Does working during higher education affect students' academic progression?

Moris Triventi

University of Milano-Bicocca

Department of Sociology and Social Research

Via Bicocca degli Arcimboldi 8 – 20126, Milano (Italy)

E-mail: moris.triventi1@unimib.it

Abstract

This paper examines the effect of working during higher education on academic progression, in terms of number of credits acquired by first-year university students in Italy. We discuss different contrasting hypotheses on the role of work during university on academic outcomes: the zero-sum perspective, the selection to work hypothesis, and the reconciliation thesis. In the empirical part we analyse data from the Eurostudent survey, which collected data on a representative sample of university students who were enrolled in the academic year 2002/03, after the implementation of the Bologna process. We use a negative binomial regression model considering work experience as an endogenous multinomial treatment. Results indicate that, conditional on observed covariates (socio-demographic variables, school-related and university-related variables), there is a positive self-selection into the working condition, especially for low-intensity work. Traditional multivariate regressions show a penalty in academic progression only for high-intensity workers, but once accounted for unobserved heterogeneity also the low-intensity work experience negatively affects academic progression.

Keywords: Student employment; Academic progression; Higher education; Self-selection; Unobservable variables.

Does working during higher education affect student academic progression?

1 Introduction

The relationship between higher education and work has been extensively studied by sociologists and economists. While most of this research focuses on work *after* higher education, less attention has been devoted to the experience of working *during* higher education. Interest in this topic is growing because of the rising costs of attending higher education and a significant increase in student employment (Ehrenberg and Sherman 1987; NCES 1994; Horn and Malizio 1998). As suggested by Riggert *et al.* (2006), colleges and universities can no longer assume that the majority of students will be able to give their full-time attention to academic studies.

On the one hand, working during higher education could be viewed as a way to get independence from the family of origin, to early develop knowledge about the 'labour market world' and to be socialized to job-related values (Stephenson 1982; Davies 1999). Nonetheless, on the other hand, working during university studies may negatively affect academic results, increasing the risk of dropping-out, having a delayed graduation or achieving lower grades. In this respect, we will discuss several competitive theories about the role of student employment on academic outcomes and we will test them using a relatively novel method, which allows us to control for selection into the working condition based on both observed and unobserved variables.

The outcome we consider is academic progression, expressed in terms of number of credits acquired by first year university students. Academic progression in the early stages of university study program is likely to affect students' motivation, increasing their subsequent probability of graduation (Attewell et al. 2012). In turn, university dropping-out and delay in graduation negatively affect several occupational outcomes, such as income and occupational prestige (Bernardi 2003; Brodaty et al. 2009).

Existing research mainly focused on the United States and Great Britain, while empirical evidence from European countries is lacking, to a certain extent because the proportion of working students have been smaller than in Anglo-Saxon societies. In this work we focus on Italy, which we believe could be an interesting case, because of several reasons. First, Italian higher education has been characterized for long time by a very large proportion of drop-outs and graduates behind schedule (Triventi and Trivellato 2009). Thus, it could be interesting to understand the relationship between student employment and these phenomena. Second, in

recent times the Italian higher education undergone relevant transformations in its degree structure and a considerable proportion of non-traditional students entered university (Cappellari and Lucifora 2009). Moreover, at the same time an increase of tuition fees and a reduction of public financial support to students occurred. It is possible that part of those who entered university under the 'new regime' need to work to finance their studies and living expenses, and this may be harmful to their academic outcomes. Third, in recent years several types of fixed-term job contracts have been introduced, which represent a convenient and flexible way the employers have to hire students for temporary jobs.

The paper is organized as follows. In the next section we briefly discuss existing empirical evidence on the role of student employment in Anglo-Saxon countries. In the third and fourth section we present the main characteristics of the Italian higher education system and existing research findings on the role of working during university in the second half of the 20th century. Then, in section four we discuss several competing theories on the effect of student employment on their academic outcomes, deriving some research hypotheses. In the sixth section we present the data, variables and methods, while in the subsequent section we present the empirical results. The last section briefly discusses the main findings and concludes.

2 Existing empirical evidence

While there is a vast literature on the determinants and effects of employment during high school – especially in the United States – relatively less attention has been devoted to examine the experience of working during higher education (Riggert *et al.* 2006). Most of the contributions in this field aim to assess whether working during higher education affects several indicators of student performance, such as drop out, re-enrolment, grade point average (GPA), time required to graduate. There is a great variation also in the type of independent variables used in the empirical analyses. Some studies focused on the simple distinction between working and non working students, while others used more refined definitions. For instance, some considered the intensity of work (weekly hours of employment), the specific type or nature of the job (term-time/semester versus summer jobs, on campus versus off campus jobs) or the reasons that lead students to seek work during their post-secondary studies.

Empirical research has reached mixed and contradictory results and most literature reviews have not been able to identify a clear pattern regarding the impact of student employment on academic outcomes (Lyons *et al.* 1986). Some studies suggested that employment negatively affects student academic performance, while others conclude that the impact of work is not detrimental to educational outcomes (Riggert *et al.* 2006).

In the United States, some studies showed that employment during post-secondary studies reduces persistence and retention, increasing the probability of drop out (Stern and Nakata 1991; Gleason 1993; Cuccaro and Almin 1997). In particular, some research identified a relevant effect of work intensity on retention (NCES 1994): increasing weekly hours of employment are related to increasing likelihood of drop-out from both 4-year colleges and 2-year community colleges (Ehrenberg e Sherman 1987). Other studies found that employment during postsecondary education negatively affects GPA, satisfaction for studies and participation in social activities (Astin 1993). Nevertheless, other research found student employment does not negatively influence academic outcomes (Volkwein *et al.* 1989) and cognitive development (Pascarella et al. 1994). For example, Horn and Malizio (1998) showed that students who worked up to 15 hours per week had the lowest risk of dropping out, even when compared with non-working students. Research on the relationship between student employment and average grades also provided mixed results: some found a negative correlation but others reported no or negligible correlation between the two variables (Ehrenberg and Sherman 1987; Volkwein et al. 1989; Canabal 1998; Barke et al. 2000; Furr and Elling 2000).

The literature on student employment in Italy is relatively scarce. The most comprehensive studies on this topic were conducted in the late 1960s and in the mid-1980s, with a recent revival of interest. Using data from the National Institute of Statistics and data from a survey of students from five Italian universities, Martinotti (1969) showed that working students had significantly greater probability of being behind schedule than full-time students, but the difference in average grades between the two groups was not marked. Indeed, the study found that it was not simply the condition of being a working student, but work intensity that mostly affects academic performance. In de Francesco e Trivellato's study (1985) a sample of students from the University of Milan was surveyed in the mid-1980s. The research results confirmed most of the previous findings and, in particular, that working students with high intensity jobs were more likely to drop-out, being behind schedule or having a delayed graduation.

