Borgna, Camilla; Struffolino, Emanuela

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Pushed or pulled?

Girls and boys facing early school leaving risk in Italy

Camilla Borgna (corresponding author)

WZB Berlin Social Science Center

Reichpietschufer 50 - 10785 Berlin, Germany

Phone: +49 30 25491 516   Fax: +49 30 25491 556

Email*: camilla.borgna@wzb.eu*

Emanuela Struffolino

WZB Berlin Social Science Center

1. Introduction

The phenomenon of dropout or early school leaving is worrisome, not only for its high economic costs in terms of wasted skills but also because it can exacerbate social inequalities. Students from low social strata run a greater risk of dropping out of school because their families are less equipped with economic, social, and cultural resources that can counteract school disengagement processes (Alexander, Entwisle, & Horsey, 1997; Chen & Gregory, 2009; Weihua Fan, 2012). Students who drop out of school and therefore enter the labor market without an upper-secondary qualification tend to experience difficulties in transitioning to their first job (Rumberger & Lamb, 2003; Solga, 2002), in later labor market integration (Gesthuizen, 2004; Gesthuizen & Scheepers, 2010; Vries & Wolbers, 2005), and in other life-course domains, such as health (Oreopoulos, 2007). Hence, early school leaving constitutes an additional penalty for students who are already disadvantaged by their socio-economic background.

Looking at gender differences in early school leaving, we encounter a more complex picture because neither boys nor girls can unequivocally be seen as the weaker group: while women still face labor market disadvantages in most industrialized societies, they have caught up to men in terms of educational attainment and, in many countries, even overtaken them (Buchmann, DiPrete, & McDaniel, 2008). Moreover, female students have long obtained higher grades than their male peers (Mickelson, 1989); they also display more positive attitudes towards school, and have higher educational aspirations (Schoon & Eccles, 2014).

Scholars who investigate the determinants of early school leaving distinguish between "push factors," which alienate students from the school system (Fine, 1986; Jordan, Lara, & McPartland, 1996), and "pull factors," such as the availability of work, which provide incentives for them to leave it (McNeal, 1997). Previous studies have shown that generally boys tend to drop out more frequently than girls do (Bradley & Renzulli, 2011; McNeal,

2011), but it is unclear whether these gender differences are driven by pull or push factors. On the one hand, the labor market might represent a more profitable alternative to school for boys than it does for girls. On the other hand, boys may be more vulnerable to push factors connected with academic failure.

In this article, we study gender differences in early school leaving by integrating insights from the gender inequality literature into the theoretical framework of push and pull factors. While much of our knowledge on the early school leaving dynamics comes from the American context, our contribution focuses on Italy, a typical Southern-European country characterized by problematic school-to-work transitions and by pronounced gender inequalities in the labor market. Early school leaving is a sizeable phenomenon in Italy: even in the youngest cohorts, almost 20% of students did not complete upper-secondary education (Eurostat, 2014). Among early school leavers, men outnumber women by three to two (OECD, 2015b). This is not surprising, given, on the one hand, the disproportionate concentration of boys among low-achieving students (OECD, 2015b, 2016) and, on the other hand, the aforementioned difficulties women face when competing with men in the labor market, especially in the access to low-skilled occupations (ISTAT, 2013). Yet, to our knowledge, gender differences in early school leaving in Italy have not been systematically investigated by any study.

Our analyses are based on two sources of nationally representative data: the *Participation, Labor, Unemployment Survey* (PLUS), which contains information on young cohorts as a whole, and the *Early School Leaving Dynamics Survey* (ESLD), a unique dataset on the educational trajectories of students with a poor scholastic performance. We empirically assess whether boys are more likely to drop out, i.e., to leave the educational system without an upper-secondary degree, and whether their weaker scholastic performance can explain these gender differences. Additionally, we investigate whether gender effects are homogenous or vary across different levels of school performance and parental education.

Finally, we combine the individual-level information with data on the 20 Italian regions: by exploiting the territorial fragmentation of the Italian labor market, we assess whether males' greater propensity to drop out can be explained by better relative opportunities in the local labor markets.

2. Theoretical framework and hypotheses

Gender, school performance, and dropout

During the last century, gender differences in educational attainment have changed fundamentally: for a long time, the educational careers of women were shorter than those of men, but starting with the cohorts born in the 1960s this pattern progressively disappeared and was even reversed in most industrialized countries (Barro & Lee, 2013; OECD, 2015b). In contrast, the female advantage in educational achievement has a longer history: girls tend to have higher grades than boys (Buchmann et al., 2008), and they did so even at times when men reached higher educational levels than women (Alexander & Eckland, 1974; Mickelson, 1989).

It is unlikely that the better scholastic performance of girls reflects superior cognitive endowments, since, while girls generally do better than boys in reading, they often do worse when it comes to mathematics and scientific skills (Marks, 2008; OECD, 2015b; Stoet & Geary, 2013). Instead, girls seem to be better equipped with a number of social and behavioral skills that have a positive impact on school performance (DiPrete & Jennings, 2012; Duckworth & Seligman, 2006; Fortin, Oreopoulos, & Phipps, 2013). They tend to be more self-disciplined and learning-oriented, while boys are more likely to display attention disorders and externalizing behaviors, resulting in a disruptive attitude in the classroom (Buchmann et al., 2008; Matthews, Ponitz, & Morrison, 2009). In addition, compared to boys, girls generally have more positive attitudes towards school and place more importance on academic success (Schoon & Eccles, 2014). Since grades reward not only achievement,

but also effort and classroom participation, such social and behavioral skills might benefit girls in two ways: first by facilitating their learning processes and second by raising teachers' assessments.

Grades play an important role in guiding students' transitions (Jackson, 2013; Stocké, 2007). In the early school leaving literature, low grades are considered a push factor contributing to students' estrangement from school (Bradley & Renzulli, 2011; Fine, 1986, 1991; Jordan et al., 1996; Stearns & Glennie, 2006; Stearns, Moller, Blau, & Potochnick, 2007). Grades are better predictors of dropout than standardized test scores, possibly because they are more visible signals for the students (Ensminger & Slusarcick, 1992; Stearns et al., 2007). Besides poor scholastic performance, other push factors include disciplinary issues, relational problems with teachers or peers, late coming, and feelings of being out of place in the school environment (Fine, 1986; Jordan et al., 1996). While these factors are clearly interrelated with achievement, they are independently associated to dropout (Bradley & Renzulli, 2011).

Our basic hypothesis is that *boys generally drop out of school more than girls do* (*H1*). Building on the above-mentioned literature on gender educational inequalities and on push factors of dropout, we develop the following hypotheses concerning prior scholastic performance. First of all, we expect *the higher propensity of boys to drop out to be partially explained by their lower grades* (*H2a*). Moreover, since girls tend to be more persistent and to have higher educational aspirations than their male peers, we expect them to be more resilient to academic failure as opposed to boys, whose more casual attitude towards school makes them "give up" more easily when faced with low grades. Therefore, our additional hypothesis concerning prior scholastic performance is that *among low-achieving students, the higher propensity to drop out displayed by boys compared to girls is even stronger* (*H2b*).

