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What Shape Great Expectations?
Gender, social origin and country differences in students' expectations of university graduation

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Abstract

Over the last decades, female educational attainment has progressively caught up with male one in many OECD countries. Expectations of university graduation have correspondingly been found to be higher among female adolescents than among male ones. The advantage is even higher for girls of lower social origin. In the present research, multilevel modelling is applied to a combination of national-level data, on the one hand, and individual- and school-level data drawn from PISA 2003 on the other hand, in order to explain lower expectations of university graduation *among male kids of lowly educated parents*. Attention is paid to gender egalitarianism, educational differentiation and economic structure. A more gender-egalitarian society is expected to make human capital investment more attractive for girls. This effect may not affect expectations of university graduation among offspring of highly educated fathers, but it is expected to raise educational expectations of daughters of lowly educated fathers well above expectations of boys of the same origin. As regards educational differentiation, vocational training may become more appealing for male kids of lower social origin than for female ones. Finally, the size and growth of employment and wages in strongly masculinised sectors (i.e. manufacturing and construction) may divert male kids from entry into university, making vocational training or straight entry into the labour market more attractive. Again, this effect could be stronger among male adolescents of lower social origin. The evidence supports the role of the economic structure and gender egalitarianism, but no evidence is found in support of the role of educational differentiation.

Keywords

Educational expectations at youth; higher education; social origin; gender; parental education; PISA

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Introduction

Not so many decades ago, there was a clear disadvantage for girls in the way households distributed the resources for the education of their offspring. Poorer families rationalized these resources by prioritising their sons' education, whereas more affluent ones could afford investing as much in their daughters' education as in their sons'. This is 'a rare example of a once persistent pattern of stratification' that has recently disappeared or even been reversed in many OECD countries (Buchmann and DiPrete, 2006: 516). Nowadays, boys of families with fewer resources are usually the ones who have poorer educational performance than their sisters.

This paper is aimed at exploring this disadvantage in terms of educational expectations. Students' educational expectations are one of the strongest predictors of future educational attainment (Morgan, 1998; Mortimer, 1996; Reynolds and Burge, 2008). Exploring the gender gap in educational expectations, now unfavourable to boys, could thus be a way of exploring a well-established male disadvantage in terms of early school leaving or poor academic performance. Closing this gap may in turn be a way of decreasing the relatively lower rate of academic performance among young males without 'rolling back the vital gains women have made in postsecondary education in the last thirty years' (Wells et al., 2011: 2). Improving academic performance and educational expectations of young male kids (thus preventing poor academic records or early school leaving among them) could also help improve work productivity at the national level. Not by chance, countries with high rates of early school leaving are often the ones with poorest records in terms of work productivity.

Resorting to PISA data for 28 countries, I will here explore how gender differences in expectation of university graduation are distributed across levels of father's education. I will pay especial attention to gender differences at the bottom of the father's educational scale. I will try to connect these differences with three types of national-level factors, namely economic structure, system of education and gender egalitarianism at the country level.

After reviewing the literature on educational expectations and formulating my hypotheses, I will introduce the database and variables (at individual-, school- and country-level) used in the analysis. I will also explain the methods I have followed for exploring the importance of the different country-level factors considered. The results will then be presented and discussed.

Theoretical framework

Individual-level factors

Girls' academic performance is well-known to be better than boys'. This is already a good basis for developing higher academic expectations. On top of that, girls show a higher level of cognitive abilities, which are important to a good academic career and are not always captured by grades. Yet, as Buchmann and DiPrete argued for the US

context, this better academic performance has not always been enough for formulating higher educational ambitions (2006). In spite of the fact that female academic performance was already better than that of males in the mid-twentieth century, the female college enrolment rate in the US had been lower than male for many decades up through the mid-1980s, and so were educational expectations (Marini and Greenberger, 1978). Thus, there must be something more than purely academic performance for explaining why girls nowadays declare higher educational expectations than boys.

Beyond academic performance, female attitudes have been found to be more attuned to good progress in school. DiPrete and Jennings find that girls clearly outperform boys in social and behavioural skills that are important for school success (2012). DiPrete and Buchmann argue that 'pre-adolescent boys, especially those from working- or lower-class backgrounds, often denigrate' activities that are closely related to school (2013). And Wells et al. (2011) mention a 'culture of anti-intellectualism among male students in US high schools'. Again, they point to male students of lower social origin as a group where such negative attitudes are more prevalent.

Social origin certainly matters. Social stratification literature has often differentiated the primary and secondary effects of social origin for explaining strategic decisions along the educational trajectory (Boudon, 1974; Breen and Goldthorpe, 1997). Primary effects are the direct effects of social origin on grades; secondary effects are the effects of social origin that come on top of primary effects; that is, once the effect of social origin on grades has been accounted for. Keeping grades constant, social origin determines what are the students' choices or expectations. In their analysis of educational aspirations in 28 OECD countries, Dupriez et al. find a clear effect of students' socioeconomic background after controlling for their academic performance (2012).

There are different mechanisms though which, in the particular case of educational expectations, social origin may condition students' expectations *well beyond the effect that it already has on students' grades*. Advantaged social origin may provide adolescents with better information about future educational or occupational careers; it may also be associated with higher expectations placed upon them by parents, with better parenting, with stronger support for their educational progression or with a different view of the risks and opportunities that subsequent human capital investment entails.

Parental gender may also play a role in the development of students' educational expectations. On the one hand, mothers' education may become more relevant than fathers' if more time and dedication are placed by mothers on their children's education. If so, the more educated the mother is, the better the children's expectations and academic performance will be, regardless of children's gender. But this argument would lead one to expect that children's performance in school would be higher in countries with more traditional gender roles, and this does not seem very realistic. On the other hand, the same-sex socialization model (Michael, 1970) argues that children are particularly influenced by their same-sex parents: girls look to their mothers' example,

and boys to their fathers' (Downey and Powell, 1993). Thus, mothers' educational gradient would mostly favour girls' educational attainment and expectations, whereas fathers' educational gradient would mostly favour boys'.

The evidence in favour of the same-sex model is mixed at best. Wells et al. (2011) and Kleinjans (2010) find some favourable evidence for the US and Denmark, respectively. Yet, looking at the US National Survey of Families and Households, Kalmijn finds that mothers' education is as important as fathers' education for explaining children's educational attainment. (1994). In their study of parenting for Denmark, Bonke and Esping-Andersen find evidence against 'the prevailing view that is primarily the mother's education that matters' (2011: 52). There are reasons to think that parental gender is not as important as some might have expected. These reasons are related to increasing marital homogamy, and to the fact that homogamous couples 'embrace less specialization since their marginal productivities in either paid or unpaid work should be similar' (Bonke and Esping-Andersen, 2011: 45). This argument could be even stronger for highly educated homogamous couples.

Even if there are good reasons to think that social origin (parental education or occupation) has a positive effect on children's educational expectations, this effect has not been found to be equal for boys and girls. The effect of social origin seems stronger for boys. In line with a relative disadvantage found in other domains (i.e. early school leaving), boys of lowly educated parents have been found less inclined to develop higher educational expectations than girls of the same social origin. It is not that girls of highly educated parents do not have an advantage over their brothers, but such an advantage is smaller than among girls of lowly educated parents.

In their study of the evolution of the gender gap in college completion in the US, Buchmann and DiPrete found that 'where fathers had a high school graduation or less, daughters increased their rates of college completion, whereas the graduation rates of sons dropped' (2006: 523). They find a 'growing vulnerability of boys who are sons of high school–educated or absent parents' (526). When looking at educational expectations among children of different ethnic minorities in the US, Wells et al. also find that 'the gender gap in the probability of expecting a college degree is larger among those with low social capital'. For Ireland, Byrne and Smyth found that gender differences in early school leaving were higher among farmers' offspring than among those of professionals (Byrne and Smyth, 2010).

School-level factors

Social origin may affect educational expectations, not only through the family, but also through those who have been labelled as 'significant others' (relatives, friends and teachers). In the case of the school, two opposite dynamics have been mentioned. On the one hand, the 'contrast effect' would explain a negative relationship between the performance of the group and the aspirations of the individual: 'when individuals in high-performing groups compare themselves with gifted individuals in those groups', they are often discouraged by the comparison. On the other hand, there is the

'assimilation effect', according to which individuals shape or mould their aspirations to the general aspirations of the group (Dupriez et al., 2012: 506).

In their cross-national study of educational aspirations with PISA data, Dupriez et al. find strong support for the positive effect of the socioeconomic composition of the school (2012). Everything else being equal, adolescents from privileged backgrounds tend to formulate higher educational aspirations, even after controlling for their own family background. The association is positive but not so clear for the academic composition of the school. Certainly, the higher the general level of parental education in the school, the higher the tendency to formulate aspirations of higher education is, but the association seems to be conditional on the level of tracking in the system of education. Highly tracked educational systems show a higher association between the educational level of the schools and their students' aspirations; the association does not seem to be as relevant for comprehensive school systems, where possibly the family origin is more decisive.

Country-level factors

A number of country-level factors may also condition the cross-country variation in students' expectation of university graduation and in the degree to which there is a female advantage in this respect. First, the transition to service economies, with an increasing importance of highly skilled service jobs, has been mentioned as an incentive for university graduation that could be particularly favourable for women. Buchmann and DiPrete used this argument for explaining growing female advantage in college completion over the second half of the XXth century in the US (Buchmann and DiPrete, 2006). Similarly, Jacobs argues that gender occupational segregation may foster female enrolment in post-secondary education, and higher educational aspirations among women, because female-dominated occupations are more closely associated with this post-secondary education than male ones (Jacobs, 2003).

The system of education may also explain cross-national differences in the way gender and social origin condition students' aspirations to university graduation. In line with the 'diversion thesis', according to which working-class children are diverted away from the academic path by educational institutions that provide them with an appealing educational alternative to the academically oriented track, differentiated educational systems have been found less conducive to adolescents aspiring to university graduation. Moreover, family social origin seems to be less important in them for explaining these aspirations. Buchmann and Dalton find that the effect of peers and parents' in shaping educational aspirations is higher in countries with relatively open, undifferentiated secondary schooling, whereas it is much smaller in countries with more differentiated secondary schooling. The effect of social origin in differentiated educational systems is likely to have been already channelled through the choice of educational trajectory (Buchmann and Dalton, 2002). In line with Buchmann and Dalton's, McDaniel finds evidence that such an effect is equal for girls and boys.

Gender egalitarianism in general, and the degree of gender equality in the labour market in particular, should also play a role in explaining gender differences in the formulation of university aspirations. A more gender-egalitarian society should make female human capital investment less risky, since women would be expecting a more hospitable labour market, one that would discriminate against them less and reward their human capital on more equal terms with men's. McDaniel certainly finds that national gender-egalitarian attitudes increase girls' expectations of university graduation (McDaniel, 2011; see also Buchmann and DiPrete, 2006).

Finally, it is not only the labour market that matters; the marriage market matters as well. Aspirations to university graduation may reveal 'women's growing interest in possessing autonomous resources by which they can pursue opportunities in both the labour and marriage market' (Buchmann and DiPrete, 2006: 535).

Country-level factors and diverse effect of gender across parental origin

The literature so far reviewed has been concerned either with the effect of social origin and gender at the national level or with the role country-level factors play in the explanation of gender differences in educational aspirations. The possibility that gender effect differs across levels of social origin, as was highlighted by Buchmann and DiPrete for the US (2006, see above), has not been much studied cross-nationally.

The present research intends to contribute to the literature by cross-nationally exploring the vulnerability of boys of low social origin in their formulation of educational aspirations. Cross-national differences in the degree to which boys of lowly educated origin are particularly disadvantaged in this respect will be referred to three national-level factors, which to a degree have already been used for the study of simple gender differences in educational expectations.

First, the development of a certain economic structure has been found to favour an increase in early school leaving among boys. This has been the case in countries that have recently experienced a housing boom, like Ireland and Spain. Taking this argument to gender differences in educational expectations, we may expect that the size and growth of employment in strongly masculinised sectors (e.g. manufacturing and construction) act as a pull factor, dissuading male children from entry into university and making the vocational track or straight entry into the labour market more appealing. If this effect is stronger among sons of lowly educated fathers, gender differences in expectations of university graduation may in turn be particularly high at the bottom of the parental social or educational scale.

Hypothesis 1: Size and growth of manufacturing and construction are positively associated with higher female advantage in expectation of university graduation among children of low social origin.

Second, the system of education may not have the same effect across different levels of parental education. Differentiated systems of education are usually associated with a

vocational training that works as a more appealing alternative to general education than in undifferentiated systems of education. This certainly explains why expectations of attending university are generally lower in the former than in the latter. But this effect could be even stronger among boys because enrolment in vocational training is slightly higher among them, and even more so in the case of dual systems that provide firm-specific training (Estevez-Abe, 2005). Working-class boys may thus find well-established vocational training programs more appealing in systems where vocational training offers good labour market opportunities than in systems where it does not.

Hypothesis 2a: Differentiated systems of education are positively associated with higher female advantage in expectation of university graduation among children of low social origin.

In the opposite direction, since differentiated systems of education have been found to echo the effect of social origin on educational expectations less than undifferentiated systems do (see above), gender differences in educational expectations at the bottom of the educational scale may be smaller in undifferentiated systems of education than in differentiated ones.

Hypothesis 2b: Differentiated systems of education are negatively associated with higher female advantage in expectation of university graduation among children of low social origin.

Finally, there could be two alternative ways of interpreting the effect of gender egalitarianism and gender labour market equality in educational expectations at the bottom of the parental social scale. A more gender-egalitarian society may make human capital investment more promising for girls, since such an investment is less likely to be curtailed or discouraged by gender discrimination or insufficient labour market performance among women. But the consequences for gender differences in educational expectations may not be the same at the top and the bottom of the parental educational distribution: whereas at the top girls would attend university regardless of gender egalitarianism, at the bottom gender egalitarianism is expected to raise girls' expectations well above those of boys. A more egalitarian society and labour market may be especially effective in making working-class girls' expectations of higher education depart from those of their brothers. A more gender-egalitarian society and labour market would be a strong incentive for female human capital investment, and especially so for working-class girls.