Triventi and Trivellato (2008) used data from the Italian Longitudinal Household Survey to analyse educational careers of university students in the second half of the 20th century. Using logistic regression models which control for socio-demographic and school-related characteristics, they found that high intensity workers had greater risk of dropping-out and having a delayed graduation compared to non-working students. On the contrary, low intensity workers were in a different position: compared to non-working students, they faced a similar probability of having a delayed graduation, but a smaller risk of dropping out. Argentin (2010) analysed data from the four waves of the Italian University Graduates Survey from 1995 to 2004; controlling for a standard set of covariates, this study found that occasional workers had

a slightly higher final mark compared to non-workers, but only in the humanities. On the contrary, continuous workers have lower marks compared to non-workers, but only in the scientific and 'professional' fields. At the end, both occasional and continuous workers have more years of delay compared to graduates who never worked during their studies.

3 Italian higher education: a sketched picture

In this section we describe the main features of the Italian higher education system, with a focus on the institutional arrangements and course structure, selectivity at entrance, rules governing examinations, and the student aid system. From an institutional point of view, Italian higher education can be considered an undifferentiated or 'unitary' system (Shavit et al. 2007), since most institutions are classified as universities with both teaching and research functions and in the public sector graduates are considered to have the same level of knowledge in their field irrespective of the university where they obtained their degree. For long time Italian tertiary education has been affected by severe problems of student drop-outs, delays in academic progression and social inequality in degree attainment, especially after the 1969 reform, which allowed all high school leavers to enrol in most fields of study without any form of selection (Cobalti and Schizzerotto 1993; Recchi 2007; Triventi and Trivellato 2009).

While in the 20th century there was only one type of degree course available (*Laurea*), lasting between 4 and 6 years, at the end of the 20th century an important reform introduced a new course structure. Within the broader European framework of the 'Bologna process', a three-level structure has been implemented, constituted by a first level degree (*Laurea triennale*, 3 years), a second-level degree (*Laurea magistrale*, 2 years), followed by doctoral studies (*Dottorato di ricerca*, 3 years). Moreover, the old system of annual/semester examinations has been replaced by the introduction of the European Credit Transfer System (ECTS), with the aim of improving the comparability of curricula across Europe and facilitating student international mobility. According to this new system, each credit corresponds to 25 hours of study, which includes both class/laboratory attendance and personal study. One academic year corresponds to 60 ECTS-credits (equivalent to 1,500–1,800 hours of study); to obtain the first level degree it is necessary to obtain 180 credits, while for the second level degree 120 credits are needed.

Most university courses is open access and all 5-year diploma holders can enroll without restriction. Nevertheless, a small number of programs provides a limited amount of places and entrance is restricted only to students who pass a selective test. Entrance restrictions are established at the national level for programmes in architecture, medicine and health-related programs, while they are established autonomously by each university for other programs (for example, psychology). Contrary to other countries, once enrolled, students are allowed to take

the examination at the end of the course or in other several occasions during the academic year, with the right to repeat it as often as they wish. Some faculties rely almost exclusively on oral examinations (especially humanities, education and law), while others on written examinations (technical and health disciplines) or a mix of the two types (social sciences, economics).

Students are allowed to stay enrolled simply paying the tuition fees, even if they do not pass any exam during the academic year. Only recently a formal distinction between full-time and part-time students has been introduced; nevertheless, part-time students are still a minority and specific courses or classes for adult learners are almost inexistent. Compared to other developed countries, tuition fees are generally low (Usher and Cervenan 2005), even if growing in recent years, after the funding cuts and the slow process of decentralization of power from the State to universities. Furthermore, Italy is characterized by a 'residual' system of student financial assistance: only a small proportion of students receive a grant, the amount of financial aid is only able to cover part of cost studies (but not living costs) and there is not a developed system of subsidized loans (Oecd 2010; Triventi 2012). These features, combined with the scarcity of students' residences, are probably at the basis of the relative low level of students' internal geographical mobility: a large part of undergraduate students are enrolled in an institution in or close to their hometown (Rui Foundation 2005; CNVSU 2007).

4 Theoretical framework and hypotheses

Even though the literature on the consequences of student employment is principally constituted by explorative empirical research, we were able to identify four perspectives which formulate contrasting theoretical arguments about the role of employment during higher education. The 'zero-sum approach' states that employment during university studies imposes constraints on the use of time: as the time of work increases, the time students can dedicate to study decreases. Thus, according to this perspective, there is a strong trade-off between study and employment. An hour spent to deliver pizzas, working in a call-center or in an office is an hour not spent studying, attending classes, preparing for examinations or sleeping (Bozick 2007). Furthermore, employment during higher education implies fewer opportunities of interaction with other students and professors, and reduces participation in extra-curriculum activities within university. The small fraction of time spent in the academic environment and interacting with peers may not let a complete identification with the 'student role' and this could imply a shift in individuals' priorities, making employment more important than academic persistence or success (Tinto 1975; Marsh 1991; Braxton and Hirschy 2004). Moreover, in many situations the simultaneous condition of worker and student may involve overloading commitment, increasing psychological stress and anxiety related to fear of academic failure

(Robotham 2008). Therefore, since attending lectures, study hours, and extracurricular participation have a beneficial effect on academic performance (Hanks and Eckland 1976; Misra and McKean 2000; Arulampalam et al. 2011), and, in turn, working during higher education is likely to decrease the time devoted to these activities, it may have a negative effect on academic progression. Thus, the zero-sum approach predicts that working students will have a slower academic progression compared to non working students and this disadvantage will persist even controlling for other characteristics, because of the intrinsic characteristics of the work experience.

Second, according to the 'negative selection-to-work' hypothesis, it is likely to find that nonworking students have better academic performance and progression than working students. However, these differences may be related not to the negative effect of employment *per se*, but to observed or unobserved pre-existing differences between the two groups of students, such as social background, ability and motivation (Warren et al. 2000; Warren 2002). Working students can be systematically different from nonworking students: for example, they can show a higher propensity to work because they obtained poor grades in their previous school stages, or they consider academic success less important than other students do. Therefore, working students' poor performance may reflect a process of academic disengagement that begins before the students enter the labor market. Therefore, the 'negative selection-to-work' approach predicts that differences in academic progression among nonworking students and working students will disappear once their pre-existing characteristics are controlled for.

