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Article *in* International Journal of Iberian Studies · June 2008

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International Journal of Iberian Studies Volume 21 Number 1 © 2008 Intellect Ltd
Article. English language. doi: 10.1386/ijis.21.1.3/1

Academic cheating in Spain and Portugal: An empirical explanation

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Abstract

Despite its obvious interest and potential for concern, empirical research on the cheating phenomenon among university students has almost exclusively been carried out in the United States, usually covering only a few universities in a given region. Little is known about cheating in European universities, let alone the Iberian Peninsula. In this article we aim to contribute towards filling this gap by presenting evidence of this illicit behaviour in Portugal and Spain. Based on a survey of undergraduate students on Economics and Management courses, we conclude that there is a pervasive 'culture' of cheating in these two countries, reaching relatively high levels in universities. Using econometric techniques, which control for a wide set of variables likely to influence a student's propensity to cheat, we found that Spanish students are relatively more prone to breaching the academic code of conduct than their Portuguese counterparts, and that the implementation of Honour Codes by universities constitute a promising approach in curbing cheating in academia.

Keywords

tertiary education
academic standards
cheating
Spain
Portugal

1. Introduction

Through its effect on the quality of the education system, cheating influences the assessment of the stock of human capital, usually calculated on the basis of the 'quantity' and 'quality' of education (Barro and Lee 2000; Hanushek and Kimbo 2000; Teixeira 2005). Cheating tends to reduce the efficiency of a country's education system by distorting honest competition among students (Magnus et al. 2002). The phenomenon of cheating in universities is of overwhelming importance, since students engaging in it are least likely to have the necessary skills for their future professional lives, and awarding them a degree will most probably lead to various kinds of damage. Indeed, the entry of unfit professionals into the job market may lead to 'social ills', since these future workers will almost certainly be unable to perform properly, possibly resulting in harm to human life and damage both to their colleagues and to the institution that trained them. What is more, the entire educational environment may also be affected, since the magnitude of cheating means that more effort has to be spent controlling it – an effort that could be better applied to learning (Dick et al. 2003).

Cheating is a concept that is hard to define. Dick et al. (2003) mention a wide range of possible kinds of cheating, deciding that, on the whole, cheating is the breach of defined and accepted rules and standards. Cheating in examinations is one form of academic fraud widely alluded to in studies dealing with this matter (e.g. Bunn et al. 1992; McCabe and Trevino 1997; Tibbetts 1999; Sheard and Dick 2003; Hrabak et al. 2004). Despite its recognised magnitude, the empirical evaluation of cheating phenomena among university students has been almost exclusively focused on the US context, covering usually on a few universities in a given region. Furthermore, non-US related studies involve a narrow scope of countries/regions, such as Australia, Japan, Israel, and Russia, and, in Europe, The Netherlands and Croatia. In this context, it is fair to say that little is known about cheating phenomena in Europe. In this article we aim to contribute to filling this gap by presenting evidence on such sanctionable breaches of university rules in the two Iberian countries: Portugal and Spain.

In addition to the determinants of copying, on which the existing literature has mostly focused, we propose an innovative, more wide-ranging, econometric specification that includes a variable which quantifies the magnitude of the 'benefits' that students perceive they will gain from cheating, such as a better grade, in comparison with not cheating. Moreover, another 'contextual' determinant is also suggested for the probability of cheating, namely, whether or not the educational establishment has a code of honour. The article is organised as follows. The next section presents an overview of existing studies on the topic of academic cheating. In Section 3 the methodology applied in gathering the data is described, and Section 4 presents the statistical description of data. The econometric specification used for evaluating the phenomenon and the results are detailed in the final section.

2. On the determinants of cheating behaviour: a review

With Becker's seminal study (1968), the economics of crime gained renewed importance. Formalising illegal behaviours in terms of a cost-benefit analysis, Becker (1968) defended the economic rationality of people committing criminal acts. He believed that criminal behaviour resulted from the maximisation of the individual utility function in certain risk situations. Crimes were thus only committed if the resulting gains outweighed the expected punishment (Garoupa 2001). There are other complementary forms of theorising illegal behaviour, as described by Ehrlich (1973) and Wolpin (1978). The first study (Ehrlich 1973) not only followed the same line of reasoning as Becker's model (decisions weighted for costs and benefits) but also developed a time allocation model for legal and illegal activities, and made it possible to forecast changes from legal to illegal activities, as well as the magnitude of each of these (Horvath and Kolomaznikova 2002). The studies by Becker, Ehrlich and Wolpin were among the more formal approaches, regarded as pioneering in the analysis of the economics

of crime. More recent studies on cheating (e.g., Bunn et al. 1992; Kekvliet and Sigmund 1999) are of an essentially empirical nature. They are based on econometric specifications consistent with the assumption of a relation between fraudulent behaviour and the notion of costs and benefits resulting from it. Thus, these studies are adaptations of Becker's crime model to academic dishonesty.[1]

1 Rocha and Teixeira (2005b) account for the distinct forms of theorising illegal behaviours and adapt Becker's crime model (1968) to cheating.

Most of studies that examine the prevalence of cheating in universities in quantitative terms (cf. Table A1 in Appendix) show that the extent of cheating is considerable – affecting over one third of students. In one of the pioneering studies by Bunn et al. (1992), involving an analysis of two higher education courses in Microeconomics in Alabama (USA), the authors found that half the students surveyed admitted to having copied. They also found that cheating was 'normal' among students, with 80 per cent of them saying that they had seen a colleague cheating and half saying that they had seen a colleague being caught copying. Apart from the prevalence of the phenomenon, such illicit behaviour seems to be quite well accepted among the student community, with 28 per cent of students admitting to knowing colleagues who copy regularly. The widespread occurrence of the phenomenon seems to be explained by the fact that most students (70%) do not see cheating as a serious offence. In another context (two public universities in the United States) and covering more courses (six Economics classes), Kerkvliet (1994) collected data in two different ways (direct response and random response questionnaires), and found that in the random response questionnaire (which he felt guaranteed greater confidentiality and thus more honest answers), 42 per cent of students indicated they had copied in an exam at least once.

