More experienced professors, more learning opportunities? Relationships between instructor's traits and students' academic performance in financial accounting courses of a Spanish University*

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Received: June 2, 2017
Sent to peer reviewers: June 29, 2017
Approved by peer reviewers: August 4, 2017
Approved by Editorial Board: September 28, 2017
DOI: 10.22395/csye.v6n12a2

ABSTRACT

The main objective of this paper is to analyse how the characteristics of professors affect students' academic performance. To do so, we analyse a sample of recollected data from 3219 students and twelve professors from the Universitat Autònoma de Barcelona. A linear regression model, adopting the censored least absolute deviations model, was applied. Results indicate that the quality of teaching and the publication of a greater number of articles in indexed journals in the ISI Web of Science and Econlit databases have a positive and significant influence on students' academic performance. On the contrary, dedicating more lecture time to the subject of Financial Accounting in comparison with the total amount of lecture time, working as an adjunct professor and teaching experience negatively influence students' academic performance.

Keywords: academic performance, instructor, undergraduate, censored least absolute deviations model.

* This article is the result of a research process at the university context, and it was reviewed by the language service of the Universitat Autònoma de Barcelona.

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¿Profesores con más experiencia suponen mayores oportunidades de aprendizaje? Relación entre las características de los profesores y el rendimiento académico de los estudiantes en la asignatura de Contabilidad Financiera de una universidad española

RESUMEN

El objetivo del presente trabajo es analizar cómo las características del profesor influyen en el resultado académico del alumno. Con este fin, se emplea una muestra que integra información sobre 3.219 alumnos y 12 profesores de la Universitat Autònoma de Barcelona. Dichos datos se analizan adoptando un modelo de regresión lineal sobre el que se aplica el estimador de desviación absoluta mínima censurada (CLAD). Los resultados obtenidos indican que la calidad de la docencia y la publicación de artículos en revistas indexadas en las bases de datos ISI Web of Science y Econlit tienen un efecto positivo y significativo en el resultado académico del alumno. Por el contrario, concentrar la docencia en una única asignatura, trabajar como profesor asociado y ser profesor de amplia experiencia influyen negativamente en el desempeño académico del alumno.

Palabras clave: desempeño académico, profesor, alumno, estimador de desviación absoluta mínima censurada.

Professores mais experientes, mais oportunidades de aprendizagem? Relações entre as características do instrutor e o desempenho acadêmico dos alunos em cursos de contabilidade financeira de uma universidade espanhola

RESUMO

O objetivo principal deste trabalho é analisar como as características dos professores afetam o desempenho acadêmico dos estudantes. Para isso, analisamos uma amostra de dados coletados de 3.219 estudantes e 12 professores da Universitat Autònoma de Barcelona. Foi aplicado um modelo de regressão linear que adotou o modelo de desvios absolutos mínimos censurados. Os resultados indicam que a qualidade do ensino e a publicação de maior quantidade de artigos em revistas indexadas nas bases de dados da ISI Web of Science e da Econlit têm uma influência positiva e significativa no desempenho acadêmico dos estudantes. Pelo contrário, dedicar mais tempo de conferência ao assunto de Contabilidade Financeira em comparação com a quantidade total de tempo de conferência, trabalhar como professor adjunto e considerar a experiência de ensino influenciam negativamente o desempenho acadêmico dos estudantes.

Palavras chave: desempenho acadêmico, estudante universitário, instrutor, modelo de desvios absolutos mínimos censurados.

Introduction

International literature has documented the significance of individual students' characteristics and institutional characteristics in explaining students' academic performance in Higher Education (Cantwell *et al.*, 2001; Marcenaro & Navarro, 2007; Martí, 2012; McKenzie & Schweitzer, 2001; Sheard, 2009). Even though the influence of prior academic achievement, receiving grants, effort made by the student, and student's maturity level on students' academic performance has been studied in previous work, few attempts have been made to examine the effect of professors' characteristics on students' academic success.

