

Teaching modes and college students achievements.

New evidence from entrepreneurship education

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Abstract

The aim of this paper is to study whether and how entrepreneurship education affects the academic performance of young individuals, paying specific attention to the teaching mode (i.e., traditional vs active) of entrepreneurship courses. The empirical analysis is based on detailed administrative data from a medium-sized University in the North of Italy. We measure academic achievement through several indicators, such as the probability to graduate, time to degree completion and the final grade. We exploit the institutional framework of a Master's degree in Management, Finance and International Business to identify a sort of diff-in-diff effect. Our estimates show that, compared to traditional teaching, a more active teaching mode, if any, reduces the probability to graduate. However, conditional on graduation, no statistically significant differences emerge in time to degree and in the average grade. Furthermore, negative effects seem to concern only high-achieving students.

Key-words: entrepreneurship education, teaching modes, academic performance

JEL codes: I20, J24; L26

1. Introduction

Entrepreneurship is considered one of the driving forces of economic growth and innovation. Furthermore, from a labor market perspective it may be a relevant port of entry into employment, especially for individuals “at the margin” of the labor market (such as immigrants, women and the young) and in years of shortage of job opportunities as dependent workers. The European Commission has pointed out that, in order to foster the entrepreneurial dynamism of European economies, it is crucial to reinforce entrepreneurial education in schools and universities (European Commission, 2006). Through the Entrepreneurship 2020 Action Plan and the Rethinking Education Communication, the European Commission has emphasized the need to embed entrepreneurial learning in all sectors of education, including non-formal learning. The aim is to provide all young people with a practical entrepreneurial experience before leaving compulsory education.

In the wake of these considerations, entrepreneurship courses have been rapidly proliferating all over the world and are nowadays taught also in a number of university programs. However, only few Italian universities have historically offered specific courses on entrepreneurship (Iacobucci and Micozzi, 2010), mainly concentrated in management and engineering departments, but the situation has been slightly improving in the last years.

The main goal of entrepreneurship education is to promote general and specific entrepreneurial skills (von Graevenitz et al., 2010), i.e. those personal attitudes, social skills, self-confidence and creativity that may drive the individual decision to pursue a business activity as well as the capacity to innovate (Johansen, 2014). Existing empirical evidence on the effect of entrepreneurship courses on entrepreneurial intentions and skills is mixed. Indeed, some studies argue that entrepreneurship education raises the interest in entrepreneurship as a career option (Souitaris et al., 2007), while others yielded opposite results (Oosterbeek et al., 2010; von Graevenitz et al., 2010).

However, the impact of entrepreneurship education may actually go beyond entrepreneurial intentions and actual creation of business start-ups, since it should

provide knowledge and skills that may be useful to young people also when they study or if they end up working as employees in existing companies or organizations.

While there is a large body of literature on the effects of entrepreneurship education on the creation and performance of new start-ups, little is known on the implications of such type of education on the academic performance of young people in tertiary education.

This aspect is relevant for a number of reasons. First, education entrepreneurship is usually taught in formal (university) courses and, as such, it should influence knowledge and skills that may be useful to students also during their academic careers. For example, learning how to write a business plan may help the students to organize better their study plans and to use more efficiently their time. Second, since academic performance is a key determinant of future labor market outcomes, the impact of entrepreneurship education on academic achievement can be used as a leading indicator of longer-run effects in terms of labor market performance. For example, empirical evidence shows that the time to degree significantly influences employment opportunities, but obtaining a college degree within normal completion time is becoming the exception rather than the norm both in the US and throughout Europe (Garibaldi et al., 2012). Staying an extra year in college increases the direct costs in terms of tuition fees and causes later entry into labor market. In this perspective, it is important to assess whether entrepreneurship education affects the time to degree (and/or increases the graduation mark). Finally, entrepreneurship education is one of the few courses that allow students to make them learning by doing through in-classroom simulations of entrepreneurial activities, such as the simulation of a business start-up. From a pedagogical point of view, a more active teaching mode may create a deeper learning experience (Zantov et al., 2005) or impact complex competencies more quickly than traditional frontal lectures (Salas et al., 2009), with subsequent effects on academic performance.