In a later study, covering twelve classes in the two universities, Kerkvliet and Sigmund (1999) estimated that an average of 13 per cent of the students surveyed had copied at least once. But there was considerable disparity among the groups, ranging from 0.2 per cent in the least 'deceitful' class to 32 per cent in the one where cheating was most prevalent. The authors say this disparity is due to the different measures of 'intimidation' used in the various classes (number of tests per student; who is in charge of discipline surveillance in the universities; space per student in the exam hall; number of test versions used by the teacher; type of exam). Taking a larger population than that covered in the Bunn et al. (1992) study, Nowell and Laufer (1997) looked at two higher courses in the United States (Economics and Accounting) and concluded that the average propensity for dishonesty was around 27 per cent. More recently, and with reference to other scientific areas, findings by Sheard and Dick (2003) in a study on postgraduate students in Information Technology at a university in Melbourne (Australia) showed that 9 per cent of students admitted to being involved in serious forms of cheating in exams. In other study on illicit behaviour among students from the 2nd to the 6th year of Medicine, in a Croatian university, Hrabak et al. (2004) found that 94 per cent admitted to having committed some kind of deceit at least once

during their studies. When it came to copying answers from other colleagues and using 'cheat sheets' (crib sheets), the percentages were 52.2 per cent and 34.6 per cent, respectively. Furthermore, a considerable percentage (66.4 per cent) of Psychology and Management students in three Dutch universities admitted to having cheated (Bernardi et al. 2004).

Most studies systematically indicate a number of determinants for student dishonesty. These may be grouped into factors associated with student characteristics; factors related to the institution, variables influencing the likelihood of the phenomenon being detected and the respective cost of detection; and also causes associated with the benefits of cheating (when they are not caught) and the benefits of not copying. In what follows we provide a brief account of these factors, summarised in Table A2 in Appendix.

The average mark/grade that the student achieves in his/her course is a determinant of cheating used in most of the studies – Bunn et al. (1992), Kerkvliet (1994), Nowel and Laufer (1997), Kerkvliet and Sigmund (1999), and Hrabak et al. (2004). Usually a *negative* correlation is expected between the average course grade and cheating in an exam, as it is reckoned that students with a high average course grade would gain less from cheating than those with lower averages. Most of the authors (Kerkvliet 1994; Nowell and Laufer 1997; Kerkvliet and Sigmund 1999) do not find the course average to be statistically significant, that is, results were inconclusive in this regard. Nonetheless, Hrabak et al. (2004) argue that the student's course average could be relevant in explaining attitudes to cheating. They take the view that students with a higher average grade have a more negative attitude to cheating than those with a lower one, and also disapprove of swapping questions by phone during an exam, and of using personal relations to pass an exam.

Besides the students' average grade/mark, we suggest here that a critical determinant of the propensity to cheat, linked to the cost/benefit idea, is the students' perceived 'benefits', since they expect to obtain a higher grade if they copy successfully. Along this line of reasoning, we tested the following hypotheses:

Hypothesis 1: The likelihood of cheating rises when the *difference* between the mark/grade the students expect if they copy, compared with the mark/grade that they expect if they do not, *is positive*.

Hypothesis 2: The probability of cheating is higher, the *greater* the *value of the difference* between the mark the students say they expect if they copy and the mark they expect if no cheating takes place.

Contextual factors and the environment, peer pressure and attitudes towards academic dishonesty are also other conditioning factors for the development of illicit academic practices. In fact, Bunn et al. (1992) found that the likelihood of cheating is directly related to observing others doing so, and the perception of the extent to which students routinely copy. In other words, the probability of a student having already copied is conditioned by his/her beliefs in relation to other students who copy.

Furthermore, these authors assess the students' perception in relation to the severity of the punishment for copying, and use this and other indicators of the 'cheating climate' as perceived by students to evaluate their perception of the percentage who copy. They find evidence for the belief among students that, given the negligible impact of intimidation measures and expected punishments, it is very unlikely that they will be caught copying. In addition, they find that students do not think cheating is a serious crime, which could contribute to the occurrence of higher rates of this phenomenon. Thus we put forward:

Hypothesis 3: In copying-favourable environments where permissiveness towards cheating is high, students' propensity to cheat tends to be higher. Conversely, the higher and more serious the perceived sanctions, the fewer incentives students have for dishonest behaviour.

The role of 'codes of honour' was examined by McCabe et al. (2003). The honour code is a group of practices used mostly in American universities where the students are trusted not to cheat and administer responses to cheating.[2] McCabe et al. do not directly analyse the influence of codes of honour on the probability of cheating. Instead, they assess whether this phenomenon has an effect on the academic integrity of university staff in terms of their attitudes and behaviour. McCabe et al. found that staff employed in universities which have a code of honour have more positive attitudes towards policies to enforce academic integrity and are more willing to allow the system to take measures to warn and discipline students. Furthermore, McCabe et al. confirmed that, where there is no code of honour, university faculty members believe that *students* should be responsible for monitoring their peers, since they recognise the fairness and efficiency of their institutions' policies of academic integrity. Following this line of argument we hypothesise here that:

Hypothesis 4: In universities where 'codes of honour' exist, the propensity to cheat among students is lower.

Differences in education systems across countries and social factors are likely to constitute an important factor in explaining students' propensity to cheat. For instance, Diekhoff et al. (1999) detect differences and similarities in American and Japanese students who cheat in exams. Weighting the limitations associated with the distinct composition of the two samples (both in terms of size and factors associated with various demographic characteristics, such as gender, age and school year), the data reveal that, in comparison with the Americans, Japanese students are more prone to copying in exams. They further say that the Japanese system, which assesses academic success/performance with one or very few types and periods of assessment, creates greater pressure on the students, and more incentives to copy. Moreover, and in terms of social involvement, Diekhoff et al. (1999) consider that if cheating is viewed as widespread, it is harder for Japanese students to resist the pressure to cheat and aid their fellow students to do so, given the deep-rooted group and team orientation among Japanese students. In a complementary

2 Some of the highest-rated universities in the world, such as Stanford, present their Honour Code on the homepage of their website (http://www.stanford.edu/dept/vpsa/judicialaffairs/guiding/honorcode.htm). We can thus read that "[t]he Honor Code is an undertaking of the students, individually and collectively: a) that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading; that they will do their share and take an active part in seeing to it that others as well as themselves uphold the spirit and letter of the Honor Code; b) The faculty on its part manifests its confidence in the honor of its students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as practicable, academic procedures that create temptations to violate the Honor Code; c) While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work."

study, Magnus et al. (2002) conducted an experiment on students in secondary, higher and postgraduate education, in five different areas – Moscow, rest of Russia, Netherlands, USA and Israel – and show that both the level of teaching and the zone lead students to have distinct opinions about academic dishonesty. On average, Russian students are against denouncers, contrary to the views held by American students where 'snitching' is tolerated. It was also found that, on average (except for Russia), secondary school pupils are less tolerant of *denouncing* when compared with students in higher education, and the latter are less tolerant than postgraduates who have more understanding for denouncers.

To the best of our knowledge, no study has so far been conducted on student dishonesty in the Iberian countries, thus little is known about such behaviour among Iberian university students. Therefore we hypothesise that:

Hypothesis 5: The propensity to cheat is influenced by the countries' education systems and social factors.