In this sense, one of the factors that may explain students' academic performance is the quality of teaching provided by the instructor. Thus, several authors (Marsh & Hattie, 2002; Stack, 2003; Gibbs & Coffey, 2004; Arnold, 2008; García-Gallego *et al.*, 2012) have used teaching evaluations as a good indicator of teaching quality. However, student's evaluations of teaching, apart from being influenced by teacher performance, are affected by other factors such as (1) the size of the class (Bedard & Kuhn, 2008); (2) the expected grade in the course (Ewing, 2012); (3) class grades (Beleche *et al.,* 2012); and (4) the teaching method applied (Carrell & West, 2010). This has prompted Angrist and Lavy (2001), Harris and Sass (2011) and Dobbie (2011) to use students' academic performance to examine teaching quality.

According to García-Gallego *et al.* (2012), this effectiveness could also be influenced by teaching load. Besides, these authors find that the fewer instruction hours, the higher teaching quality, and thus the higher students' performance. On the contrary, the higher teaching hours by the professor, the lower teaching quality, and thus, lower students' performance. However, this result could be biased since the authors do not include instructor rank, since some of the instructors in their sample are part-time non-tenure-track professors who may have a significant negative effect on the students' academic performance, compared to recruitment of full-time faculty members (in tenure-track and non-tenure-track positions) as shown by Jacoby (2006) and Jaeger and Eagan (2011).

This could be due to: (1) The different training levels of full-time and part-time professors. According to Benjamin (2003), the percentage of doctorate professors among full-time professors is higher than the percentage of doctorate professors among part-time professors; (2) The shorter amount of time professors are available to interact with students, and implement changes in their teaching methods, according to Benjamin (2002) and Umbach (2007); (3) The lack of motivation of this group of professors, who earn much lower salaries than full-time professors, according to Jacoby (2005); (4) The inefficiency of the subject coordinators to assign teaching hours to subjects related to the development of

skills in a particular occupation, according to Bettinger and Long (2010).

The productivity of faculty work differs depending on the ranks of full-time instructors, due to the learning and experience effect; in this sense, higher-rank faculty members should lead to greater productivity than those of lower ranks, as shown by Tien and Blackburn (1996). However, according to the lifecycle theory of faculty work, instructors make more effort during the first years of their academic careers, when promotion and tenure decisions are imminent; this decreases after promotion or when they are near retirement, as suggested by Levin and Stephan (1991), Goodwin and Sauer (1995), Hu and Gill (2000), Kim (2003) and Hardre et al. (2011). Therefore, students attending classes given by faculty members of lower rank could obtain higher grades than those who attend classes given by faculty members of higher rank, given that the former make more effort.

As mentioned above, instructors who are expecting to be promoted could make a greater effort to increase their productivity in the areas in which they will be evaluated: teaching, research and service (Fairweather, 2002; Marsh & Hattie, 2002; Fogarty, 2004; Hardre *et al.*, 2011). Considering these there areas, the Spanish State System and Spanish universities give greater weight to institutional accreditation and to the evaluation of research by individual Faculty members (García-Gallego et al, 2012) as it is the case in other countries such as Australia, the United Kingdom, and the United States (Adler & Harzing, 2009; Bazeley, 2003; Watty *et al.*, 2008; Mishra & Smith, 2012; Hemmings & Kay, 2008; Armstrong & Goodyear, 2006; Sykes, 2006; Prince *et al.*, 2007).

The most important rewards for instructors (tenure, promotion and professional status) go to faculty members who publish their findings in the most prestigious journals. For this reason, Faculty members seeking to be more productive in research may make less effort in their teaching activities (Barnett, 1992; Chow & Harrison, 1998; Hardre *et al.,* 2011; Hattie & Marsh, 1996; Massy & Wilger, 1995), which may have a negative influence on the academic performance of students.

In contrast, some authors such as Braxton (1996), Ramsdem and Moses (1992), Neumann (1992) and Sullivan (1996), from a conventional wisdom theory perspective, state that research productivity and teaching effectiveness are complementary because they involve common values. Furthermore, instructors who are active researchers are more organized, have more interest in learning and a greater ability to motivate students, and teach the latest developments in their discipline, which could have a positive effect on their students' academic performance. A similar conclusion is reached by García-Gallego *et al.* (2012) and Witte *et al.* (2013) who find synergies and economies of scope between

research and teaching activities, taking as a reference the modern theories of the firm developed by Spiller and Zelner (1997), Lindbeck and Snower (2003) and Cherchye *et al.,* (2008). However, these authors do not take into account the levels of the courses that the lecturers are teaching, which could affect their findings according to Noser *et al*. (1996), who find evidence of a positive but minor effect of research on teaching at undergraduate level, while mixed results appear for the graduate level.

