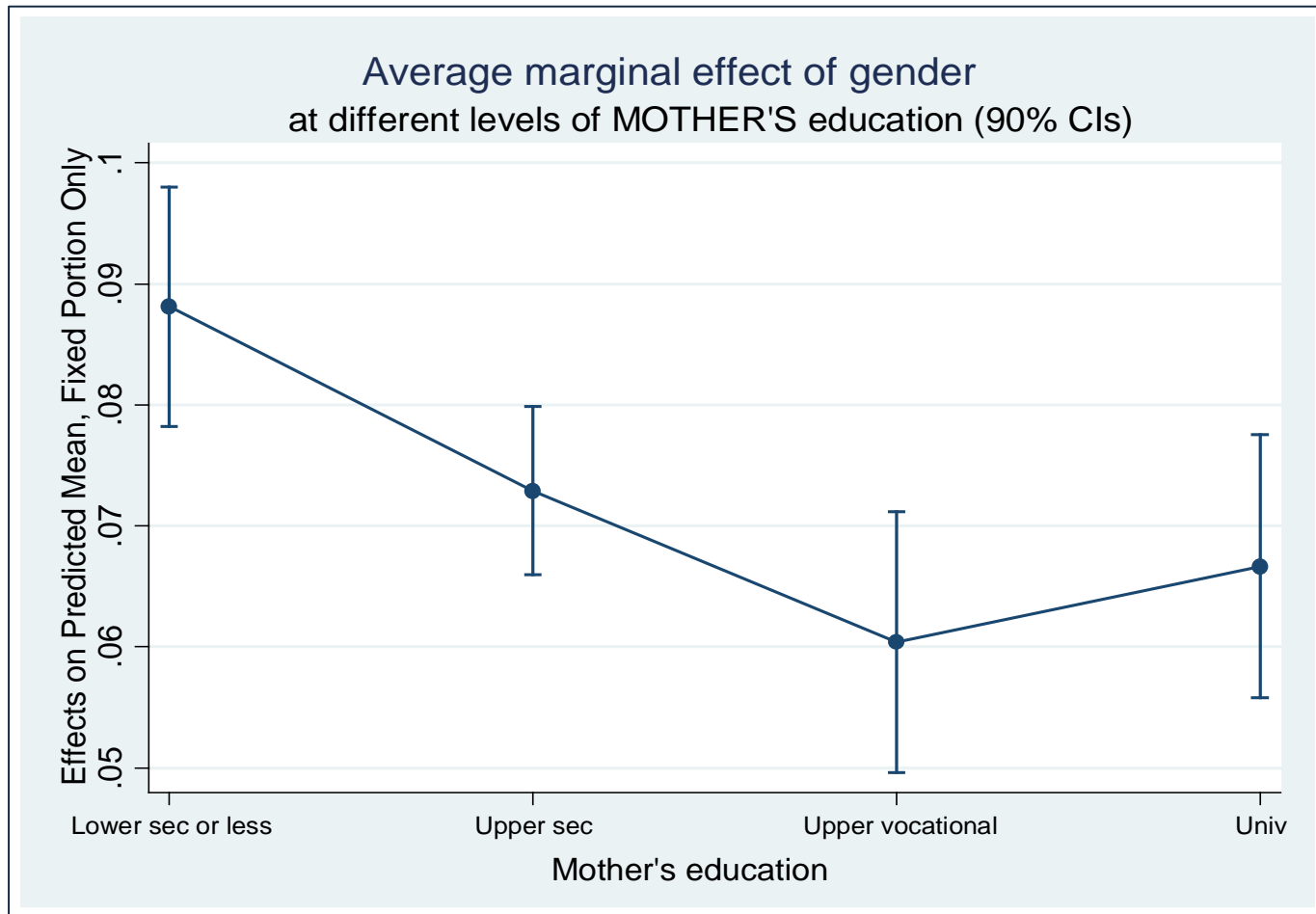
RESULTS

Marginal effect of **father's** education

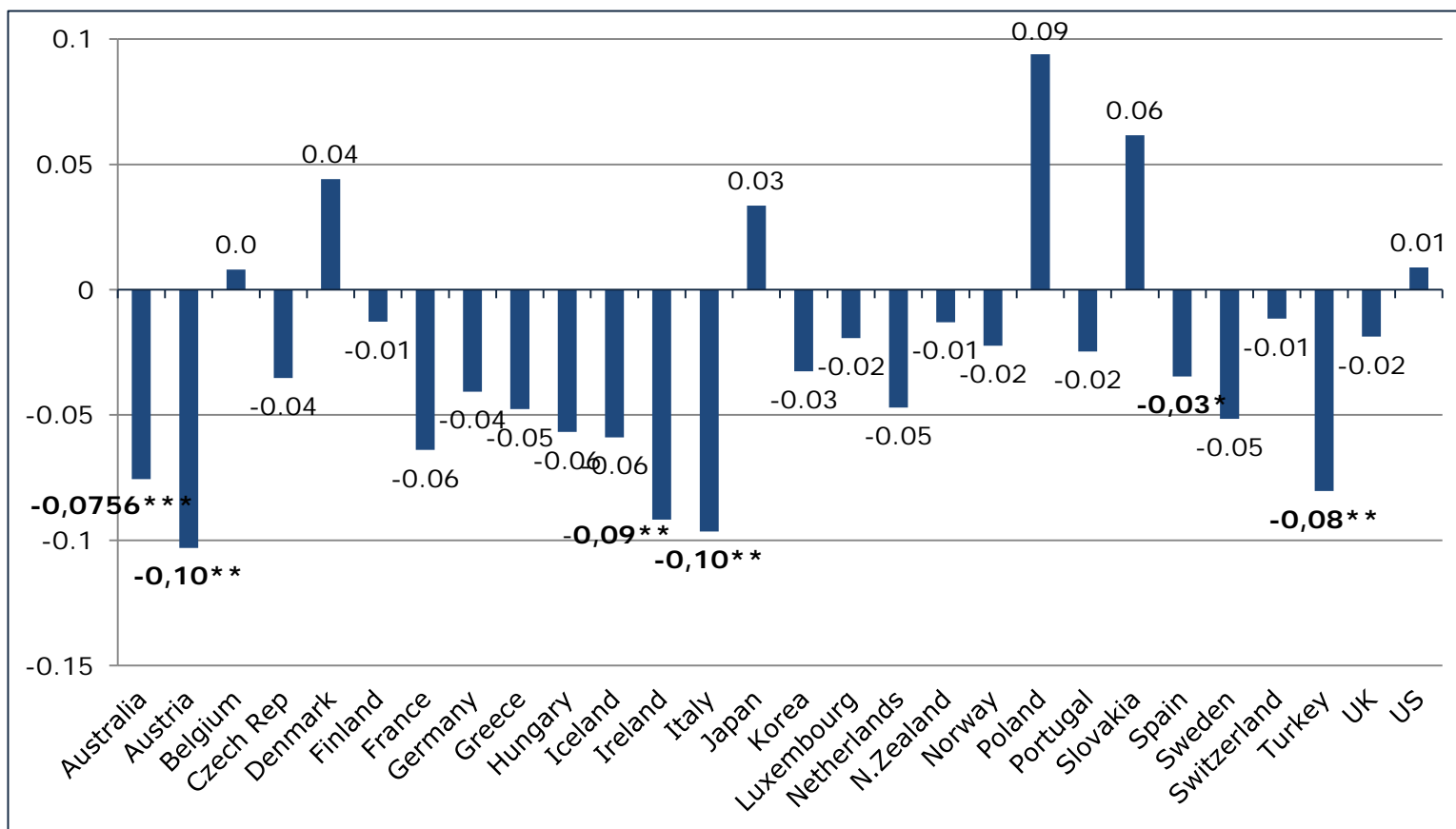


RESULTS

Marginal effect of **mother's** education

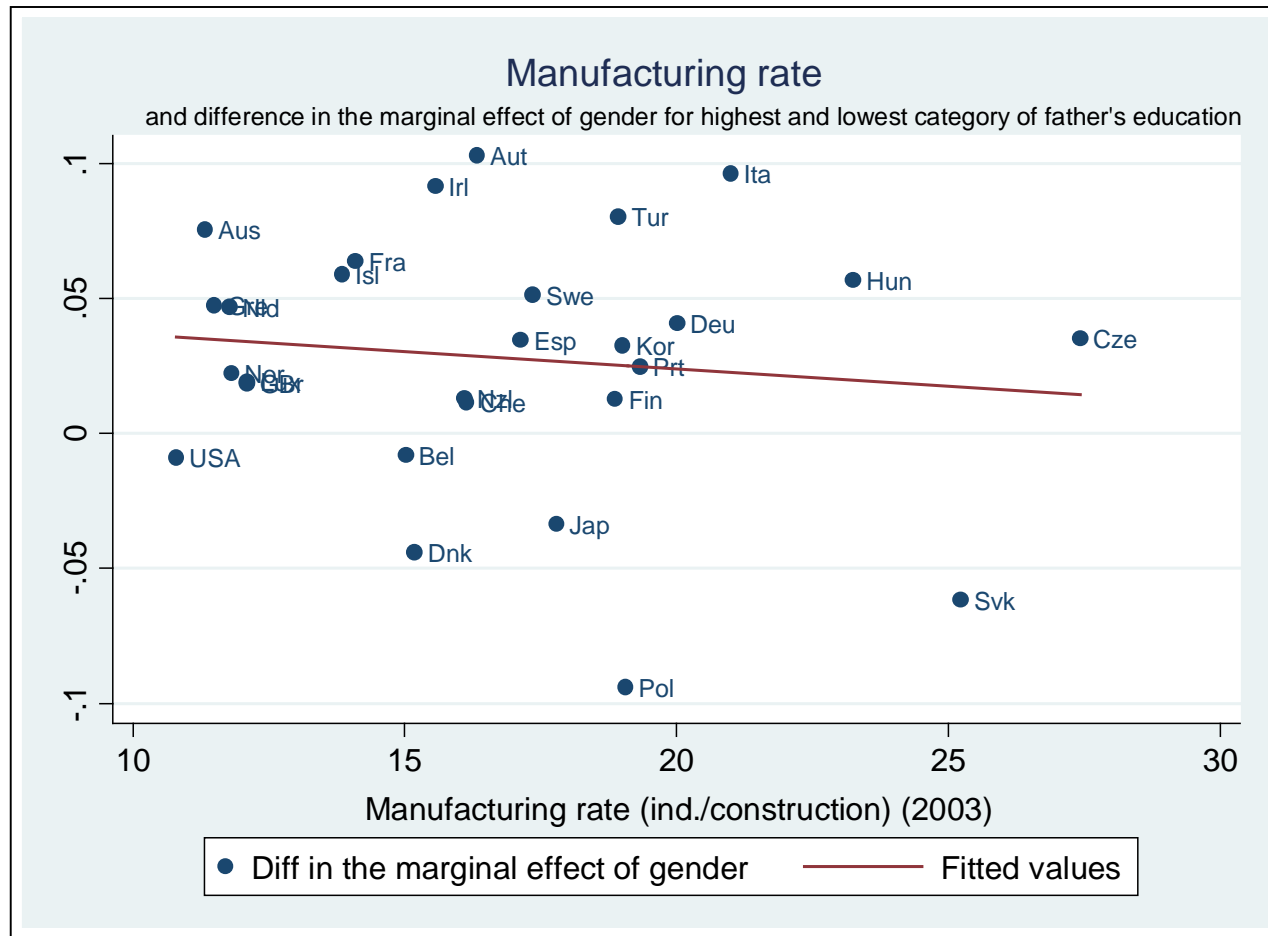


Contrast of the marginal effect of gender for the highest and lowest categories of father's education



