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# The Economics of Illegitimate Activities: Further Evidence

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**ABSTRACT:** Economists who have studied the economics of crime and other illegitimate activities have pointed out that criminals behave according to economic axioms, and tend to evaluate the marginal costs and marginal benefits of such activities. Criminals, as economic agents, consider the probability of capture, conviction, and penalization as costs of the process of criminal activity. These rational individuals often recognize that these probabilities are quite low, at least in many countries, and crime occurs as a result.

## I. INTRODUCTION

As pointed out by Bunn, et al., (1992), studies into the economics of crime date back to Edwin Chadwick (1829) and include the work of Becker (1968), Ehrlich (1973), Reynolds (1980), and Stigler (1970). In fact, Becker's seminal work on the economics of crime and punishment was a substantial factor that led to his successful nomination for the 1992 Nobel Prize in economic science.

Many interesting studies have developed these seminal theories mentioned above. McCormick and Tollison (1984) proxy the criminal "agents" and "agencies" with participants in sports activities, namely collegiate basketball participants. As described by Bunn, et al. (1992), crime can be described in terms of the agents and agencies involved, where some legal authority establishes prop-

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erty rights. Second, some police force is charged with enforcing the law by apprehending the criminals (who evaluate the costs and benefits of crime) who violate the property rights of unconsenting parties for personal gains (Bunn, et al., 1992: 198). McCormick and Tollison examine the role played by basketball officials, as police forces, in enforcing the rules of the game. Using data from the National Collegiate Athletic Association, these authors found that when the NCAA increased the number of game officials (police) from two to three, the number of personal fouls (crimes) declined over the course of a season.

Another useful example in the literature has been the examination of crime in the classroom, or student cheating behavior. University honor codes represent the laws that govern cheating, which according to Bunn, et al. (1992) determine the type and extent of precautions taken by the professor (police). A strictly enforced honor code can act as a substitute for strong measures by instructors—a substitution of privately provided security for publicly provided protection (Bunn, et al., 1992: 198; Clotfelter, 1977). According to Bunn, et al.:

In the classroom, the professor, proctors, and fellow students act much like policemen, ready to apprehend violators. The cheating student is the criminal, taking information from illegal sources (Bunn, et al., 1992: 198).

The costs and benefits—the *why*—of student cheating has been examined by many researchers, including Tom and Borin (1988), Stevens and Stevens (1987), Barnett and Dalton (1981), Gardner, Roper, and Gonzales (1988), Haines, Diekhoff, Labeff, and Clark (1986), Singhal (1982), Nelson and Schaeffer (1986), and Houston (1983, 1986). Foremost among these studies is the aforementioned work of Bunn, et al. (1992). According to these economists, classroom cheating is different from the crime of theft in at least two important respects. First, a professor has a great deal more scope to affect the costs of cheating than a mayor or policeman (Bunn, et al., 1992: 199). Reynolds (1980) finds that high population density increases the incidence of crime by lowering the costs of search to the criminal. A professor can disperse the class during exams to reduce population density, as well as produce several “versions” of an exam to reduce the density of good targets (Bunn, et al., 1992: 199).

A second distinction, according to these researchers, arises because of the public good dimension of exam answers. Unlike a durable good stolen from its owner, answers on exams are not taken from the owner, but copied (Bunn, et al., 1992: 199). The victim retains the answers; the cheating student is free-riding on the answers of others. “Victims” could take measures to exclude cheating, however this may not occur because the victims may actually be conspirators. Helping others cheat costs very little (because answers are only transferred) and may bring pleasure to the co-conspirators (Bunn, et al., 1992; Houston, 1986). According to Bunn, et al.:

From the professor's point of view, the free-riding being done by the cheater is a serious problem. The professor's goal is to produce knowledge, but knowledge will be under-produced in the presence of free-riding. Students who successfully cheat can enjoy the benefits of high grades without actually studying and learning the material (Bunn, et al., 1992: 199).

The purpose of this study is to extend the analysis of student cheating behavior—crime in the classroom. Below we detail several of the features of previous studies, and provide a student survey to examine the probability of the occurrence of illegitimate activities in the classroom. Our study differs from previous work, namely that of Bunn, et al. (1992), by examining the probability of the *habitual* occurrence of crime in the classroom. By employing an ordered logit model for qualitative data, our results can be compared/contrasted to those of previous studies.

## II. PREVIOUS WORK ON CHEATING BEHAVIOR

Much of the previous work on the frequency and motivations for college student cheating have been anecdotal (descriptive) in nature (e.g., Barnett & Dalton, 1981; Haines, et. al. 1986; Tom & Borin, 1988; Singhal, 1982; Stevens & Stevens, 1987). In a study of engineering students, Singhal (1982) found that over 50% of the students admitted to cheating, but less than 5% were actually caught. Haines, et. al. (1986) found similar results, as did Bunn, et al. (1992). Houston (1983) and Bunn, et al. also found similar results as to the students' expectations about probable punishments. According to Bunn, et al., 65% of the students surveyed reported that they expected they would retake the exam or receive an F for the course if caught, which is not a serious deterrent if the student is presently failing the course. Houston found only the strongest deterrent to have a serious effect on such criminal activity.