The instructor's gender could influence teaching effectiveness for, as commented by Toutkoushian and Bellas (1999), women spend more time on teaching activities and less time on research than their male workmates, maybe because women: (1) Have greater interest in teaching; (2) Use more labor-intense teaching strategies; (3) Have heavier teaching loads; And/or (4) spend more time on course preparation than men, which could be of benefit to their students. However, these differences could be attributable to the different distribution of sexes across diverse academic ranks, as suggested by Ramsdem (1998). On the other hand, instructors of the same gender as their students could positively influence the latter's academic performance due to the Pygmalion effect or to the role-model effect as suggested by Cho (2012).

Taking into account that different factors could affect teaching effectiveness and therefore students' academic performance, the purpose of this study is to analyse whether professors' characteristics determine university students' success/failure in the subject of Financial Accounting. Thus, we seek to make two contributions to the previous literature. Firstly, we focus on a graduate accounting course, which has received little attention in education literature, despite being important to the accounting profession and to universities (it is a compulsory subject for all business program undergraduates). Secondly, while prior research tends to focus on analysing professors' productivity, we provide empirical evidence of how professors' productivity in different tasks affects the students' academic performance. The findings from this study could provide new insight for administrators and subject coordinators in terms of identifying those aspects that enable them to distribute efficiently human resources in order to improve learning environments. Better making-decisions processes in these issues might improve students' academic performance.

Data and method

Institutional context

This study was performed at a large-sized public research university (approximately 46,000 students, of which 29,018 are graduate students) in Spain.

It is one of the most important Spanish universities according to QS World University Rankings. The institution is co-educational (60% women; 40% men) and comprises predominantly domestic students (approximately 90%). All students commute to the Faculty.

Course description

Financial Accounting is a compulsory undergraduate course taught in the Economics and Business Faculty for the degrees of Economics, Business, and Business and Law at Spanish universities. Thus, approximately 50.36% of the students enrolled in Financial Accounting are majoring in Economics, while 41.78 % major in Business Studies, and 7.86% do a Business and Law Major. The course is designed to provide students with the skills and competences needed to prepare financial statements.

To this end, students are divided into eight sections of Financial Accounting. Students must attend the assigned class and cannot make any changes during the course, thereby preventing problems of self-selection. Each class is 75 minutes long, three times a week, during a 32-week academic year. The Financial Accounting course consists of lectures with PowerPoint presentations in parallel with textbooks and exercises which are modified as the accounting laws change. Homework, examinations and the grading structure are constant throughout the eight sections of the course.

Requirements for the course include six exams, i.e., four multiple-choice exams (11.25% each one) and two practical exams (22.5% each one) given at the end of each semester, and homework (10%).

Sample

The data applied derives from the Students Records Service of the Universitat Autònoma de Barcelona for eight sections of Financial Accounting from 2005 to 2009. This eliminates possible problems associated with data provided by students, as pointed out by Becker and Powers (2001). We have complete information for 3219 of the 3317 students enrolled in the course at the end of each academic year. Missing data correspond to international students for whom we do not have university entrance exam grades and student withdrawals from the course prior to the end of the academic year.

For each student we obtained information regarding their academic performance in Financial Accounting class at the end of the academic year, the program they are studying, the group in which they are enrolled, whether the student receives a grant or not, the professor responsible for the group, number

of times the student has enrolled in the subject; student's gender, university entrance exam grade, date of birth, pre-university studies specialization and the teaching strategy for these groups.

For each instructor, we collected information regarding gender, number of years working in the university system, number of years devoted to administrative duties, total number of articles published in indexed journals, non-indexed journals and books; rank (assistant professor, associate professor, full professor or adjunct lecturer), workload in the subject of Financial Accounting and in other subjects, and the students' evaluations of their teaching.

Measures

Dependent variable

This study employs the weighted average score as a dependent variable (AP), which enables us to avoid the aggregation effect (Kennedy & Siegfried, 1997), and address concerns about error in measurement as a result of relying on the score of one exam (Walstad, 2001). Thus, we assign a weight of 0.1125 to each of the four multiple-choice tests taken during the year; the weight of two exams taken at the end of each semester is 0.225 and the weight of the homework completed during the year is 0.1. The maximum number of points a student could earn on each test, exams and homework is 10, while 0 is the minimum number of points. The overall final grade obtained by each student oscillates between 0 and 10 points. The test, homework, exams and other teaching and learning materials are exactly the same in all classes, which ensures the validity of their outcome measure.