Nevertheless, the 'negative selection-to-work' hypothesis has been elaborated mainly with a reference to student work in high school. The student-workers' situation in higher education could be different, since this educational level is not compulsory. High school leavers who decide to continue to study at university should know in advance that they will have to manage both work and learning at higher level and this is relatively more demanding than working or studying alone. Therefore, they could be on average highly motivated to pursue university education, perceiving work primarily as an instrument to finance their studies. Thus, since the working student condition is demanding, it will negatively affects academic progression; however, the higher motivation of working students or their ability to cope simultaneously with work and learning could help them in their academic studies, making their credits accumulation similar to that of non-working students.

At the end, according to the 'reconciliation approach', there is not necessarily a negative relationship between student employment and academic outcomes, for several reasons. First of all, the zero-sum hypothesis was elaborated to explain the relation between employment and school outcomes for high-school students. It seems less applicable to university students because they often don't have compulsory classes, they spend less time in classroom and thus

they are more flexible in organizing their time. Second, it is not so obvious that an hour spent at work is an hour that the student does not dedicate to study; for example, a working student may decide to reduce her leisure time, maintaining the time she devotes to study nearly constant. Third, if there is flexibility in planning the academic schedule, working students can choose less demanding courses or those that do not require classroom attendance to pass the final examination. Finally, working students can be aware of the time constraints they face and this can be an incentive to organize their time more efficiently (Trueman and Hartley 1996; Butler 2007).

[table 1 about here]

To sum up, we have identified four main theoretical positions about the effect of working during higher education on academic progression. Their contrasting predictions are summarized in table 1. According to zero-sum approach we should observe significant differences in academic progression among nonworking and working students and these will persist even after controlling for selection into the working condition (hypothesis 1). According to the negative selection-to-work hypothesis, we could find a gap in academic progression between students with different working engagement, but this would disappear once properly controlled for relevant antecedent variables (hypotheses 2). On the contrary, if positive selection of working students is in place, we should observe the opposite pattern: a trivial difference among working and non-working students, while a significant penalty once selection into the working condition is accounted for (hypotheses 3). At end, according to the reconciliation approach, we should find no major differences between nonworking and working students, even after controlling for their socio-economic characteristics (hypotheses 4). We will provide an empirical test of these contrasting hypotheses in the next sections.

5 Data, variables, methods

5.1 The data

The data was obtained from the Eurostudent survey, which is a survey conducted every three years in several European countries in order to monitor the characteristics of higher education students. In particular, we used data from the IV Italian Eurostudent survey, carried

out in 2004 by the Rui Foundation (2005).[1] The survey was conducted on a representative sample of undergraduate students enrolled in Italian universities during the 2002-03 academic year, who entered university for the first time from the academic year 2000-01 onwards. The sample design is stratified with proportional allocation of sample units. The variables used for stratification are: geographic area of the university, student residence, tax exemption, year of first registration, and type of degree program. We limit our analysis to students attending three-year bachelor courses; therefore we excluded 291 individuals from the initial sample of 5,023 students, because enrolled in single cycle or master programs. Furthermore, we excluded 749 students, whose answer to the question about the number of credits was considered unreliable by the interviewer (see later). All the analyses considered only first-year students enrolled in public institutions (the vast majority), in order to make the sample more homogeneous and to reduce potential selection bias due to drop-outs in successive years of enrolment. The analytical sample consists of 1,834 cases.

5.2 Variables

The main dependent variable is ECTS credits obtained by the students on the 31st March 2004. Since this variable is derived from the respondents' own declaration, one can argue that it may be unreliable or subject to relevant measurement error. Even if this problem could not be completely checked or eliminated, some considerations suggest that it may be mitigated in our context. First, the interviewers have been trained to carefully ask this question, inviting students to check their exam record before answering. Second, the interviewers have been provided with a reserved question in which they declared their perception about the answer reliability, allowing us to exclude individuals who provided less trustful answers. Third, the fact that we focused on first-year student should moderate memory recall problems.

The main independent variable is a categorical variable indicating the intensity of the work experience during higher education and it is derived from the number of weekly hours devoted to paid job in a 'typical week'. It classifies respondents in three categories: 1) nonworking students (zero hours of work); 2) low-intensity workers (between 1 and 20 hours of work per week); high-intensity workers (more than 20 hours of work per week). We focused on this variable in the multivariate analyses because it is the one which is more likely to affect academic progression, it reflects the classification already used in Italian research on this topic

[1] We analyzed only the Italian survey because an harmonized cross-country dataset does not exist at the moment. We use this specific survey-year because the subsequent ones do not contain any measure of academic progression or performance. We thank Giovanni Finocchietti and Rui Foundation for providing us with the data.

and it is well suited to test the hypotheses elaborated in the third section.[2] Since the Eurostudent survey provides some additional information on characteristics of the job experience, we will use this information in the first part of the analysis to describe the prevalent job experiences.

We used a number of control variables in the analysis, which refer to socio-demographic characteristics, social background, previous school career, type of course and institution attended in higher education. They are: gender, age (18-19, 20-21, at least 22), parents' education level (no more than primary, lower secondary, upper secondary, tertiary), school track (lyceum, teaching/art/languages, technical/vocational) final mark in upper secondary education (60-70, 71-80, 81-90, 91-100),[3] enrolment in a top university (top quartile of the laRepubblica-Censis ranking), field of study (social sciences/economics, scientific, health, technical, law, humanities/education), financial aid (if the student received a grant or a subsidized apartment), average tuition fees at university level (quartiles), residence condition (off-site, in-site, commuters), geographical area where the university is located (North-West, North-East, Centre, South, Islands), unemployment rate for young people aged 15-24 aggregated at regional level and divided by sex.

All the variables included in the analyses can be considered as 'relevant antecedent', since they may affect both work condition and academic progression. Mediating variables – those who are affected by work condition and in turn affect academic outcomes – are deliberately omitted from the multivariate analyses, as suggested by Morgan and Winship (2007). Nevertheless, they will be considered in the discussion, in order to explain some of the research findings.

5.3 Methods

To properly assess the competitive hypotheses outlined in the theoretical framework section, we have to consider that working condition is likely to be not randomly distributed across students, but it could be more often pursued by specific types of individuals. Moreover, it is difficult to account for all the relevant variables that affect both the working condition and academic progression. Given the type of data available (cross-section and observational) and the categorical nature of our main independent variable, it is not easy to take into account the potential endogeneity of working condition. In this work, we applied a recently developed treatment-effects model that can be used to analyze the effects of an endogenous multinomial treatment on a nonnegative integer–valued outcome, developed by Deb and Trivedi (2006).