It is important to point out that there are other factors indicated in the literature that can influence dishonest behaviour among students, which we also consider in our analysis, such as gender (Kerkvliet 1994; Nowell and Laufer 1997; Kerkvliet and Sigmund 1999; Tibbets 1999; Hrabak et al. 2004), year of study (Nowell and Laufer 1997; Kerkvliet and Sigmund 1999; Hrabak et al. 2004), and student status (Nowell and Laufer 1997). However, the strength of these variables is not clear cut and there is no consensus about them.

3. Methodology for quantifying the phenomenon of student dishonesty

The main problem when analyzing cheating in higher education is that it is hard to measure, and researchers have generally used their own observations to assess this type of behaviour (Nowell and Laufer 1997). There are four ways to obtain data on student dishonesty (Kerkvliet and Sigmund 1999): direct yet discrete observation of the phenomenon; the 'overlapping error' method; the 'random answer questions' method; and the 'inspection via direct questions' method. In this study, we have opted for the last method. Although this method takes no account of problems associated with any sensitivity to the kind of questions asked (like the random answers method), meaning that it can induce deviation in the estimates for student dishonesty (Kerkvliet and Sigmund 1999), it does have simplicity of implementation in its favour and a wealth of output for analysis. This is why 'inspection via direct questions' it is often the procedure used (e.g. Bunn et al. 1992; Magnus et al. 2002; Sheard and Dick 2003; Hrabak et al. 2004).[3]

We devised a one-page questionnaire in the line of Bunn et al. (1992) embracing a range of questions focusing on the main determinants associated with fraudulent student behaviour and adding new variables/questions which, in our view, were likely to influence cheating propensity

3 In Rocha and Teixeira (2005b) a detailed description of the different methods is provided presenting their relative strengths and weaknesses.

(cf. Section 2). The questionnaire was implemented only for Economics and Management courses. In the case of Portugal, all eleven public universities were surveyed, encompassing 2,805 students. In Spain, we sent questionnaires to three universities with which our school has Erasmus Agreements, gathering 974 responses. This was a 'convenient' sampling criterion since contacts were rapidly established (through the corresponding university's Erasmus exchange coordinator) and guaranteed a certain degree of desired comparability between courses, given that to participate in Erasmus Mobility Programmes, universities must meet certain academic requirements. As a result, we received a total of 3,779 valid questionnaires.

4. Statistical description of the data

Our survey on cheating propensity among Portuguese and Spanish undergraduate Economics and Management students points to an average cheating propensity of close to 67% per cent. Thus, similarly to the studies reviewed in Section 2, we conclude that the phenomenon of cheating in universities reaches very high levels. It should be noted that studies using a comparable methodology to this one had estimated cheating probabilities between 50 per cent (Bunn et al. 1992) and 62 per cent (Rocha and Teixeira 2005a). Focusing also on cheating practices, Hrabak et al. (2004) had pointed to figures between 34.6 per cent and 52.2 per cent.

To pinpoint differences and similarities in cheating behaviours between these two Iberian countries, both the propensity to cheat and the observation of cheating in exams was analysed. Table 1 presents the results on frequency of cheating and Table 2 figures for the frequency with which students observe others copying.

Undergraduate Economics and Management students admitted to cheating to a greater extent in Spain than in Portugal (nearly 80 per cent

	Total percentage of students in each country cheating			Probability of cheating (sometimes + often + always − %)	% of total valid responses (n = 3757)
Countries	Never	Sometimes	Often or Always		
Portugal	37.6	60.0	2.4	62.4	74.1
Spain	20.3	73.1	6.6	79.7	25.9

Table 1: Frequency of cheating in Portugal and Spain.

Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

	Total percentage of students in each country			Probability of observing cheating (%)	Total percentage of responses (n = 3769)
Countries	Never	Sometimes	Often or Always		
Portugal	7.5	68.6	23.9	92.5	74.2
Spain	2.6	47.4	50.1	97.4	25.8

Table 2: Frequency of 'observing others copying' in Portugal and Spain.

Source: Calculations made by the authors based on direct survey conducted in the periods February 2005–June 2006.

against slightly over 60 per cent, respectively). The proportion of those who claimed never to have copied in Portugal (37.6 per cent) is almost double the Spanish figure. As to the frequency with which students in each of these two countries engage in illegal practices during exams, the evidence reveals that the highest proportions of students admit to cheating *sometimes* in exams, and only a very small proportion admit to cheating in exams *often or always*. In both cases the percentages are higher in Spain where 79.7 per cent admitted to cheating in at least one exam compared to 62.4 per cent in Portugal.

Observing other students cheating (Table 2) may constitute an indirect measure of cheating propensity and a reasonable indicator of a generalised 'culture' of cheating.

Our research revealed the alarming fact that in both countries over 90 per cent of students (92.5 per cent in Portugal and 97.4 per cent in Spain) admitted to having seen others committing illegal behaviour in exams – and in Spain approximately half of the students claimed to observe such behaviour often or always. Thus, we can conclude that there is a pervasive 'culture' of cheating in the Iberian Peninsula, where the vast majority of students have observed others cheating. Nevertheless, the pattern of the frequency of the phenomenon is somewhat different in these two countries, as the high frequency of observing others cheating is more clearly detected in Spain (50.1 per cent) than in Portugal (23.9 per cent of students). The pervasiveness of cheating is further confirmed by the percentage of students who admitted knowing someone among their closer friends or relatives who copies regularly, again to a greater extent in Spain (85.7 per cent) than in Portugal (59.4 percent).

Such pervasiveness is to a large extent explained by the opinion and attitude of students regarding fraudulent behaviour. From our study we found that, on the whole, only 10.4 per cent of the student respondents reckoned that cheating was a serious problem and around one third recognised that it deserved some concern. For the majority (55.3 per cent), cheating was either not a problem or only a trivial problem (Figure 1).

In the Iberian student culture, cheating is a non-issue, even though both countries have preoccupying levels of cheating. It should be noted that in Spain, where the magnitude of cheating is greater, a considerable majority of students (65.3%) does not perceive it as a problem. Even more disturbing is that nearly half of all the respondents (46.7%) believed that cheating was an intentional act and only 11.7 per cent thought that cheating had occurred due to 'last-minute' panic.

Another disquieting finding is that more than half of the students (55.6%) asserted that they would study (even) less if there were no supervision/invigilation during exams and/or no sanctions for illegal practices, suggesting that they would cheat to an even greater extent if there were no deterrents. In Spain the figures are again more alarming than in Portugal (65.8% against 52.1%, respectively). Furthermore, the percentage of students who admitted that they would spend much less time studying if there

were no sanctions or supervision in exams is quite significant: in Spain, 36.9 per cent and in Portugal, 27 per cent.