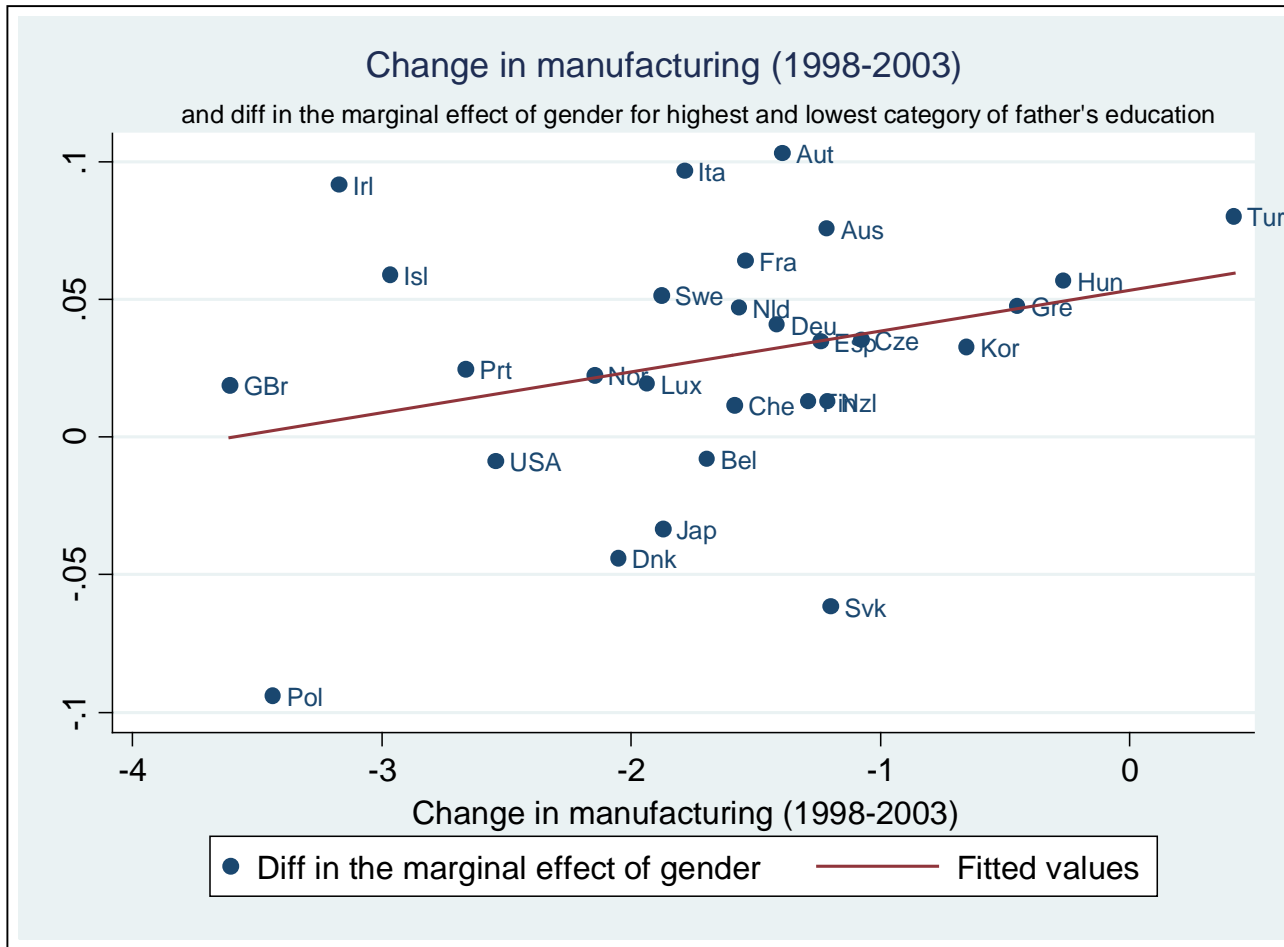
1. TWO-STEP APPROACH

Manufacturing rate



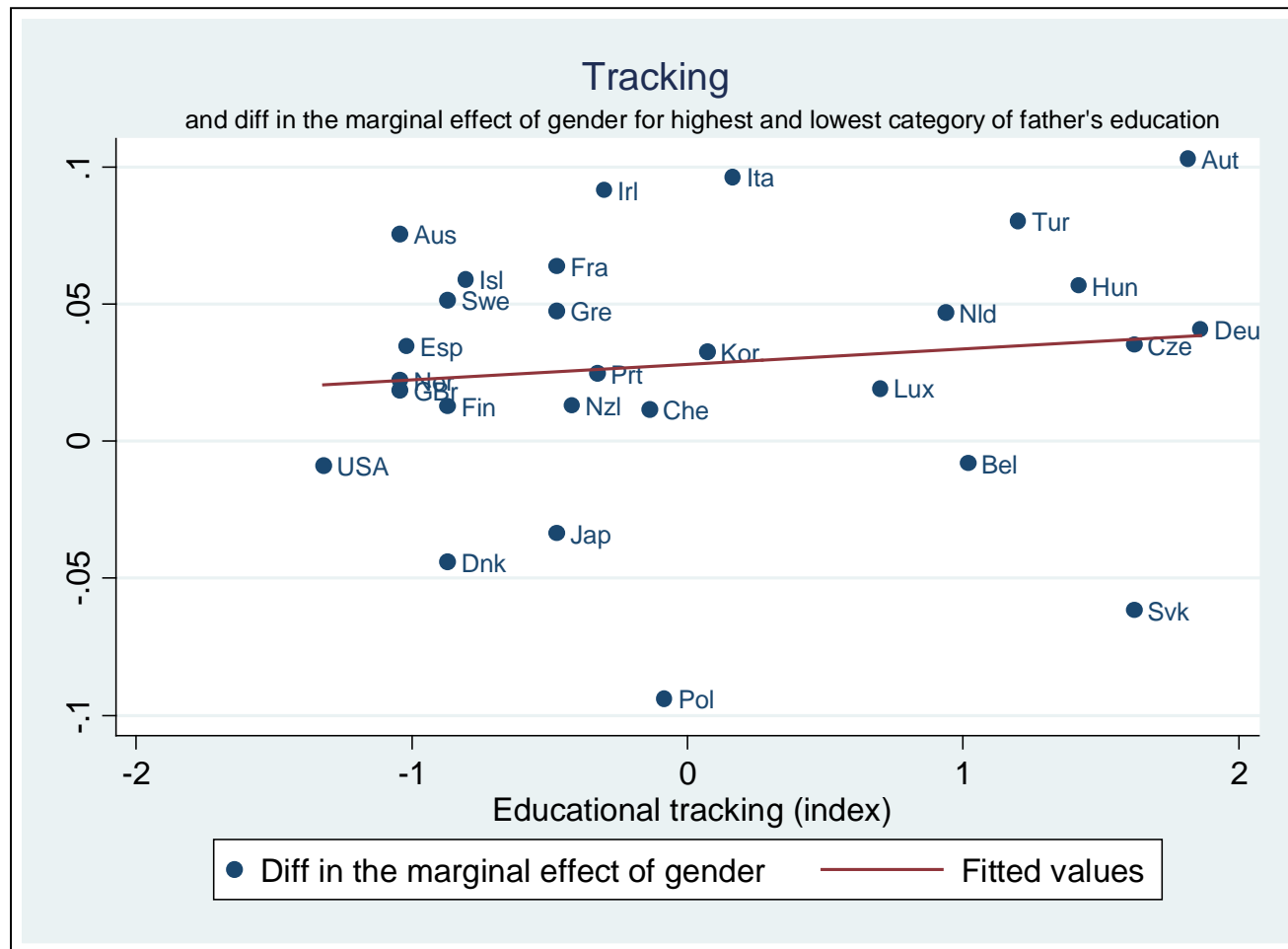
1. TWO-STEP APPROACH

Change in manufacturing



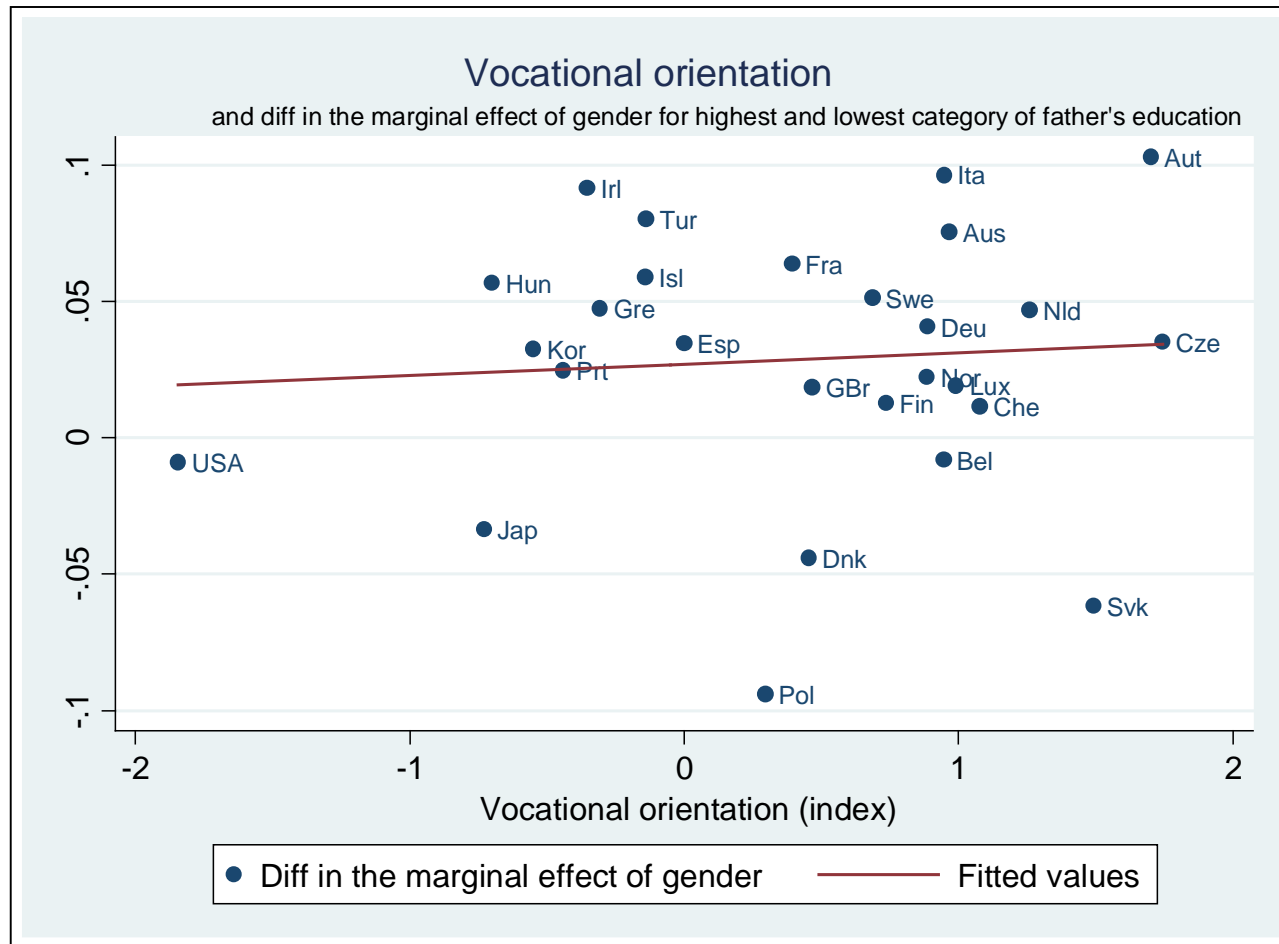
1. TWO-STEP APPROACH

Tracking



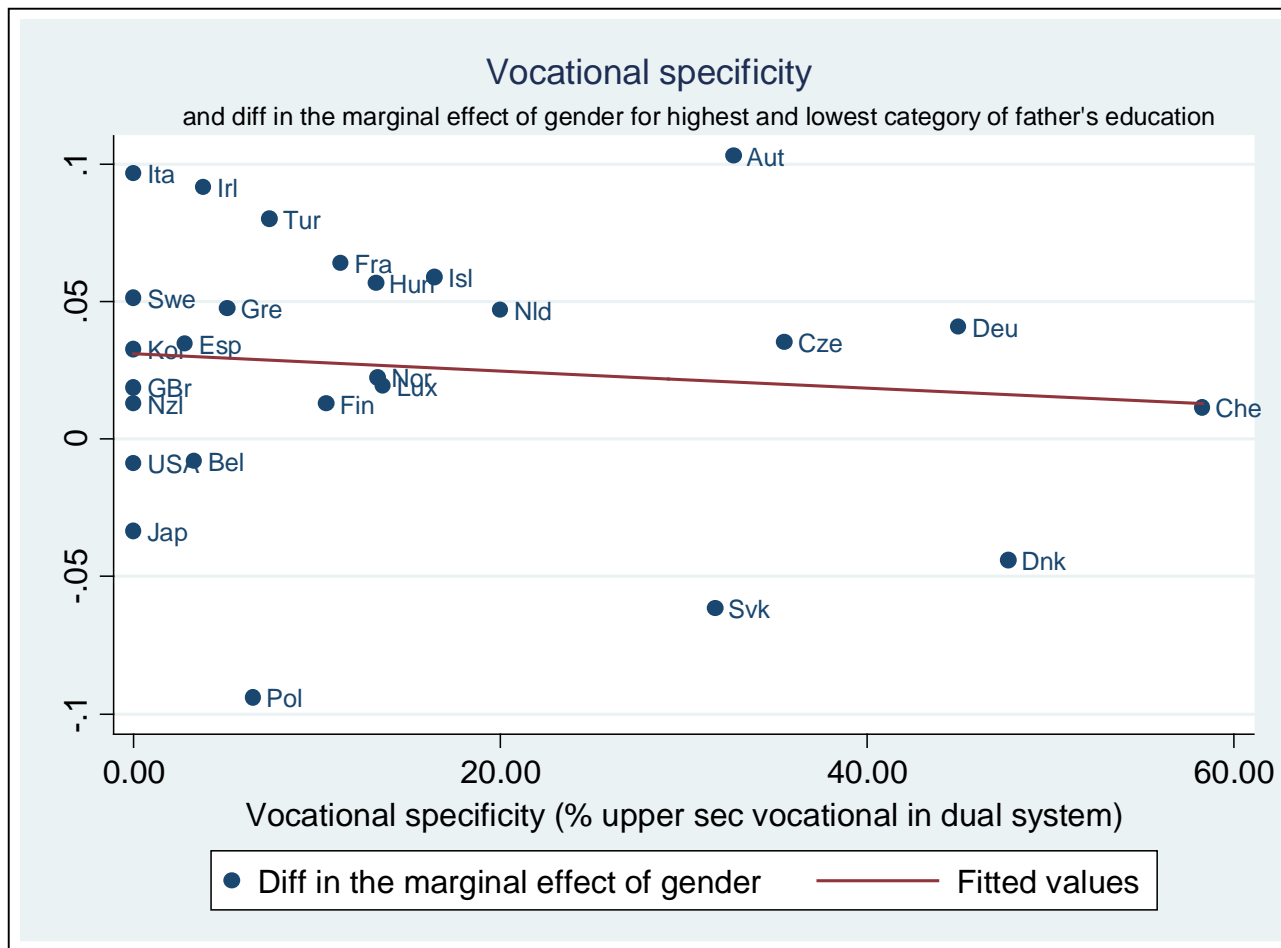
1. TWO-STEP APPROACH

Vocational orientation