Hypothesis 3a: Higher gender egalitarianism and better female labour market performance are positively associated with higher female advantage in expectation of university graduation among children of low social origin.

Alternatively, in countries where gender-egalitarian attitudes are not so prevalent, or where the labour market does not perform so well in terms of gender equality, working-class girls may feel that the only way of counteracting labour market discrimination is by increasing human capital investment. And this is so because this type of gender

discrimination is more likely at the bottom of the occupational scale than at the top of it, which is to be reached by means of higher human capital investment. Higher educational expectations among working-class girls would work as a way of compensating for an unfavourable labour market environment.

Hypothesis 3b: Lower gender egalitarianism and worse female labour market performance are positively associated with higher female advantage in expectation of university graduation among children of low social origin.

Data and methods

Individual- and school-level variables

The survey carried out by the Programme for International Student Assessment Survey (PISA) in 2003 includes information on the educational aspirations of the 15-year-old students who were interviewed in the 28 countries considered in this analysis[1] (see table 1). Students interviewed for the survey were asked to answer, 'Which of the following [educational levels] do you expect to complete?' They did so for four different levels. In this paper, I will focus on the answers (yes or no) provided for level ISCED5A/6; that is, for their expectations of university graduation.

Besides a student's gender, other individual-level independent variables included in the analysis are immigrant background, family structure, academic performance, mathematical and reading ability, the student's attitude towards the school, and the father's and mother's occupational status and level of education. Immigrant background is captured by a dummy variable where non-native and second-generation immigrant students are merged into a single category and native ones into another one.[2] Family structure is known to have a significant effect on students' academic performance and expectations; in particular, students living with single parents have been found to be more at risk of early school leaving and/or low academic performance. In the event that such a family structure is not randomly distributed across different levels of parental background (father's/mother's education/occupation), I have included it as a control in the initial models of my analysis. As in the case of immigrant status, for the sake of statistical efficiency I have simplified the information on family structure provided by PISA 2003 by grouping all the initial categories other than 'nuclear family' into a single category.[3]

Other information about the student refers to his/her academic performance, abilities and attitudes. As regards her academic performance, PISA created a distributional variable in order to adjust for between-country variations and thus facilitate cross-

[1] Canada and Mexico were excluded from the analysis due to the high number of missing values in quite a number of the variables considered in the analysis.
[2] Due to the low number of second-generation and non-native students in some countries (Korea, Japan, Poland), I have opted to group them into a single category.
[3] These other types of families are: a) single-parent family, b) mixed-family (a father and a guardian, a mother and a guardian, or two guardians) and c) other familial groups.

national research. The variable 'indicates whether students are at a modal grade[4] in a country (value 0) or whether they are below or above the modal grade (+x grades, -x grades)' (PISA, 2003: 272).

Since grades may not fully explain students' cognitive abilities, and abilities could in turn motivate the formulation of educational expectations, I have also included in the analysis the same test scores for mathematical literacy (PV1MATH) and reading literacy (PV1READ) as Dupriez et al. used in theirs (2012).[5]

Finally, besides grades and cognitive abilities, students' attitudes towards the school have been mentioned as a plausible explanation of their academic performance and expectation. Attitudes that are less conducive to the formulation of high educational expectations may be concentrated in one gender and among kids with certain parental backgrounds (occupational or educational). If so, the explanation of why students' expectations are partly explained by gender and social origin may lie precisely there. An attitudinal index was generated for every student in the sample by averaging the student's response to four different statements.[6]

Moving now to parental background, father's education was used for the main analysis in the paper. The reason why father's education was preferred to mother's education, and to father's occupation, is related both to the results of the analysis (see below) and to the fact that father's education seems easier to register than father's occupation, due to the relatively high number of cases where a father's occupation was not declared because of his unemployment or inactivity.[7] A category corresponding to students' not declaring their fathers' occupations or reporting that they did not have any could certainly be added to the variable capturing father's occupation, but it would not be as easy to interpret as the categories corresponding to father's education. Father's and mother's education was coded according to the International Standard Classification of Education (ISCED). Both father's and mother's education has been structured into four categories: 'Lower secondary or less' (ISCED2 or less), 'Upper secondary' (ISCED3A/3B), 'Upper vocational' (ISCED5B) and 'University' (ISCED5A/6).

Although parental education was prioritized in the analysis, robustness checks were carried out in the analysis using parental occupation instead. Four categories were then considered: 'white collar, high skilled' ('legislators, senior officials and managers', 'professionals' and 'technicians and associate professionals'), 'white collar, low skilled'

[4] 'Data on student's grade are obtained both from the student questionnaire and from the student tracking forms' (PISA, 2003: 272).

[5] PV1MATH and PV1MATH are what in the PISA jargon is labelled as 'plausible scores': 'They are random numbers drawn from the distribution of scores that could be reasonably assigned to each individual' (PISA 2003: 130).

[6] 1) 'School has done little for preparing me for adult life when I leave the school', 2) 'School has been a waste of time', 3) 'School has helped give me confidence to make decisions', 4) 'School has taught me things which could be useful in a job'. An average index, instead of an additive one, allows getting around the problem of non-response to any of these questions.

[7] Due to relatively low female labour market activity in some of the countries considered (including Korea, Japan and Turkey), mother's occupation may be even more problematic.

('clerks' and 'service workers'), 'blue collar, high skilled' ('skilled agricultural' and 'skilled industrial workers') and 'blue collar, low skilled' ('unskilled industrial' workers and 'elementary occupations'). Two artificial categories were built into this variable so as not to lose the information corresponding to parental occupation not being declared or not existing.

As argued in the literature review, the effect of social origin may be partly channelled through the student's immediate environment. In order to discount this peer effect from the effect of parental social origin, two variables were created at the school level: one captures the average level of socioeconomic prestige among the parents of the school;[8] the other one captures the average educational level among the parents of this school.[9]

Country-level variables

The micro-level data drawn from PISA is complemented by country-level data drawn from different sources. The three groups of country-level variables considered refer to the economic structure of the country, its system of education and the prevalent gender ideology in it, in accordance with the hypotheses formulated above.

As regards the economic structure, it is hypothesized that the relative importance of economic sectors where low-skilled male work is over-represented may have a role in dissuading male students (and not so much female ones) from having high educational expectations. In order to test this possible effect, two country-level variables were created resorting to data drawn from OECD statistics: the percentage of employment in manufacturing and construction in the year of the survey, and the change in this rate over the five years prior to the survey.

As regards the system of education, three indicators were drawn from Bol and Van de Werfhorst's database of Indicators for Educational Systems (Bol and Van de Werfhorst, 2012): the tracking index, the index of vocational orientation and the index of vocational specificity. The tracking index is based on country-level data on age of first selection at school, number of tracks for 15-year-old students and proportion of the curriculum that is tracked. The index of vocational orientation is based on the percentage of upper secondary students who are enrolled in vocational education. Both the tracking index and the index of vocational orientation have a mean of 0 and a standard deviation of 1. Finally, the index of vocational specificity is actually the percentage of upper secondary vocational students who are in a dual system of vocational training.

For capturing the level of gender egalitarianism prevalent at the country level, I have created a gender equity index for the countries considered, drawing information on them

[8] Occupational prestige is measured according to the International Socio-Economic Index of Occupational Status (ISEI). The highest occupational status of the parents corresponds to 'the higher ISEI score of either parent or the only available parent's ISEI score' (PISA, 2003: 273).

[9] The highest educational level of the parents corresponds to the higher ISCED level of either parent. The following ISCED categories are considered: None, ISCED1, ISCED2, ISCED3B/C, ISCED3A/4A, ISCED5B, ISCED5A/6. It is assumed here that these categories can be numerically ranked.

from the European Value Survey (EVS) and the World Value Survey (WVS). I have considered the average level of agreement with the statement 'Men should have more right to a job than women', which appears in both surveys. Of the three initial responses (agree, disagree, neither), I have merged the first and the last ('neither') into a single category, which would reveal a low inclination to gender equity in the labour market among the population; the remaining category ('disagree') would capture the opposite.

Besides gender egalitarianism, I have drawn country-level data on employment and gender wage gap from different sources. Drawing data from the Database for Institutional Comparisons in Europe (DICE), I have computed the difference in the gender employment gap between the lowest (ISCED0/2) and the highest level of educational attainment (ISCED5) for the countries of study. This indicator should capture incentives in terms of employment prospects that should move girls to remain in education; especially girls who are more at risk of stopping at low levels of educational attainment. The larger the difference in terms of gender employment gap, the higher a two-fold incentive for girls to remain in education would be: getting away from a relatively high gender employment gap at the bottom of the educational distribution, on the one hand, and enjoying a relatively low gender employment gap at the top. The indicator is thus expected to be positively associated with a gender advantage in expectations of university graduation—especially among girls who, for other reasons, may be more at risk of leaving education early.[10]

Labour market prospects are not only restricted to employment; they also concern the financial returns to education. For this reason, I have also considered the gender wage gap. First, I have taken information on the gender wage gap for the countries considered from the OECD database. I have also considered the average gender wage gap for each one of these countries in the years prior to the survey (2000-2003). Besides the gender wage gap, I have considered the difference in earnings of male and female university graduates, as a percentage of upper secondary ones.

Methods

As the data are hierarchical in nature (individuals nested in schools, and schools nested in countries), it is reasonable to apply multilevel modelling in order to reliably estimate country-level effects on the student's probability of expecting to graduate from university. But the number of countries in the analysis calls for some caution. In a recent article, Bryan and Jenkins refreshed a long-standing warning against multilevel research without enough cases at the aggregate level: 'with large sample sizes of individuals within each country but only a small number of countries, analysts can reliably estimate individual-level effects but estimates of parameters summarizing

[10] Besides the difference in terms of gender employment gap between the highest and lowest category of educational attainment, I have also considered the average of this indicator for the years prior to the survey (1997-2003), to compensate for any possible figure that does not correspond to the general trend of the country in that period. Finally, I have simply considered the gender employment gap in the lowest educational category.

country effects are likely to be unreliable" (Bryan and Jenkins, 2016: 3). The problem could be even worse if the research implies introducing cross-level interactions.

Since the number of countries in this analysis is on the limit of what is customarily acceptable as suitable for multilevel analysis, I have followed a parallel research strategy. On the one hand, I have proceeded with standard multilevel analysis; on the other hand, I have followed a modified version of the two-step approach recommended by Bryan and Jenkins for cases where there are few countries in a multi-country data set.

Two-step approach

In order to partially overcome the problem of a low N at the country level, Bryan and Jenkins suggested following a two-step approach proposed by Hanushek (1974) a long time ago. The first step consists of running a regression with all the individual-level covariates and country fixed effects. The coefficients corresponding to country dummies should capture the effect of each country, *conditional on how individual-level factors operate in each country*. The second step consists of turning the country-level coefficients from the previous model into a dependent variable and regressing this variable to the country-level factors that are considered to be relevant for explaining the phenomenon at stake. This method is not a panacea, since it does not avoid the fact that the number of countries is low (the N problem comes up again in the second step), but it yields unbiased country-level estimates and could be useful for making a graphical summary of these country-level effects.

Yet, the requirements of my research force me to depart slightly from what Bryan and Jenkins proposed. First, my data is structured in three levels, not two; second, I am not interested in country-level effects *per se*, but in how such effects modify the effect of student's gender and social origin. In other words, the key interest of my research lies in a cross-level interaction of a number of country-level factors and two individual-level ones (gender and social origin). I have thus proceeded first to fit a two-level random intercept model (individuals and schools) for each country in the analysis.

$$Log\left[P_{ij}/\left((1-P_{ij}\right)\right]=\beta_0+\beta_1 X_{ij}+\beta_2 Z_j+\beta_3(COUNTRY)+\mu_i+\varepsilon_{ij},$$

where $Log\left[P_{ij}/\left((1-P_{ij}\right)\right]$ is the log transformation of the probability of student *i* in school *j* of declaring that she/he expects university graduation; *X* and *Z* represent variables at the individual and school level, respectively; and the error term is decomposed in a school (μ_i) and individual-specific (ε_{ij}) error term.

For every country in the analysis, I have then estimated the marginal effect of gender for the highest and lowest level of father's education. The difference between the marginal effect of gender for the highest and the lowest level of father's education in each country[11] turns into the dependent variable in the second step of the analysis. It is

[11] Such difference was generated using the command 'contrast' of Stata.

necessary to consider that the values of this new variable are only estimates; they should be weighted according to their standard error. The OLS regression constituting the model in the second step is weighted accordingly. Weights are built as the inverse of the standard error of the difference in the marginal effect of gender for the highest and lowest category of father's education in the previous logit models run for each country.[12]

Three-level random intercept multilevel modelling

Besides applying a modified version of the two-step approach mentioned by Bryan and Jenkins, I have fit a three-level random intercept multilevel model. Since the dependent variable is dichotomous, the model is a multilevel binary logit model:

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

where $Log\left[P_{ij}/\left((1-P_{ij}\right)\right]$ is the log transformation of the probability of student *i* in school *j* and country *k* of declaring that she/he expects to get a university degree in the future; *X*, *Z* and *W* represent variables at the individual, school[13] and country level, respectively; and the error term is decomposed in a country-, school- and individual-specific term. Each model considers a different country-level factor.

As I said before, the main focus of attention is the three-way interaction between gender, social origin and each one of the country-level factors considered. In other words, the main interest lies in knowing the extent to which the effect of gender across levels of social origin is in turn conditioned by those country-level factors.

Results

For the 27 countries considered in the analysis, table 1 shows the general effect of a number of individual- and school-level variables on the students' probability of expecting to graduate from university. The table is the result of applying random intercept multilevel modelling to PISA data. Three different levels are considered in the analysis (individuals, schools and countries), but the models only include covariates at the individual level (model 1) and individual and school level (model 2). No variable at the country level is included yet; the models only control for the fact that observations are not independent at the country level. In order not to incur overcontrol bias (Elwart and Winship, 2014), I have initially excluded from the analysis all the variables that are potentially endogenous to class or social origin; that is, variables that may be moderators of the social origin, thus depriving it of part of its effect on educational

[12] Besides providing a reliable difference in the marginal effect of one variable across values of another one, the command 'contrast' in Stata provides the standard error of such difference, thus enabling us to build these weights.