The aim of this research project is hence to empirically study whether and how entrepreneurship education affects the academic performance of young individuals, paying specific attention to the teaching mode (i.e., traditional or active) of entrepreneurship courses. We base our empirical analysis on detailed administrative

data from a medium-sized university in the North of Italy, where entrepreneurship education is getting more and more relevant, particularly in the departments/degrees with a management vocation. We measure academic achievement through several indicators, such as the probability to graduate, time to degree completion, the final grade. In order to identify a causal effect of the teaching mode of entrepreneurship on students' achievement, we exploit the features of the plan of studies of some Master's degrees of this University (particularly those with compulsory entrepreneurship courses) to build a sort of "quasi natural" experiment. More specifically, we exploit the fact that a Master's degree in management, which has a compulsory entrepreneurship course, is offered both in Italian and in English. The main difference between the two programs, other than the official teaching language, is the way in which entrepreneurship is taught: while the entrepreneurship course in the English program provides a set of practical elements related to entrepreneurial skills, the correspondent course in the Italian curriculum mainly relies on a set of normative rules and procedures related to the entrepreneurial career. This setting allows us to use a sort of difference-in-differences (diff-in-diff) framework, in which the treatment is the intensity of the active contents of the entrepreneurship course. In order to take into account of potential self-selection of the teaching language, similarly to Leuven et al. (2007) and in Oosterbeek et al. (2010), we also perform IV diff-in-diff estimates, using pre-treatment English test scores and the share of *peers* that have opted for the English track as exclusion restrictions.

The paper is structured as follows. In Section 2, starting from the existing literature, we outline a theoretical framework on the relationship between teaching modes of entrepreneurship and academic performance. In Section 3 we present the data used in the empirical analysis, paying great attention to the institutional context characterizing the Master's program under investigation. In Section 4 we discuss the empirical strategy, while the main results are reported in Section 5. The last Section concludes.

2. Theoretical framework (TO BE COMPLETED)

Academic debate about entrepreneurship education has recently shifted from whether entrepreneurship can be actually taught and learned (...) to how entrepreneurship should be taught to actually influence learning.

In this respect, Walter and Dose (2012) identify two broad categories of teaching methods: the traditional (or reflective) ones, where students acquire knowledge and skills through reflective observation, and the active ones, where students acquire knowledge through active sedimentation. The first teaching modes include frontal lectures, videos, case studies and discussions, while the second ones encompass a wide range of activities, such as simulations, experiments, role plays and other types of field work.¹

The two teaching modes should pursue also different objectives: while traditional modes aim at changing knowledge and conceptual skills, active modes should influence more understanding, practical skills and attitudes.

Traditional modes are usually based on contents that can easily verbally explained and/or captured in writings and drawings, thus creating explicit knowledge. On the contrary, active modes, by encouraging personal experience and learning by doing, should influence more tacit knowledge and intuition, including senses-based knowledge and rule of thumbs (Nonaka and von Krogh, 2009).

Notice that teaching in Italian Universities has been traditionally based on frontal lectures, but recently some departments have started to revise their programs in order to favor different teaching styles and create more differentiated learning situations. In this context, entrepreneurship education, due to its peculiar objectives and contents, may be a natural candidate to experiment various pedagogical techniques, including more active modes.

3. Institutional context and data

The empirical analysis in this paper relies on data for five enrollment cohorts of graduate students at the University of Bergamo, a public Italian institution of tertiary education. Specifically, we select the cohorts of students enrolled as freshmen for the

¹ Notice that active modes could in principle include any activity in which the student has an active role, such as homework, but in practice they require that the activity is done in the classroom (Prince, 2004). Furthermore, there are some forms of cooperative learning, such as teamwork, that can pertain to either active or traditional teaching modes. For example, teamwork requiring the students to read and present papers is close to traditional teaching modes, while teamwork requiring the start-up of a simulated new business can be considered like an active teaching mode.

academic years 2010/2011- 2013/2014 in the Master degree in Management, Finance and International Business.