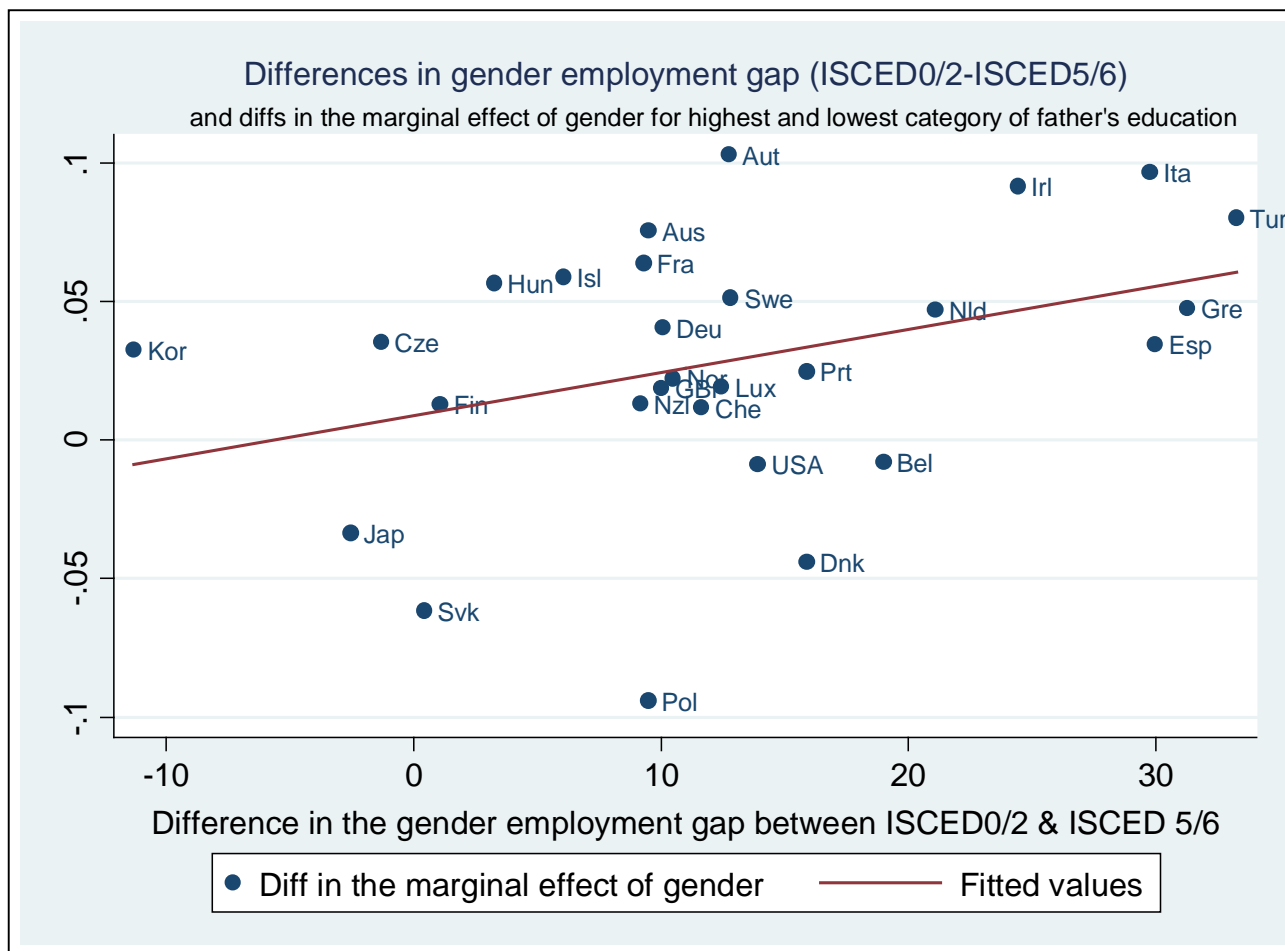
1. TWO-STEP APPROACH

Vocational specificity



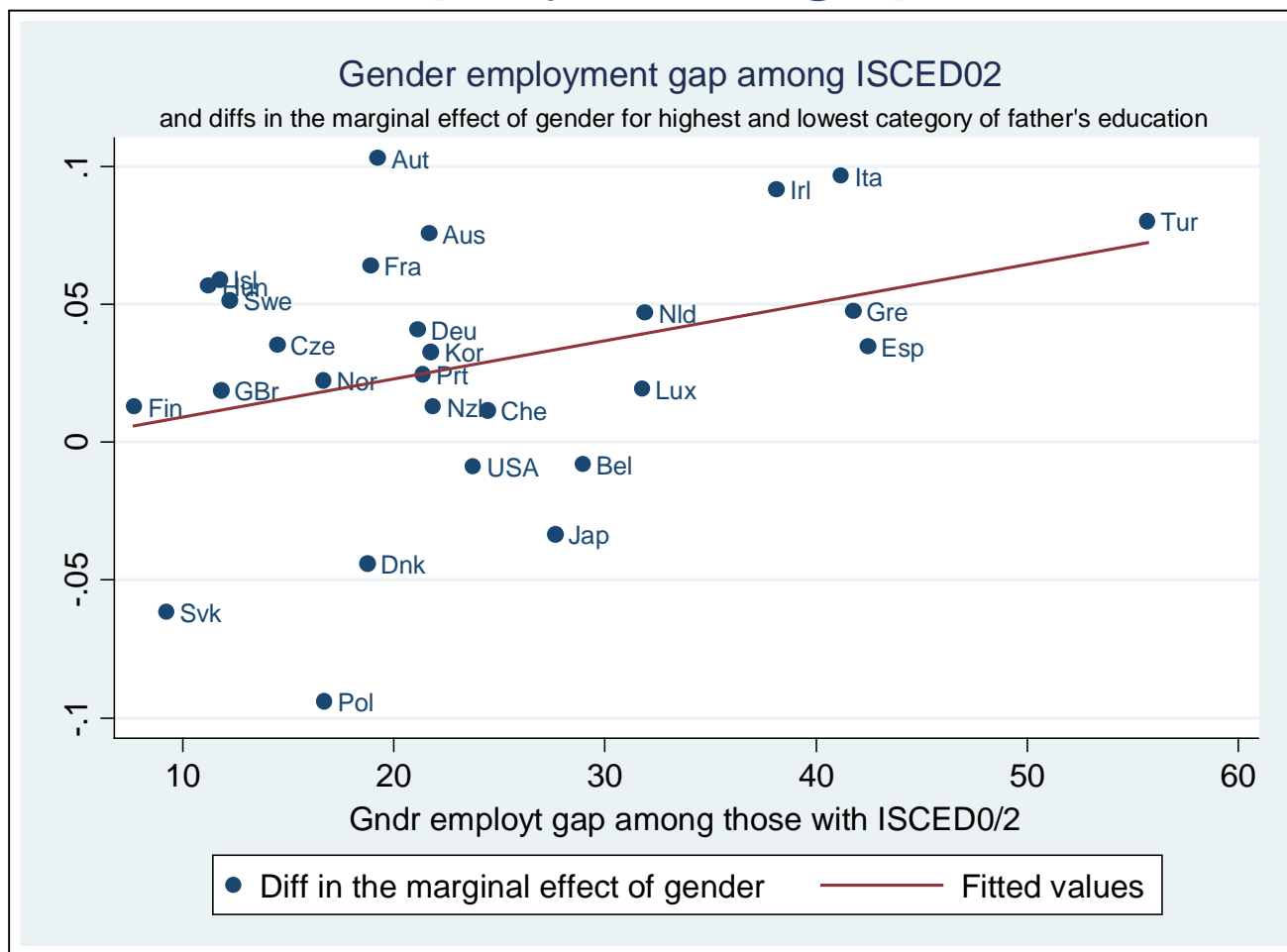
1. TWO-STEP APPROACH

Gender employment gap



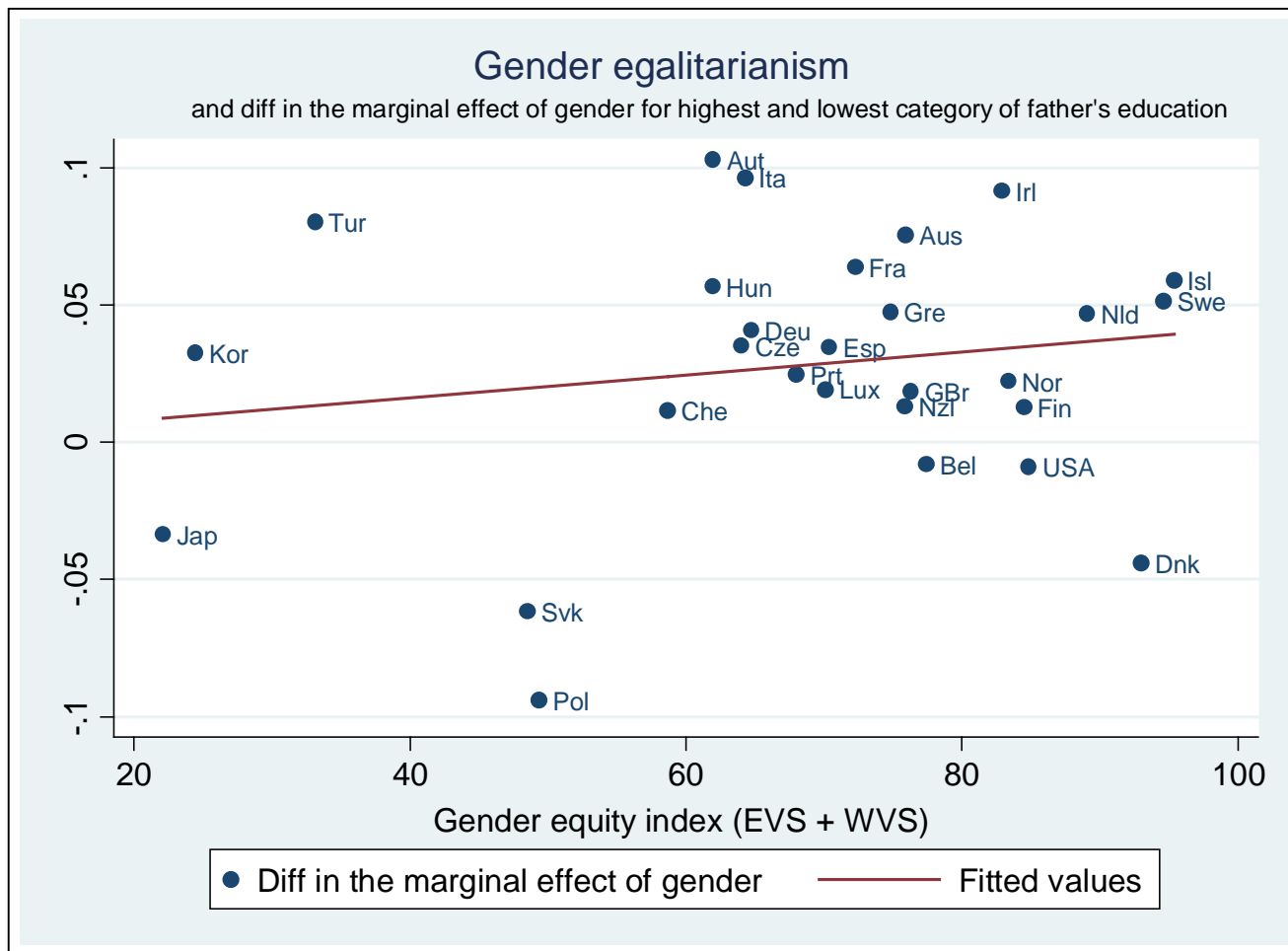
1. TWO-STEP APPROACH

Gender employment gap at the bottom



1. TWO-STEP APPROACH

Gender egalitarianism



1. TWO-STEP APPROACH: WLS regression