[2] Even if the classification of students is mainly based on a quantitative variable – the number of hours devoted to work while enrolled at university – the categories of low-intensity workers and high-intensity workers can be considered as qualitatively different conditions, as we will show later.
[3] In this scale 60 is the worst grade, while 100 is the best grade.

Following the authors, we specified the model with a latent factor structure that allows for idiosyncratic influences on 'treatment' choice (working condition) to affect outcome (ECTS credits), thus enabling us to make a distinction between selection on unobservables and selection on observables.

In the first stage of the model, the individual chooses a working condition out of three mutually exclusive choices, namely to be a nonworking student, to work a limited number of hours per week (low-intensity worker) or to work a considerable number of hours per week (high-intensity worker). Let EV* denotes the indirect utility associated with the j_{th} working condition, $j=0,1,...,J$ and:

$$EV_{ij}^{*} = z_i'\alpha_j + \delta_j l_{ij} + \eta_{ij}$$

In this equation: $\mathbf{z_i}$ is a set of exogenous covariates with associated parameters α_j; η_{ij} are identically independent distribute errors; l_{ij} is a latent factor that incorporates unobserved characteristics common to individual i's choice of the working condition and the number of ECTS credits attained (with δ_j as estimated coefficients). These latent factors may include, for instance, latent propensity to work, motivation or multitasking skills. The latent factor l_{ij} is assumed to be independent of the error term η_{ij}.

While EV_{ij}^{*} is not observed, we observe the choice of the working condition during higher education and we measure it as a set of dummy variables d_j representing the observed treatment choice, $\mathbf{d_i}=(d_{i1}, d_{i2,...,} d_{ij})$. Without loss of generality, let $j=0$, $EV_{i0}^{*}=0$.

We assume that the probability of choosing a given working condition, conditional on the latent variables, has a mixed multinomial logit (MMNL) structure, defined as:

$$\Pr(d_i \mid z_i, l_i) = \frac{\exp(z_i'\alpha_j + \delta_j l_{ij})}{1 + \sum_{k=1}^{J} \exp(z_i'\alpha_k + \delta_k l_{ik})}$$

where $j=0, 1, 2,..., J$.

The outcome y is a nonnegative integer-valued count variable and the expected outcome equation for individual i (i=1,…, N) is formulated as:

$$E(y_i \mid d_i, x_i, l_i) = x_i'\beta + \sum_{j=1}^{J} \gamma_j d_{ij} + \sum_{j=1}^{J} \lambda_j l_{ij}$$

where x_i is a set of exogenous covariates with associated parameter vectors β and γ_j denotes the treatment effects (low-intensity worker, high-intensity worker) relative to the control choice (nonworking student). $E(y_i|d_i, x_i, l_i)$ is a function of each of the latent factors l_{ij}; i.e., the outcome is affected by unobserved characteristics that also affect selection into the working condition during higher education.

Since the main outcome – the number of ECTS credits obtained by the students – is a nonnegative integer–valued outcome and it has a considerable overdispersion, we used a negative binomial regression in the second stage of the model. The count variable is assumed to be generated by a Poisson-like process, except that the variation is greater than that of a true Poisson and accounts for overdispersion (Cameron and Trivedi 1986; Hilbe 2007).[4] As in the standard multinomial logit model, the parameters in the MMNL are identified only up to a scale. In addition, we assume that each choice is affected by a unique latent factor and we assume δ_j=1 for all j in order to normalise the scale of each choice equation. The resulting model can be estimated using a Maximum Simulated Likelihood (MSL) approach.[5]

While it is not strictly necessary that the vector of covariates includes additional variables not included in x_i for the model to be identified, we included two variables as exclusion restrictions. The first one is age; we included it only in the first equation because previous studies found that age is a strong determinant of the probability of working during higher education (de Francesco and Trivellato 1985; Argentin 2010). Within the Italian familistic welfare regime and residual model of students' support system (Daniel et al. 1999), younger students are less likely to work because they can rely on their parents' financial help. On the other hand, there is no evidence that a direct effect of age on academic progression is in place, while its effect seems mostly mediated by the working condition during university studies. The second variable included in the first-stage equation but omitted from the outcome-equation is the local unemployment rate. The rationale is that the desire/need a student has to work while studying is a necessary but insufficient condition of his/her working status. A second condition refers to the availability of job positions in the labour market. Local youngster unemployment rate can be considered as a proxy of the demand of young workforce at the local level; so it is assumed that as the unemployment increases, the probability of working during university declines. On the other side, there no theoretical reasons why such variable should affect academic progression.[6] At the end, survey weights that re-proportion the sample according to

[4] The negative binomial model introduces a latent heterogeneity in the conditional mean of the poisson model, preserving the conditional mean but introducing overdispersion. We assume that the conditional distribution of the outcome variable follows a negative-binomial-1 density (constant dispersion), whose conditional variance function is Var[yi|xi]=λi+kλi1=λi[1+k]. The negative-binomial-1 density has been preferred to the negative-binomial-2 density, because a comparison of the models' fit using different statistics for non-nested models (Akaike Information Criterion, Bayesian Information Criterion) showed that the former outperforms the latter in our data. For more details on the derivation, the likelihood and density functions of such model refer to Cameron and Trivedi (1986) and Hilbe (2007).

[5] The model was estimated using the –mtreatreg– routine in Stata, an extension of the –treatreg– command to a multinomial setting, developed by Partha Deb, Hunter College, CUNY.

[6] One can argue that the labour market conditions could affect incentives for students to graduate on time or to take more time to get the degree. In this respect, those who attend university in a economically-depressed area may have less incentive to graduate on time. Nevertheless, even if this is the case, this should not affect our results, for several reasons. First, our variable refers to the unemployment condition

population figures are used in all the estimations. Clustered standard errors at the university levels are applied in the multivariate analyses, in order to account for potential heteroscedasticity.

6 Empirical results

In the first step of the analysis, we present some descriptive statistics. Among Italian freshmen in 2002-03, 17% worked within 20 hours during their first academic year, while 10.5% worked on average more the 20 hours per week. Therefore, among the subpopulation of students who had a work experience during their freshman year, slightly more than one third were employed for more than 20 hours per week. Low-intensity workers worked on average 11.3 hours per week, while high-intensity workers 35.4 hours. Thus, there is a considerable difference in their engagement in job activities while studying, with the former group be closer to part-time working condition and the latter to a full-time job. Coherently with this figure, among low-intensity workers only 22% had a continuous-in-time job while among high-intensity workers the vast majority had such type of job (67%). The main reason to work during higher education was the wish to have personal financial resources, but this rationale is relatively more present among low-intensity workers than high-intensity workers (68% versus 51%), who more often stated they worked for strict economic need.