Independent variables

The independent variables comprise the focus of the analysis, which could be closely related to students' learning processes. Thus, in order to examine the effect of the professors' characteristics on students' academic performance, we use eight explanatory variables which refer to the distribution of the faculty tasks. The first of these variables refers to the administrative duties (admduties), which will take a value of 1, if the instructor carries out administrative tasks during the academic year and 0 if not. In this line, different authors, including Toutkoushian and Bellas (1999) and García-Gallego *et al.* (2012), consider that administrative duties could affect teaching effectiveness and, therefore, students' academic performance. Nevertheless, in Spain, professors serving in administrative positions have a mandatory reduction in their teaching load, so it is unlikely that such positions will influence students' academic performance.

The teaching load can also vary depending on the instructor's rank in the university, as pointed out by García-Gallego *et al.* (2012). Thus, adjunct lecturers, who work as part-time instructors, may feel unmotivated to teach because they earn lower salaries than full-time professors, and this may negatively affect students' academic performance (Jacoby, 2005). Assistant professors who seek promotion may make greater effort for research than for teaching, compared to associate or full-time professors who hold a tenure-track position at the university. This could also damage the quality of teaching, as stated by García-Gallego *et al*. (2012). For this reason, we include in our model the dummy variables afprofessor, aprofessor and alecturer, which have the value of 1 if the professor works as a full or associate professor, assistant professor or adjunct lecturer, and 0 if not.

Instructors in each category may have spent a different number of years teaching in the university. Professors with more work experience may spend less time on preparing a class than those with less experience, which could be due to a learning and experience effect on the instructor (Tien & Balckburn, 1996). To assess this, our model includes the variable experience which represents the number of years from the beginning of his/her academic career until the start of each course.

The learning and experience effect also exists when the instructor has to prepare the same subject during the academic year, instead of preparing two or more subjects, which may affect their lectures. For this reason, in this model, we will take into account the workloadp variable, which represents the percentage number of hours taught by the professor on the Financial Accounting course out of his/her total number of hours worked during the academic year.

Professors who spend their teaching time on preparing only one subject may deliver higher quality teaching, which can lead to greater student learning (Riehl & Sipple, 1996). In order to examine the effect of the quality of teaching on students' academic performance, we introduce the qteaching variable as a proxy, assessing it with students' evaluations of teaching based on a standard university survey (with a scale of 0 to 4). To assess each instructor's performance, the university chooses the courses where it carries out the teaching evaluations survey at random, given that the university is not able to assess all courses in which professors teach, due to lack of financial and/or human resources. Instructors do not know in which subjects the teaching evaluation survey will be conducted. This survey is conducted before students take their final exams. The professor knows the scores of the students' teaching evaluations in the following academic year. This allows us to reduce the biases detected by Ewing (2012).

Moreover, students may assess instructors of the same gender better in the teaching evaluations survey, which may be due to the Pygmalion effect or the

role-model effect (Cho, 2012). For this reason, a dummy variable samegen will be introduced, having a value of 1 if the student is of the same gender as the instructor and 0 if not.

To measure the quality of research productivity, we will use the number of articles published in highly ranked international peer-reviewed journals in the ISI Web of (Social) Science and Econlit databases, during the three academic years following the current course, and denoted referred.

Given that Mishra and Smith (2012) indicate that these databases are insufficient to assess the performance of scholars in the area of social sciences, Harzing (2013) suggests the use of Google Scholar to measure the quantity of research published by each instructor. For this reason, we will include in our model the nonrefer variable, which represents the number of books and articles in journals not included in the ISI Web of Science and Econlit databases during the three academic years following the current course.

The control variables used in this work are often used in literature regarding academic performance (Cantwell *et al.,* 2001; Marcenaro & Navarro, 2007; Martí, 2012; McKenzie & Schweitzer, 2001; Sheard, 2009; Martí & Orgaz, 2014). They include age, student's gender, degree, grant, number of times the student has enrolled in the subject, ability and pre-university studies specialization. The descriptive statistics and first-order correlations between independent variables and control variables are shown in table 1 and 2, respectively. Table 2 indicates that the variance inflation factor (VIF) values for each variable are between 1.07 and 8.82. This suggests that each independent variable has a VIF between 1 and 10. Therefore, no multicollinearity problems exist (Sharma & James, 1981).