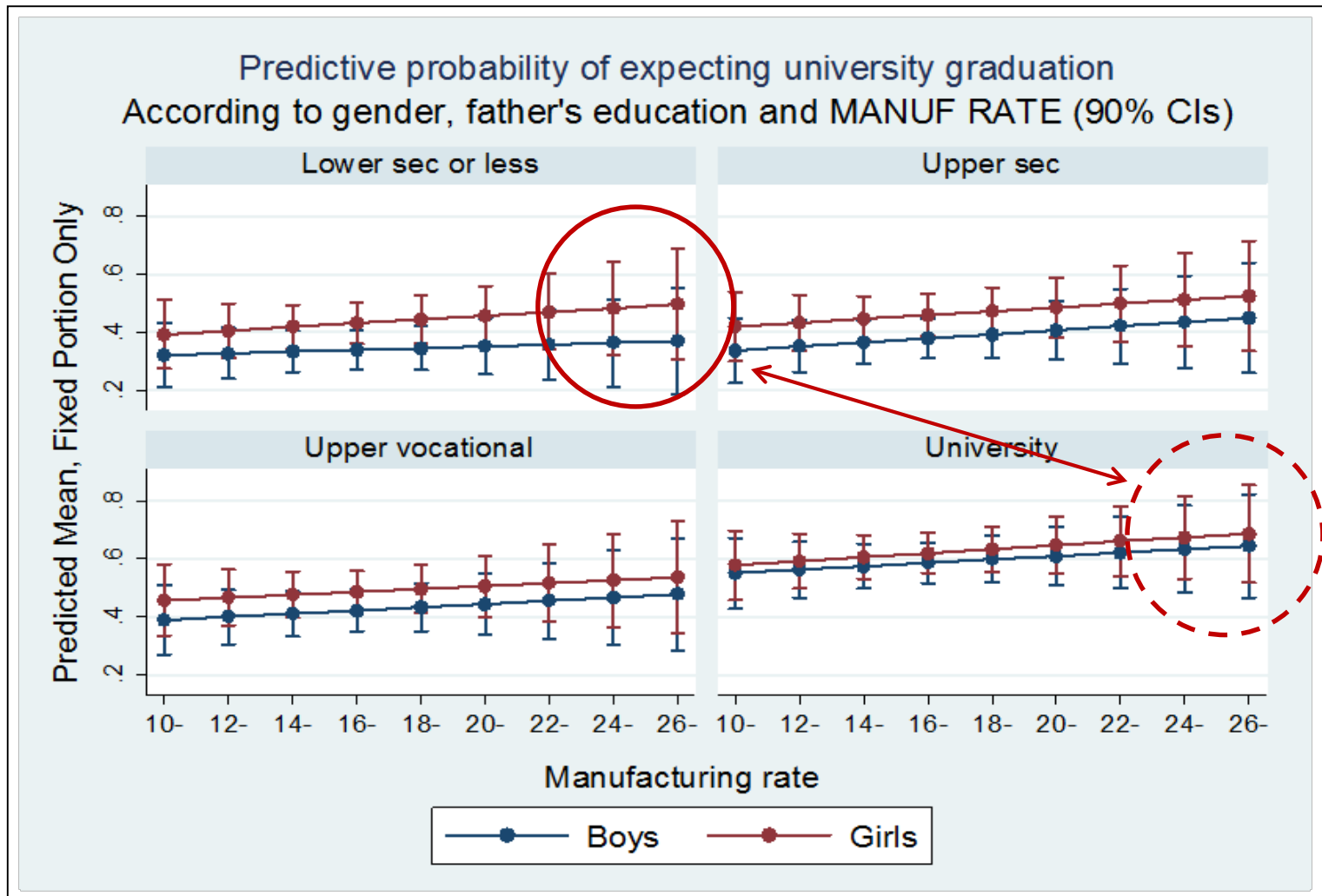
	Each country-level variable	Economic Structure	System of education	Gender
Manufacturing rate	-.002	-.006		
Manufacturing rate (change)	.007+	.008*		
Tracking index	-.003		.002	
Vocational orientation	.002		.001	
Dual system	-.002		-.004	
Gender employment gap	.014*			-.012