As seen in Figure 2, the general environment in both countries is quite permissive towards academic misconduct. The highest penalty students

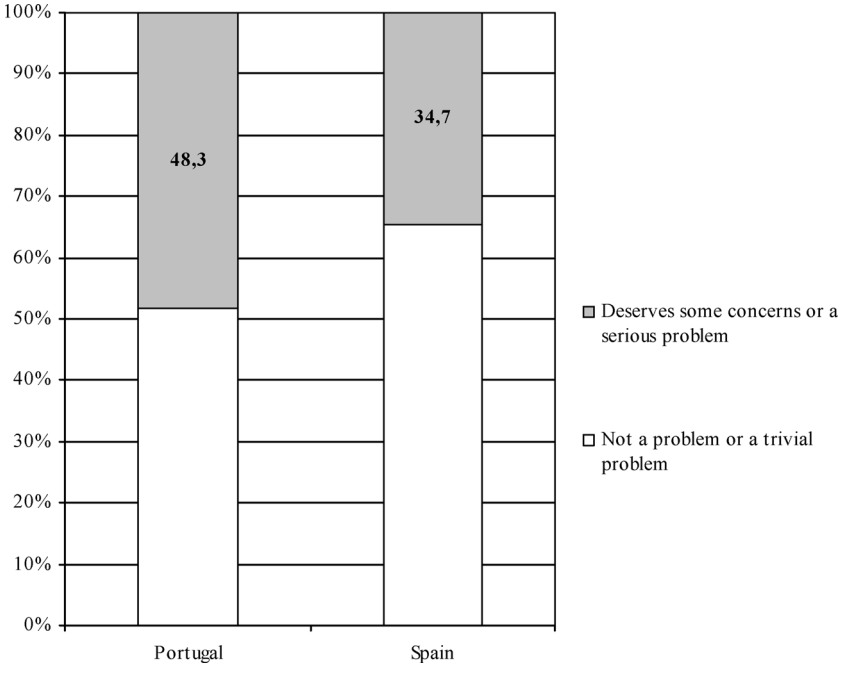

Figure 1: Students' opinion regarding cheating by country.
Source: Calculations made by the authors based on a direct survey conducted in the period February 2005–June 2006.

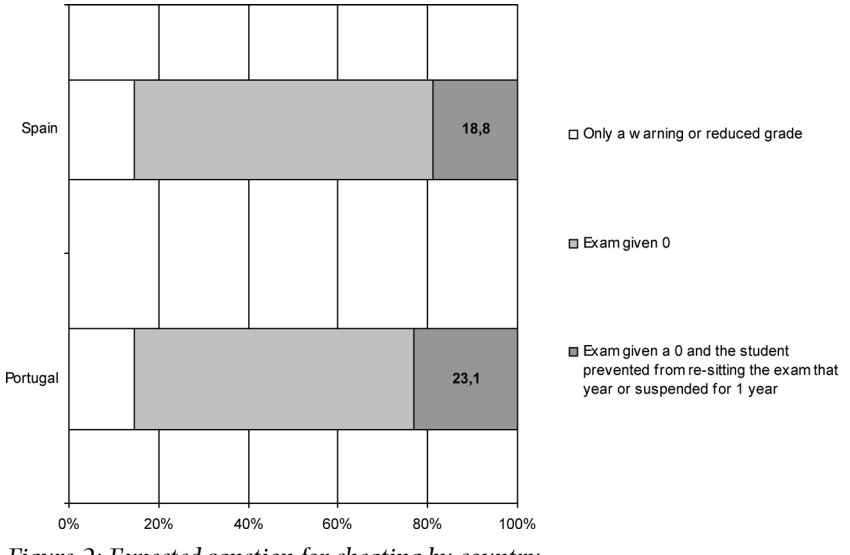

Figure 2: Expected sanction for cheating by country.
Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

expect from various types of deceit is that their exam will be annulled (given a mark of 0) (over 60 per cent in both countries) and only around 20 per cent anticipate severe sanctions for fraudulent misconduct.

In Spain, a huge percentage (73.3%) of students who admitted to having copied at some point have been caught by academic staff, professors and/or invigilators. The figure in the Portuguese case is also significant (50.3%). Yet being caught has not prevented widespread academic misconduct in these countries, which further proves the ineffectiveness of the sanctions. We could conclude that both countries run an ineffectual university teaching system. This ineffectiveness is aggravated by the students' widespread expectations of greater gains (higher marks/grades) if their cheating goes undetected. This explains why misconduct is so prevalent in both countries. Figure 3 shows similar student expectations in both countries, with 73.4 per cent of the students expecting a better mark/grade from cheating and only 6.5 per cent consider the possibility of a lower mark/grade after copying.

Only some schools/universities in Portugal have some kind of binding document regulating cheating practices, the majority of which focus on deceitful practices in exams. None of the Spanish schools in the analysis have any type of written document in this regard. Moreover, we found that in schools that do have some type of written regulation (identifying and stipulating sanctions in cases when cheating is detected) or (more rarely) an honour code, the propensity to cheat is substantially lower in the latter case (Figure 4).

Although at first glance age tends to be related to the year of schooling (2nd, 3rd, or 4th) in which the student is enrolled, the results across the board

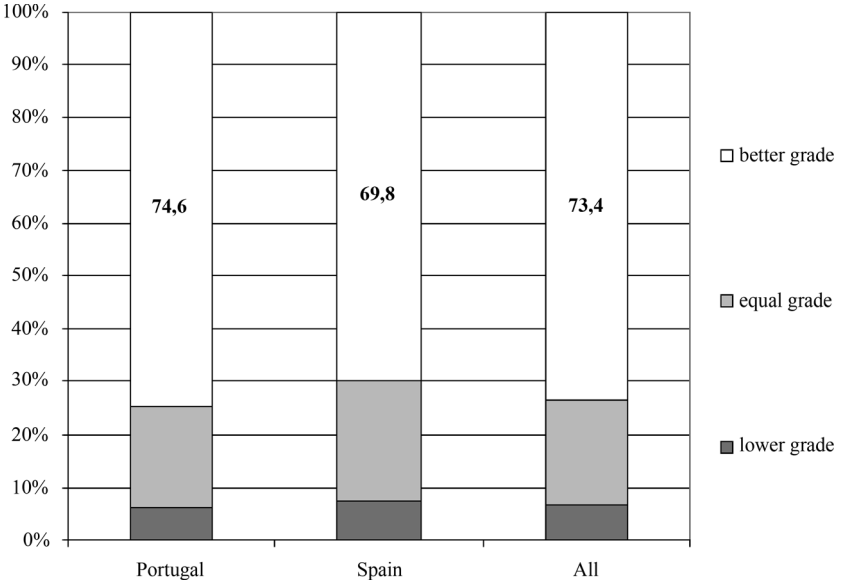

Figure 3: Expected gain (in terms of a better mark/grade) as a result of cheating successfully, by country.
Source: Calculations made by the authors based on a direct survey conducted in the period February 2005–June 2006.