Gender, parental resources, and dropout

Dropout is often the culmination of a gradual process of disengagement in which family resources play a central role (Alexander et al., 1997; Chen & Gregory, 2009; Weihua Fan, 2012). In particular, high parental expectations and involvement are a protective element against push factors, such as low academic achievement or feelings of estrangement (McNeal, 1999). Parents can intervene by supplying encouragement and guidance, by helping with homework and monitoring, by talking to the teachers, by providing private tutoring, and so on. Middle-class parents tend to be more involved, not only because they have more informational and relational resources but also because they are more inclined to closely monitor their children (Lareau, 2003). Previous studies have extensively shown that the occupation and the educational level of the parents are important predictors of dropout (Rumberger, 2011). Indeed, parental behaviors and attitudes associated to a higher risk of dropout are strongly correlated with low social background (Britt Østergaard Larsen, 2014).

Boys might be particularly in need of parental support because, as we discussed above, they are more likely to experience both academic and relational difficulties at school. It follows that, when considering the possible interaction between gender and parental resources, we should expect socio-economic status (SES) to be particularly protective for males. Boys from high-SES families are more likely than boys from low-SES ones to get the support they need. In contrast, we can expect smaller differences between girls from high-SES and low-SES families, because on average girls will be less in need of additional support. Our third hypothesis is therefore that *among low-SES students, the higher propensity to drop out displayed by boys compared to girls is even stronger (H3).*

Gender, employment opportunities, and dropout

Besides push factors, like low achievement and disaffection from the school system, some scholars have argued that early school leaving might also be driven by pull factors. According to pull-out theories, students take into account the costs and benefits connected to remaining in school and compare them to their (perceived) alternatives out of school (Bradley

& Renzulli, 2011; McNeal, 1997; Stearns & Glennie, 2006). In particular, a major pull factor is the availability of jobs (Eckstein & Wolpin, 1999; Lee & Staff, 2007; Warren & Lee, 2003), especially in low-skilled occupations (McNeal, 1997; Rees & Mocan, 1997).

It has been argued that work as a pull factor is particularly strong for boys (Stearns & Glennie, 2006). Indeed, if girls have a harder time in transitioning to the first job, the opportunity cost of leaving school might be higher for them than for boys. Moreover, girls may anticipate the future discrimination on the labor market and try to compensate for it with more education (Dieckhoff & Steiber, 2011). We therefore expect *the higher propensity of boys to drop out to be partially explained by their relative advantage in the labor market compared to girls* (*H4*).

3. The Italian case

Education system

The Italian educational system is characterized by two cycles of comprehensive and compulsory schooling, followed by a tripartite upper-secondary system. Pupils typically enter primary school (*scuola elementare*) at age six, and after five years they move to lower-secondary schooling (*scuola media*), which lasts three years and takes place in a comprehensive setting. At the end of grade eight, students take a national exit exam that grants a lower-secondary educational degree. This typically marks the end of compulsory schooling, which is set at 14 years[1]. After that, students can formally leave the school system, although a great majority of them enroll in upper-secondary education (Contini & Scagni,

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[1] During the brief period between the school years 1999/2000 and 2002/2003, the age of compulsory schooling was raised to 15, so that every student would spend at least one year in upper-secondary schooling. However, the extent to which this reform was successfully implemented is questionable (Raimondi, 2014).

2013). Those who continue school are tracked into a tripartite system of fully academic (*licei*), technical (*istituti tecnici*), and vocational schools (*istituti professionali*). Track choice is left to the students and their families, since teachers' recommendations at the end of grade eight are not binding. The association between social background and school track is strong (Checchi & Flabbi, 2007; Contini & Scagni, 2011), also when controlling for previous scholastic achievement (Contini & Scagni, 2013). Academic and technical schools last five years; in grade 13, students take a track-specific national exit exam that leads to an upper-secondary degree. In vocational schools, the upper-secondary degree also requires attendance for five years; however, in this track students also have the opportunity to attain an intermediate degree after three years[2]. Traditionally, only academic tracks gave access to university, while technical and in particular vocational schools were meant as a transition towards the labor market. However, since 1969 the access to university has been liberalized, so that, irrespective of the track type, every individual with a five-year upper-secondary degree can enroll in university.

The Italian school system is highly standardized. Educational curricula are set at the national level, as are budget allocations to schools and regulations for teachers' training, hiring, and career progression, while the private sector is residual. Despite this institutional standardization, students in the South lag behind those in the northern and central regions of the country, both in terms of educational achievement (Bratti, Checchi, & Filippin, 2007) and attainment (Ballarino, Panichella, & Triventi, 2014). According to Bratti, Checchi, & Filippin (2007) such territorial gaps reflect differences in family resources, school infrastructures, and socio-economic environments, in particular with respect to employment opportunities in the regular sector.

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[2] The possibility to obtain a three-year diploma was abolished in 2010, but this reform is not relevant for the birth cohorts analyzed in this paper.

Traditionally, vocational training did not play a big role in the Italian educational system. However, since the early 2000s investments in vocational training targeting young people have grown, partly as a strategy to tackle early school leaving. Vocational training programs, offered by both public and private agencies, are open to students after grade eight as an alternative to formal schooling. The distinctive trait of vocational training is its strong labor-market orientation: compared to vocational schools, it lacks a general instruction component, it lasts two to three years only, and its certificates do not grant access to university.

Early school leaving

The incidence of early school leaving in Italy is higher than in most other European countries. This phenomenon has steadily declined during the 1990s and 2000s, but its magnitude is still alarming: according to the most recent Eurostat's estimates, 18% of the Italian population aged 18 to 24 have not obtained an upper-secondary qualification, including certificates from vocational training. Among the European Union countries, only Spain (25%), Malta (23%), and Portugal (21%) display higher rates of early school leavers (Eurostat, 2014).

Despite its relevance, early school leaving has not been a primary focus of interest for scholars analyzing educational transitions in Italy, possibly due to the lack of suitable data. Indeed, among the few praiseworthy works exploring the determinants of dropout, two rely on self-collected or local data sources (Fiorio & Leonardi, 2010; O'Higgins, D'Amato, Caroleo, & Barone, 2008), and only one uses nationally representative data (Mocetti, 2012). In accordance with the international literature, all studies find evidence for a strong role of family resources. Focusing on a southern province, O'Higgins et al. (2008) find that low parental education is the strongest predictor of dropout. The probability of abandoning school is also positively associated with financial constraints in the family of origin, measured either

as household income (see Fiorio & Leonardi, 2010, who analyze data from a northern province) or as having an unemployed father (Mocetti, 2012). Another common finding is that girls are less likely to drop out than boys, though not always significantly (O'Higgins et al., 2008). Ballarino, Bison, & Schadee (2011) show that, for the cohorts born between the 1930s and the 1980s, dropout rates are generally higher for men than for women. Moreover, the historical trends of male dropout from high school are more volatile than female dropout rates, which the authors interpret as a sign that boys are more likely to drop out for economic reasons and therefore more subject to the business cycle.