Looking at the dependent variable, on average first-year students acquired 43.9 [42.7, 45.1] credits, an amount far smaller than those prescribed to be fully regular (60). If we also consider that students are asked to report the number of credits they have attained at the end of March of their second year, the average delay of Italian students appears even more clearly.[7] More than one half of the students got no more than 30 credits, half of the ones expected by the end of the first year.

Figure 1 shows that the average number of credits noticeably varies according to the working condition. Nonworking students attained on average 45.9 [44.5, 47.3] credits and a similar amount, 45.6 [42.7, 48.5], has been acquired by low-intensity workers. On the other side, high-intensity workers are far behind the other two groups, with an average of only 28.1 [24.4, 31.8] credits.

---

of young people between 15 and 24, who are usually not graduated. On the contrary, it is likely that if university students look at the labour market condition, they will take the occupational outcomes of graduates in their field of study to infer their prospect returns. Second, this situation may apply to students in their last year of undergraduate studies and not to first-year students, the ones who are included in our analysis.

[7] The academic year in Italy usually starts between October and November, depending on the specific university and field of study.

[figure 1 about here]

Table 2 reports results from the first equation of our endogenous treatment model, in which a MMNL regression is used to predict working condition and in which the reference category in the dependent variable is constituted by nonworking students. Results are presented in terms of odds ratios and therefore estimates between zero and one indicate a negative effect, while those larger than one a positive effect. The estimate associated with each variable is reported net of the other regressors and the latent factors capturing unobserved heterogeneity, which is simultaneously related with the choice of working condition and the number of credits obtained. Controlling for other covariates, the effect of gender, high school track, marks and enrolment in a top university are not statistically significant at the 95% level. Interestingly, parental education negatively affects the odds of being a high-intensity worker, but not that of being a low-intensity worker. This suggests that working a limited amount of hours during university studies is a widespread experience across different social groups and it is more related to the desire of financial independence from parents rather than to a strict economic need.

[table 2 about here]

All else being equal, field of study plays no major role in affecting the probability of working during higher education, but some differences are detected. Students from technical fields are less likely compared to those from the social sciences and economics to be workers rather than not working at all; a similar but weaker association is found for health students, but only for the likelihood of being a high-intensity worker. The average level of tuition fees at the university level is, as expected, positively associated with the likelihood of working during university: it is reasonable that, all else being equal, students who have to pay higher fees need to work to finance their instruction. Nonetheless, quite surprisingly, the estimated odds ratio is only statistical significant for the low-intensity work outcome. The student residence condition is also an important predictor of the working condition: commuters and in-site students had between two and three times the odds of working during their first year of university compared to off-site students. The university location is not a major determinant of the working condition for first-year students, with the exception of individuals enrolled in an island, who were less likely to be high-intensity workers compared to those from the North-West.

At the end we shall look at the variables which function as exclusionary restrictions, age and local unemployment rate), we see that students who were at least 22 were more than nine times more likely to be a high-intensity worker rather than a nonworking student compared to those who were 18/19 years old when freshmen. Consistently with our expectation, the higher the level of unemployment, the lower is the probability of working during the first year, but only the odds-ratio related to low-intensity work appears to be statistically significant at the 95%.

Looking at the bottom panel in table 3, we see that hardly working condition can be considered as an exogenous variable and there is substantial unobserved heterogeneity. First, it is useful to look at the parameter estimates associated with the two regressors which capture the latent unobserved heterogeneity (λ). When λ_j are positive (negative), treatment and outcome are positively (negatively) correlated through unobserved characteristics; i.e., there is positive (negative) selection. The third column in table 2 indicates that both coefficients are statistically significant at 95% and have a positive sign. Therefore, conditional on the other observed variables in the model, there is positive selection into working condition and it larger for the low-intensity work condition. This means that there are omitted variables which enhance the propensity of being a working student and that simultaneously positively affect academic progression. We speculate that these variables could be related to motivation and multi-tasking skills, since ability could be mostly captured by the variables referring to the track and marks in secondary education.

Second, we constructed the likelihood-ratio test for exogeneity of working condition, which is a test for the joint hypothesis that the λ_s are equal to zero. The constrained log likelihood can be calculated as the sum of the log-likelihood values of the MMNL and the negative binomial regressions (Deb and Trivedi 2004).[8] This test clearly rejects the null hypothesis of exogeneity ($\chi^2(2)= 42.1$, prob.$> \chi^2(2) = 0.000$).

We now focus the attention on the estimates of our substantive interest, those referring to the effect of working during higher education on academic progression. Table 3 compares the results of three negative binomial regression models which estimate the relationship between working condition and the number of academic credits acquired by first-year students. The first one only includes working condition as an independent variable and it represents the baseline model; the second one treats working condition as an exogenous variable and controls for observed covariates alone, while the last one treats working condition as an endogenous variable which is affected by both observable and unobservable variables. The comparison

[8] The likelihood-ratio statistic for exogeneity follows a $\chi^2(q)$ distribution, where q is the number of λ parameters or, equivalently, the number of treatment equations. In our model, q = 2.

between these models should help to better understand whether and to what extent omitting to control for endogeneity of the independent variable is consequential for the results.

[table 3 about here]

According to the baseline model, the average difference in the number of credits does not significantly differ between nonworking students and low-intensity workers, while high-intensity workers experienced a remarkable penalty in their academic progression, since they obtained 78% less credits than nonworking students. Introducing controls for observed variables does not change the result on the first comparison, while slightly reduces the magnitude of the high-intensity workers' disadvantage, which now amounts to 66%. Interestingly, the last model, which includes controls for unobserved heterogeneity, shows a somewhat different picture. While the difference between high-intensity workers and nonworking students is slightly increased compared to the previous model (74%), there is a sharply growth in the effect of the low-intensity working experience, which is now statistically significant and negative, around 27%. This means that once controlled for unobserved differences between these two groups, the low-intensity working experience appears to impair academic progression, even if to a less extent compared to the high-intensity work experience. Our interpretation is that low-intensity workers were on average more motivated than nonworking students and this masked the detrimental effect of working during higher education on academic progression.

7 Discussion and conclusions

Previous research has shown that Italian university students' careers were longer than prescribed by law, with a large proportion of behind schedule students and delayed graduations. A new degree structure and system of exams have been implemented in recent years in order to improve the effectiveness of university instruction and to reduce student wastage and delays. Nevertheless, at the same time the new degree structure stimulated entrance in higher education of non-traditional students, those with a lower socioeconomic background and a weaker academic background. This trend could have been paralleled by a growth in the proportion of those who decide to work while studying, making the aim of reducing delays in students' careers less feasible from a policy perspective.