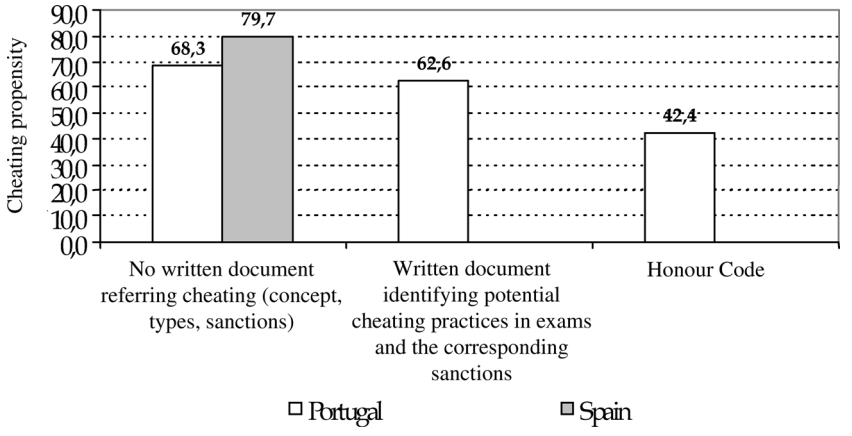

Figure 4: Cheating propensity by existence of honour code and by country.
Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

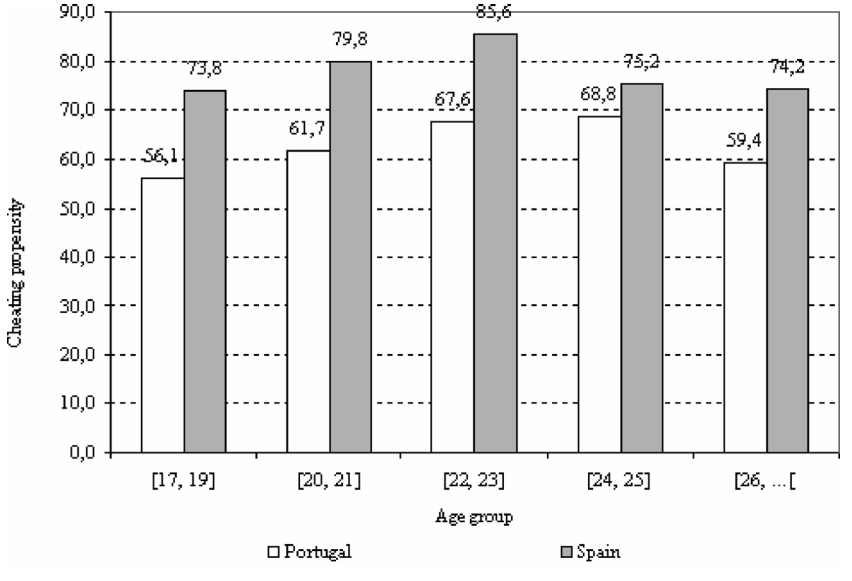

Figure 5: Cheating propensity by age and by country.
Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

reveal a strong relationship between the propensity to copy and students in the final years of their degree, that is, when closer to graduating (Figure 5).

For the total sample, students enrolled in the final year (4th year) reveal a 72.5 per cent likelihood of cheating compared to 62 per cent for those in their 2nd year. When analysing each country individually, in Spain, the highest likelihood was found among 3rd-year students (86.8%), even higher than in the 4th year (78.7%) and the 2nd year (75.9%), as Figure 6 clearly shows.

Most of the students surveyed (87.9%) were 'Normal' or 'Regular' students (students enrolled normally in full-time programmes). Students who

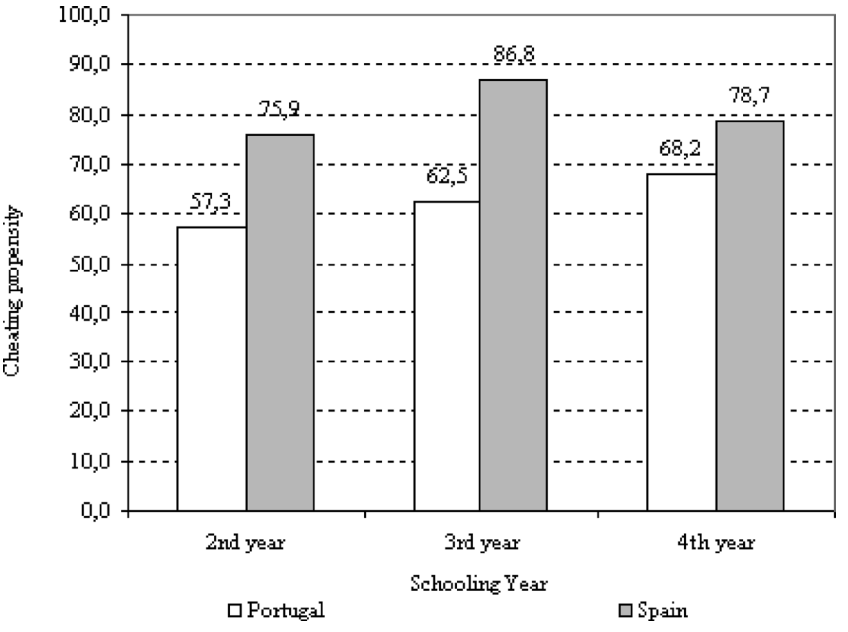

Figure 6: Cheating propensity by schooling year and by country.
Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

actively involved in student organisations ('activist' students – ASs) and those working part-time (WSs) only accounted for 2.4 per cent and 8.6 per cent respectively of the students surveyed, yet these two groups proved to be even *more* likely to engage in academic misconduct, namely 70 per cent in the case of ASs and 70.5 per cent in the case of WSs, against the 67.6 per cent of the so-called 'regular' students. This may reflect the fact that ASs and WSs have less time to devote to their studies.

As to the question of whether higher or lower performing students are more likely to cheat, the data in this exploratory analysis revealed an inverse relationship between good performance (for which their average academic grade or Grade Point Average, GPA) was used as a proxy), and their likelihood to cheat, but it was not very significant. Considering the overall sample, 60.4 per cent of the better students (with average grades of 80 per cent or higher) admitted to cheating, which is a smaller proportion than their weaker colleagues (with average grades of 50–60%), among whom 69.8 per cent were likely to cheat, in other words, a 10 point gap. This tendency was evident in both countries (cf. Figure 7).