Labor market

The Italian labor market is characterized by low rates of female participation (OECD, 2014). A wide range of research shows that, net of educational qualification, women are disadvantaged compared to men both in terms of contract duration (Barbieri, 2009; Reyneri, 2011) and wages (Barbieri & Cutuli, 2010; Raitano & Struffolino, 2013).

Youth unemployment has sharply increased with the current economic crisis, but it was comparatively high also before, reaching 22% in 2007 (OECD, 2015a). In particular, not having obtained any kind of upper-secondary qualification represents a serious drawback for young people: lower educated youth experience more volatile employment trajectories (Struffolino & Raitano, 2013) and they are disadvantaged in the long run in terms of both future wages and career perspectives (Schizzerotto, 2002). This is particularly true for young women[3].

Due to the long-lasting differences in the economic and labor market systems across regions, Italy has been defined as a two-speed country: employment rates and female

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[3] Young women are more likely to be unemployed than men with the same level of education, especially among low-educated individuals (own analyses on 25–34-year-old, source: OECD (2013), Indicator A5, Tables A5.4c and A5.4d).

participation are higher in the northern regions (Contini & Trivellato, 2005). This polarization particularly affects the younger workers (ISTAT, 2013), who face stronger barriers than older workers to find core jobs (Reyneri, 2011).

In contrast to other European countries, in Italy employment in the informal economy is substantial, reaching the 12.2% of the national employment rate. Estimates vary from 8.9% in the North, 11.9% in the Center, and 18.5% in the South and Islands (ISFOL, 2007). The presence of women among workers employed in the informal economy is stronger in the North (64%) than in the South (32%) and the Center (50%).

4. Data, variables, and methods

Data

The first data source is the *Participation, Labour, Unemployment Survey* (PLUS) conducted by the Italian national research institute for vocational training (ISFOL) (see Mandrone, 2012; Mandrone, Corsetti, & Spizzichino, 2015). The waves collected in 2010 and 2011 (CATI interviews) include data on a wide range of individual- and family-related information, as well as on scholastic performance at the end of lower-secondary school. PLUS has a complex survey design based on a probabilistic sampling stratified by region, type of municipality (metropolitan/non-metropolitan), sex, employment status, and age (Corsetti & Mandrone, 2012). Young people represent one of the target populations of the survey, which permits the study of relatively rare phenomena: thus, the dataset is more suitable than others, such as the Labor Force Survey, for studying school dropout. We pooled waves 2010 and 2011 together and selected the subsample of individuals aged 18 to 20 at the time of the interview (N=5,233). Although the data do not allow us to determine the exact year of dropout, the selected age group passed the age limit for compulsory schooling between 2004 and 2007 and the limit for compulsory education (including vocational

training) between 2006 and 2009. This is important because it sets up an observation window before the 2008 financial crisis hit the Italian labor market.

The second data source is the *Early School Leaving Dynamics Survey* (ESLD) that was also conducted by ISFOL in 2011 (ISFOL, 2012). This unique dataset targets individuals considered at risk of early school leaving due to their poor scholastic performance. The sample includes boys and girls who: (i) were born in 1991 (aged 19–20 in 2011) and (ii) either obtained a very low grade in the exit exam from lower-secondary school in 2005 or repeated one or more years during lower-secondary school. In this case, the complex survey design is based on a probabilistic sampling stratified by region and size of the municipality. The final sample (N=1,508 CAPI interviews) is therefore representative on a regional as well as national level of the low-achieving students born in 1991. ELSD surveys individuals from the same birth cohort as the subsample we selected from PLUS, and its larger sample size allows us to test additional hypotheses by including local labor market variables in our models (see below).

To ensure representativeness, we applied sampling weights following the procedure recommended by ISFOL (Corsetti and Mandrone, 2012; ISFOL, 2012).

Variables and methods (i)

In the first analytical phase, we dealt with hypotheses 1, 2a, 2b, and 3 by running a set of binomial logistic regression models on PLUS. To strengthen the robustness of the results on low-achieving students (i.e., those more at risk of dropout), we repeat the same analyses on ESLD.

Dependent variable. For both PLUS and ESLD datasets, dropout was operationalized as a dummy variable that identifies individuals (i) who never enrolled in any upper-secondary

school/vocational training or (ii) who enrolled but quit before getting an upper-secondary degree, including vocational certificates[4].

Independent variables. The main independent variable is gender. We test the presence of gender effects and their heterogeneity by previous scholastic performance and parental education. In the analyses based on PLUS data, scholastic performance was operationalized with a categorical variable measuring the exit-exam grade at the end of lower-secondary education (excellent, very good, good, and pass). Given the target of ESLD, gender effects based on these data refer to low-achieving individuals only. To operationalize parental resources, we constructed a categorical variable measuring the highest educational level attained by any parent (lower-secondary, upper-secondary, or tertiary education)[5].

Control variables. The models on both datasets control for geographical area (North-West, North-East, Centre, as well as South and Islands). In the analyses based on PLUS we additionally control for survey year (2010 and 2011)[6]. The distribution of the dependent, independent, and control variables for both datasets is presented in Table 1. The dropout rate is considerably larger in the ESLD sample compared to the PLUS sample: this supports the assumption that low achievers experience higher risk of dropout. Furthermore, while in PLUS the sample is equally distributed across gender, in ESLD boys are overrepresented, consistently with the fact that boys have a lower scholastic performance. Finally, in line with the influence of parental education on achievement, compared to PLUS, ESLD includes a larger proportion of students whose parents only hold a lower-secondary education degree.

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[4] This choice is driven by sample sizes concerns. While such definition encompasses two potentially different processes of early school leaving, robustness checks on the restricted sample of those who dropped out after enrollment produce results consistent with those on the whole sample (available upon request).

[5] For the analyses on PLUS, we imputed the missing values (7.7% of the sample) for parental education by using the multiple imputation *mi* command in STATA (Royston, 2007; StataCorp, 2013). The 100 imputations were run by using variables included in our models and according to the sequential imputation procedure using chained equations. According to role modeling theories, mother's education should be particularly important for daughters, and father's education for sons (Rosen & Aneshensel, 1978). Therefore, we additionally estimate models that distinguish between mother and father's highest educational level. However the results (available upon request) do not vary substantially.

[6] We did not add migration status as a control because in PLUS data very few individuals (42 out of 5,233) are migrants, while ESLD only targets native Italians.

Additional descriptive statistics of dropout by gender and the aforementioned control variables in the two datasets are reported in Tables A1-4 in the Appendix.

The results from all regression models will be presented as average partial effects (APE) (Long & Freese, 2014; Wooldrige, 2002), which can be interpreted as the average difference in the probability of interest between two categories, net of the other variables the model controls for (Long, 1997)[7].