[13] Although the focus of attention is not school-level factors, the effect of country-level factors on the probability of declaring university graduation can only be accurately estimated accounting for the fact that observations (students) are also clustered in schools. Moreover, it is intrinsically interesting to assess the importance of school-level factors (average educational and socioeconomic level among the parents in the school), since these factors may absorb part of the effect of social origin that lies in the family.

expectations. These variables (students' attitudes, grades, cognitive abilities and mediators of social effect at the school level) are incorporated into the analysis in the second model in the table. As a proxy for social origin, I have considered father's education.

As we may see in model 2, academic performance has the predicted effect on the probability of expecting university graduation. Students with grades below the mode in their respective country are less likely to expect university graduation than students in the mode (reference category). Mathematical and reading abilities also have a positive effect, even after controlling for the effect of academic performance, which possibly indicates that grades do not fully capture students' cognitive abilities. The table also shows that a positive attitude towards the school increases the student's willingness to attain a university degree, well beyond the effect of cognitive abilities or academic performance.

Table 1: Expectations of university graduation among youth
Random-intercept multilevel logistic regression

	Model without mediator variables		Model including mediator variables	
	Coefficient	SE	Coefficient	SE
Immigrant (1)	.304**	(.027)	.755**	(.029)
Single-parent (2)	-.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)
Average deviation (country level)	0.92	(.127)	1.31	(.179)
Average deviation (school level)	1.05	(.014)	.676	(.011)
N	144619		139414	
N schools	6012		5985	
N countries	27		27	

(1) Second-generation immigrants are included in this category, along with immigrants. Ref. cat: natives
(2) Families with a single father and a stepfather or stepmother are also included in this category. The reference category is nuclear family
+ p<.10 * p < .05; ** p < .01

All these factors (marks, cognitive abilities and positive attitudes towards the school) are well-known to be associated with social origin (Jackson et al., 2007). Children coming from more affluent social origins show better marks, develop higher cognitive abilities and possibly a more positive attitude towards the school. Controlling for all these factors, though, social origin (either in the form of father's education or father's occupation[14]) still keeps a positive and statistically significant effect on the probability of expecting university graduation. This is another sign of the secondary effect of social origin well established in social stratification literature (Jackson et al, 2007).

The results also confirm that the effect of social origin on students' expectations of university graduation may also come through their peers. The average socioeconomic and educational levels among the parents of a student's school are both positively and significantly associated with his/her expectations of university graduation. It is important to note, though, that such peer effect does not exhaust the effect of parental social origin. In other words, beyond the effect that comes from their peers, there is a clear effect of social origin *at home*.

The effect of ethnic origin deserves a special mention. In line with previous research (Salikutluk, 2015), second-generation and immigrant students are more likely to expect university graduation than natives. This is quite remarkable, and possibly deserves further attention, in the line of enquiring about the particular effect of gender and social origin for immigrant students' expectations of university graduation. In the present work, I stick to the general effect of these two variables.

Coming to the interaction of interest between gender and father's education, such interaction is surprisingly not much reduced by the introduction of factors that could be mediators between social origin and educational expectations (grades, attitudes, etc.); on the contrary, such an interactive effect seems stronger when these mediators are introduced in the model. In other words, the effect of social origin over educational expectations seems more homogenous across gender when we do not control for these mediating factors. After controlling for them, though, we see that girls' advantage is not equally distributed across social origin. The effect of gender is strongest at the lowest level of father's education (coef. 0.533**). This coefficient should be interpreted as the effect of being female for the reference category of father's education; that is, for daughters of fathers with secondary education at most, relative to boys of the same parental education origin. Father's education has the expected effect on expectations of university graduation: relative to sons of fathers with low secondary education or less (reference category), the probability of expecting university graduation steadily and linearly increases with fathers' education (0.229**, 0.477*, 1.36**). But the interaction effect tells us that the female advantage in the probability of expecting university graduation steadily *decreases* as we move up in the scale of father's education. The relative advantage of daughters of lowly educated fathers over boys of the same parental education (coef. 0.533**) is progressively reduced, to the point that brothers and sisters

[14] Results using parents' occupation, instead of parents' education, show similar results, which are available upon request.

of university-graduated fathers do not differ much in their (high) expectations of university graduation. The corresponding average marginal effects of gender are shown in graph 1 for the different categories of father's education. We see there how these marginal effects are steadily reduced as we move from offspring of lowly educated fathers to offspring of graduated ones.[15]

The next question is: which parent's education matters more, father's or mother's? We should remember that, according to some theories, the mother's education is more decisive than the father's, both for girls and boys. It has also been argued that boys look to their fathers, and girls look to their mothers. In this sense, it is to be expected that mothers' education is more decisive for explaining girls' advantage in expectation of university graduation.

Table 2 shows the results of two models that include interactions of gender with mother's and father's education, respectively. The interaction between children's gender and education is quite similar for both father's and mother's education. The comparison of graphs 1 and 2 reveals that the marginal effect of gender at different levels of parental education (after setting other variables in the respective models at their mean) is very similar too. The gradient of parental education seems to be the same for mothers and fathers; in other words, mothers' education does not seem to explain expectations of university graduation more than fathers'. This is in line with Marks's findings, according to which 'in the great majority of countries there is little or no gender difference in the effects of father's and mother's characteristics on their sons' and daughters' educational performance' (Marks, 2008: 862).

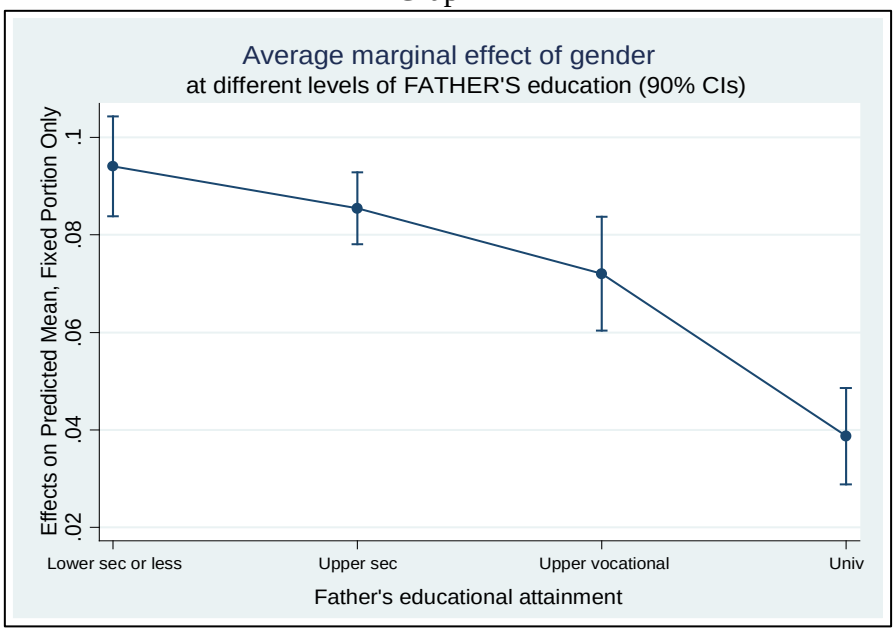
[15] A similar model using father's occupation, instead of father's education, yielded similar results. Although less straightforward than in the case of education, due to the inclusion of two artificial categories ('father is not working' / 'father is unemployed'), the results showed that the relative advantage of daughters of low-skilled blue-collar workers was reduced for daughters of high-skilled white-collar workers, relative to their corresponding 'brothers'. Results are available upon request.

Table 2: Random intercept logistic regression of expectations of university graduation among youth *Controlling for ethnic background, family structure, grades, cognitive abilities, attitude and school-level effects*				
	Model including interaction between gender and **FATHER'S education**		Model including interaction between gender and **MOTHER'S education**	
	Coefficient	SE	Coefficient	SE
Gender (female)	.533**	(.030)	.504**	(.029)
Father's/mother's educ: upper secondary (ref.cat.: lower secondary or less)	.229**	(.027)	.291**	(.027)
Father: upper vocational	.477**	(.035)	.604**	(.034)
Father: university	1.36**	(.032)	1.27**	(.033)
Female * father's/mother's upper sec. educ (ref.cat.: lower second or less)	-.060+	(.036)	-.098*	(.035)
Female * upper vocational	-.140**	(.047)	-.173**	(.045)
Female * university	-.315**	(.043)	-.126*	(.045)
Constant	-11.57**	(.279)	-11.7**	(.263)
Average deviation (country level)	1.31	(.179)	1.32	(.180)
Average deviation (school level)	.676	(.011)	.671	(.011)
N	139414		143483	
N schools	5985		5986	
N countries	27		27	
+ p<.10 * p < .05; ** p < .01				

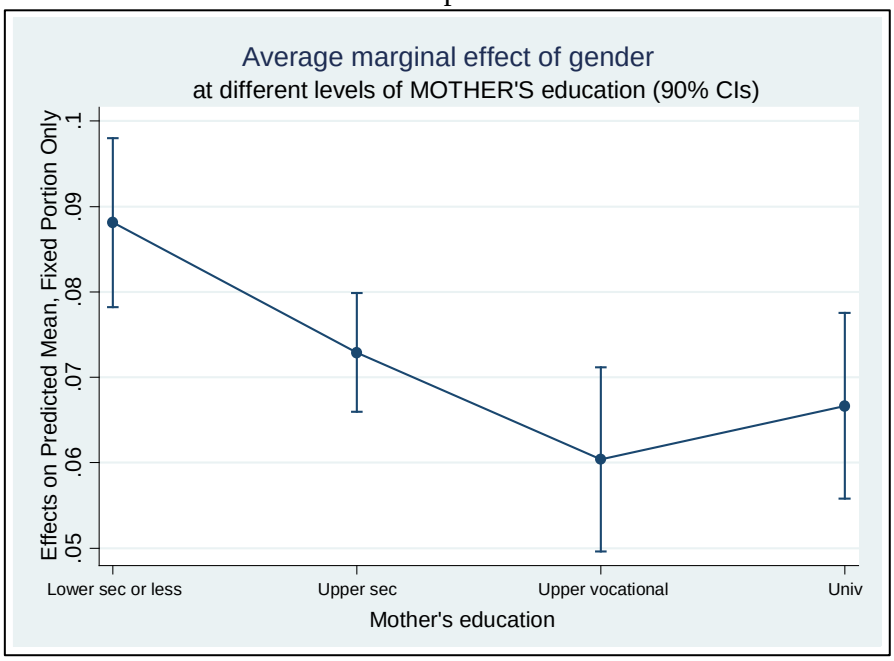
The only noteworthy difference, which possibly deserves further attention, is that female advantage in terms of expectation of university graduation by daughters of lowly educated *mothers* does not decrease so much among daughters of highly educated *mothers* (coef. -0.126**) as it does among daughters of highly educated *fathers* (-0.315**). If we look at graphs 1 and 2 again, we see that the marginal effect of gender is slightly higher for highly educated mothers than for highly educated fathers.[16] As a preliminary step in this research, I have restricted the analysis to the exploration of father's education; that is, I have approximated students' social origin through their fathers' education. But there seem to be reasons to explore further the differential effect of father's and mother's education at high levels of parental education.

[16] Table A1 in the appendix shows a model including at the same time the interaction between gender and father's education, on the one hand, and gender and mother's education, on the other hand. It is quite telling that the coefficient capturing the effect of gender for highly educated fathers is strongly negative, whereas the corresponding interaction for highly educated mothers is not significant. In the former case, it means that the advantage girls bear over boys decreases strongly and significantly at the high level of father's education, whereas nothing of the sort happens with mother's education.

Graph 1



Graph 2

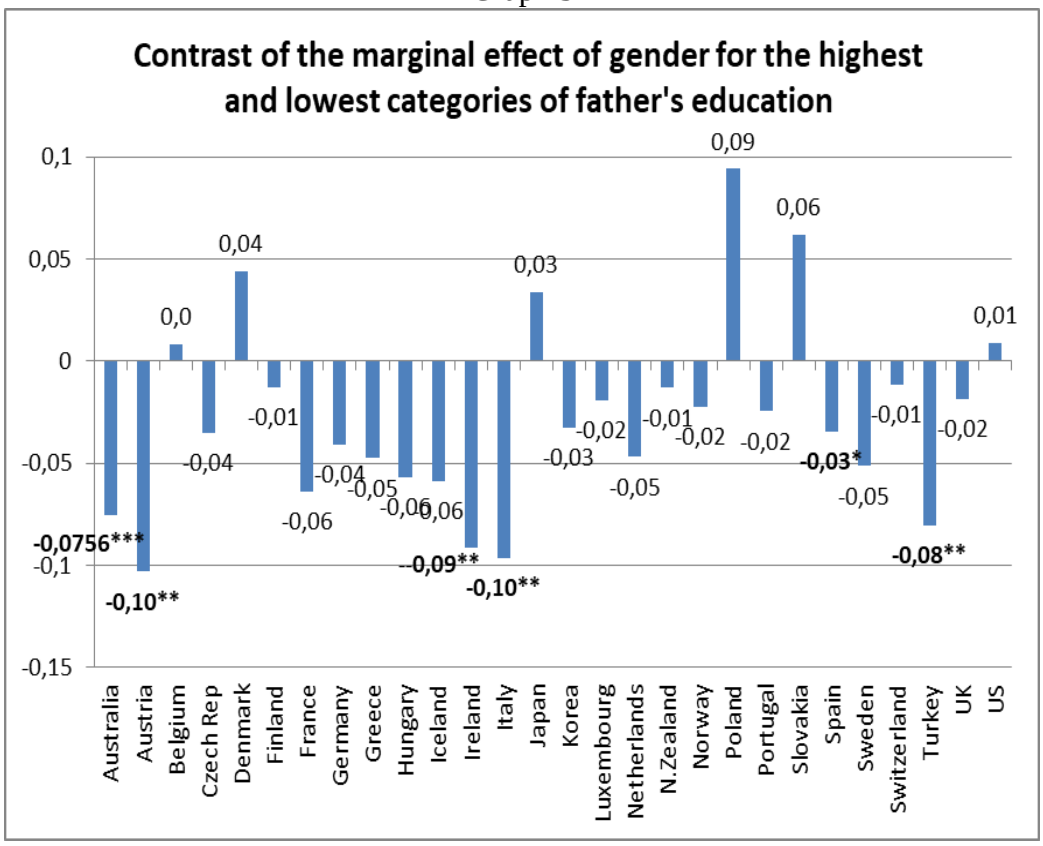


Two-step approach

This approach consists of turning the difference in the marginal effect of gender for the highest/lowest category of father's education for each country into a dependent variable, and regressing it to each one of the country-level factors that I have considered relevant for explaining the disadvantage of sons of low-skilled fathers, relative to girls of the same social origin.