Generally speaking, with the application of the statistical instrument of Pearson's linear correlation coefficient we found that the probability to cheat appears statistically and positively correlated with the variation in the benefits gained from successful copying; the frequency with which other students are seen cheating and being caught copying; familiarity with those who copy regularly; time spent studying for an exam for which

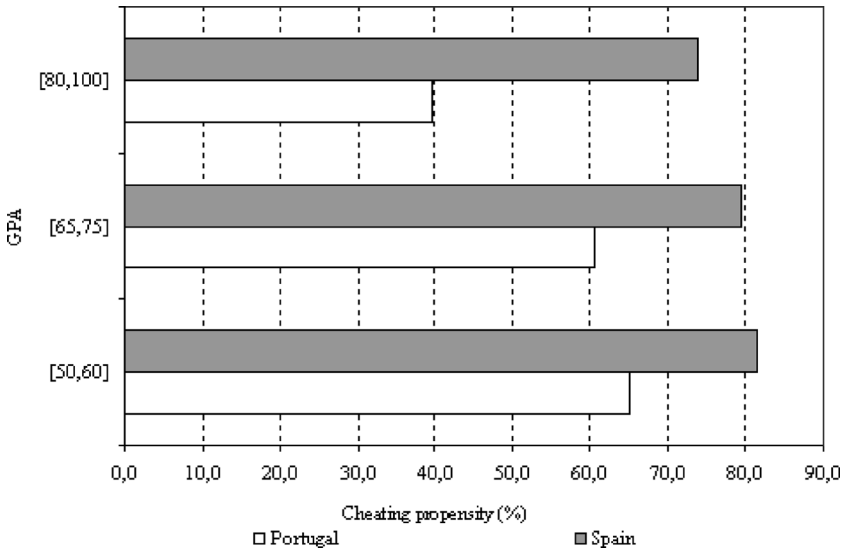

Figure 7: Cheating propensity by grade point average and by country.
Source: Calculations made by the authors based on direct survey conducted in the period February 2005–June 2006.

there will be no surveillance/sanctions; and the age and the year in which students are enrolled. Finally, older students and those who are closer to concluding their degrees are more inclined to cheating (see Table A3 in Appendix). The negative correlations can be summarised as follows. Students who are enrolled in schools that have codes of honour are, in general, *less* likely to cheat in exams. So are students with average marks/grades (GPA) of approximately 63 per cent or above, and those who perceive that the penalties for cheating are severe.

5. Assessing the determinants of academic cheating: model specification and results

The aim was to assess which are the main determinants of the propensity to cheat among university students. The statistics supporting these findings are appended at the end of this article (Tables A3 and A4). The results are as follows. As to the potential determinant 'grade average', as seen above, a *negative* correlation is usually expected between good student performance (average course mark/grade) and their propensity to cheat in an exam. Indeed, our results show that students with a high average grade would have less to gain from cheating than those with a lower average, that is, the opportunity cost for the former is higher than for the latter. Thus, our results corroborate those of Hrabak et al. (2004): students with a higher average reveal a lower propensity to cheat than those with a lower one.

As to the potential determinant 'expected gains', we found that students who expect a positive increase in their grade through cheating do tend to cheat relatively *more* than those who do not expect to gain from cheating, although the difference is unexpectedly small. Thus Hypothesis 1

is corroborated, but only just. Furthermore, the *value of the difference* between the expected grades from cheating and from not cheating *does not* impact on the propensity to cheat, that is, Hypothesis 2 is not corroborated by the data. In brief, the relevant issue for students is *any gain* from cheating rather than the *amount* of gain they manage to achieve. Whether they believe they might gain an additional 5 or 15 points does not seem relevant in explaining their propensity to cheat.

As to contextual factors and the environment, peer pressure, and attitudes towards academic dishonesty as factors, these emerged as important conditioning rather than explanatory factors for the development of illicit academic practices. Similarly to Bunn et al. (1992), we found that the likelihood of cheating is directly related to observing others doing so. The perception of the number of students who routinely copy, in other words the general propensity of students to cheat, is conditioned by their beliefs in relation to other dishonest practices. Those that perceive cheating as a more problematic/serious issue tend to cheat less. Moreover, factors such as students' perception of the effectiveness of existing mechanisms to prevent cheating; the severity of the corresponding punishment (proxied by indicators such as 'has seen others being caught cheating'); the influence of invigilators on the amount of time spent studying (how much less the student studies if there are no invigilators); and the expected sanction for cheating (from minor or no sanctions to getting expelled from the University) – all produced mixed results. On the one hand, students who admitted to studying much less for exams where there would be no invigilators tended to cheat *more*. Those that expected more serious punishments presented a *lower* cheating propensity. On the other, having seen others get caught tends to be associated with a *higher* degree of cheating. This latter aspect seems to indicate that, in some measure, a punitive environment discourages cheating, but seeing others become the victims of it does not.

Among student characteristics as potential factors, such as gender, age or status as regular/full time enrolled student, or part-time student, or 'activist' student, only the year of schooling was found to have some effect on cheating propensity. Results reveal that on average students who are close to finishing their degree (i.e., are enrolled in the final year) have a *higher* propensity to cheat.

Instead, cultural and social factors intrinsic to the country of origin were found in our case to be more relevant in explaining cheating propensity. Hypothesis 5, which assumes that the propensity to cheat is influenced by a country's education system and social factors, is corroborated by our data – differences do exist between the Spanish and Portuguese education and social systems in this regard. In particular, there is a clearly higher propensity to cheat in exams in Spain than in Portugal that is not explained by other factors. Although beyond the scope of the present study, it would be of great interest to those involved in the maintenance of academic standards to explore the reasons behind these differences between Spanish and Portuguese students.

Finally and most importantly, the existence of a university 'code of honour' as a factor that has a statistically significant and negative association with cheating was explored. Our findings confirm that in universities that have them, the propensity to cheat among students is lower – in other words such codes have a deterrent effect. Thus, our fourth hypothesis is corroborated. In fact, the present study reveals that, regardless of the country, context or student characteristics, the practice of instituting honour codes has significantly curbed deceitful acts among students. Therefore we have identified an issue that should be taken up by educational policymakers in Spain and Portugal. There is an urgent need for both universities and government to reflect on the need for appropriate codes of honour, like those applied in some renowned universities such as Stanford and Harvard. We also agree with Dick et al. (2003: 182) who correctly pointed out that '. . . deterring cheating is far more effective than detecting and punishing cheating due to the costly nature of formal responses to cheating, so academics should focus their time and energy on pre-empting cheating rather than detecting cheating'. The existence of honour codes comprises an excellent measure for pre-empting cheating.

The recognition and quantification of the phenomenon of cheating in universities is an important (first) step in raising awareness among students and staff, so that ultimately cheating can become unacceptable. It is our belief that a feasible option in this direction includes gradually introducing codes of honour in each university/school.