Variables and methods (ii)

In the second analytical phase, we addressed hypothesis 4 stating that boys drop out more than girls because they have more opportunities in the labor market[8]. An empirical limitation exists when one wants to test this hypothesis directly[9]: all sectors and occupations formally grant equal employment opportunities to men and women, and thus gender differences in the share of jobs available are not detectable by looking at job demand but can only be assessed indirectly after the job matching occurred. Moreover, looking at gender differentials in employment rates might be misleading in the Italian case, because of the sizable share of the informal sector. In fact, the demand for low-skilled employment is higher in the informal labor market, which also constitutes an "immediate" channel for getting a job for underage individuals, who cannot be employed legally. Hence, employment opportunities in the informal sector may represent an important pull factor for students at risk of dropping out. We therefore consider gender differences in unemployment rates and in employment rates in the informal sector. The regional variation of both indicators allows us to indirectly

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[7] The post-estimation analyses were performed by using the *margins* command of the SPost13 Stata package (Long & Freese, 2014).
[8] Following Stearns & Glennie (2006), an additional pull factor responsible for gender differences in dropout behavior could be family formation. Indeed, in Italy marriage still represents an alternative to employment as channel of social mobility for women, both in terms of status and disposable income (Ballarino, Bison, & Schadee, 2011). However, robustness checks on ESLD show that very few individuals got married shortly after dropping out (seven girls and five boys out of 574), although we cannot exclude that this potential opportunity plays a role in girls' decisional processes. Teenage parenting is a residual phenomenon in our sample (four girls and no boys). Indeed, unlike the US and other European countries, Italy scores very low (0.4%) on women fertility rate between 15 and 19 (World Bank, 2015).
[9] ESLD data comprises the self-reported motivations for having dropped out, including work-related reasons. However, this information is collected several years after the event and is likely to be affected by rationalization processes.

test our hypothesis. In particular, we expect gender differences in dropout to be higher in regions where women have higher unemployment rates compared to men, as well as in regions where the informal sector employs more men than women.

For this second analytical step, we estimated a set of logistic regression models to examine the relation between gender differences in dropout probability and the variation across the 20 Italian regions in gender gaps in: (i) the youth unemployment rate and (ii) the share of employment in the informal sector (see below for details). We computed the main average partial effects (APE) and the interaction terms of the variables of interest (Long & Freese, 2014)[10]. We restricted these analyses on the ESLD data, because the sample size of individuals at risk of dropping out is larger than in PLUS.

Dependent variables. In this case too, the dependent variable is the probability to drop out, operationalized as explained above.

Independent variables. Two independent variables are considered: (i) the gender gap in the youth unemployment rate (min. -0.4, max. 19.4, mean 6.3)[11]; and (ii) the gender gap in the share of informal employment over the total employment rate (min -12.5, max 19.1, mean 3.3)[12].

The distribution of the independent variables is shown in Table A5 in the Appendix.

Control variables. The cross-sectional nature of data does not allow us to rule out the possibility that other sources of regional differences confound the relation between our three indicators and gender differences in dropout. To deal with this issue, the models include

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[10] We estimated the interaction effects as multiplicative effects as robustness check to control for differences between the groups in baseline odds (Buis, 2010). The estimates are consistent with those expressed as marginal effects. Results are available upon request.

[11] Computed as the difference between the unemployment rates of 15–24 year-old women and men, averaged for 2006-2008. This time frame corresponds to the period when the individuals surveyed in ESLD were at risk of dropout. The index was computed based on data from the Labor Force Survey (ISTAT, 2015).

[12] Computed as: $\frac{FI_j}{FT_j} - \frac{MI_j}{MT_j}$ where, for each region j, FI_j and MI_j are the employment rates in the informal sector of females and males, respectively, while FT_j and MT_j are their total employment rates. The index was computed based on data from an *ad hoc* report on gender differences in the informal sector across Italian regions (ISFOL, 2007).

macro-area fixed effects (North-West, North-East, Centre, and South and Islands)[13].

	PLUS	ESLD
Gender		
Boys	50.5	55.9
Girls	49.5	44.1
Dropout		
No	85.5	59.4
Yes	14.5	40.6
Area		
North-West	22.9	16.3
North-East	17.5	18.2
Center	18.5	14.7
South and Islands	41.1	50.8
Highest parental education		
Lower-secondary	31.7	53.3
Upper-secondary	45.0	38.9
Tertiary	14.7	7.8
missing	8.6	-
Previous achievement		
Excellent	23.9	-
Very good	30.5	-
Good	26.9	-
Pass	18.7	-
Year of the survey		
2010	58.8	-
2011	41.3	-
Sample size	*5,233*	*1,508*

Table 1 Distribution of the dependent and independent variables (weighted). Source: PLUS waves 2010–2011, and ESLD 2011. Authors' calculations.

6. Results and discussion

Gender differences in early school leaving, previous achievement, and parental education

In the first analytical phase, we tested whether boys are less likely than girls to drop out from upper-secondary education and assessed the extent to which these effects are mediated by previous scholastic performance. Results from the logistic regression models estimated on PLUS are displayed in Table 2.

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[13] Results are also robust in terms of an alternative model specification (available upon request) where we control for the regional availability of vocational training agencies.

	PLUS									
	Model 1a		Model 2a		Model 3a		Model 4a		Model 5a	
	APE	c.i. min / max	APE	c.i. min / max	APE	c.i. min - max	APE	c.i. min - max	APE	c.i. min - max
Gender										
Boys (ref.)	0	–	0	–	0	–	0	–	0	–
Girls	–0.096	–0.106 / –0.086	–0.074	–0.083 / –0.065	–0.078	–0.087 / –0.069	–0.045	–0.072 / –0.018	–0.063	–0.091 / –0.035
Previous achievement										
Excellent (ref.)			0	–	0	–	0	–		
Very good			0.044	0.032 / 0.056	0.047	0.036 / 0.058	0.040	0.004 / 0.076		
Good			0.117	0.105 / 0.130	0.116	0.104 / 0.128	0.063	0.028 / 0.099		
Pass			0.210	0.196 / 0.224	0.209	0.196 / 0.223	0.130	0.086 / 0.173		
Highest parental education										
Lower secondary (ref.)							0	–	0	–
Upper secondary							–0.147	–0.185 / –0.109	–0.170	–0.209 / –0.131
Tertiary							–0.172	–0.216 / –0.129	–0.204	–0.245 / –0.163
Girls vs. Boys by previous achievement										
Excellent										
Boys (ref.)					0	–	0	–		
Girls					0.035	0.018 / 0.052	-0.016	–0.065 / 0.032		
Very good										
Boys (ref.)					0	–	0	–		
Girls					0.010	–0.005 / 0.025	0.005	–0.049 / 0.060		
Good										
Boys (ref.)					0	–	0	–		
Girls					–0.166	–0.183 / –0.149	–0.049	–0.097 / –0.001		
Pass										
Boys (ref.)					0	–	0	–		
Girls					–0.186	–0.206 / –0.166	–0.146	–0.214 / –0.077		
Girls vs. Boys by highest parental education										
Tertiary										
Boys (ref.)									0	–
Girls									-0.028	–0.070 / 0 .015
Upper secondary										
Boys (ref.)									0	–
Girls									–0.055	–0.087 / –0.023
Lower secondary										
Boys (ref.)									0	–
Girls									–0.091	–0.158 / –0.025
N.	5,233		5,233		5,233		5,233		5,233	

Table 2 Binomial logistic regression models for the analysis of the probability of dropout according to gender: average partial effects (APE) and 95% confidence intervals. All models control for wave and geographical area. Source: PLUS waves 2010–2011. Authors' calculations.