Gender employ gap (bottom)	.006*			.013**
Gender wage gap	-.005			-.004
Gender equity index	.004			.010+
+ p < .10 * p < .05; ** p < .01				

1. TWO-STEP APPROACH

- ECONOMIC STRUCTURE: Only the *growth* of manufacturing rate seems to have the expected result (not the manufacturing rate as such)
- SYSTEM OF EDUCATION: Neither educational trait (vocational specificity, dual system, tracking) seems to be significantly associated to a female advantage at the bottom of the father's educational scale
- GENDER: Negative effect of gender employment gap, following the compensation hypothesis; positive effect of gender equity.

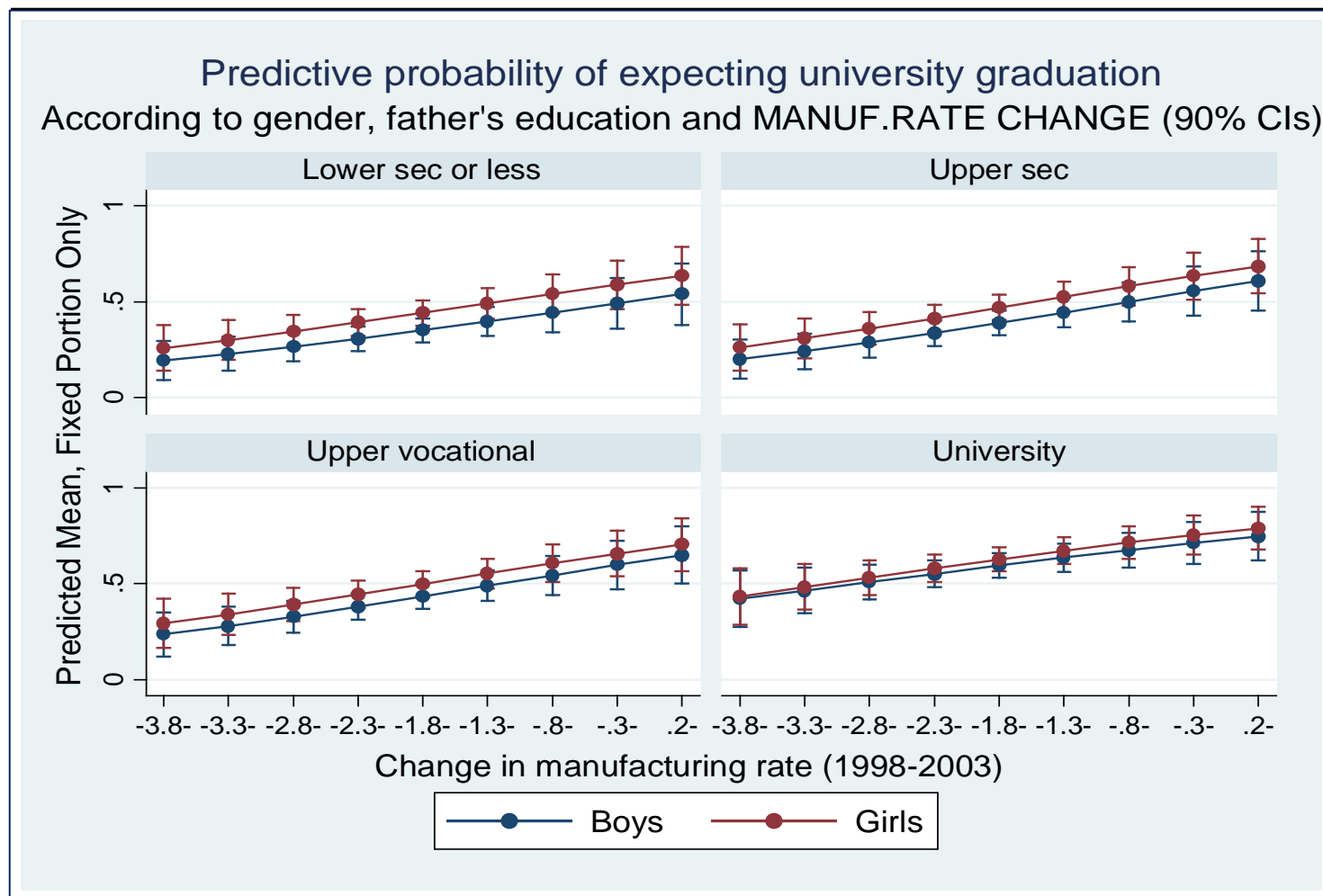
2. MULTILEVEL LOGISTIC REGR.