Acknowledgement

The authors are deeply grateful for insightful comments and suggestions from two referees and the Editor of the IJIS. The authors are also indebt to a large number of colleagues, both in Portugal and Spain, who help in the implementation of the survey and who, due to privacy reasons, are not named here. To all students that answered the survey a word of gratitude.

Works cited

Barro, R.J. and Lee, J.W. (2000), 'International data on educational attainment updates and implications', *NBER Working Paper* n 7911, National Bureau of Economic Research.

Becker, G.S. (1968), 'Crime and punishment: an economic approach', *Journal of Political Economy*, 76: pp. 168–217.

Bernardi, R.A., Metzger, R.L., Bruno, R.G.S., Hoogkamp, M.A.W., Reyes, L.E. and Barnaby, G.H. (2004), 'Examining the decision process of students' cheating behaviour: an empirical study', *Journal of Business Ethics*, 50: pp. 397–414.

Bunn, D.N., Caudill, S.B. and Gropper, D.M. (1992), 'Crime in the classroom: an economic analysis of undergraduate student cheating behavior', *Journal of Economic Education*, 23: pp. 197–207.

Dick, M., Sheard, J., Bareiss, C., Carter, J., Joyce, D., Harding, T. and Laxer, C. (2003), 'Addressing student cheating: definitions and solutions', *ACD SIGCSE Bulletin*, 35: 2, pp. 172–184.

Diekhoff, G.M., LaBeff, E.E., Shinohara, K. and Yasukawa, H. (1999), 'College Cheating in Japan and the United States', *Research in Higher Education*, 40: 3, pp. 343–353.

Ehrlich, I. (1973), 'Participation in illegitimate activities: a theoretical and empirical investigation', *Journal of Political Economy*, 81: pp. 521–565.

Garoupa, N. (2001), 'Optimal law enforcement when victims are rational players', *Economics of Governance*, 2: pp. 231–242.

Greene, W.H. (2003), *Econometric Analysis*, New Jersey: Prentice Hall.

Hanushek, E. and Kimbo, D. (2000), 'Schooling, labor-force quality and growth of nations', *American Economic Review*, 90: 5, pp. 1184–1208.

Horvath, R. and Kolomaznikova, E. (2002), 'Individual decision-making to commit a crime: early models', *Law and Economics*, n 0210001: pp. 1–17.

Hosmer, D. and S. Lemeshow (1989), *Applied Logistic Regression*, New York: John Wiley & Sons.

Hrabak, M., Vujaklija, A., Vodopivec, I., Hren, D., Marusic, M. and Marusic, A. (2004), 'Academic misconduct among medical students in a postcommunist country', *Medical Education*, 38: 3, pp. 276–285.

Kerkvliet, J. (1994), 'Cheating by economics students: a comparison of survey results', *Journal of Economic Education*, 25: 2, pp. 121–133.

Kerkvliet, J. and Sigmun, C.L. (1999), 'Can we control cheating in the classroom?', *Journal of Economic Education*, 30: 4, pp. 331–351.

Laufer, D. and Nowell, C. (1997), 'Undergraduate student cheating in the fields of business and economics', *Journal of Economic Education*, 28: pp. 3–12.

Magnus, J.R., Polterovich, V.M., Danilov, D.L. and Savvateev, A.V. (2002), 'Tolerance of cheating: an analysis across countries', *Journal of Economic Education*, 33: pp. 125–135.

McCabe, D.L. and Trevino, L.K. (1997), 'Individual and contextual influences on academic dishonesty: a multicampus investigation', *Research in Higher Education*, 38: 3, pp. 379–396.

McCabe, D.L., Butterfield, K.D. and Trevino, L.K. (2003), 'Faculty and academic integrity: the influence of current honor codes and past honor code experiences', *Research in Higher Education*, 44: 3: pp. 367–385.

Pulvers, K. and Diekhoff, G.M. (1999), 'The relationship between academic dishonesty and college classroom environment', *Research in Higher Education*, 40: 4, pp. 487–498.

Rettinger, D.A., Jordan, A.E. and Peschiera, F. (2004), 'Evaluating the motivation of other students to cheat: a vignette experiment', *Research in Higher Education*, 45: 8, pp. 873–890.

Rocha, M.F. and Teixeira, A.C. (2005a), 'College cheating in Portugal: results from a large scale survey', *FEP Working Papers*, n° 197, Faculdade de Economia, Universidade do Porto.

——— (2005b), 'Crime without punishment: an update review of the determinants of cheating among university students', *FEP Working Papers*, n° 191, Faculdade de Economia, Universidade do Porto.

Sheard, J. and Dick, M. (2003), 'Influences on cheating practice of graduate students in IT courses: what are the factors?', *ACM SIGCSE Bulletin* 35: 3, pp. 45–49.

Teixeira, A.C. (2005), 'Measuring aggregate human capital in Portugal: 1960–2001', *Portuguese Journal of Social Science*, 4: 2, pp. 101–120.

Tibbets, S.G. (1999), 'Differences between women and men regarding decisions to commit test cheating', *Research in Higher Education*, 40: 3, pp. 323–342.

Whitey, Jr., B.E. (1998), 'Factors associated with cheating among college students: a review', *Research in Higher Education*, 39: 3, pp. 235–274.

Wolpin, K.I. (1978), 'An economic analysis of crime and punishment in England and Wales, 1894–1967', *Journal of Political Economy*, 86: 5, pp. 815–840.

Appendix

Studies/authors	Level of education	Courses (n°)	Countries (n° univ/country)	Number of students	Magnitude of 'cheating'
Bunn et al. (1992)	University – Undergraduate	Microeconometrics (2)	USA (1) (Alabama)	476	50.0%
Kerkvliet (1994)	University – Undergraduate	Economics (6)	USA (2)	363	42.2%
Nowell and Laufer (1997)	University –Undergraduate	Economics and Accounting (2)	USA (2)	311	27.0%
McCabe and Trevino (1997)	University –Undergraduate	–	USA (9)	1793	30.0%
Diekhoff et al. (1999)	University –Undergraduate	Sociology and Psychology related courses (6)	USA (1), Japan (3)	392, 276	20.0% (USA) 55.4% (Jap)
Pulvers and Diekhoff (1999)	University –Undergraduate	Behavioral and Social Sciences, Criminal Justice, Economics and Physical Education (18)	USA (2) (Midwest)	280	11.6%
Kerkvliet and Sigmund (1999)	University –Undergraduate	Economics (12)	USA (2)	597	12.8%
Tibbetts (1999)	University –Undergraduate	Introductory Behavioral Science (6)	USA (1) (Mid-Atlantic)	598	39.0%
Magnus et al. (2002)	Secondary, University – Undergraduate and Postgraduate	Economics	Russia (Moscow and provincial Russia), USA; Netherlands; Israel	885	–
Sheard and Dick (2003)	University – Postgraduate	Information Technologies	Australia (1) (Melbourne)	112	9.0%–38.0%
Bernardi et al. (2004)	University – Postgraduate	Psychology and Management (2)	Netherlands (3)	220	66.4%
Hrabak et al. (2004)	University – Undergraduate	Medical Sciences	Croatia (1) (Zagreb)	827	34.6%–52.2%
Rettinger et al. (2004)	University – Undergraduate	Arts (4)	USA (1) (North-eastern)	103	53.0%–83.0%

Table A1: Magnitude of academic dishonesty among students found in previous studies.