Many studies have applied rigorous statistical techniques to survey results (e.g., Bunn, et al., 1992; Houston, 1983; Haines, et. al. 1986; Gardner, et. al. 1988). All of these studies have found that student grade point averages are negatively related to the probability of cheating (criminal activity). Bunn, et al. report significant findings on "seeing other students cheat" in one student's decision-analysis of the costs and benefits of cheating. Seeing others cheat is positively related to the probability of cheating for students. The economists also find that the student's perception of the percentage of students who cheat on a typical examination is positively related to the probability of cheating on the part of the student. Houston (1986) finds that acquaintanceship with a routine cheater (criminal) is positively related to the probability of cheating, although Bunn, et al. (1992) fail to reproduce this result. Nelson and Schaeffer (1986) report that surveys tend to overestimate the incidence of cheating, while Gardner, et. al. (1988) find the opposite, because the bias in reporting stems primarily from cheaters claiming not to cheat and not from non-cheaters claiming that they do cheat (Bunn, et al. 1992:

n3, p.205). According to Bunn, et al., although survey data may suffer from shortcomings, surveys remain the predominant way data are gathered on cheating behavior. Below, we report the results from a student survey and our statistical hypotheses.

### III. SURVEY RESULTS AND STATISTICAL HYPOTHESES

Our survey was administered to 157 students in business courses (economics and accounting) at a large Southern university, a copy of which (and results) is given in Table 1. Our results are somewhat similar to those of previous studies. Sixty-two percent responded that they had, at some time, observed another student cheating on an exam, while just over 9% stated that they had seen another student get caught cheating. Thirty-seven percent of those questioned reported that they had cheated at least once on an exam or written assignment, and 25% reported that they knew someone (another student) who routinely cheats on exams. Seventy-five percent of the respondents stated that they believed cheating at their university was not a problem, or only a trivial problem; 29% reported that they believed at least 10% of students cheated on a typical exam. Regarding the type of penalties (the costs of crime), 66% of the students perceived that they would either be forced to retake the exam or receive an F for the course if they were caught cheating. To further examine the probability of cheating behavior, we developed the following regression model:

$$CHEHAB = f(GPA, OBCHEAT, CCAUGHT, SEECC, PENAL, PERCHT, KNOCHT);$$

As pointed out by Bunn, et al. (1992), the dependent variable is a latent variable measuring the student's propensity to cheat. This variable was not observed, but what was observed was the student's response to the cheating question on the survey (Bunn, et al., 1992: 201-202). These authors discuss the probability of the occurrence of cheating behavior with a dichotomous dummy dependent variable (0 = never cheated, 1 = have cheated). Our model differs with respect to the dichotomous dummy variable. By observing question four on our survey, more information is provided regarding the occurrence of cheating by the students. In fact, enough information is obtained to categorize the levels of cheating behavior, from never cheated ( $CHEHAB = 1$ ) to the one-time criminals ( $CHEHAB = 2$ ), as well as the habitual and repeat offenders ( $CHEHAB = 3$  or  $4$ ). Because of our alterations to the dependent variable, an ordered logit model is employed (see Greene, 1993). The habitual occurrence of cheating behavior is described as a function of several variables, including student grade point averages (GPA). Consistent with previous studies on cheating behavior, we expect that student GPA is negatively related to cheating behavior because of the costs of capture and punishment to those students with high GPAs—these students have the most to lose in the process (see Bunn, et al., 1992).