As a preliminary step, graph 3 offers the contrast between the marginal effect of gender for the highest and lowest category of father's education for each country in the study. The marginal effects have been generated after running a two-level random intercept logistic regression including school- and individual-level variables mentioned above for every country in the analysis. Marginal effects should be interpreted as the effect that gender has for the student at each of the two levels of father's education considered for every country in the sample and after setting the other covariates in the model at their mean. As we may see in the graph, although not all the contrasts are statistically significant, most have the expected negative sign, which indicates that the effect of gender is lower among adolescents of highly educated fathers than among adolescents of lowly educated ones. There are a few countries for which the contrast is actually positive, but not statistically significant. Finally, it is interesting to note that the countries where negative contrast is statistically significant (Austria, Australia, Ireland, Italy, Spain and Turkey) do not constitute a purely homogeneous group, but have things in common that may announce what is at stake in explaining cross-national differences in the effect of gender and social origin (father's education) on expectations of university graduation.

Graph 3



Graphs 4-12 (see Annex) show the result of simple bivariate regressions of this difference in the marginal effect of gender and each one of the country-level factors considered. As regards economic structure, the association between manufacturing rate and differences in the marginal effect of gender for the highest and lowest category of

father's education is almost non-existent (graph 4). The picture is clearer for the change in the manufacturing rate over the period 1998-2008 (graph 5): countries where manufacturing and construction have grown more over this period (or decreased less) are the countries where girls' advantage over boys is higher among children of lowly educated parents. Sons of lowly educated fathers –we may say- are more easily discouraged of following the academic path (eventually leading to university) where construction and industry has grown more (or decreased less).

As regards the system of education, neither tracking (graph 6) nor vocational orientation (graph 7) seem relevant for explaining girls' advantage at lower level of parental education. Only in the case of vocational specificity (dual system), there seems to be some negative association, albeit non-significant (graph 8). Differences in the marginal effect of gender between children of highly and lowly educated fathers seem to be lower in countries where dual system vocational training is more salient.

Finally, some of the country-level factors considered in the realm of gender egalitarianism seem more strongly associated to differences in the marginal effect of gender than other country-level factors considered so far. But this association show opposite signs. On the one hand, it is fairly clear that advantage in expectations of university graduation among daughters of lowly educated fathers is higher in countries with higher gender employment gap (graphs 10 & 11). This would support the idea that that the difference in the marginal effect of gender for the highest and lowest category of father's education is associated to worse situations of women in the labour market. Girls of lowly educated fathers would develop higher expectations of university graduation, relative to boys of the same parental education, where female labour market situation is worse. On the other hand, though, gender wage gap and gender egalitarianism work in the opposite direction. As we may see in graph 9, differences in the marginal effect of gender are higher in countries where higher gender egalitarianism invites to consider that labour market could be more receptive of female work.

Table 4 shows the results of regressing country differences in the marginal effect of gender to the different country-level factors considered. To account for the fact that these values are only estimates, and should be weighted according to their standard error, weighted least square regressions have been run, instead of standard OLS regressions. Weights are built as the inverse of the standard error of the difference in the marginal effect of gender for the highest and lowest category of father's education in the previous logit models run for each country. Due to the low N (low number of countries), the table shows both simple and multivariate WLS regressions. The first column shows the results of regressing country differences in the marginal effect of gender to *each* one of the country-level variables considered. The columns to the right of this first column show the results of multiple WLS regressions aggregating country-level variables by domain[17]. The last column shows a multivariate WLS regression with all the country-

[17] Gender employment gap at the bottom of the educational scale has been omitted from the two last models due to high association with the other indicator of gender employment gap. Analyses including

level factors as independent variables. The coefficients here should be very cautiously interpreted, due to the number of variables and the low number of cases (countries).

Table 4: Explaining differences in the marginal effect of gender for highest and lowest category of father's education (WLS regressions with country-level variables)

	Each country-level variable	Economic Structure	System of education	Gender	All
Manufacturing rate	-.007	-.001			.002
Manufacturing rate (change)	.014	**.008+**			.013
Tracking index	.005		.011		.002
Vocational orientation	.005		.005		.010
Dual system	-.003		-.007		-.000
Gender employment gap	**.014***			**.006+**	**.002+**
Gender employ gap (bottom)	**.001+**			(omitted)	(omitted)
Gender wage gap	-.007			.000	.003
Gender equity index	.002			.001	.001
N		28	25	28	25

+ p<.10 * p < .05; ** p < .01

If there is any general lesson to draw from the table, it is that the only two domains that turn out to be slightly significant in explaining differences in the marginal effect of gender for the highest and lowest categories of father's education are economic structure and gender egalitarianism.

Random intercept logistic regression (cross-level variables)

Tables 5 & 6 show the results of multilevel logistic regression with three-way cross-level interactions of gender, father's education and each one the country-level variables considered. Different models have been built for each one of the country-level variables

the former indicator, instead of the latter, revealed an even stronger association with the dependent variable.

considered in the study. Only the coefficients of the variables involved in the interaction are presented in the table. Marginal effects corresponding to the three-way of interactions will be presented only when the interactions turn out to be marginally significant.

As regards economic structure (table 5), the manufacturing rate seems to slightly increase the advantage of daughters of lowly educated fathers over their brothers (0.02**), which is equivalent to say that this rate decreases the *relative* probability of boys of lowly educated fathers declaring expectations of university graduation. When looking at the coefficients of the three-way interaction, it seems that this further advantage that manufacturing and construction brings for girls of lowly educated fathers is reduced for the next category of father's education (-0.02*). In sum, it looks as if, as expected, girls' advantage at lower levels of father's education is higher in countries where, due to the importance of manufacturing and construction, sons of lowly educated fathers are more likely to be diverted away from the track leading to university than in countries where manufacturing and construction do not offer such a good opportunity for them; that is, where these sectors do not raise the opportunity cost of education, particularly for boys of lowly educated fathers (see graph 13). The pattern is not so clear for change in the manufacturing rate (graph 13 bis).

Moving to female labour market performance and gender egalitarianism, I will first focus on the difference in gender employment gap between the lowest (ISCED02) and highest (ISCED5) level of educational attainment. This difference heightens the advantage among daughters of lowly educated fathers (0.10**), effect that is reduced for daughters of fathers with upper secondary education (-0.08+) (table 5) (see also graph 16, for the marginal effects of the variables involved in this interaction). This effect is further confirmed when we focus our attention on the gender employment gap that exists just among the lowly educated in each of the labour markets considered in this research (0.09**) (see also graph A1, in the Annex). As for gender wage gap, female advantage seems lower in countries where gender wage gap is higher (-0.02**). But this effect, which would go in line with the idea that gender equality in the labour market acts as an incentive for higher educational expectations among girls, is felt across all the fathers' education scale (see graph A2). Finally, as regards gender egalitarianism, it seems associated to lower probability of expecting university graduation, but this is possibly because countries with high values of gender egalitarianism also score high in other variables relative to educational system (see below). As we may see in graph 15, the gender difference in the probability of expecting university graduation does not change at different levels of gender egalitarianism and parental education . In sum, the findings in this dimension show that a worse record in terms of employment gap heightens female advantage among daughters' of lowly educated fathers, but stronger gender egalitarian values do not make a difference.

Table 5: Random intercept multilevel logit model (three levels considered: individual, school, country)
Cross-level interactions with variables concerning **economic structure** and **gender equity** in the labour market (ALV=country-level variable)
All models include the following controls, which are omitted from the table: ethnic background, grades, reading and math skills, student's attitude

	Economic structure		Gender			
	Manuf. rate	Manuf rate (change)	Gndr Emp Gap	Gndr. Emp Gap (low)	Gndr Wage Gap	Gender Equity Index
Gender (female)	.14	.48**	.28*	.25**	.89**	.55**
Father's educ: upper secondary (ref.cat.: lower secondary or less)	-.14	.33**	.08+	-.00	.31**	.43**
Father: upper vocational	.41*	.54**	.46**	.39**	.44**	.72**
Father: university	1.13**	1.2**	1.3**	1.4**	1.4**	1.3**
Female * father's upper sec. educ (ref.cat.: lower second or less)	.03*	-.06	0.11+	.13	-.14	.02
Female x upper vocational	.15	-.14	-.07	-.06	-.05	.08
Female x university	-.11	-.26**	-.19*	-.23*	-.38*	-.04
ALV	.03	.55*	.02	.04*	.22	-.03*
Female * ALV	.02*	-.02	.10**	.09**	-.02**	-.00
Father's upper sec educ (ref.cat.: lower second or less) * ALV	.02*	.06*	.08**	.08**	-.05	-.02+
Upper vocational * ALV	.03	.04	-.00	.02	.00	-.03
University * ALV	.01+	-.06+	-.00	-.05*	-.00	-.00
Female * father's upper sec. educ * ALV	-.02*	-.00	-.08+	-.05*	.00	-.01
Female * upper vocational * ALV	-.01	-.00	-.00	-.00	-.04	-.03
Female * university * ALV	-.01	.03	-.03	-.00	.01	-.04
Constant	-12.1**	-10.6**	-11.8**	-12.7**	-12.3**	-8.9**
N	139414	139414	139414	139414	139414	139414
Number of countries	27	27	27	27	27	27

+ p<.10 * p < .05; ** p < .01

Table 6: Random intercept multilevel logit model (three levels considered: individual, school, country)
Cross-level interactions with variables concerning **education system** variables (ALV=country-level variable)
All models include the following controls, which are omitted from the table: ethnic background, grades, reading and math skills, student's attitude

	Tracking	Vocational orientation	Dual system
Gender (female)	.52**	.55**	.59**
Father's educ: upper secondary (ref.cat.: lower secondary or less)	.24**	.21**	.20**
Father: upper vocational	.51**	.40**	.41**
Father: university	1.3**	1.3**	1.3**
Female * father's upper sec. educ (ref.cat.: lower second or less)	-.04	-.01	-.06
Female x upper vocational	-.15*	-.09	-.12+
Female x university	-.30**	-.27**	-.30**
ALV	-.03	-.92**	-.03**
Female * ALV	-.03	-.03	-.01**
Father's upper sec educ (ref.cat.: lower second or less) * ALV	.09*	.04	.00
Upper vocational * ALV	.13**	.14*	.01
University * ALV	.04	.01	.00
Female * father's upper sec. educ * ALV	-.04	-.07	.03+
Female * upper vocational * ALV	-.06	-.08	.00
Female * university * ALV	-.01	-.05	.05+
Constant	-11.6**	-11.23**	-11.1**
N	139414	136385	124374
Number of countries	27	26	25

+ p<.10 * p < .05; ** p < .01

As regards the system of education, the three-way interactions do not reveal any clear effect on the female advantage at lower level of parental education. The interaction concerning tracking index does not turn out to be statistically significant. In line with prior research, tracking index certainly increases the effect of social origin, but such an increase of the effect of social origin is equal for boys and girls. This effect is reduced if we account for the clustering of observations into schools (see also graph 16.2, Annex[18]). This would go in line of the idea that aspirations in systems with more differentiated secondary education "are largely determined by the type of school the student attends" (Buchmann and Dalton, 2002: 99).

Vocational orientation decreases the probability of expecting university graduation, but not less for daughters of lowly educated fathers than for their 'brothers' (see also graph 16.1 Annex). Only in the case of vocational specificity, we see that the index has a relatively clear effect on the gender difference among offspring of lowly educated fathers. The index reduces the initial female advantage of daughters of lowly educated fathers (-0.01**) and corrects the reduction of this advantage in the case of daughters of father's with higher levels of education. In other words, only vocational specificity (the existence of dual system vocational training) has a clearer effect on the gender gap in educational expectations among offspring of lowly educated fathers. As we may see in graph 16.3, female advantage grows marginally at lower values of dual system *for children of fathers with lower secondary education or less*; in other words, the female advantage at lower levels of parental education disappear when dual system vocational training is important.

Discussion

After merging individual data from PISA with national-level data on economic structure, systems of education, gender egalitarianism and gender equality in the labour market, this research has explored gender differences in expectations of university graduation among adolescents interviewed for PISA 2003 in 28 countries. The study has paid special attention to gender differences among children of lower social origin.

Controlling for academic performance, cognitive abilities, attitude towards the school, and the effects peers may have in shaping children's expectations, social origin and gender are found to have a clear effect on the probability of expecting university graduation in the future. Yet, female advantage is neither fully explained by marks or attitudes at the school nor equally distributed across levels of father's education. Daughters of lowly educated fathers have higher expectations than sons of the same social origin, and this difference progressively disappears as we move up on the scale of father's education.

Several hypotheses were formulated for explaining cross-national differences in the degree to which boys of lowly educated fathers are disadvantaged, relative to girls of

[18] The graph also reveals that gender differences are larger as we move down the parental educational scale, as we saw in the initial analysis, but again such a decrease does not differ much across values of tracking, at least if we compare the highest and lowest category of father's education.

the same origin, but no one is firmly supported by the evidence drawn from this research. Considering economic structure first, there are some signs that male disadvantage at the bottom of the father's educational scale is higher in countries with higher employment rates in manufacturing and construction. Since these are sectors with a clear male over-representation, they may discourage sons of lowly educated fathers from formulating expectations of higher education. At the end of the day, these sectors offer them good opportunities for employment, which is not the case for girls of the same origin. This favours gender differences in terms of educational expectations at the bottom of the parental educational scale. Yet, supportive evidence for this hypothesis from standard multilevel analysis, and from the two-step approach, comes only for growth in manufacturing rates, not from manufacturing rates as such (level).