Table 1. Measurement of dependent and independent variables

Variable	*Measure*
Dependent	
Result for student	Total result for student for exam and assessment items
Independent	
qteaching	Students' evaluations of teaching taking values between 0 and 4.
workloadp	Percentage number of hours taught by the professor on the Financial Accounting subject.
admduties	1= the instructor carries out administrative tasks during academic years; 0=does not have administrative tasks during the academic year
afprofessor	1= the professor works as a full-time or associate professor; 0= did not work as full-time or associate professor
aprofessor	1= the professor works as an assistant professor; 0= did not work as an assistant professor.
experience	Number of years from the beginning of his academic career.
referred	Number of articles published in highly ranked international peer-reviewed journals.
nonrefer	Number of books and articles in journals not included in the ISI Web of Science.
age	Indicates the age of the student in years.
gender	1=male; 0=female
grant	1=grant; 0=no grant
business/social	1=studied the specialisation indicated in secondary education: 0 = did not study it.
entrance	University entrance exam grade (5-10 points).
credits	Number of credits the student has passed during the year minus the credits passed in the subject of Financial Accounting.
repeat	1=repeat; 0= no repeat
degress	1= studying the academic degree indicated; 0= is not studying it.
afternoon	1= the student attends class in the afternoon; 0= the student attends class in the morning.
size	Number of students making up a group.

Source: Own work

Table 2: Correlation Matrix for Regression Variables

	vif	qteaching	workloadp	admduties	afprofessor	aprofessor	experience	referred
qteaching	3.24	1						
workloadp	2.53	0.249	1					
admduties	6.08	0.084	-0.153	1				
afprofessor	8.82	-0.263	-0.402	0.789	1			
aprofessor	8.28	0.052	-0.214	-0.109	-0.251	1		
experience	2.82	-0.153	-0.072	0.444	0.403	0.099	1	
referred	4.18	-0.118	-0.178	0.116	0.142	0.651	-0.006	1
nonrefer	5.48	0.025	-0.297	0.406	0.273	0.680	0.256	0.678
samegen	1.30	0.067	0.131	-0.055	-0.096	-0.055	-0.044	-0.052
age	1.33	0.125	0.140	-0.111	-0.122	-0.173	-0.087	-0.152
gender	1.37	-0.019	0.084	-0.021	0.015	-0.167	-0.014	-0.106
grant	1.14	-0.079	-0.094	0.088	0.067	0.117	0.081	0.102
repeat	1.54	0.223	0.258	-0.219	-0.246	-0.220	-0.164	-0.238
business	1.07	-0.027	-0.006	-0.026	-0.030	0.006	-0.017	-0.006
social	1.15	-0.004	-0.069	0.027	0.019	0.081	0.035	0.035
entrance	1.80	0.008	-0.236	0.050	-0.050	0.437	0.012	0.313
credits	1.42	0.085	-0.129	0.096	0.010	0.335	0.100	0.255
degree	2.91	-0.001	-0.352	-0.085	-0.224	0.560	-0.131	0.277
year2005	2.75	-0.162	-0.351	-0.007	0.184	-0.027	-0.088	-0.086
year2006	2.37	0.114	0.011	-0.039	-0.061	-0.048	-0.063	-0.214
year2007	2.19	0.061	0.096	-0.037	-0.059	-0.017	0.077	0.016
afternoon	2.08	0.092	0.202	-0.247	-0.262	-0.355	-0.051	-0.345
size	5.44	-0.531	0.094	-0.268	-0.080	-0.310	0.278	-0.415

Source: Own work

Table 2: Cont.