Using university-level data from a single master program provides a more homogeneous setting and reduce potential confounding effects due to unobserved heterogeneity (Oosterbeek et al., 2010; von Graevenitz et al., 2010). Moreover, entrepreneurship education is a relevant topic at the University of Bergamo. In particular, supporting student entrepreneurship is a significant part of the university's self-declared mission, not only offering support for those college graduates who intend to pursue an own start-up, but also promoting and encouraging entrepreneurial attitudes and pro-active environment.

Concerning teaching programs, students attending the Master degree in Management, Finance and International Business can choose between two curricula taught both in Italian and in English, respectively "Management, Leadership and Marketing" and "International Business and Finance". Each curriculum requires taking a sequence of compulsory and elective courses spanning the entire duration of the two-year program. Table A1 in the Appendix lists exactly the sequence of exams for each curriculum with a break by year.

The Management, Leadership and Marketing program refers to management and entrepreneurship issues faced by organizations and firms, in order to compete in challenging international markets. Hence, the objective of the course is to offer students a set of skills that, on the one hand, facilitate participation in entrepreneurial teams and the development of new business and on the other hand, help to pursue a career path in several corporate functions requiring international openness, attitude to change and cross-functional knowledge. Contextually, the International Business and Finance program addresses the role of multinational firms in a context of global competition with a special focus on finance and international business. The objective of this curriculum is therefore to provide students with the ability to recognize new market opportunities and the capability to adapt the corporate strategies to the changing diversification in the international competition. Structurally, two curricula have similar plans of studies in the first year, with some common compulsory exams. However, the entrepreneurship course is included only in the Management, Leadership and Marketing

curriculum as a compulsory exam of 12 ECTS, while the correspondent specific counterpart of International Business and Finance curriculum is the course in International Business and trade. Moreover, the Italian and English versions of each curriculum share the same content regarding the plan of studies. Interestingly, one main difference concerns the teaching method for the entrepreneurship exam, which is more active in the English program, based on students' participation and the definition of a business plan and more normative in the Italian program, based on traditional lectures and a normative approach. In the wake of this consideration, the teaching language does not convey what students should learn, but how entrepreneurship should be taught.

Our data cover the entire academic career of the college students including their basic individual characteristics (gender, place of birth and area of residence), high school leaving grades as well as the type of high school (academic or technical/vocational), information on bachelor degree (university, final grade and majors) and the grades on each single exam they passed at the University of Bergamo during the master degree. Graduation marks are observed for all non-drop-out students who obtained Master degree.²

We exclude the very recent student intakes from 2014 onward, since their regular instructional time would not fit in our observation period. Our data is not a sample of only graduates. Indeed, we observe students who enrolled but do still not complete their degree (either because they are still enrolled in school or because they dropped out). The final sample used in the empirical analysis consists of 599 college students, of which 451 in the Italian track and 148. Table 1 provides additional information on the number of college students enrolled for each academic year in the English and Italian programs.

Table 2 provides summary statistics for the entire sample and by distinguishing students who attended or not the entrepreneurship course. Looking at the main academic outcomes, it is evident that there are huge differences between the two groups, with the sample of those attending an entrepreneurship track that shows better college achievements, in terms of both graduation rate and the probability to complete the

² Using the date in which students obtained the degree we are able to measure study duration and to recognize those who have finished within legal time, that represents one of our dependent variables.

studies within the legal duration. One of the main difference on the observables concerns high school background. Indeed, students who enrolled in the curriculum with the entrepreneurship course largely attended lyceum as high school, while for the other group the share of students with a technical/vocational high school background is more consistent.