As regards systems of education, there is no evidence of the role of systems of education in raising or lowering expectations of university graduation, or even enhancing or reducing gender differences in this respect. The system of education does not seem to play a major role in explaining disadvantages among boys of lowly educated fathers. Multilevel modelling reveals that tracking enhances the role of social origin, but it does not help explain boys' disadvantage at the bottom of the father's educational scale. In spite of the negative association between vocational orientation and (to a lesser degree) tracking, multilevel modelling does not reveal any significant effect of these two variables in moderating or modifying the combined effect of gender and father's education. Only for dual systems (vocational specificity), there is some evidence of a negative association, and it is provided by both the two-step approach and standard multilevel modelling. Female advantage in terms of expectations of university graduation decreases where the importance of dual-system vocational training is higher. This works against the idea that a better, more developed system of vocational training prevents boys of lower social origin from developing high educational expectations *more* than it does with girls of the same origin; on the contrary, it may mean that, whenever there is a system of vocational training that is attractive enough to provide good opportunities of employment for everybody, daughters of lowly educated fathers are as keen on enrolling in this type of vocational training as sons of lowly educated fathers.

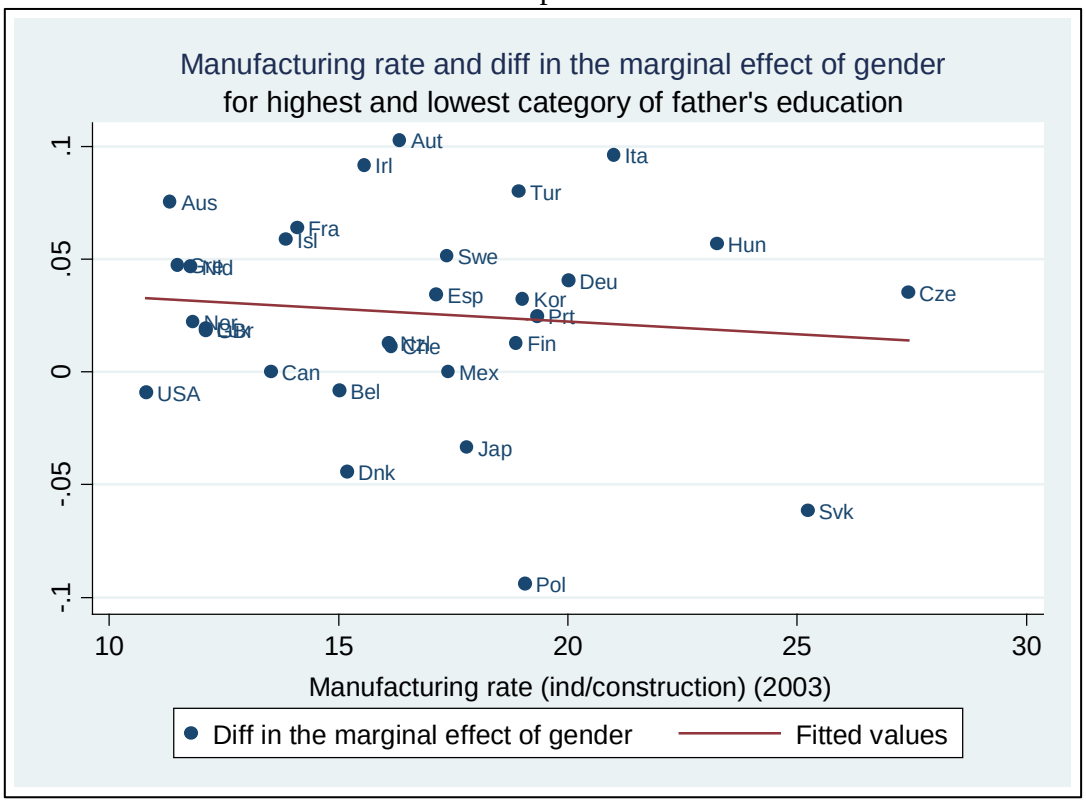
Finally, the country-level variables selected for capturing gender egalitarianism and gender equality in the labour market provide contradictory evidence. The difference in the gender employment gap between highly and lowly educated workers has a positive effect on female advantage at the bottom of the fathers' educational scale. This could be interpreted as a sign that daughters of lowly educated fathers try to compensate for a labour market situation that is perceived as adverse for them with higher educational expectations. Female labour market performance works here, not as an incentive per se, but as motivation to compensate for gender inequality with education. The opposite happens with gender egalitarianism, though. At minimum, the marginal effects resulting from the multilevel model, including the corresponding variable, invite one to think that more gender-egalitarian countries motivate daughters of lowly educated fathers to

develop higher educational expectations than their brothers. Finally, the gender wage gap seems to act as a negative incentive for women. Where the gender gap is lower, girls develop higher expectations of university graduation. This happens across the entire father's education scale.

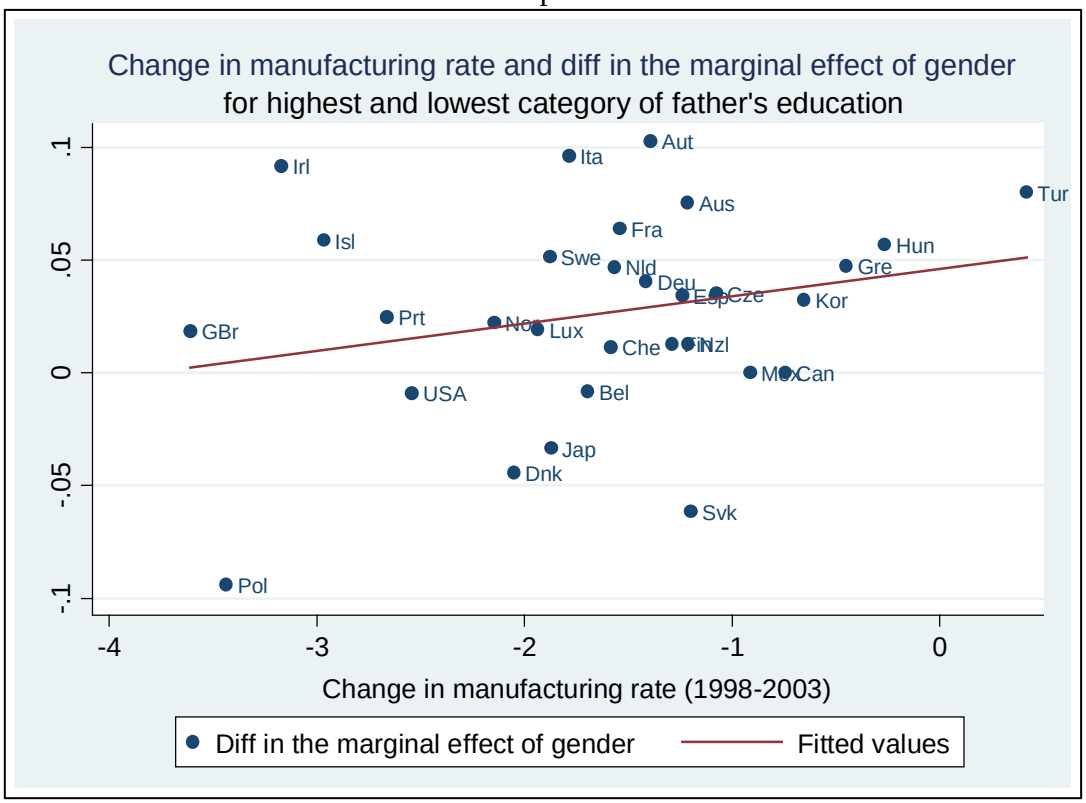
Annex

Table A1: Expectations of university graduation among youth Father's and mother's interaction (2)		
	Model including interaction between gender and **FATHER'S and MOTHER'S education**	
	Coefficient	SE
Gender (female)	.552**	(.033)
Mother's educ: upper secondary (ref.cat.: lower secondary or less)	.168**	(.029)
Mother: upper vocational	.375**	(.037)
Mother: university	.791**	(.036)
Father's educ: upper secondary (ref.cat.: lower secondary or less)	.129**	(.029)
Father: upper vocational	.271**	(.037)
Father: university	1.02**	(.035)
Female * mother upper sec. educ (ref.cat.: lower second or less)	-.081*	(.039)
Female * mother upper vocational	-.155**	(.050)
Female * mother university	.020	(.051)
Female * father upper sec. educ (ref.cat.: lower second or less)	-.032	(.039)
Female * father upper vocational	-.096*	(.051)
Female * father university	-.301**	(.048)
Parents' educational level (school average)	.257**	(.028)
Parent's socioeconomic level (school average)	.041	(.002)
Constant	-10.5**	(.263)
Average deviation (country level)	1.26	(.169)
Average deviation (school level)	.700	(.011)
N	145523	
N schools	6130	
N countries	28	
+ p<.10 * p < .05; ** p < .01		