2.1 Economic structure (manufacturing rate)



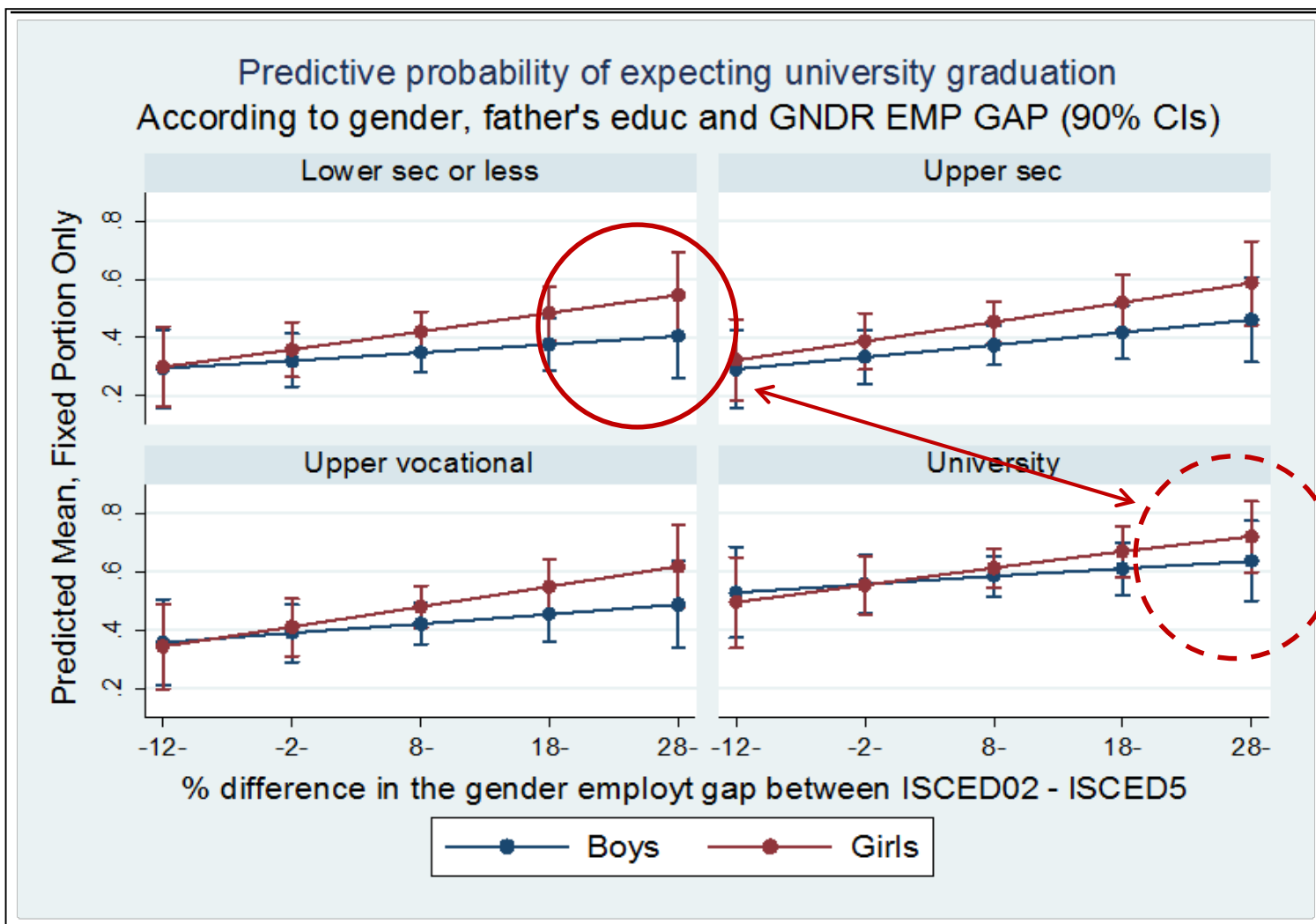
2. MULTILEVEL LOGISTIC REGR.

2.2 Economic structure (manufacturing rate change)



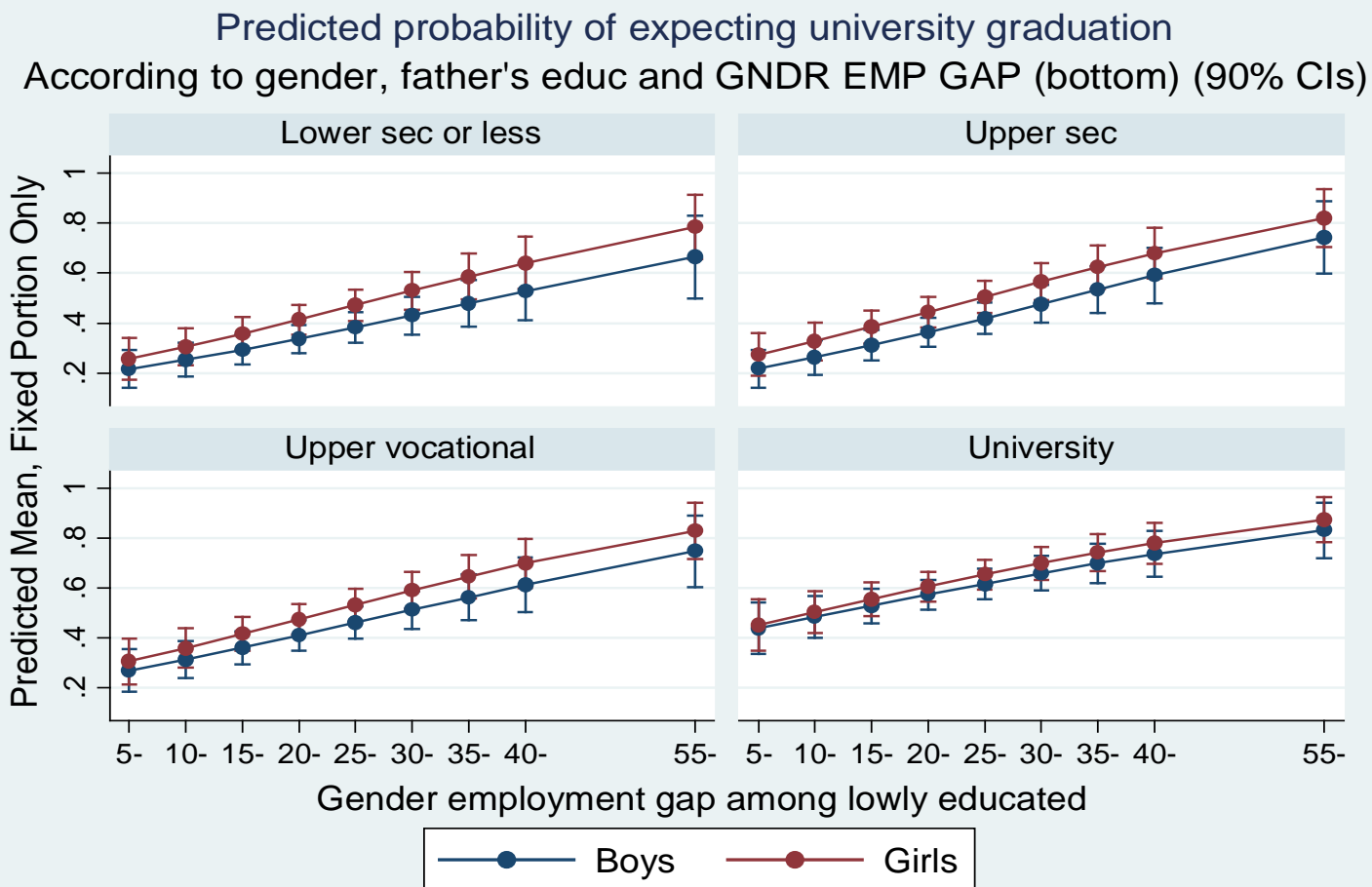
2. MULTILEVEL LOGISTIC REGR.