In summary, our core estimation sample corresponds to those college students with non-missing values in key baseline characteristics coherently with the logic of our empirical strategy.

4. Empirical strategy

To assess the causal impact of different teaching modes in entrepreneurship education on students' academic achievement, we exploit the institutional setting discussed above in a sort of difference-in-differences framework. In particular, we exploit the specific features of the Master's degree in Management, Finance and International Business, that exhibits a peculiar structure, with each curriculum taught both in English and in Italian. Moreover, we rely on the fact that a compulsory entrepreneurship course is offered only in one curriculum but, within the same curriculum, the entrepreneurship course in the English program has more active contents than the corresponding course in the Italian one. Hence, the treatment is the intensity of active modes in teaching entrepreneurship. In our setting, we observe some students attending the active entrepreneurship course (treated group), while others attend the more traditional one (control group). The logic of this identification strategy can be ideally represented by a two-by-two table in which we compare means of outcome variables for different curricula and teaching language, where the latter can be separated in a high- (English language with associated active modes) and low-intensity treatment.

We can then identify to what extent alternative teaching modes in entrepreneurship education can influence college students' achievement as follows:

$$y_{it} = \alpha + \beta EEcourse_{it} + \gamma english_{it} + \delta EE_english_{it} + \theta X_{it} + \mu_t + \varepsilon_{it} \quad (1)$$

where y_{it} is an indicator of academic performance for student i at time t , $EEcourse_{it}$ is a dummy variable indicating whether the student attended or not the entrepreneurship

course, $english_{it}$ is a dummy variable indicating whether the student enrolled in an English program or not, $EE_english_{it}$ identifies those individuals who attended the entrepreneurship course in the English programs, that corresponds to the active mode of teaching. X_{it} is a vector of personal controls aimed at capturing pre-treatment unobserved heterogeneity (gender, citizenship, area of residence, high school type, years since high school graduation final grade in bachelor degree, a dummy capturing whether the student have obtained the bachelor degree in the same university, the average grade in previous academic career), μ_t are cohort fixed effects and ε_{it} is a standard error term.

In this setting we combine differences in the teaching mode of Entrepreneurship with differences between curricula (i.e., students attending an Entrepreneurship course with students not attending it). The main coefficient of interest in equation (1) is δ , which should capture the causal effect of an active mode of teaching Entrepreneurship compared to a more traditional mode under the assumption that, without the active mode of teaching, the change in student achievement registered with respect to students not taking Entrepreneurship in the English program would have been the same as that registered in the Italian program. This diff-in-diff approach allows to control for other observed differences and unobserved heterogeneity between the two curricula that can influence student achievement other than the Entrepreneurship course. Our setting is similar to a diff-in-diff estimator with multiple treatments, in which the development of a group that is less affected by a policy is used to estimate the development of a more affected group (Fricke, 2017). Furthermore, pre-treatment values are represented by academic performance of students in the curriculum without the Entrepreneurship course in, respectively, the English and the Italian program.³

The accuracy of the diff-in-diff estimator in recovering the causal impact of different teaching methods in entrepreneurship education depends crucially on the exogeneity of the treatment (i.e. the attendance of the English entrepreneurship class). However, the students' choice of the English entrepreneurship track might not be random. In particular, some individuals may have higher innate abilities or innate entrepreneurial skills (such as ability to deal with risk, attitude towards change and multitasking ability)

³ Our setting is very similar to Duflo (2001), analyzes the effect of school construction on schooling and labor market outcomes in Indonesia by combining differences across regions in the number of schools constructed with differences across cohorts induced by the timing of the program.

and could actually self-select into active entrepreneurship courses (Oosterbeek et al., 2010) enrolling in the curriculum of master degree that includes this track. In this perspective, the choice of the language of the program is potentially endogenous.