	nonrefer	samegen	age	gender	grant	repeat	business
nonrefer	1						
samegen	-0.097	1					
age	-0.200	0.093	1				
gender	-0.110	0.452	0.103	1			
grant	0.142	-0.069	-0.163	-0.149	1		
repeat	-0.313	0.075	0.338	0.071	-0.288	1	
business	-0.011	-0.029	0.082	-0.033	0.051	-0.052	1
social	0.061	-0.091	-0.257	-0.162	0.121	-0.059	-0.155
entrance	0.328	-0.055	-0.189	-0.189	0.141	-0.293	0.089
credits	0.290	-0.033	-0.224	-0.142	0.131	-0.288	-0.033
degree	0.257	-0.059	-0.128	-0.176	0.099	-0.153	0.066
year2005	-0.043	0.005	0.023	-0.008	-0.028	0.018	-0.057
year2006	-0.097	-0.011	-0.012	-0.005	-0.019	-0.045	0.017
year2007	-0.183	-0.010	0.014	-0.007	-0.010	0.008	0.028
afternoon	-0.407	0.061	0.343	0.070	-0.119	0.305	0.062
size	-0.421	0.013	0.116	0.086	-0.034	0.175	0.023

Source: Own work

Table 2: Cont.

	social	entrance	credits	degree	year2005	year2006	year2007	afternoon
social	1							
entrance	0.067	1						
credits	0.027	0.434	1					
degree	0.106	0.574	0.301	1				
year2005	-0.014	-0.033	-0.026	-0.025	1			
year2006	0.002	-0.013	-0.040	0.002	-0.335	1		
year2007	0.013	0.004	0.042	0.017	-0.341	-0.321	1	
afternoon	-0.131	-0.182	-0.199	-0.080	-0.025	-0.002	-0.016	1
size	-0.058	-0.225	-0.264	-0.187	0.257	-0.183	-0.095	0.440

Source: Own work

Data analysis

We use a censored least absolute deviations regression model proposed by Powell (1984)[1], which does not require known distributional form in the term error, to analyse whether the characteristics of instructors influence the academic success of students. It is defined as follows:

$$\begin{aligned} y_i^* &= \alpha + \beta' \boldsymbol{x}_i + u_i \quad \text{si} \quad y < y_i^* < \overline{y} \\ y_i^* &= \overline{y} \qquad\qquad\quad \text{si} \quad y_i^* > \overline{y} \\ y_i^* &= \overline{y} \qquad\qquad\quad \text{si} \quad y_i^* < \overline{y} \end{aligned} \qquad [1]$$

Where *yi** is the academic performance reached by the undergraduate; y represents the minimum amount of points that a student can obtain (0 points); $\overline{y}$ is the maximum score that a student can reach (10 points); *xi* is a vector that contains all the explanatory variables of students' academic performance; β is a K-dimensional vector of unknown parameters; *ui* are the residuals which do not require known distributional form, as shown by Powell (1984). The standard errors of the estimations were obtained using the bootstrap technique.

Results

The results obtained by estimating the censored least absolute deviations model are shown in table 3. These results show that the qteaching variable is positively and significantly associated with student's academic performance. Other factors held constant, a 1 point increase in the teaching evaluation is associated with a 0.90 point rise in the students' academic performance. This result is consistent with Jacob and Lefgren (2008), Hoffmann and Oreopoulos (2009) and Beleche *et al*. (2012), demonstrating that teaching evaluations are a good indicator of the quality of teaching. Thus, students attending Financial Accounting classes given by instructors with more highly evaluated teaching might achieve better academic performance than those who attend classes given by professors with lower teaching evaluations.

[1] Unlike the Tobit maximum likelihood estimator proposed by Tobin (1958), the censored least absolute deviations model provides robust and consistent estimators in presence of non-normality and heteroscedasticity of the error terms (Powell, 1984). Given that the results obtained implementing likelihood ratio test (LR= 309.44; p-value= 0.000) and the conditional moment test (conditional moment= 135.60; p-value: 0.000) indicate the presence of heteroscedasticity and non-normality in the model, the clad model proposed by Powel (1984) was adopted.

Table 3: Academic performance

	CLAD		
Variable	*Coefficient (β)*		*Standard Error*
qteaching	0.8986	***	0.2841
workloadp	-0.0128	**	0.0054
admduties	-0.2274		0.4358
afprofessor	0.5956		0.4587
aprofessor	-0.8141	**	0.3540
experience	0.3119		0.6083
experience^2	-0.3178	*	0.1852
referred	0.2530	*	0.1418
nonrefer	0.0349		0.0949
samegen	-0.0251		0.1284
age	-0.0386		0.0741
gender	-0.1231		0.1274
grant	0.3742	***	0.1305
repeat	0.7172	***	0.2132
business	2.0679	***	0.5359
social	0.2878	*	0.1425
entrance	0.6469	***	0.0873
credits	0.1097	***	0.0038
degree	0.3758		0.2289
afternoon	-1.1398	***	0.2509
size	0.0465	***	0.0086
year2005	-0.5597	**	0.2694
year2006	-0.5043	*	0.2822
year2007	-0.7491	***	0.2463
Constant (α)	-9.0021	***	2.4201
N. observations	3,219		
Left-Censured	1,134		
Right-Censured	1		
Pseudo R	0.2472		

Statistical significance at the 1%, 5% and 10% levels is denoted by ***, **, *, respectively.