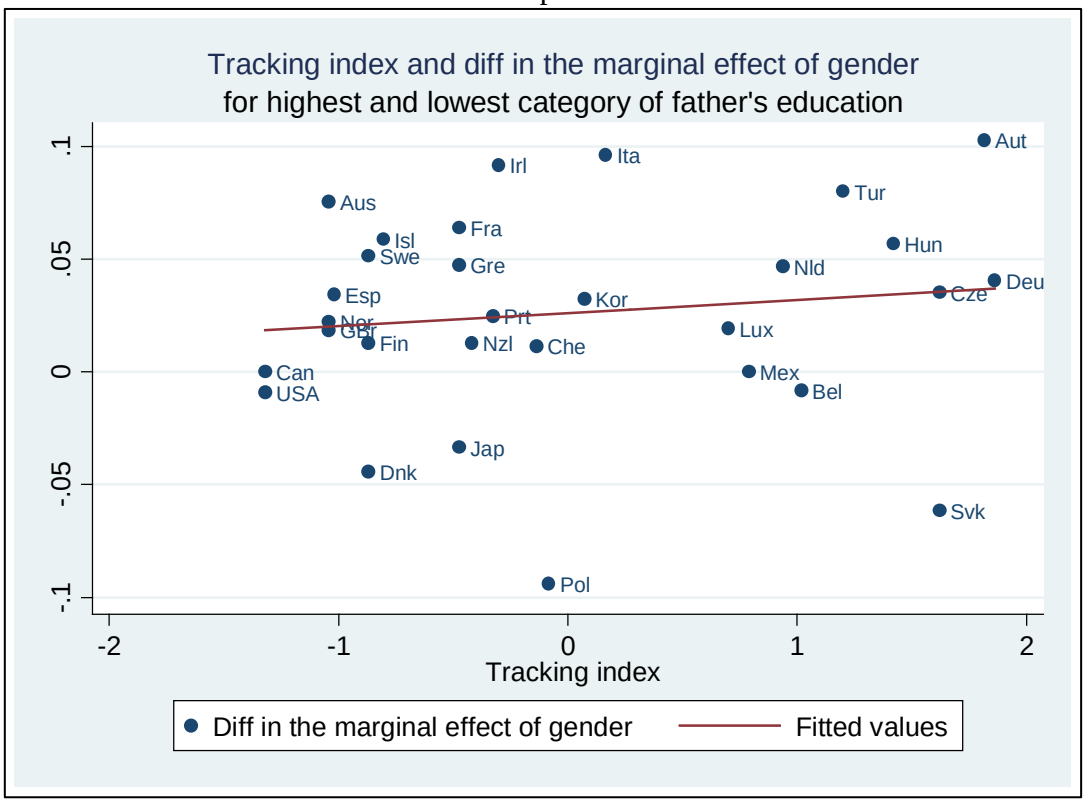
Graph 4



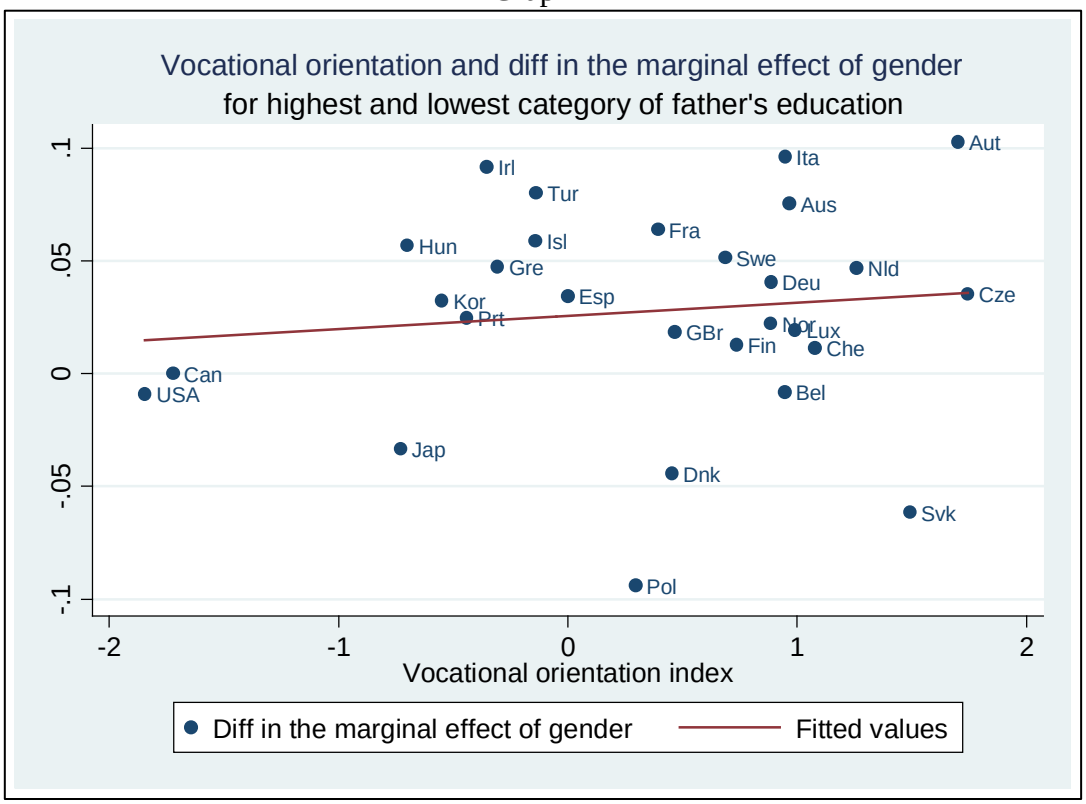
Graph 5



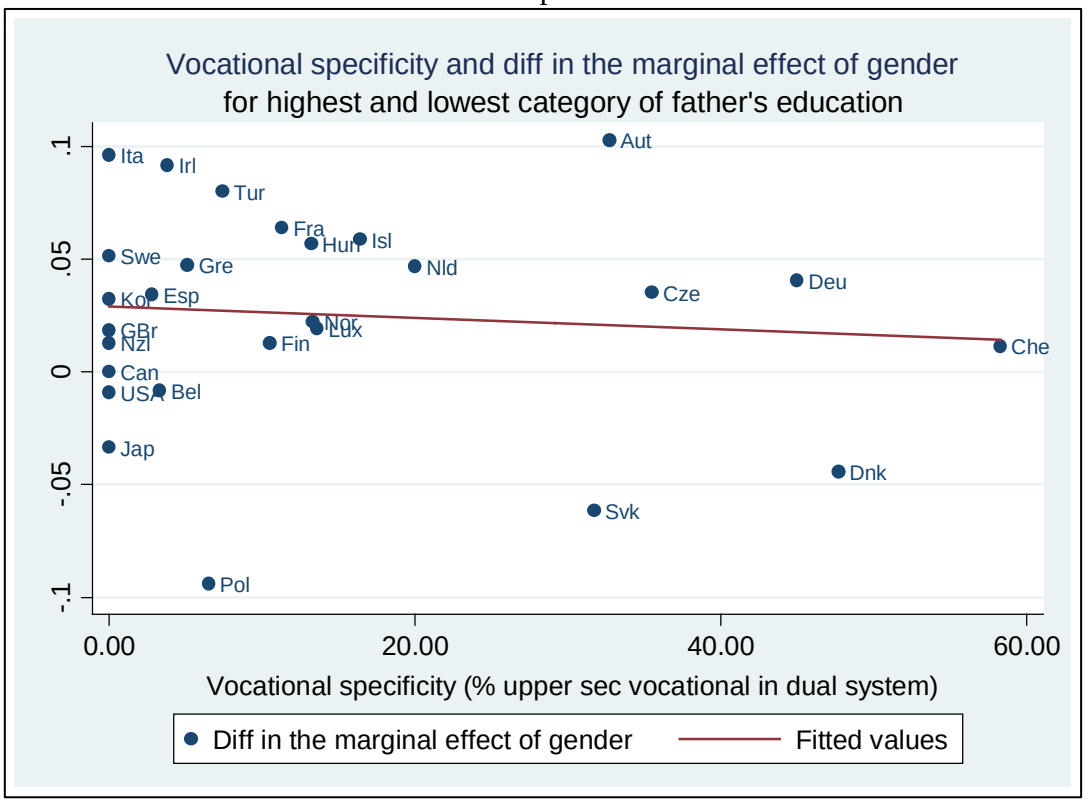
Graph 6



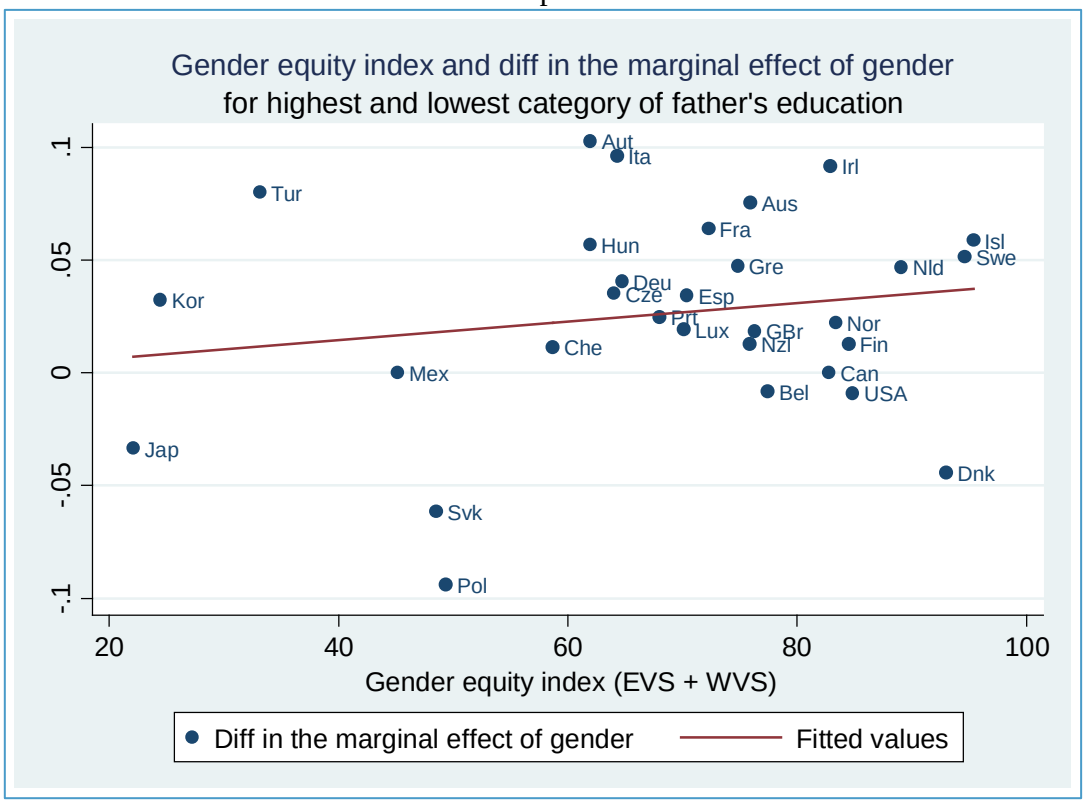
Graph 7



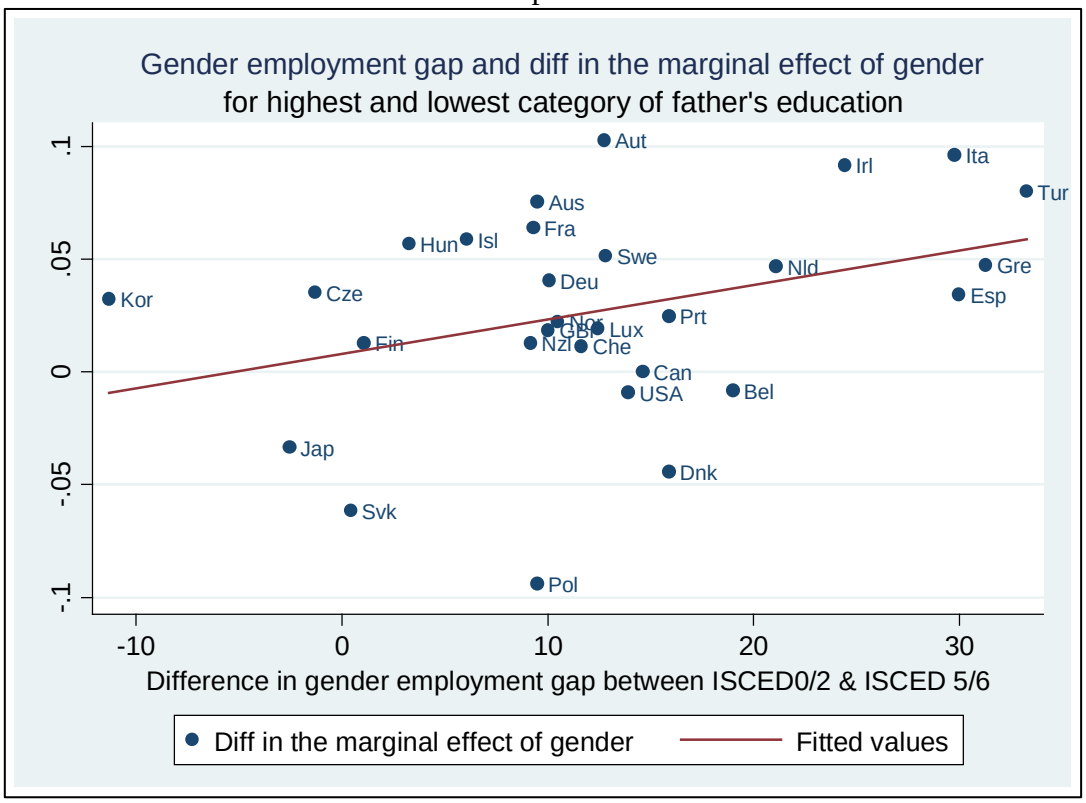
Graph 8



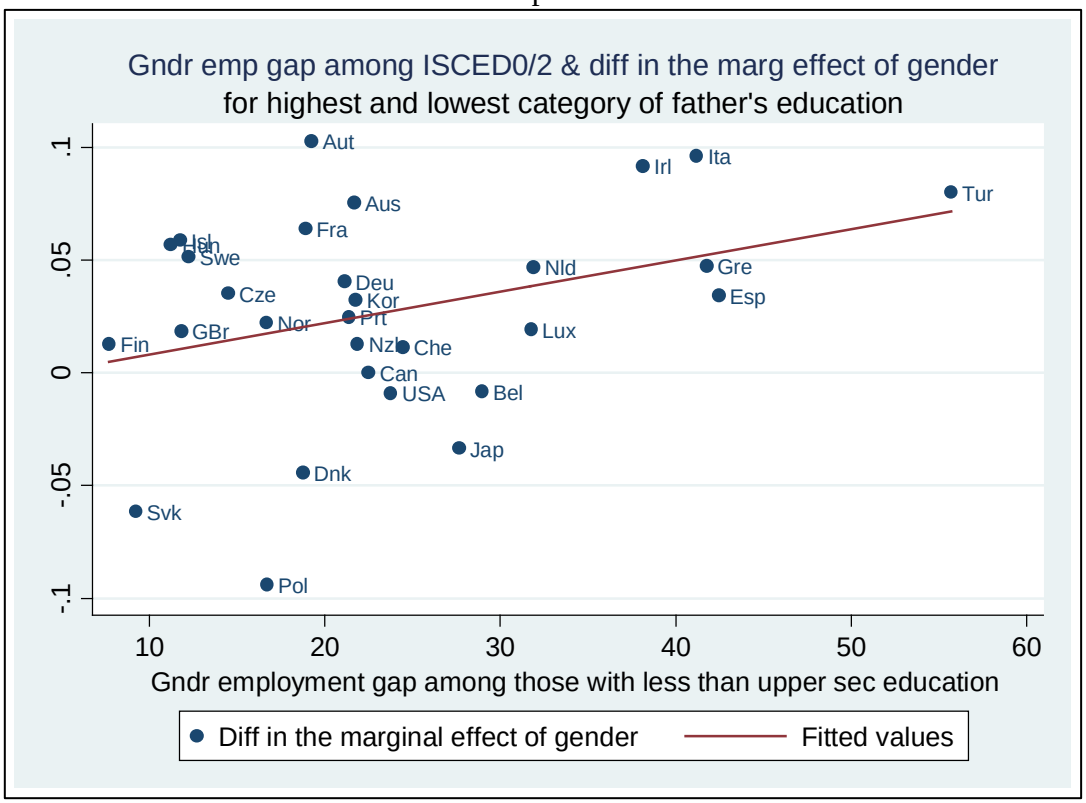
Graph 9



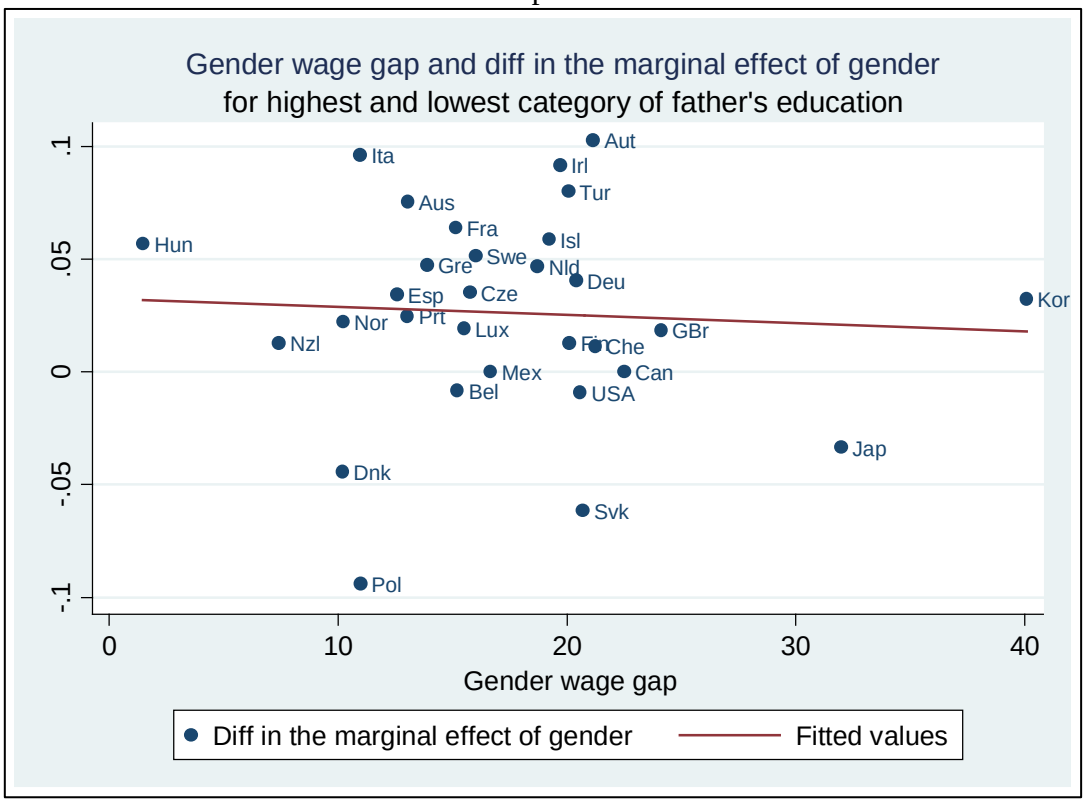
Graph 10



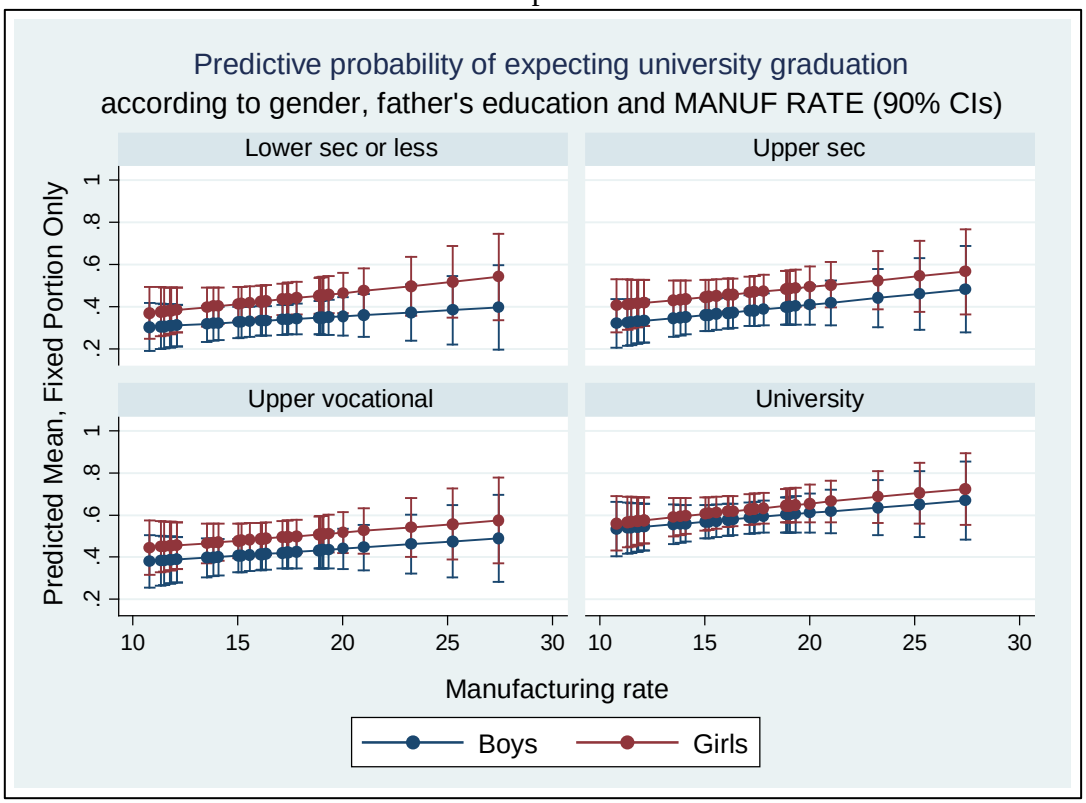
Graph 11