One way to deal with the self-selection issue is to combine the diff-in-diff estimator with an instrumental variable approach. In the Entrepreneurship literature this approach has been already used by Oosterbeek et al. (2010), who estimated an IV diff-in-diff model to evaluate the effect of entrepreneurship education on entrepreneurial skills and motivation by comparing students enrolled in a Dutch University site offering such course with student enrolled in another University site not offering it. In order to take into account of potential endogeneity of location choice, they used the distance of the University sites from students' home as instrument. In our context, as instrument for teaching language choice, we exploit information on the previous academic career for the students who have obtained their bachelor degree at the University of Bergamo. Specifically, we rely on English test scores that students have to pass when they enroll in the first degree or, alternatively, the share of *peers* that have opted for the English track. The identifying assumption is that, conditional on a large set of control variables, this test score (or the share of peers) is unrelated to the error term in the outcome equation.

5. Main results

This section reports the main empirical results for the impact of different modes in entrepreneurship course on college students' achievement. We concentrate on several indicators to identify to what extent active modes in entrepreneurship education (with respect to a more traditional and normative one) can influence academic performance.

First, Table 3 reports main estimates of the DID estimator on the relationship between teaching methods in entrepreneurship track and the probability of graduating. Columns differ for the model specification used: in column (1) we include only the dummy variables indicating whether a student has attended an entrepreneurship course, in column (2) we add some personal controls (gender, citizen, final grade for bachelor degree, having attended bachelor degree at the University of Bergamo, three dummies

for high-school types, a dummy indicating whether the master degree is in English or not, years since high school graduation). In column (3) we include cohort fixed effects and in column (4) we add also controls for area of residence fixed effects. In column (5), we drop those students that attended the entrepreneurship course as an elective exam, while column (6) excludes from control group also those students graduated in older curricula. We estimate all these specifications using a limited probability model. For a comparison purpose, in column (7) we also provide marginal effects from a probit model. The coefficient of interest is δ that captures the specific impact of active teaching modes in entrepreneurship education with respect to control group. Hence, we concentrate on this parameter in discussing the empirical results.

Estimates in column (1) seem to indicate that treated group are less likely to be graduated. Such probability is around 15 percentage points. As we progressively add controls for individual characteristics, cohort and local fixed effects in columns (2) – (4), the coefficient is still statistically significant and similar in size. OLS estimates from the most saturated model in column (6) where we also exclude those observations that can act as a confounding factor, indicate that students passing the active entrepreneurship track have lower probability of 14 percentage points to graduate (compared to the control group).

Then, we complement previous analysis, investigating the relationship between entrepreneurship education and the probability of graduating within legal completion time. Estimation results are summarized in table 4. The main estimates provide some general indication that active teaching modes in entrepreneurship course do not seem to influence the probability of graduating within legal time. Indeed, the coefficient is not statistically significant in all specification. In order to capture potential heterogeneity behind this (not significant) result, we replicate the analysis, by gender and prior achievement status of the students. Table 5 provides the estimates by gender reporting specifications in columns (4) – (6) of table 4. Again, the coefficients of interest seem to indicate that for both female and male students attending a more active learning experience in entrepreneurship education does not make the difference in terms of academic achievement and in particular, in the probability to obtain a master degree within legal time.

On the other hand, the literature has traditionally claimed that individuals who decide to pursue an entrepreneurship track are more easily low-achievement students. In the wake of this consideration, we explore the extent to which active modes and learning-by-doing approach in entrepreneurship training can affect in a different way low- and high-achievement students. Hence, the status of low- or high-achievement students depends on whether the final grade at bachelor degree for each individual is below or above the median final grade.⁴

Table 6 replicates the same analysis, distinguishing students by achievement status. As expected, the results emphasize that an active mode of teaching entrepreneurship negatively affects the probability of graduating within legal time for high-achievement students, with a statistically significant coefficient of -0.211 in the preferred specification (column 6). Differently, the same coefficient is positive for low-achievement students, even if not statistically different from zero. Coherently with the literature on entrepreneurship education, we find that previous educational background can influence how and to what extent different pedagogies in entrepreneurial training can be effective in improving students' academic achievement.