In this study we aimed to estimate the proportion of working students among freshmen after the implementation of the 'Bologna process' in Italy and to understand whether and to

what extent the working experience in the early years of university studies affect academic progression, in terms of number of ECTS credits obtained.

This is an interesting question, both from a policy and a theoretical perspective. First, student employment raises an issue of equity: if students with a lower socioeconomic background are more likely to work for financing their studies and student employment depresses academic progression, it may contribute to the reproduction of social inequality in academic outcomes. Second, student employment raises an issue of effectiveness: is it possible to work while studying and to obtain the same results – in terms of number of credits acquired – that one would gain not working? Several theories provide different answers to this question. According to the zero-sum approach, the answer is 'no', because working will distract freshmen from university, reducing both the time they can devote to study and their motivation/commitment to academic goals. According to the reconciliation hypothesis, instead, students can modulate the time they devote to leisure activities, allocating a sufficient amount of hours to study to maintain a regular academic progression. The selection-to-work hypotheses are placed somewhat in the middle. The negative-selection hypothesis argues that working students have a lower academic progression than nonworking students, but once accounted for pre-existing characteristics of these two groups, the gap should be reduced or even disappears; on the contrary, the positive-selection hypothesis argues that working students are on an average more motivated than nonworking students and this difference may mask the penalizing effect of student employment on academic progression.

In this paper we explored the phenomenon of student employment and we tested these contrasting hypotheses using a representative sample of first-year university students in Italy in 2002/03. We found that the proportion of working students is smaller compared to Anglo-Saxon countries, even if it is far from negligible (27.5%). The reason of this difference may be due to several factors: the level of tuition fees, the proportion of students who do not live with their parents, and the availability of jobs for higher education students. In Italy tuition fees (even if growing) and the proportion of students who do not live with their parents are much lower than in Anglo-Saxon countries. Moreover, in several regions of the countries, especially in the South, there is a scarcity of jobs for young people. Thus, these features provide less incentives and a lower availability of jobs to university students.

Multivariate analyses showed the usefulness of distinguishing the situation of low-intensity workers, those who mostly had occasional job experiences with a limited amount of work engagement per week, from high-intensity workers, who devoted to work on average 35 hours per week. The distinction of these two categories from nonworking students is useful both for studying the determinants and the effects of working condition. On the one hand, the variables affecting the probability of working during the first-year of university are partially

different between the two conditions. While student residence affects both outcomes, some of the other predictors have different effects.

On the other hand, analysing the relationship between working condition and academic progression, we found interesting and heterogeneous results between the two main working conditions. Looking at the high-intensity work there are few doubts: in all models it has a large detrimental effect on academic progression compared to non working, even when controlling for both observed and unobserved variables. This means that the zero-sum approach fully applies to the condition of high-intensity workers, who devoted on average 35 hours per week to job. It is likely that such degree of involvement makes it difficult to dedicate a sufficient amount of hours to study and to maintain a regular academic progression. The Eurostudent data seems to support this speculation. Looking at the average number of hours devoted to study, the differences across groups are significant and apparent: nonworking students study on average 17.0 hours per week, while low-intensity and high-intensity workers respectively 15.7 and 13.4 hours. Striking differences also appear considering the number of hours spent on average attending classes and seminars: this is much higher among nonworking students and low-intensity workers (22.5 and 21.6 respectively) than among high-intensity workers (15.1). Thus, it is possible that differential time allocation is at the basis of the full-time workers' disadvantage in academic progression. Nevertheless, it should be stressed that even nonworking students, who did not work at all during their first year and devoted a remarkable amount of time to attend classes and studying, experienced a noteworthy delay in their credits accumulation.

The second noteworthy finding refers to the low-intensity working condition. In this case, the results are more fuzzy. Bivariate and traditional multivariate analyses show no major gap in academic progression between low-intensity workers and nonworking students. Thus, at first sight working during higher education a limited amount of time seems not detrimental to academic progression, at least in comparison with the nonworking students' achievement. Nevertheless, once accounting for unobserved variables – which are likely to capture motivation and multitasking skills in our work – the picture changes, since also the low-intensity working condition negatively affects the number of credits acquired (even if to a less extent compared to the high-intensity working condition). This means that, in line with the positive-selection hypothesis, the standard analyses in Italy mask the fact that low-intensity workers are positively selected (conditional on observed covariates) and thus are able to compensate the difficulties related with the working condition through their higher commitment to pursue the two activities at the same time.

From a policy perspective, it is possible to identify some interventions that could be implemented in order to reduce the working students' disadvantage in the Italian context. First,

the establishment of the systematic provision of internet-related services may be helpful to working students, who have less time and are less likely to attend university. This will involve the provision of 'basic materials', such as clear and complete syllabi, study materials and the like. Moreover, professors and the administrative staff should consider that students are not an homogeneous group, taking into account the specific situation of working students. Professors should carefully select appropriate textbooks or articles, which could be studied independently. Furthermore, special classes for working students with a friendly time-table, organized to summarize the most important points of the program, should be helpful. Nevertheless, we speculate that these interventions may help to reduce the gap between nonworking and working students, but hardly this can be completely eliminated – especially for high-intensity workers. The lot of time involved in working activities spent by these individuals, indeed, makes the time available to study and to prepare exams insufficient to maintain a regular progression. It is also likely that this type of job has a variable negative effect on academic outcomes, depending on the field of study. Further studies should investigate this topic among university students with larger sample sizes.

8 References

Arulampalam, W., Naylor, R. A. and Smith, J. (2011). Am I missing something? The effects of absence from class on student performance. Economics of Education Review , 31, 363–375.

Astin, A.W. (1993). Preventing Students From Dropping Out. San Francisco: Jossey-Bass.

Attewell, P., Heil, S. and Reisler, L. (2012). What Is Academic Momentum? And Does It Matter? Educational Evaluation and Policy Analysis, 34 (1), 27-44.

Barke, M., Braidford, P., Houston, M., Hunt, A., Lincoln, I., Morphet, C., Stone, I. and Walker, A. (2000). Students in the Labour Market: Nature, Extent and Implications of Term-Time Employment among University of Northumbria Undergraduates. DfEE Research Report No. 215. London: DfEE.

Bernardi, F. (2003). Returns to educational performance at entry into Italian labour market. European Sociological Review, 19, 25–40.

Bozick, R. (2007). Making It Through the First Year of College: The Role of Students' Economic Resources, Employment, and Living Arrangements. Sociology of Education, 80(3), 261–285.