Groups of determinants	Determinants	Studies
Student characteristics	• Gender • Course average grade • Consumption of alcohol • Academic Year of studies • Religious preference • Student Status • Have failed at least a year • Moral factors and kind of personality • Motivation and Competence	Kerkvliet (1994) Nowell and Laufer (1997) Whitey (1998) Kerkvliet and Sigmund (1999) Tibbetts (1999) Bernardi et al. (2004) Hrabak et al. (2004) Rettinger et al. (2004)
Factors related with the educational institution	• Dimension and level of Class • Category of teachers • Existence of 'honour code' • Classroom environment	Nowell and Laufer (1997) Whitey (1998) Pulvers and Diekhoff (1999) Kerkvliet and Sigmund (1999) McCabe et al. (2003)
Cost of detecting academic dishonesty	• Teacher's academic category • Existence of verbal warnings regarding the resultant consequences of cheating in exams	Bunn et al. (1992) Kerkvliet and Sigmund (1999)
Probability of detecting cheating	• Number of tests by students whose goal is maintaining good behaviour	Kerkvliet and Sigmund (1999)
Benefits of cheating (in case of not getting caught)	• Spatial class occupation by student • Number of exam versions employed by the instructor • Type of exams • Expected grade/mark • Number of "free" hours by the student in the term • Type of Courses	 Whitey (1998) Kerkvliet and Sigmund (1999)
Benefits of not copying	• Average number of weekly hours of study	Kerkvliet (1994) Kerkvliet and Sigmund (1999)
Others factors	• Students' opinion of those that copy or commit other types of academic dishonesty • Students' perception of the percentage of students that copy and rival group behaviours • Intensity of work ("Workload") • Pressure not to fail • Type of courses • Country/region • Students' background • Students' origin	Bunn et al. (1992) Kerkvliet (1994) McCabe and Trevino (1997) Nowell and Laufer (1997) Whitey (1998) Diekhoff et al. (1999) Magnus et al. (2002) Sheard and Dick (2003) Hrabak et al. (2004)

Table A2: Groups of factors influencing the propensity to cheat, based on previous studies.

		Mean	σ	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13
	Probability of cheating	0.669	0.471	0	1	0.115***	0.083***	−0.050***	0.296***	0.277***	−0.082***	0.212***	0.127***	−0.102***	−0.236***	0.014	0.038**	0.106***
Expected benefits	(1) ΔGain Cheating	0.734	0.442	0	1		0.677***	−0.187***	0.077***	0.092***	−0.021	0.029	0.149***	−0.014	−0.042**	0.032*	0.026	−0.037**
	(2) DΔGain Cheating	13,57	17,89	−100	100			−0.194***	0.086***	0.087***	−0.045**	0.032*	0.148***	−0.004	−0.058***	0.015	0.032*	−0.044**
Opportunity cost	(3) Grade	62,73	8,37	50	100				0.031*	0.022	0.086***	0.029	−0.073***	0.020	0.000	0.023	−0.104***	0.006
Context – permissibility and permeability	(4) Frequency with which the act of cheating is observed (1: never . . . 5: always)	3,042	1,015	1	5					0.457***	0.032*	0.291***	0.080***	−0.042**	−0.238***	0.037**	0.040**	0.140***
	(5) Familiarity with someone that cheats regularly	0.657	0.475	0	1						0.033*	0.289***	0.119***	−0.038**	−0.262***	0.085***	0.045**	0.138***
	(6) Opinion regarding cheating (1: not a problem . . . 4: serious problem)	2.416	0.849	1	4							0.034*	−0.016	0.131***	0.075***	0.004	0.019	0.004
Sanctions	(7) See someone being caught cheating	0.563	0.496	0	1								0.072***	−0.033*	−0.165***	0.025	0.060***	0.121***
	(8) Amount of study if there is no surveillance (0: no influence . . . 6: study less 50% or more)	1.572	1.774	0	6									0.030	−0.045**	−0.022	−0.027	0.003
	(9) Expected sanction for cheating	3,012	0.845	1	5										0.155***	0.056***	−0.030	0.011
	(10) Honour Code	0.578	0.626	0	2											−0.074***	−0.103***	−0.074***
Student characteristics	(11) Gender	0.579	0.494	0	1												−0.082***	0.014
	(12) Age	21.67	2,96	17	59													0.403***
	(13) Schooling year (1: 2nd year . . . 3: 4th year)	2,056	0.829	1	3													

Table A3: Descriptive statistics.

*Note: significance levels ***1 per cent; **5 per cent; *10 per cent.*

		Model	
		$\hat{\beta}$	Exp($\hat{\beta}$)
Expected Benefits	(1) ΔGainCheating	0.477***	1.610
	(2) DΔGainCheating	−0.004	0.996
Opportunity cost	(3) Grade	−0.987***	0.373
Context – permissibility and permeability	(4) Frequency with which the act of cheating is observed	1.312***	3,712
	(5) Familiarity with someone that cheats regularly	0.438***	1.550
	(6) Opinion regarding cheating	−0.408***	0.665
Sanctions	(7) See someone being caught cheating	0.418***	1.519
	(8) Invigilators' influence on amount of study	0.302***	1.353
	(9) Expected sanction for cheating	−0.391***	0.676
Honour code	(10) Honour code	−0.542***	0.582
Countries	(11) Country (Spain = 1; Portugal = 0)	0.638***	1.893
Student characteristics	(12) Gender (Fem = 1)	−0.127	0.881
	(13) Age	−0.103	0.902
	(14) Schooling year	0.281**	1.324
	(15) Status_Assoc	0.239	1.270
	(16) Status_worker	−0.109	0.897
Constant		3.695**	40.248
N		2971	
Cheated		2065	
Not cheated		906	
Percentage corrected		75.6	
Nagelkerke R Square		0.248	
Hosmer and Lemeshow Test, Chi-Square (p-value)		14.97 (0.160)	

Table A4: Determinants of academic dishonesty among university students (Maximum Likelihood estimation).
*Note: significance levels ***1 per cent; **5 per cent; *10 per cent.*

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