6. Conclusion (TO BE DONE)

⁴ In our sample median final grade at the bachelor degree is 93.

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Table:

Table 1. Number of students enrolled by academic year and teaching language

Teaching language	Academic year				Tot.
	2010/11	2011/12	2012/13	2013/14	
<i>English</i>	0	41	34	73	148
<i>Italian</i>	145	110	109	87	451
Tot.	145	151	143	160	599

Table 2. Sample mean characteristics

	All sample	Entrepreneurship track (n=303)	Other track (n=296)
Students' outcome			
Graduation rate	0.85 (0.35)	0.91 (0.28)	0.79 (0.41)
Graduating within legal time	0.77 (0.42)	0.81 (0.39)	0.72 (0.45)
Final grade	102.94 (6.45)	102.43 (6.11)	103.52 (6.80)
Students' characteristics			
Entrepreneurship course	0.51 (0.50)	-	-
Active entrepreneurship course	0.10 (0.29)	0.20 (0.39)	-
Normative entrepreneurship course	0.41 (0.49)	0.80 (0.40)	-
Female	0.54 (0.50)	0.54 (0.50)	0.53 (0.50)
Italian citizen	0.93 (0.26)	0.95 (0.22)	0.91 (0.29)
Bachelor degree in the same univ.	0.73 (0.45)	0.71 (0.45)	0.75 (0.43)
Final grade: bachelor	94.46 (7.90)	94.00 (7.88)	94.92 (7.90)
Type of high-school			
Liceum	0.55 (0.50)	0.60 (0.50)	0.49 (0.50)
Technical high-school	0.36 (0.48)	0.31 (0.46)	0.42 (0.49)
Professional high-school	0.03 (0.17)	0.04 (0.19)	0.02 (0.14)
Other types	0.06 (0.24)	0.05 (0.22)	0.07 (0.26)
Years since high school graduation	4.30 (2.46)	4.32 (2.56)	4.29 (2.34)
Province			
Bergamo	0.64 (0.48)	0.64 (0.48)	0.64 (0.48)
Lombardy	0.25 (0.43)	0.26 (0.44)	0.24 (0.43)
Italy	0.11 (0.31)	0.10 (.030)	0.12 (0.33)

Note: s.d. are reported in parenthesis

Table 3. Active modes of teaching and graduation rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	OLS	Probit
<i>EE track</i>	0.171*** (0.04)	0.180*** (0.04)	0.191*** (0.04)	0.189*** (0.04)	0.157*** (0.04)	0.161*** (0.05)	0.139*** (0.04)
<i>English</i>	0.133*** (0.05)	0.173*** (0.04)	0.204*** (0.04)	0.200*** (0.04)	0.192*** (0.04)	0.198*** (0.05)	0.141*** (0.03)
<i>EE track* english</i>	-0.152** (0.07)	- 0.179*** (0.06)	-0.149** (0.07)	-0.142** (0.07)	-0.132* (0.07)	-0.139* (0.07)	-0.195 (0.14)
<i>Personal controls</i>	No	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cohort FE</i>	No	No	Yes	Yes	Yes	Yes	Yes
<i>Local FE</i>	No	No	No	Yes	Yes	Yes	Yes
<i>N</i>	599	581	581	581	499	464	452

Note: Robust standard errors in parenthesis. *** Significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6), from a probit model in column (7).

Table 4. Active modes of teaching and the probability of graduating within legal time

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	OLS	Probit
<i>EE track</i>	0.085* (0.05)	0.123*** (0.05)	0.105** (0.05)	0.098** (0.05)	0.150*** (0.05)	0.177*** (0.06)	0.170*** (0.05)
<i>English</i>	0.058 (0.06)	0.094 (0.06)	0.055 (0.06)	0.045 (0.06)	0.072 (0.07)	0.090 (0.07)	0.068 (0.05)
<i>EE track* english</i>	0.088 (0.08)	0.054 (0.07)	0.011 (0.08)	0.015 (0.08)	-0.045 (0.08)	-0.071 (0.09)	0.055 (0.12)
<i>Personal controls</i>	No	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cohort FE</i>	No	No	Yes	Yes	Yes	Yes	Yes
<i>Local FE</i>	No	No	No	Yes	Yes	Yes	Yes
<i>N</i>	511	498	498	498	434	405	405

Note: Robust standard errors in parenthesis. *** Significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6), from a probit model in column (7).