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The baseline model (1a) shows that girls are significantly less likely than boys to drop out from secondary schooling (-9.6 percentage points). When we control for previous scholastic performance (model 2a), the gender difference decreases to -7.4 percentage points but remains significant, meaning that gender holds as strong predictor of dropout net of achievement. Our results show that the lower the grade obtained at the end of lower-secondary school, the higher the probability of dropping out, which increases by 21 percentage points (model 2a) between the highest grade ("excellent") and the lowest grade ("pass"). Hence, poor achievement is in itself a strong predictor of dropout and estimates from model 3a reveal that this is especially the case for boys. Likewise, gender effects vary across levels of scholastic performance, being higher among low-achieving boys and girls ("pass") compared to among higher achievers. These results hold even after controlling for parental education (model 4a). Even after controlling for previous achievement and parental education, girls still display a lower probability of dropping out compared to boys (-7.8 and -4.5 percentage points in model 3a and model 4a respectively).

Finally, we considered whether gender effects vary across different levels of parental education. In models 5a the gender gap is smaller between offspring of university graduates (-2.8 percentage points) and increases among the kids whose parents only hold an upper- and a lower-secondary degree (-5.5 and -9.1 percentage points respectively). It is worth noticing that low parental education itself is a strong predictor of dropout: children of parents with upper-secondary education are less likely to drop out than children of parents with lower-secondary education by 17 percentage points, and the difference is even larger between the latter category and the children of parents with tertiary education (-20 percentage points).

Figure 1a and 1b clearly show the interaction between gender and grades and gender and parental education respectively: as we move from poor to better grades and from lower to higher parental education, gender differences become smaller and reach insignificance.

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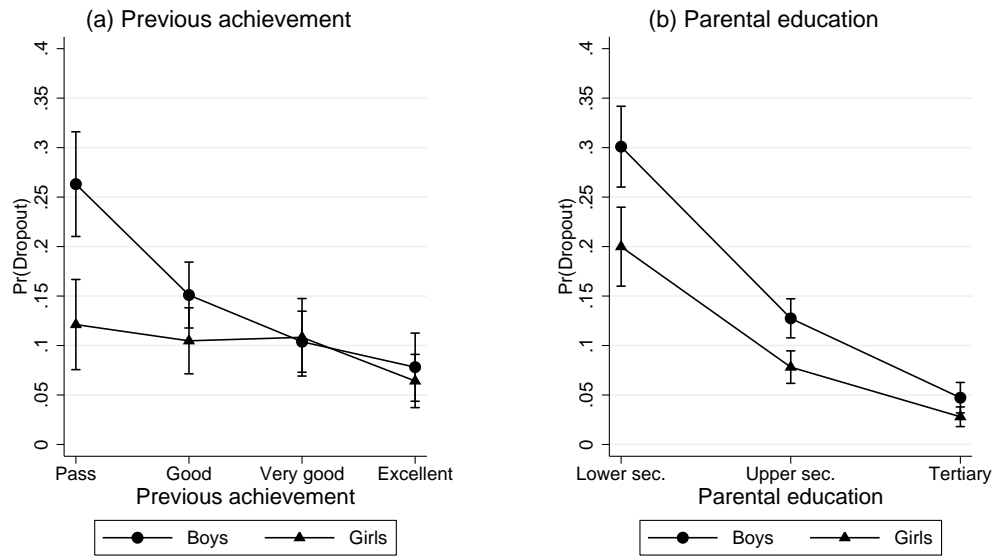
Figure 1 Probability of dropout according to (a) gender and previous achievement and (b) gender and parental education: average partial effects (APE) and 95% confidence intervals. Estimates from model 4 (a) and model 5 (b) in Table 2.

Table 3 shows the results from logit regression models estimating gender differences in the probability of dropout among low-achieving students. The sample size of low achievers is larger in ELSD than in PLUS, therefore these models offer further evidence on this category of students.

Our basic model (model 1b) shows that girls have a lower probability of dropout than boys (-9.2 percentage points). Since, as noted in Table 1, girls are underrepresented in the sample of low-achieving students, gender differences might hide compositional effects by parental education. Thus, in model 2b we additionally control for parental education. Yet, gender effects do not change in size or in significance. When we look at the interaction between gender and parental education in model 3b, gender differences are statistically significant only among the offspring of medium and lower educated parents. These findings are consistent with results from PLUS (model 5a in Table 2). Moreover, similarly to what we found on PLUS, among low achievers, offspring of medium- and highly-educated parents

have a -26 and -41 percentage point lower probability of dropping out than children of low

educated parents.

	ESLD					
	Model 1b		Model 2b		Model 3b	
	APE	c.i. min / max	APE	c.i. min / max	APE	c.i. min / max
Gender						
Male (ref.)	0	–	0	–		
Female	–0.092	*–0.149 / –0.036*	–0.095	*–0.149 / –0.040*	–0.090	*–0.144 / –0.036*
Highest parental education						
Lower secondary (ref.)			0	–		
Upper secondary			–0.261	*–0.320 / –0.202*	–0.322	*–0.381 / –0.263*
Tertiary			–0.411	*–0.496 / –0.326*	–0.496	*–0.578 / –0.413*
Girls vs. Boys by highest parental education						
Tertiary						
Boys (ref.)						
Girls					–0.017	*–0.160 / 0.127*
Upper secondary						
Boys (ref.)						
Girls					–0.120	*–0.205 / –0.035*
Lower secondary						
Boys (ref.)						
Girls					–0.081	*–0.161 / –0.002*
N.	*1,508*		*1,508*		*1,508*	

Table 3 Binomial logistic regression models for the analysis of the probability of dropout according to gender: average partial effects (APE) and 95% confidence. All models control for geographical area. **Source: ESLD 2011. Authors' calculations.**

To sum up, we find that boys are overall more likely to drop out than girls (*H1*) and

that this gender effect is partially ascribable to boys' worse scholastic performance (*H2a*).

Moreover, gender differences are particularly strong among low-achieving students, while

they become smaller or even close to zero among students with high grades. This finding,

which also holds after controlling for parental education, indicates that girls are more resilient

to academic difficulties (*H2b*). Additionally, while no gender differences exist in the

probability of dropout among sons and daughters of highly educated parents, strong gender

effects emerge among students whose parents did not attain tertiary education. In particular,

in families where neither parent holds an upper-secondary degree, boys are substantially

more likely to drop out than girls (*H3*). This finding is in line with previous literature on

gender inequalities, indicating that the female advantage on a number of educational

outcomes is stronger among students from less privileged backgrounds (Alexander, Entwisle,

Thompson, & Maxine, 2003; Deslandes, Bouchard, & St Amant, 1998; Entwisle, Alexander, & Olson, 2007; Mensah & Kiernan, 2009).