Brodaty, T., Gary-Bobo R. and Prieto A. (2009) Does Speed Signal Ability? A Test of Spence's Theory, Working Papers 2009-02, Centre de Recherche en Economie et Statistique.

Butler, A. B. (2007). Job characteristics and college performance and attitudes: A model of work-school conflict and facilitation. Journal of Applied Psychology, 92(2), 500-510.

Cameron, A.C. and Trivedi, P. K. (1986). Econometric models based on count data. Comparisons and applications of some estimators and tests. Journal of Applied Econometrics, 1 (1), 29–53.

Canabal, M. E. (1998). College Student Degree of Participation in the Labor Force: Determinants and Relationship to School Performance. College Student Journal, 32(4), 597–605.

Cappellari, L., & Lucifora, C. (2009). The "Bologna Process" and college enrollment decisions. Labour Economics, 16(6), 638–647.

CNVSU (2007). Mobilità Regionale degli Studenti - Anno Accademico 2005-2006 (http://nuclei.cnvsu.it/2007111111101IMMF/provenienze.html).

Cuccaro-Alamin, S. (1997). Findings from the condition of education, 1997: Postsecondary persistence and attainment. (National Center for Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement Publication No. NCES 97-984). Washington DC: U.S. Government Printing Office.

Daniel, H.-D., Schwartz, S. and Teichler, U. (1999). Study Costs, Student Income and Public Policy in Europe. European Journal of Education, 34 (1), 7-21.

Davies, P. (1999), Half Full, Not Half Empty: A Positive Look at Part-Time Higher Education. Higher Education Quarterly, 53(2), 141–155.

Deb P. and Trivedi, P.K. (2006). Maximum simulated likelihood estimation of a negative binomial regression model with multinomial endogenous treatment. Stata Journal, 6(2), 246-255.

de Francesco, C. and Trivellato, P. (1985). L'università incontrollata, Milano, FrancoAngeli.

Ehrenberg, R.G. and Sherman, D.R. (1987). Employment While in College, Academic Achievement, and Postcollege Outcomes: A Summary of Results. The Journal of Human Resources, 22(1), 1–23.

Furr, S.R., and Elling, T.W. (2000). The Influence of Work on College Student Development. NASPA Journal, 37(2), 454–470.

Gleason, P.M. (1993). College Student Employment, Academic Progress, and Post-College Labor Market Success. Journal of Student Financial Aid, 23(2), 5–14.

Hilbe, J. M. (2007). Negative Binomial Regression, Cambridge, UK: Cambridge University Press.

Horn, L.J., and Malizio, A. (1998). Undergraduates Who Work: National Postsecondary Student Aid Study, 1996 (National Center for Education Statistics, U.S. Department of

Education, Office of Educational Research and Improvement Publication No. NCES 98-137). Washington DC: U.S. Government Printing Office.

Lyons, T.F., Krachenberg, A.R., and Henke, J.W. (1986). Academic Performance and Work: A Methodological Critique and Review. Social and Behavioral Sciences Documents, 16(1), 34.

Marsh, H.W. (1991). Employment During High School: Character Building or a Subversion of Academic Goals? Sociology of Education, 64(3), 172–189.

Martinotti, G. (1969). Gli studenti universitari. Padova: Marsilio.

Misra, R. and McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. American Journal of Health Studies,16, 41–51.

National Center for Education Statistics. (1994). Undergraduates Who Work While Enrolled in Postsecondary Education, 1989–1990 (U.S. Department of Education, Office of Educational Research and Improvement Publication No. NCES 94-311). Washington DC: U.S. Government Printing Office.

Oecd (2010). Education at a glance, Paris, Oecd.

Pascarella, E. T., Bohr, L., Amaury, N., Desler, M., and Zusman, B. (1994). Impacts of On-Campus and Off-Campus Work on First Year Cognitive Outcomes. Journal of College Student Development, 35, 364–370.

Riggert, S.C., Boyle, M., Petrosko, M.P., Ash, D., and Rude-Parkins, C. (2006). Student Employment and Higher Education: Empiricism and Contradiction. Review of Educational Research, 76(1), 63–92.

Robotham, D. (2008). Stress among higher education students: towards a research agenda. Higher Education, 56, 735–746.

RUI Foundation (2005). Le condizioni di vita e di studio degli studenti universitari. IV indagine Euro Student, Universitas quaderni, 19.

Shavit, Y., Arum, R. e Gamoran, A. (Eds.), (2007). Stratification in Higher Education. A Comparative Study, Stanford (CA), Stanford University Press.

Stephenson, S.P. (1982). Work in college and subsequent wage rates. Research in Higher Education, 17 (2), 165-178.

Stern, D. and Nakata, Y. (1991). Paid Employment among U.S. College Students: Trends, Effects, and Possible Causes. Journal of Higher Education, 62(1), 25–43.

Tinto, V. (1975). Drop out from higher education: A theoretical synthesis of recent research. Review of Education Research, 45(1), 89–125.

Triventi, M. & Trivellato, P. (2009). Participation, Performance and Inequality in Italian Higher Education in the 20th Century. Evidence from the Italian Longitudinal Household Survey. Higher Education, 57, 681–702.

Triventi, M. (2012). Sistemi universitari comparati. Riforme, assetti istituzionali e accessibilità agli studenti. Milan: Bruno Mondadori.

Trueman, M. and Hartley, J. (1996). A comparison between the time-management skills and academic performance of mature and traditional-entry university students. Higher Education, 32 (2), 199-215.

Volkwein, J.F., Schmonsky, R.J., and Im, Y.S. (1989). The Impact of Employment on the Academic Achievement of Full-Time Community College Students. Paper presented at the Association for Institutional Research 1989 Annual Forum, Baltimore. (ERIC Document Reproduction Service No. 308 774).

Voorhees, R.A. (1997). Student Learning and Cognitive Development in the Community College. In J. Smart (ed.), Higher education: Handbook of theory and research, Vol. 13. New York: Agathon.

Warren, J.R. (2002). Reconsidering the Relationship Between Student Employment and Academic Outcomes: A New Theory and Better Data. Youth and Society, 33, 366-393.

Warren, J.R., Lepore, P.C., and Mare, R. (2000), Employment During High School: Consequences for Students' Grades in Academic Courses. American Education Research Journal, 37, 943–969.