Table 5. Active modes of teaching and the probability of graduating within legal time, by gender

	(1)	(2)	(3)	(4)	(5)	(6)
	Female			Male		
	OLS	OLS	OLS	OLS	OLS	OLS
<i>EE track</i>	0.092 (0.07)	0.171** (0.07)	0.228*** (0.08)	0.075 (0.07)	0.099 (0.08)	0.095 (0.09)
<i>English</i>	0.044 (0.09)	0.085 (0.09)	0.120 (0.10)	0.023 (0.10)	0.040 (0.10)	0.047 (0.11)
<i>EE track* english</i>	0.080 (0.10)	-0.006 (0.11)	-0.057 (0.11)	-0.007 (0.12)	-0.024 (0.13)	-0.032 (0.14)
<i>Personal controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cohort FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Local FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	270	238	223	228	196	182

Note: Robust standard errors in parenthesis. *** Significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6). Model specification as in columns (4) – (6) of Table 4, for both female and male students.

Table 6. Active modes of teaching and the probability of graduating within legal time, by students' achievement status

	(1)	(2)	(3)	(4)	(5)	(6)
	Low-achievement students			High-achievement students		
	OLS	OLS	OLS	OLS	OLS	OLS
<i>EE track</i>	0.081 (0.07)	0.163** (0.08)	0.121 (0.09)	0.103 (0.07)	0.143** (0.07)	0.261*** (0.08)
<i>English</i>	-0.114 (0.11)	-0.058 (0.11)	-0.079 (0.11)	0.142* (0.08)	0.163** (0.08)	0.233*** (0.09)
<i>EE track* english</i>	0.182 (0.13)	0.049 (0.14)	0.088 (0.14)	-0.067 (0.09)	-0.098 (0.10)	-0.211** (0.10)
<i>Personal controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cohort FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Local FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	231	199	193	267	235	212

Note: Robust standard errors in parenthesis. *** Significant at 1%, ** significant at 5%, * significant at 10%. Marginal effects from a linear probability model in columns (1)-(6). Model specification as in columns (4) – (6) of Table 4, for both low- and high-achievement students.

Appendix A1

Curriculum in Management, Leadership and Marketing (MLM):

Subjects

- First year
 - Probability and Statistics for Business and Finance (advanced)
 - Energy & Environmental Economics
 - Markets and Companies Law (advanced)
 - International Business and Trade
 - Business Ethics and Social Accounting
 - Entrepreneurship Bootcamp, and Marketing Strategies
 - Corporate Finance (advanced)
- Second year
 - Topics on Globalization
 - Cross-cultural and Diversity Management
 - Seminar in Leadership and HRM
 - Knowledge & Marketing Management
 - One activity to be chosen among
 - Internship
 - Foreign Language (English, French, German, Spanish)
 - Innovation Management
 - Research in Organization Learning
 - International Business Management (advanced)
 - Quantitative Models for Decision Making

Curriculum in International Business and Finance

Subjects

- First year
 - Probability and Statistics for Business and Finance (advanced)
 - International Monetary Economics
 - Markets and Companies Law (advanced)
 - Financial Markets and Institutions (advanced)
 - International Business and Trade
 - International Accounting
 - Corporate Finance (advanced)
 - Second year
 - Topics on Globalization
 - International Business Management (advanced)
 - Risk Management and Derivatives
 - Credit and Operational Risks Measurement
- or**
- Marketing Strategies (advanced)