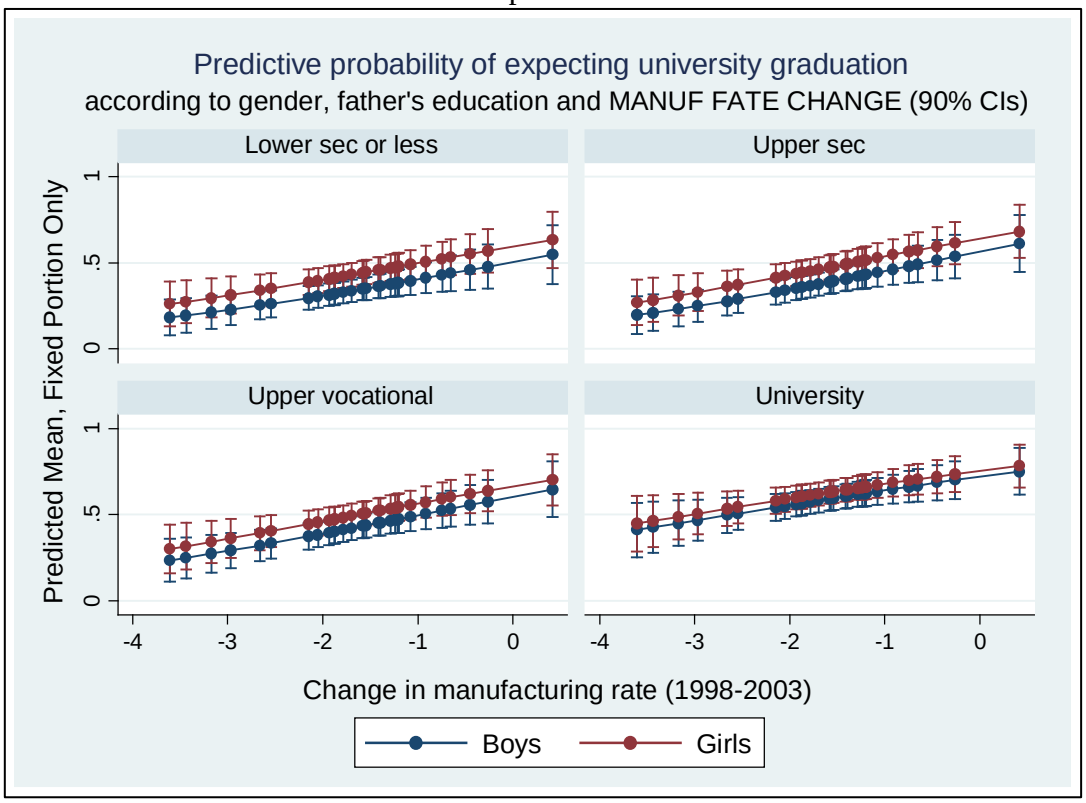
Graph 12



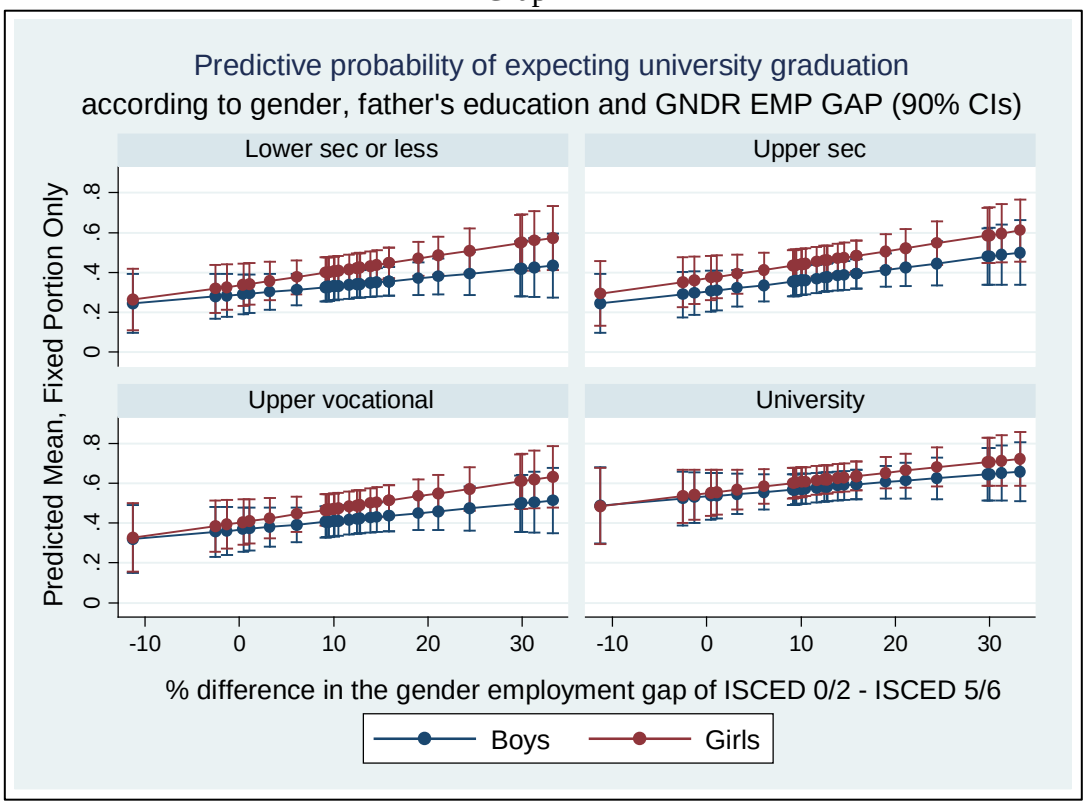
Graph 13



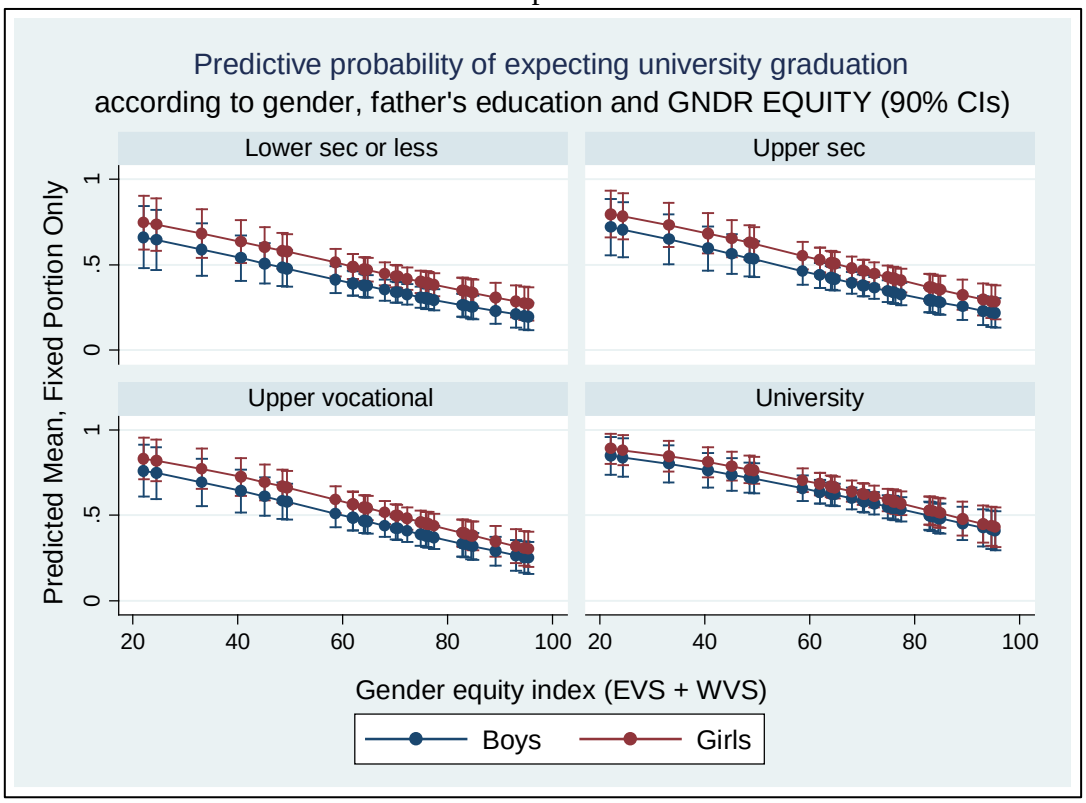
Graph 13 bis



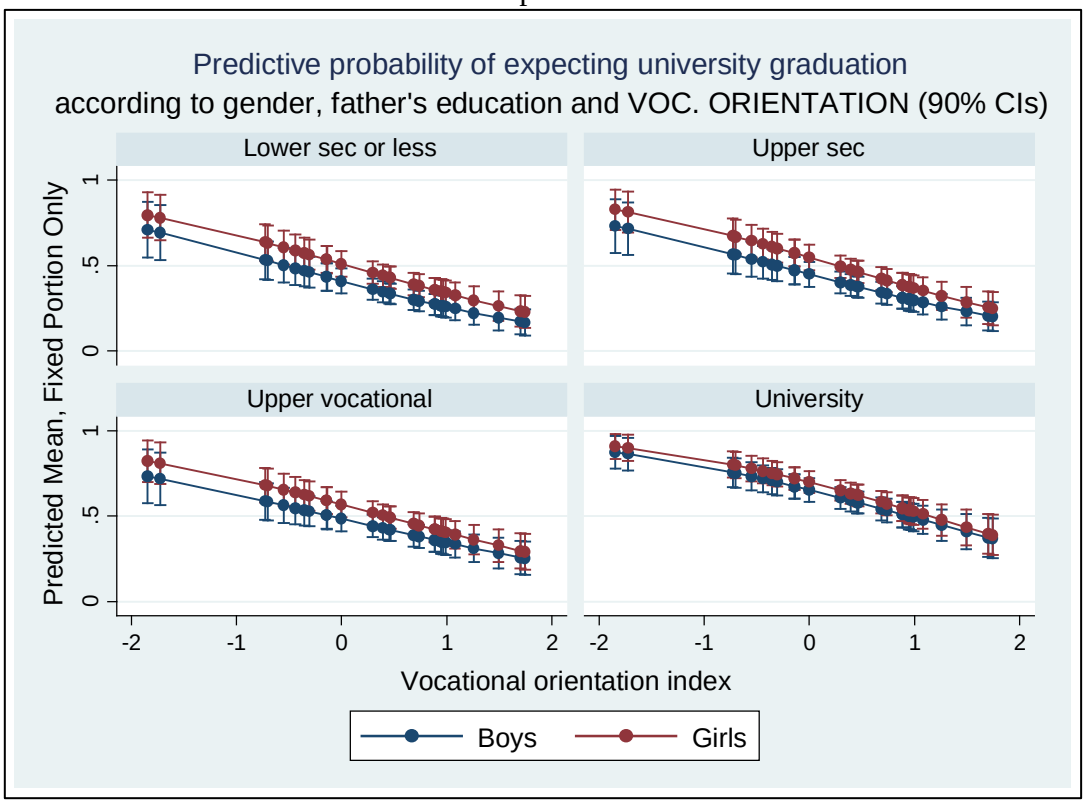
Graph 14



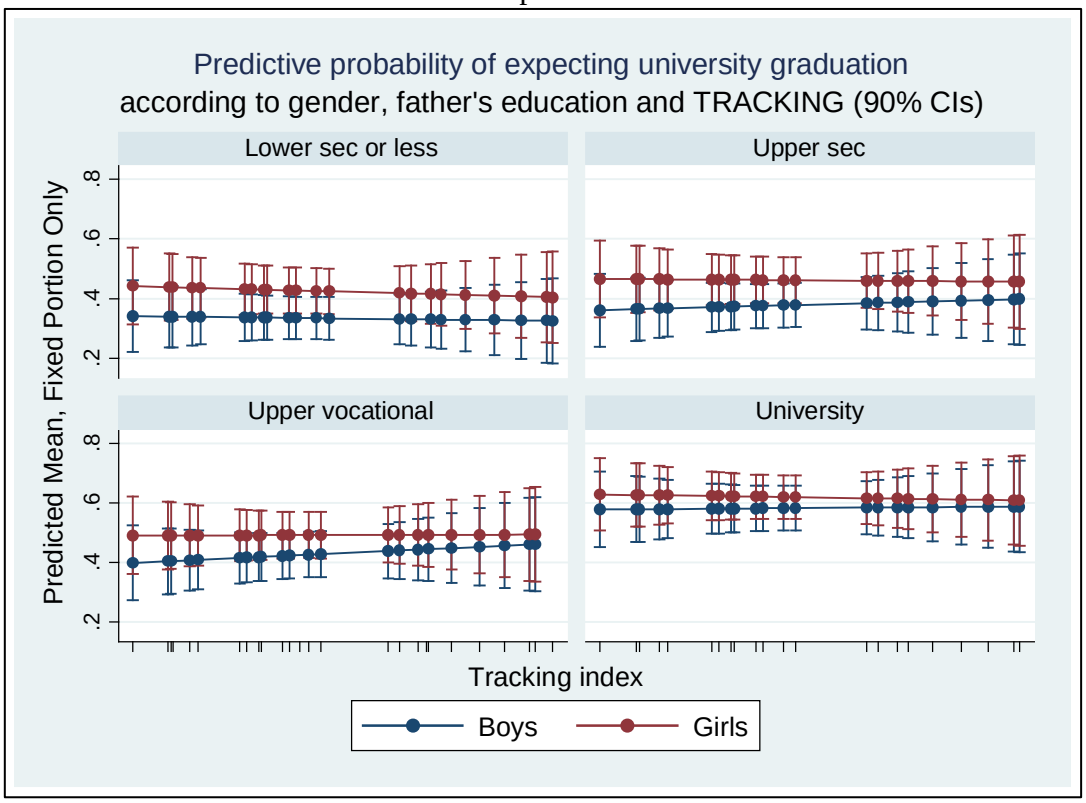
Graph 15



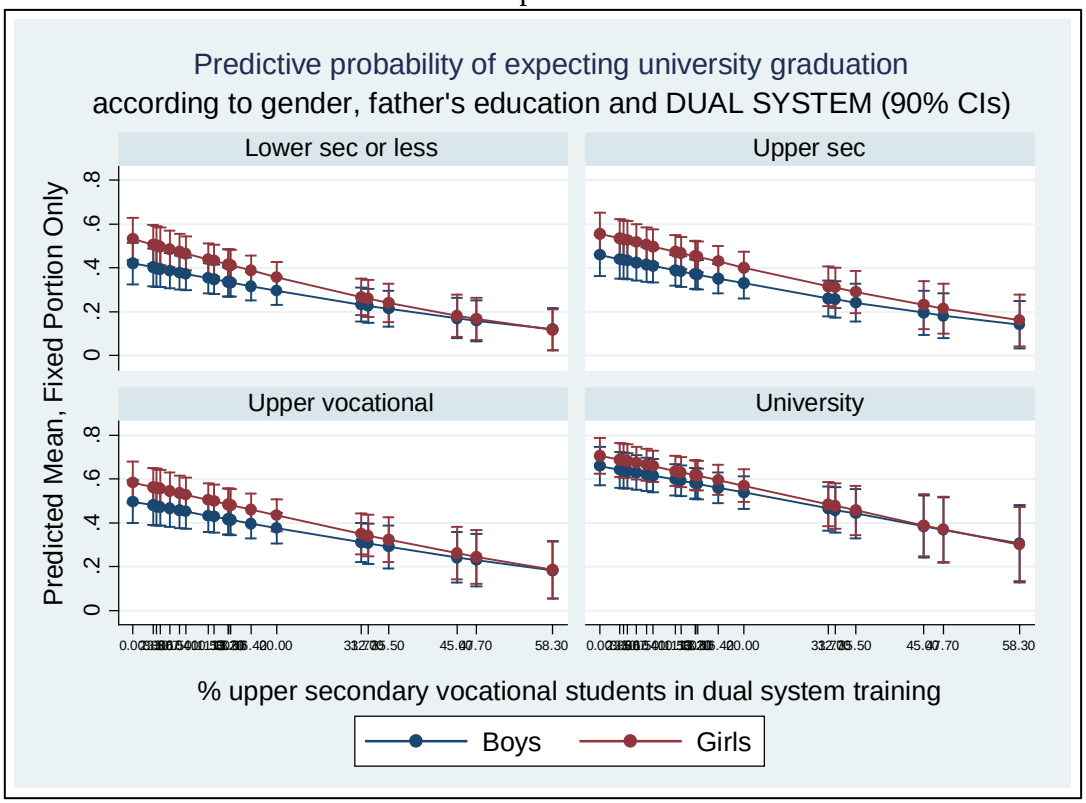
Graph 16.1



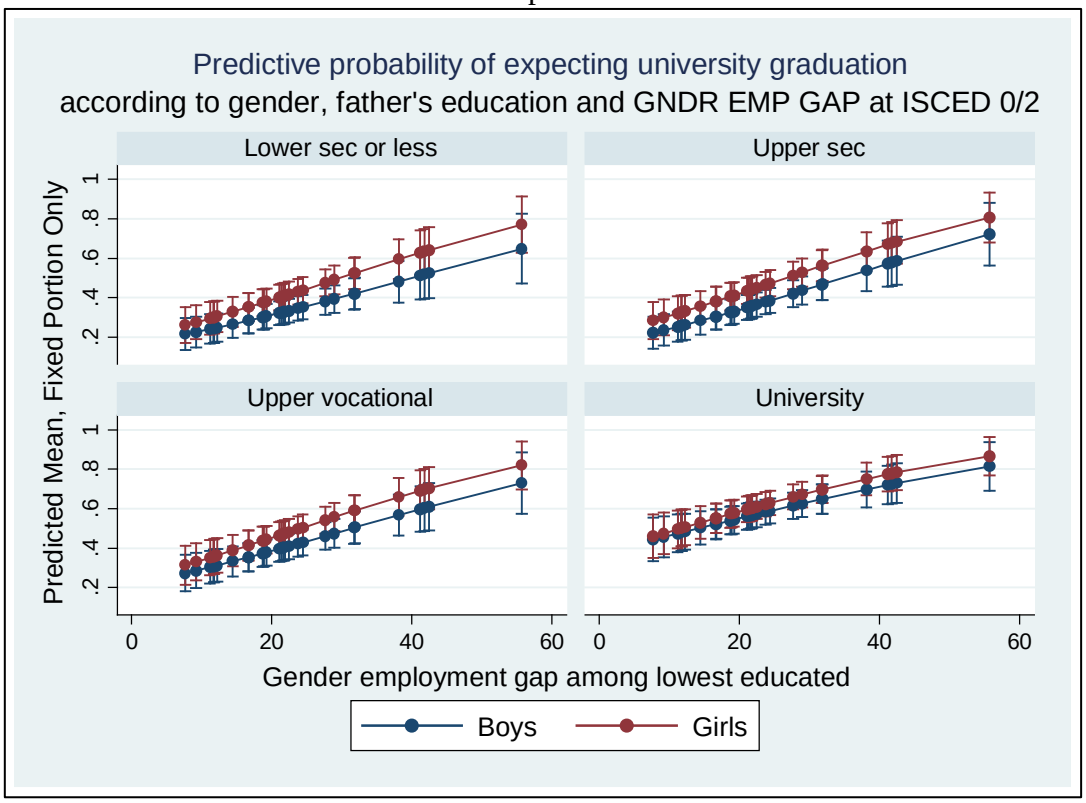
Graph.16.2



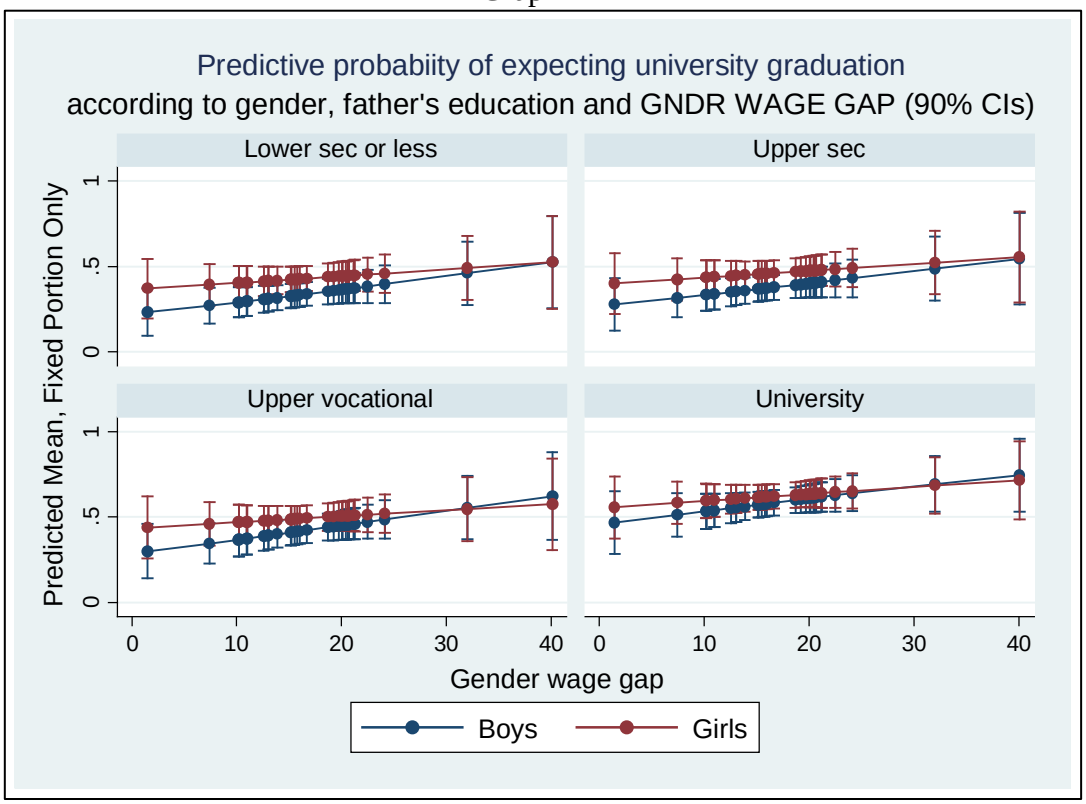
Graph 16.3