Gender differences in dropout and labor market opportunities

In the second analytical phase, we used ESLD data to test the two implications of hypothesis 4, which argued that gender differences in dropout can be explained by the different opportunities men and women have in the labor market. As mentioned above, due to its bigger sample size compared to PLUS, ESLD allows us to exploit the internal geographical differentiation of the Italian labor market.

Figure 2(a) displays the relative probability of dropout for girls compared to boys (y-axis) at different levels of gender gap in the unemployment rate (x-axis). Boys are more likely to drop out than girls only in regions where female unemployment rate exceeds males' by 6% or more. However, we cannot detect any significant difference in the gender effects on dropout across different levels of unemployment gender gaps. Similarly, Figure 2(b) shows gender differences in dropout behavior are significant only in regions where men are more likely to be informally employed than women over the total employment rate for each gender. Yet, also in this case, differences across levels of employment in the informal sector are not significant.

In summary, boys' greater likelihood to drop out is somehow positively associated to better opportunities for men in the formal and informal labor markets, but estimates are not statistically significant. However, since the estimates are to be intended as residual effects of regional labor market characteristics after controlling for macro-area fixed-effects, this might be the result of the small sample size within macro-areas.

(a)

(b)
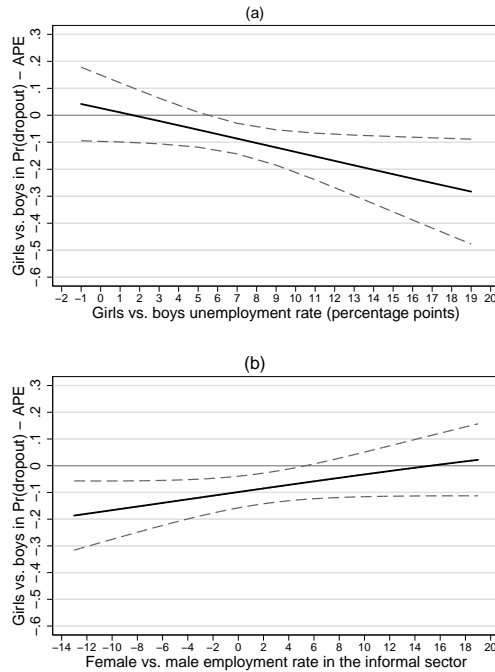
Figure 2 Binomial logistic regression models estimating the probability of dropout according to gender: average partial effects (APE) and 95% confidence intervals. Source: ESLD 2011. Authors' calculations.

7. Conclusive remarks

In this article, we examined gender differences in early school leaving, with a special focus on boys' and girls' previous scholastic performance, their family resources, and the role of labor market opportunities. We did so by analyzing two sources of nationally-representative data from Italy, a typical Southern European country with high rates of early school leaving and with a segmented labor market structure that penalizes young people and women.

Our findings indicate that both push and pull factors might be responsible for boys' greater propensity to drop out of school. On the one hand, boys are more affected by push factors connected to academic failure and they are also more vulnerable to such factors. Indeed, scholastic performance partially explains the higher risk of dropout displayed by boys and the male disadvantage is even stronger for low-achieving students. Following Entwisle et al. (2007) and Upadyaya & Eccles (2014), we suspect that the stronger attachment to school displayed by girls, especially when confronted with low grades, is due to behavioral skills

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such as self-regulation and diligence, possibly reinforced by gendered socialization processes within the family and the classroom. Our results also clearly show that the risk of early school leaving is particularly high for students whose parents did not attain an upper-secondary certificate themselves and that gender differences are larger within this group. In this respect, Italy is in line with other industrialized countries like the US and the UK, where public debates on students' underachievement have long been concerned with what has been called "the problem with boys" (Epstein, Elwood, Hey, & Maw, 1998)[14]. It follows that policies directed at tackling early school leaving should not just offer additional support to children coming from socially disadvantaged backgrounds and with a poor history of scholastic performance; for these vulnerable groups, policies should be also designed to boost boys' learning processes and educational aspirations.

On the other hand, our findings on the role of the labor market as a potential pull factor suggest that male underachievement is only part of the story. By exploiting the internal differentiation of the Italian labor market, we investigated the link between gender differences in early school leaving and in employment opportunities. Our findings, although not conclusive due to the small sample sizes within macro areas, indicate that the greater propensity to drop out of school displayed by boys is, at least partly, connected to better employment opportunities in the formal and informal labor markets. Further research should directly examine the consequences of early school leaving for labor market entry: if the penalty associated with dropping out of school is higher for women than for men, this would corroborate our finding that in Italy the female advantage at school is partly illusory, with important implications for countries where women still suffer from severe labor market

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[14] Compared to these countries, in Italy between-school tracking might be an additional factor contributing to boys' school disengagement. Students attending technical and vocational schools are exposed to less favorable learning environments in terms of instructional quality and quantity as well as of peers interaction and, similarly to what happens with achievement problems, girls might be more resilient to such difficulties. Yet, at the same time, the possibility to attend a less demanding school track might decrease the risk that low-achieving students drop out immediately after lower-secondary schooling. Future research, based on more detailed data on students' educational trajectories, should investigate the role of tracking for early school leaving in Italy and its gender-specific implications.

disadvantages. While educational policies preventing boys' underachievement are important to reduce gender differences in early school leaving, the other crucial side of the coin is the promotion of gender equality in access to and progression within the labor market.

Research ethics statement

The data used in this study were collected by the Italian Institute for the Development of Vocational Training of Workers (ISFOL), are publically available and contain no personal identifiers. All surveyed individuals gave their informed consent.

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Appendices

Appendix A. Descriptive statistics

PLUS				
	Dropout			
	No	Yes	Tot.	*N.*
Boys	82.7	17.3	100.0	*2,529*
Girls	88.3	11.7	100.0	*2,704*
Tot.	85.5	14.5	100.0	*5,233*
ESLD				
	Dropout			
	No	Yes	Tot.	*N.*
Boys	54.79	45.21	100	*845*
Girls	65.3	34.7	100	*663*
Tot.	59.43	4.057	100	*1,508*

Table A1 Dropout behavior by gender (weighted). Source: PLUS waves 2010-2011, and ESLD 2011. Authors' calculations.

(a) Excellent

| | Dropout | | | |
	No	Yes	Tot.	N.
Boys	93.0	7.0	100.0	489
Girls	93.4	6.6	100.0	821
Tot.	93.2	6.8	100.0	1,310

(b) Very good

| | Dropout | | | |
	No	Yes	Tot.	N.
Boys	89.2	10.8	100.0	746
Girls	87.4	12.6	100.0	870
Tot.	88.2	11.8	100.0	1,616

(c) Good

| | Dropout | | | |
	No	Yes	Tot.	N.
Boys	82.1	18.0	100.0	749
Girls	85.9	14.1	100.0	656
Tot.	83.8	16.2	100.0	1,405

(d) Pass

| | Dropout | | | |
	No	Yes	Tot.	N.
Boys	68.2	31.8	100.0	545
Girls	83.9	16.1	100.0	357
Tot.	73.6	26.4	100.0	902

Table A2 Dropout behavior by gender and final-exam grade in lower-secondary school (weighted). Source: PLUS waves 2010-2011. Authors' calculations.