Source: Own work

On the other hand, we find a significant and negative relationship between the workloadp variable and student's academic performance. Other factors held constant, a 1 point increase in the WORKLOADP variable is associated with a 0.01 point decrease in the students' academic performance. This indicates that the professors taking different subjects in the accounting area are able to transmit better knowledge to students and present the key concepts from a wider perspective on the accounting area. Therefore, professors teaching several subjects could use the content of other subjects to explain financial accounting and/or resolve doubts among students of this subject.

Our estimates also suggest that other factors held constant: an increase in the percentage of assistant professors with respect to adjunct lecturers, is associated with a significant reduction in students' academic performance; while a modification in the relationship between the percentages of full or associate professors and adjunct lecturers does not significantly influence student success. Thus, congruent with Tien and Blackburn (1996), Faculty members of higher rank deploy more effective teaching than those in lower ranks who might be putting more effort into increasing their productivity in research in order to gain promotion and obtain tenure positions, according to Chow and Harrison (1998). On the other hand, adjunct lecturers are specialized in teaching and have concurrent employment in the private sector, which enables them to explain their experiences in private companies to students, thus improving their academic performance, as suggested by Bettinger and Long (2010).

We also find a nonlinear relationship between the experience variable and students' academic performance, which is summarized by the positive coefficient of the linear term and the negative and significant coefficient of the square term. This suggests that students' academic performance is positively affected by attending classes given by experienced professors until a maximum is reached, beyond which higher levels of experience may hinder the students' academic performance. This finding could be due to: (1) The most experienced professors within each rank being less motivated, which leads to a reduction in their student's academic performance; And/or (2) the existence of assistant professors whose contracts are about to end, meaning that they spend more time on research activities and less time on teaching activities because in evaluation processes for promotion of individual Faculty members, the Spanish State System and Spanish universities give greater weight to articles published in journals indexed in the ISI Web of Science than to teaching effectiveness. This is consistent with Barnett (1992), Chow and Harrison (1998), and Hardre *et al,* (2011).

Our estimates suggest that other factors held constant, an increase in the number of articles by the instructor published in journals indexed in the ISI Web

of Science and Econlit databases is associated with an increase in students' academic performance. Each additional article published by a professor is associated with a 0.26 point rise in students' academic performance. This could be due to professors doing research in issues related to class content, allowing them to give more detailed lectures, or having more extensive knowledge of the accounting area. This result is congruent with García-Gallego *et al.* (2012) and Witte *et al.* (2013), revealing that teaching effectiveness and quality research are complementary in the accounting area, there being synergies and economies of scope between research and teaching activities.

Regarding control variables for the individual characteristics of students and institutions, we find that the effect of obtaining study grants on students' academic performance is positive and significant. Thus, the academic performance of students benefiting from grants is on average 0.37 points higher than that of students who do not receive study grants. This could be because students receiving grants during their first year in university come from humble families which need a grant in order for the student to continue their studies. Therefore, they are more motivated to achieve their aim, which is to obtain a good academic record so that they can have their grant renewed. This is consistent with Marcenaro and Navarro (2007).

Our results also reveal that the repeat variable is positively and significantly associated with student's academic performance. The students who did not manage to pass the Financial Accounting credits in previous exams, increase their academic performance by 0.72 points compared to new entrants, other factors held constant. This may be due to the fact that the student is more familiar with the material and the type of exam given in the subject.

Obtaining a good academic record proves to be significantly more feasible for those students who previously studied accounting in vocational training Higher Education courses in Administration and Finance (BUSINESS variable) than for their classmates coming from the Social Science (SOCIAL variable), specialisation in secondary school or other secondary education studies, which could point to the existence of a close correspondence between secondary school and university curricula. This result is consistent with the empirical evidence provided by Eskew and Faley (1988) and Martí (2012).