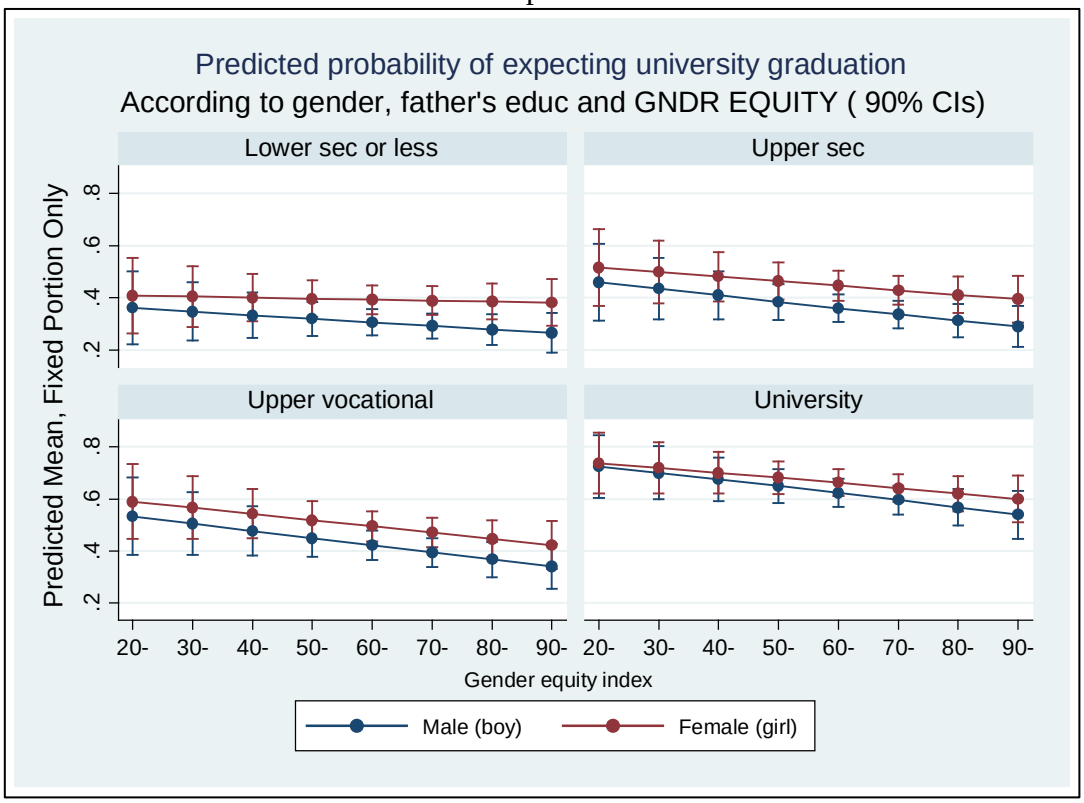
Graph A1



Graph A2



Graph A3


Predicted probability of expecting university graduation
According to gender, father's educ and GNDR EQUITY (90% CIs)
Lower sec or less
Upper sec
Upper vocational
University
Predicted Mean, Fixed Portion Only
.2
.4
.6
.8
20-
30-
40-
50-
60-
70-
80-
90-
Gender equity index
Male (boy)
Female (girl)

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