PLUS						**ESLD**				
(a)Tertiary education						**(a)Tertiary education**				
	Dropout						*Dropout*			
	No	Yes	Tot.	*N.*			No	Yes	Tot.	*N.*
Boys	93.2	6.8	100.0	*446*		Boys	87.8	12.2	100.0	*66*
Girls	96.0	4.0	100.0	*443*		Girls	89.6	10.4	100.0	*58*
Tot.	94.5	5.5	100.0	*889*		Tot.	88.6	11.4	100.0	*124*
(b) Upper secondary education						**(b) Upper secondary education**				
	Dropout						*Dropout*			
	No	Yes	Tot.	*N.*			No	Yes	Tot.	*N.*
Boys	89.0	11.0	100.0	*1,169*		Boys	68.5	31.5	100.0	*382*
Girls	94.1	5.9	100.0	*1,249*		Girls	81.0	19.0	100.0	*283*
Tot.	91.5	8.6	100.0	*2,418*		Tot.	73.9	26.1	100.0	*665*
(c)Lower secondary education						**(c)Lower secondary education**				
	Dropout						*Dropout*			
	No	Yes	Tot.	*N.*			No	Yes	Tot.	*N.*
Boys	70.3	29.7	100.0	*695*		Boys	39.9	60.2	100.0	*397*
Girls	78.2	21.8	100.0	*822*		Girls	50.6	49.4	100.0	*322*
Tot.	74.5	25.5	100.0	*1,517*		Tot.	44.6	55.4	100.0	*719*
(d)missing										
	Dropout									
	No	Yes	Tot.	*N.*						
Boys	74.3	25.8	100.0	*219*						
Girls	85.3	14.7	100.0	*190*						
Tot.	79.3	20.7	100.0	*409*						

Table A3 Dropout behavior by gender and parental education (weighted). Source: PLUS waves 2010-2011, and ESLD 2011. Authors' calculations.

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Region	(a) Gender			(b) Dropout			
	Male	Female	Tot.	No	Yes	Tot.	*N.*
Liguria	59.7	40.3	100	66.1	34.0	100	*39*
Lombardia	60.0	40.0	100	71.4	28.6	100	*266*
Piemonte/V.d'Aosta	51.2	48.8	100	47.4	52.6	100	*92*
North West	*57.6*	*42.4*	*100*	*63.8*	*36.2*	*100*	*397*
Emilia Romagna	42.4	57.6	100	82.2	17.8	100	*82*
Friuli V.G.	33.1	66.9	100	81.9	18.1	100	*13*
Trentino A.A.	75.0	25.0	100	80.7	19.3	100	*26*
Veneto	55.9	44.1	100	82.4	17.6	100	*119*
North East	*50.5*	*49.5*	*100*	*82.1*	*17.9*	*100*	*240*
Lazio	50.1	49.9	100	69.7	30.4	100	*174*
Marche	57.2	42.8	100	56.9	43.1	100	*50*
Toscana	60.3	39.7	100	53.5	46.5	100	*60*
Umbria	80.5	19.5	100	90.2	9.8	100	*16*
Center	*54.3*	*45.7*	*100*	*64.3*	*35.7*	*100*	*300*
Abruzzi/Molise	56.1	43.9	100	60.4	39.6	100	*38*
Basilicata	31.3	68.8	100	59.4	40.6	100	*16*
Calabria	64.8	35.2	100	32.4	67.6	100	*44*
Campania	54.2	45.8	100	46.1	53.9	100	*173*
Puglia	58.3	41.7	100	62.8	37.2	100	*133*
Sardegna	62.1	37.9	100	37.9	62.1	100	*18*
Sicilia	59.9	40.2	100	45.3	54.7	100	*149*
South and Islands	*57.8*	*42.3*	*100*	*48.5*	*51.5*	*100*	*571*
Total	55.9	44.1	100	64.7	35.3	100	*1,508*

Table A4 Proportion of (a) males and females, and (b) dropout and non-dropout individuals by region and macro-area (weighted). Source: ESLD 2011. Authors' calculations.

Region	Youth unemployment rate (age 15-24) (a)			Employment rate in the informal sector over the total employment rate (b)		
	Female	Male	Δ Female-Male	Female	Male	Δ Female-Male
Liguria	19.5	19.9	-0.4	18.3	3.4	14.9
Lombardia	14.3	11.3	3.0	13.1	5.0	8.1
Piemonte/V.d'Aosta	17.9	12.7	5.2	15.5	7.5	8.0
Emilia Romagna	13.2	9.2	4.0	15.1	2.8	12.3
Friuli V.G.	17.9	10.4	7.5	6.6	12.4	-5.8
Trentino A.A.	9.6	5.8	3.8	13.4	8.8	4.6
Veneto	14.7	7.1	7.6	13.5	5.8	7.7
Lazio	28.3	23.6	4.7	15.7	12.4	3.3
Marche	15	8.7	6.3	11.1	8.6	2.5
Toscana	17.4	12.4	5.0	12.0	9.0	3.0
Umbria	20.1	9.5	10.6	22.7	3.6	19.1
Abruzzi/Molise	25.9	15.3	10.6	20.6	8.7	12.0
Basilicata	45.6	26.2	19.4	15.3	16.3	-1.0
Calabria	40.2	30.4	9.8	20.5	26.9	-6.4
Campania	37	31.1	5.9	21.2	19.4	1.8
Puglia	36.8	28.9	7.9	16.3	17.5	-1.2
Sardegna	42.8	27.3	15.5	15.7	15.2	0.5
Sicilia	45.9	34.2	11.7	11.4	23.9	-12.5
Italy	*24.4*	*18.7*	*5.7*	*15.4*	*11.5*	*3.9*

(a) ISTAT 2015, average 2006-2008.

(b) ISFOL 2007.

Table A5 Labor market indicators by region: (i) youth unemployment rate over the total active young population (age 15-24) by gender, and (ii) employment rate in the informal sector over the total employment rate (age 15-64) by gender.

Appendix B. Results in tabular format.