We also find that the variable entrance seems to influence significantly and positively students' academic performance. Thus, students who achieve higher university entrance grades obtain a better academic performance than those who achieve poor university entrance grades. More specifically, a 1 point increase in the university entrance grade means an increase of approximately 0.65 points in the academic performance in the subject of Financial Accounting. Such result is consistent with previous studies carried out by Kherfi (2008) and Martí (2012).

The effort made by students during the year, measured using the variable credits, also seems to have a positive and significant influence on student's academic performance. Thus, those students who passed a greater number of credits during the year obtained a better academic performance. The time at which students attend class significantly influences their academic performance. In this regard, students who attend class in the afternoon obtain approximately 1.14 points less in their academic performance than those students who attend class in the morning. This result contradicts the empirical evidence encountered by Kherfi (2008), which may be because the morning timetable established by the Universitat Autònoma de Barcelona starts at an attractive time for students (9.00 to 10.00 in the morning). Those students who have better academic records can choose the morning time-slot, while students who work may be more interested in attending classes in the afternoon, combining professional obligations with academic responsibilities, which may result in poorer academic performance since they have less time to carry out the exercises given in class.

On the contrary, empirical evidence was fount that class size has a positive and significant influence on the students' academic performance. This could be due to the fact that the professor feels more motivated and prepares the classes better when giving a lecture to a large number of students. This would improve the teaching and the academic performance of students.

Finally, the present results show that the academic year in which students take the Financial Accounting course significantly affects students' academic performance. This could be due to differences in the difficulty level of exams, the exams in the last year (2008/2009 academic course) being easier because of an imminent change in Spanish accounting rules.

Discussion and conclusion

This paper contributes to an increasing body of literature examining the factors that influence students' academic performance. While other studies focus on analysing how students and institutional characteristics affect students' success, our study examines how professors' characteristics exert a differential impact on students' academic performance. The findings, combined with other studies, may prove to be useful in Accounting Education and other professional programs in Higher Education.

According to this, the results show that quality of teaching and publishing more articles in journals indexed in the ISI Web of Science and Econlit databases have a positive and significant influence on students' academic performance. On the contrary, dedicating more lecture time to Financial Accounting with regard to the total number of hours taught, working as an adjunct professor and having more teaching experience negatively influence students' academic performance.

Students attending Financial Accounting classes taught by assistant professors achieve poorer academic performance than those who attend classes taught by adjunct lecturers, associate professors or full-time professors, probably because assistant professors spend more time on research activities and less time on teaching activities in order to gain promotion to tenured track positions, the Ministry of Education and Research and the universities should: (1) Reduce the number of hours taught by assistant professors for them to achieve associate professor status, from which students will benefit, or (2) Assign teaching assistants to classes given by assistant professors.

It was also possible to detect poorer academic performance among students that attend classes given by more experienced professors, which could be because more experienced associate professors, full-time professors and adjunct lecturers are unmotivated because they are near retirement, while more experienced assistant professors make more effort into their research activities because their promotion is imminent. To improve their teaching effectiveness, the Ministry of Education and Research and the universities could reduce the number of teaching hours or give professors a year's sabbatical, depending on the number of years they have been teaching.

On the other hand, the quality of research is a relevant factor in students' academic performance. For this reason, the Ministry of Education and Research and the universities should encourage research by: (1) Increasing the salary incentives based on the number of articles published in leading journals while reducing their base salary and other complements; and (2) Giving research grants to assistant professors in order for them to be able to do research and gain promotion to associate professor positions. As commented by Martí (2012), it was also found that the individual characteristics of students and institutions affect their own academic performance.

Regarding the limitations of this work, the empirical evidence provided (although potentially important) may have a limited validity, as the students in this study were from the Business and Economics programs, enrolled in one single university, the Universitat Autònoma de Barcelona. Therefore, it is difficult to generalize results to other areas, degrees and universities which may have little relation. Nevertheless, it is possible to assume that the sample used could be representative of students who enrol in Financial Accounting courses in State, public and large universities. For future studies, it may be useful to analyse the impact of professors' characteristics on students' academic performance using student samples from other disciplines and/or other universities, comparing the results obtained by public and private universities.

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