2.1 Gender (gender employment gap)



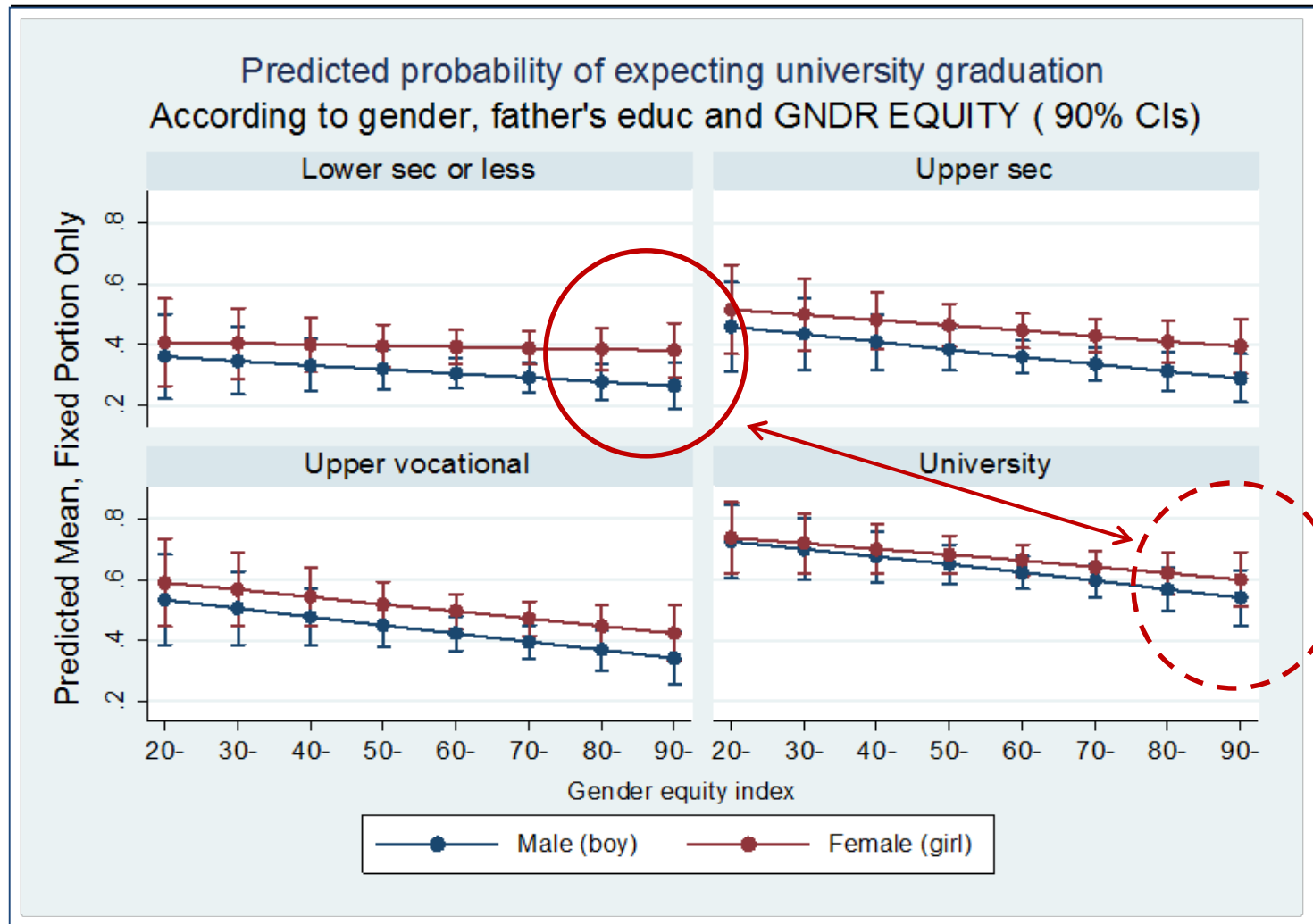
2. MULTILEVEL LOGISTIC REGR.

2.2 Gender (gender employment gap *at the bottom*, ISCED 0/2)



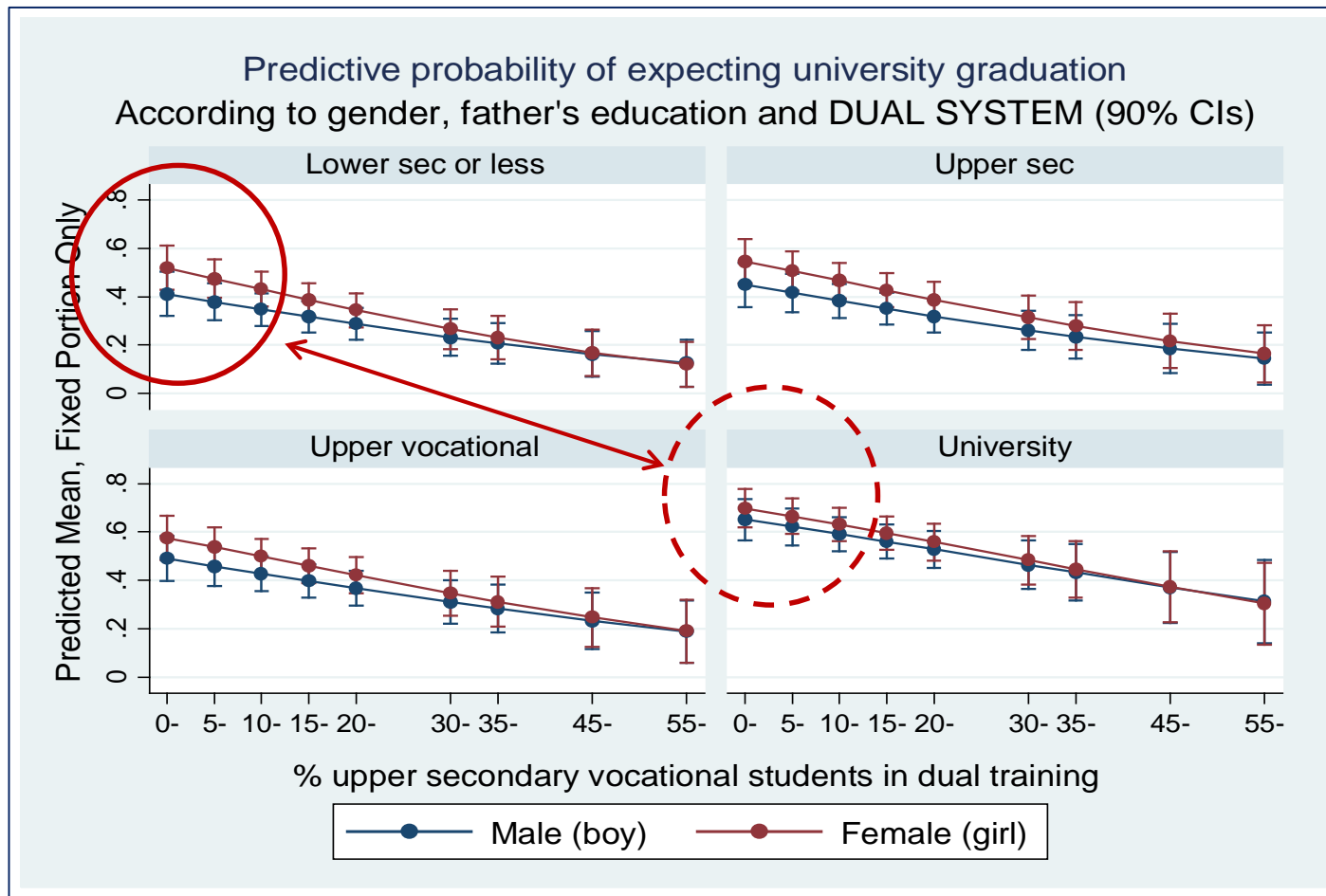
2. MULTILEVEL LOGISTIC REGR.

2.2 Gender (gender egalitarianism)



2. MULTILEVEL LOGISTIC REGR.

2.2 System of education



DISCUSSION (1)

- Controlling for factors potentially associated to social origin, both social origin (father's education) and gender have a clear effect on expectations of university graduation
 - Confirmation of the secondary effect of social origin on educational expectations
- Daughters of lowly educated fathers have higher expectations than sons of the same educational origin, and this advantage decreases with parental educational scale
- No one of the hypotheses initially formulated for explaining such a cross-national variation is firmly supported by the evidence

DISCUSSION (2)

- ECONOMIC STRUCTURE:
 - There are signs that male disadvantage among offspring of lowly educated fathers could be *marginally* driven by sectors where male workers are over-represented (manufacturing and construction)
- SYSTEM OF EDUCATION:
 - Institutional differences in the system of education do not seem to matter much for explaining higher female advantage at low levels of parental education
- GENDER
 - Higher female advantage at low levels of parental education seem higher where gender employment gap is higher, but also in countries with higher gender egalitarian ideology



DISCUSSION (3)

- OTHER COUNTRY-LEVEL FACTORS?
 - Are there other country-level factors behind cross-national differences in the effect of gender diverges across levels of parental education?
- AN INTERNATIONALLY HOMOGENEOUS PHENOMENON
 - May the forces explaining such a heterogeneous effect of gender across levels of parental education be constant across countries?

Thanks for your comments and attention



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