Figures

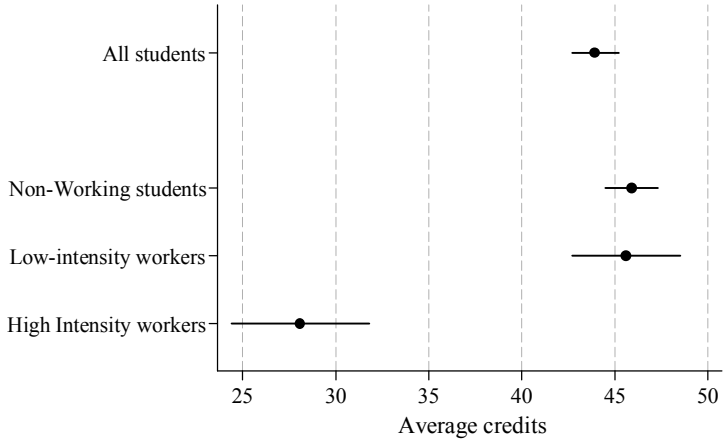

Fig. 1 – Average number of credits acquired by first-year students according to the working condition.

Tables

Table 1 – Expectations about the effect of student work on academic progression according to different theoretical perspectives

	Gross effect	Net effect
Zero sum approach	–	–
Negative selection	–	0
Positive selection	0	–
Reconciliation	0	0

Table 2 – Mixed multinomial logit (first stage equation) to study the determinants of working condition: odds ratios and 95% confidence intervals

	Low–intensity worker	High–intensity worker
Gender: Female	1.331	0.673
	[0.908,1.952]	[0.415,1.091]
Parental education: 9–12 years	0.972	1.008
	[0.679,1.390]	[0.601,1.692]
Parental education: 13–13.9 years	0.748	0.404**
	[0.504,1.111]	[0.214,0.761]
Parental education: At least 14 years	0.937	0.351*
	[0.558,1.576]	[0.157,0.783]
Track: Teacher/Art/Languages	0.939	0.940
	[0.507,1.741]	[0.397,2.228]
Track: Technical/Vocational	1.237	1.312
	[0.833,1.836]	[0.902,1.908]
Mark: 71–80	0.928	0.747
	[0.630,1.369]	[0.433,1.287]
Mark: 81–90	0.942	0.818
	[0.589,1.508]	[0.419,1.595]
Mark: 91–100	0.874	0.626
	[0.531,1.437]	[0.326,1.204]
Field of study: Scientific	0.651	0.728
	[0.383,1.104]	[0.403,1.315]
Field of study: Health	0.528	0.299*
	[0.204,1.368]	[0.096,0.935]
Field of study: Technical	0.485**	0.335**
	[0.280,0.838]	[0.162,0.691]
Field of study: Law	0.718	0.974
	[0.453,1.139]	[0.596,1.591]
Field of study: Humanities/Education	0.954	0.752
	[0.652,1.395]	[0.466,1.216]
Institution quality: Top university	0.812	0.714
	[0.519,1.271]	[0.437,1.166]
Financial aid: Yes	1.126	0.536+
	[0.768,1.651]	[0.267,1.075]
Tuition fees: Second quartile	1.103	0.884
	[0.756,1.610]	[0.577,1.354]
Tuition fees: Third quartile	1.373	0.565+
	[0.854,2.208]	[0.289,1.107]
Tuition fees: Top quartile	1.918*	1.048

	[1.053,3.494]	[0.421,2.605]
Student residence: In–site	2.655**	3.222**
	[1.664,4.238]	[1.756,5.914]
Student residence: Commuters	2.075**	2.290**
	[1.332,3.230]	[1.240,4.229]
Area: North–East	0.744	0.885
	[0.438,1.264]	[0.531,1.474]
Area:Center	1.385	0.907
	[0.925,2.073]	[0.461,1.786]
Area:South	1.049	0.340+
	[0.529,2.080]	[0.115,1.004]
Area: Islands	0.662	0.241*
	[0.252,1.736]	[0.065,0.886]
Age: 20–21	1.015	1.370
	[0.483,2.131]	[0.420,4.470]
Age: At least 22	1.500	9.228**
	[0.600,3.748]	[2.871,29.658]
Unemployment rate	0.982*	1.007
	[0.964,1.000]	[0.978,1.038]
N.	1,834	

+ $p < .10$, * $p < .05$, ** $p < .01$

Note : the omitted reference categories are respectively: Gender: Male; Parental education: less than 9 years; Track: Lyceum; Mark: 60-70; Field of study: Social sciences; Institution quality: Not top university; Grant: No; Tuition fees: bottom quartile; Student residence: Off–site; Area: North–West; Age: 18–19.

Table 3 – Negative binomial regression models to analyze the number of credits acquired: estimated coefficients and 95% confidence intervals.

	Baseline model	Exogenous working condition	Endogenous working condition
Low–intensity worker	0.0365	–0.0112	–0.268**
	[–0.037,0.110]	[–0.081,0.059]	[–0.339,–0.196]
High–intensity worker	–0.784**	–0.665**	–0.736**
	[–1.009,–0.560]	[–0.872,–0.458]	[–0.981,–0.491]
Control variables (not shown)	No	Yes	Yes
Ln(δ)			2.655**
			[2.570,2.740]
λ_1 [Low–intensity worker]			0.276**
			[0.197,0.355]
λ_2 [High–intensity worker]			0.127*
			[0.012,0.242]
Observations	1,834	1,834	1,834

+ $p < .10$, * $p < .05$, ** $p < .01$

Appendix

Table A1 – Descriptive statistics: mean/proportions

Variable	Proportion/ Mean	Variable	Proportion/ Mean
ECTS credits	43.9	*Top quartile university*	0.209
Student working condition		*Financial aid*	0.120
Nonworking student	0.728	*Avg university tuition fees*	
Low–intensity worker	0.165	Bottom quartile	0.264
High–intensity worker	0.107	Second quartile	0.245
Female	0.526	Third quartile	0.200
Parental education		Top quartile	0.292
No more than 9 years	0.311	*Residence condition*	
9–12 years	0.233	Off–site	0.213
13–13.9 years	0.252	In–site	0.231
At least 14 years	0.203	Commuters	0.556
Track		*Age*	
Lyceum	0.459	19–20	0.066
Teacher/Art/Languages	0.108	21	0.635
Technical/Vocational	0.432	At least 22	0.299
Mark		*Geographical area of living*	
60-70	0.280	North–West	0.222
71-80	0.232	North–East	0.146
81-90	0.176	Centre	0.208
91-100	0.312	South	0.290
Field of study		Islands	0.133
Socio–Eco	0.309	*Local unemployment rate*	26.4
Scientific	0.139		
Health	0.045		
Technical	0.183		
Law	0.119		
Hum–Educ	0.205		