'		Model 1			Model 2			Model 3			Model 4	
	APE	c.i min	c.i.max	APE	c.i min	c.i.max	APE	c.i min	c.i.max	APE	c.i min	c.i.max
Boys (ref.)	0	–	–	0	–	–	0	–	–	0	–	–
Girls	-0.105	-0.163	-0.047	-0.103	-0.16	-0.045	-0.103	-0.16	-0.045	-0.092	-0.149	-0.036
Gender gap in youth unemployment rate				0.02	0.012	0.029	0.021	0.013	0.029	0.006	-0.005	0.017
Girls vs. Boys * Gender gap in youth unemployment rate (perc.points)												
-1							0.032	-0.087	0.152	0.042	-0.094	0.178
1							0.006	-0.096	0.108	0.011	-0.099	0.120
3							-0.025	-0.108	0.057	-0.021	-0.106	0.064
5							-0.060	-0.125	0.005	-0.053	-0.118	0.011
7							-0.098	-0.156	-0.039	-0.086	-0.143	-0.030
9							-0.136	-0.205	-0.066	-0.119	-0.185	-0.054
11							-0.174	-0.267	-0.080	-0.152	-0.239	-0.066
13							-0.209	-0.331	-0.087	-0.185	-0.298	-0.073
15							-0.241	-0.391	-0.090	-0.218	-0.358	-0.079
17							-0.268	-0.445	-0.090	-0.251	-0.418	-0.083
19							-0.290	-0.492	-0.087	-0.283	-0.477	-0.088
North-West (ref.)										0	–	–
North-East										-0.203	-0.293	-0.112
Center										-0.02	-0.115	0.074
South and Islands										0.105	0.001	0.209
N.	1,508			1,508			1,508			1,508		

Table B1 Binomial logistic regression models estimating the probability of drop out according to gender for different levels of gender gap in unemployment rate: average partial effects (APE) and 95% confidence intervals. Source: ESLD 2011. Authors' calculations.

	Model 1			Model 2			Model 3			Model 4		
	APE	*c.i min*	*c.i.max*	APE	*c.i min*	*c.i.max*	APE	*c.i min*	*c.i.max*	APE	*c.i min*	*c.i.max*
Boys (ref.)	0	–	–	0	–	–	0	–	–	0	–	–
Girls	-0.105	*-0.163*	*-0.047*	-0.097	*-0.154*	*-0.040*	-0.097	*-0.154*	*-0.040*	-0.092	*-0.148*	*-0.035*
Gender gap in the share of informal employment over the total employment rate				-0.012	*-0.016*	*-0.009*	-0.012	*-0.016*	*-0.008*	-0.005	*-0.010*	*0.000*
Girls vs. Boys * Gender gap in the share of informal employment over the total employment rate (perc.points)												
-13							-0.188	*-0.324*	*-0.053*	-0.186	*-0.316*	*-0.057*
-11							-0.178	*-0.301*	*-0.056*	-0.173	*-0.289*	*-0.057*
-9							-0.167	*-0.277*	*-0.058*	-0.160	*-0.262*	*-0.057*
-7							-0.155	*-0.252*	*-0.059*	-0.146	*-0.236*	*-0.056*
-5							-0.143	*-0.227*	*-0.058*	-0.132	*-0.211*	*-0.054*
-3							-0.129	*-0.203*	*-0.056*	-0.119	*-0.188*	*-0.050*
-1							-0.115	*-0.180*	*-0.050*	-0.105	*-0.167*	*-0.044*
1							-0.101	*-0.161*	*-0.041*	-0.092	*-0.150*	*-0.034*
3							-0.087	*-0.145*	*-0.029*	-0.078	*-0.136*	*-0.020*
5							-0.073	*-0.134*	*-0.012*	-0.065	*-0.127*	*-0.003*
7							-0.059	*-0.125*	*0.007*	-0.052	*-0.121*	*0.017*
9							-0.046	*-0.119*	*0.027*	-0.039	*-0.117*	*0.039*
11							-0.034	*-0.114*	*0.046*	-0.026	*-0.115*	*0.063*
13							-0.023	*-0.110*	*0.065*	-0.014	*-0.114*	*0.086*
15							-0.012	*-0.106*	*0.082*	-0.002	*-0.113*	*0.110*
17							-0.002	*-0.102*	*0.098*	0.010	*-0.113*	*0.133*
19							0.006	*-0.099*	*0.111*	0.022	*-0.113*	*0.157*
North-West (ref.)										0	–	–
North-East										-0.194	*-0.281*	*-0.107*
Center										-0.031	*-0.125*	*0.063*
South and Islands										0.080	*-0.016*	*0.176*
N.	*1,508*			*1,508*			*1,508*			*1,508*		

Table B2 Binomial logistic regression models estimating the probability of drop out according to gender for different levels of gender gap in the share of informal employment over the total employment rate: average partial effects (APE) and 95% confidence intervals. Source: ESLD 2011. Authors' calculations.
Appendix C. Robustness checks.

	PLUS														
	Model 1a			Model 2a			Model 3a			Model 4a			Model 5a		
	APE	c.i. min	c.i. max	APE	c.i. min	c.i. max	APE	c.i. min	c.i. max	APE	c.i. min	c.i. max	APE	c.i. min	c.i. max
Gender															
Boys (ref.)	0	–		0	–		0	–		0	–	–	0	–	–
Girls	-0.083	-0.092	-0.074	-0.071	-0.079	-0.063	-0.074	-0.082	-0.066	-0.038	-0.064	-0.012	-0.038	-0.064	-0.012
Previous achievement															
Excellent (ref.)				0	–	–	0	–	–	0	–	–			
Very good				0.051	0.041	0.061	0.046	0.036	0.056	0.034	0.000	0.069			
Good				0.125	0.114	0.136	0.122	0.111	0.133	0.044	0.011	0.078			
Pass				0.115	0.103	0.127	0.106	0.095	0.117	0.093	0.052	0.134			
Highest parental education															
Lower secondary (ref.)										0	–	–	0	–	–
Upper secondary										-0.118	-0.156	-0.081	-0.118	-0.156	-0.081
Tertiary										-0.141	-0.182	-0.099	-0.141	-0.182	-0.099
Girls vs. Boys by previous achievement															
Excellent															
Boys (ref.)										0	–	–			
Girls							-0.030	-0.043	-0.016	-0.013	-0.058	0.033			
Very good															
Boys (ref.)										0.000	–	–			
Girls							0.023	0.009	0.038	0.009	-0.044	0.062			
Good															
Boys (ref.)										0.000	–	–			
Girls							-0.131	-0.149	-0.114	-0.032	-0.078	0.013			
Pass															
Boys (ref.)										0.000	–	–			
Girls							-0.200	-0.216	-0.184	-0.148	-0.213	-0.084			
Girls vs. Boys by highest parental education															
Tertiary															
Boys (ref.)													0	–	–
Girls													-0.033	-0.070	0.004
Upper secondary															
Boys (ref.)													0	–	–
Girls													-0.039	-0.069	-0.009
Lower secondary															
Boys (ref.)													0	–	–
Girls													-0.075	-0.142	-0.007
N.	*5,093*			*5,093*			*5,093*			*5,093*			*5,093*		

Table C1 Binomial logistic regression models for the analysis of the probability of drop out according to gender: average partial effects (APE) and 95% confidence intervals. All models control for wave and geographical area. Source: PLUS waves 2010-2011, sample restricted to individuals who enrolled in upper-secondary school/vocational training only after lower-secondary schooling. Authors' calculations.