**Table 1.** Student Survey and Responses

<i>Results</i>	
1. Have you ever observed another student cheating on an exam or written assignment at SLU?	
a. Yes (98)	
b. No (59)	
NR (0)	
2. Have you ever seen another student get caught cheating at SLU?	
a. Yes (15)	
b. No (142)	
NR (0)	
3. Based on your experience in the classroom at SLU, what percentage of students do you think cheat on a typical exam?	
a. No more than 1% (37)	d. Between 30% and 30% (16)
b. Between 1% and 10% (71)	e. More than 30% (4)
c. Between 10% and 20% (26)	NR (3)
4. Which response accurately describes your behavior at SLU?	
a. Have never cheated on a test or written work (99)	
b. Have cheated once on a test or written work (22)	
c. Have cheated more than once, but less than five times on a test or written work (30)	
d. Have cheated five times or more on a test or written work (6)	
NR (0)	
5. If you answered "b," "c," or "d" on question 4, have you ever been caught?	
a. Yes (3)	
b. No (55)	
NR (0)	
6. If you answered "c" or "d" on question 4, and you answered "a" on question 5, did you cheat again after being caught?	
a. Yes (0)	
b. No (3)	
NR (0)	
7. Do you know anyone who routinely cheats on exams?	
a. Yes (39)	
b. No (117)	
NR (1)	
8. If you were caught copying another student's answers on an exam, what would you expect to happen to you?	
a. Nothing more than a reprimand (2)	
b. Be forced to retake the exam (33)	
c. Have my course grade lowered by a letter or more (31)	
d. Receive an F for the course (70)	
e. Be suspended from SLU for at least one semester (20)	
NR (1)	
9. In your opinion, cheating at Southeastern Louisiana University is:	
a. Not a problem (52)	
b. A trivial problem (65)	
c. A problem deserving some concern (35)	
d. A serious problem (4)	
NR (1)	
10. My current classification is:	
a. Freshman (8)	d. Senior (65)
b. Sophomore (40)	e. Grad. Student (7)
c. Junior (37)	NR (0)
11. My current grade point average is:	
a. 3.50-4.00 (15)	d. 2.00-2.49 (36)
b. 3.00-3.49 (44)	e. less than 2.00 (8)
c. 2.50-2.99 (54)	NR (0)

Note: NR refers to no response

Many of our other independent variables follow those of Bunn, et al. (1992). Included here are OBCHEAT, a dummy variable that takes the value of one for students who have seen another student cheat on an exam, and zero otherwise. Students who see classmates cheat might feel cheating was not bad and the probability of detection low, especially if the cheaters were not caught (Bunn, et al., 1992). This variable is expected to be positively related the occurrence of cheating behavior (CHEHAB). The variable CCAUGHT is a dummy variable that takes the value of one if the student has ever observed another student caught cheating, and zero otherwise. A negative relation is expected between CHEHAB and CCAUGHT, because seeing another student caught provides information on the probability of capture and works as a deterrent to cheating. The variable PENAL measures the students' perceptions of the penalty for students who are caught cheating. Again, our model differs from that of Bunn, et al., here, because we index the variable from question eight of the survey, while Bunn, et al., employ a zero-one dummy variable (where one captures options "c"- "e" of our survey, and zero captures "a" and "b"). Our model indexes PENAL from one to five, with the penalty increasing in severity as PENAL increases. This variable is expected to be negatively related to CHEHAB, or the habitual occurrence of criminal behavior in the classroom.

The climate for cheating is proxied by PERCHT, which is a measure of the students' perceptions of the percentage of their classmates that cheat on a typical exam. Again, when students perceive that many of their classmates cheat, information is gathered on the perceptions of the probability of capture and the costs of illegitimate activities. The categorical variable PERCHT is expected to be positively related to CHEHAB (Bunn, et al., 1992). As a final independent variable, SEECC is an interaction variable between OBCHEAT and CCAUGHT. Following Bunn et al., this variable is expected to be negatively related to CHEHAB because it provides further information on the likelihood of capture.

#### IV. ECONOMETRIC RESULTS

The results of the ordered logit estimates are provided in Table 2 below. Four versions of the model are estimated in Table 2, and the model chi-square statistics for each version are significant at the 5% level or better. In all four models, GPA is significant at the 5% level or better. The sign of GPA is positive in all four versions because of the way the variable was indexed; on question 11 of the survey, an answer of "a" received the value of 1, while an answer of "e" received the value of 5, for example. The coefficient on GPA ranged between 0.3650-0.4228 in the four versions. OBCHEAT was also significant, when included in versions two, three and four of the model. Its coefficient remained fairly stable, between 1.2968 and 1.4040 in the three versions. The results add further support to the work of Bunn, et al. (1992).

**Table 2.** Ordered Logit Results

	Ordered Logit Results			
	(1)	(2)	(3)	(4)
GPA	0.3650* (2.28)	0.4228* (2.40)	0.4181* (2.38)	0.4125* (2.32)
OBCHEAT	—	1.3467* (3.20)	1.4040* (3.23)	1.2968* (2.94)
CCAUGHT	—	—	0.9261 (0.75)	1.0586 (0.86)
SEEC	—	—	0.1659 (0.12)	-0.1976 (0.14)
PERCHT	—	0.2064 (1.15)	0.3353* (1.94)	0.2195 (1.21)
KNOCHT	—	1.0305* (2.61)	—	0.9304* (2.31)
PENAL	-0.0409 (0.25)	-0.1323 (0.76)	-0.1155 (0.67)	-0.1449 (0.82)
INTERCEPT	-1.4701 (1.80)	-2.9948* (2.97)	-3.1889* (3.25)	-2.9428* (2.96)
CHI-SQUARE	11.80*	29.50*	80.46*	81.53*

Note: Absolute value of asymptotic *t* ratios is given in parentheses.  
\*indicates significance at the .05 level or better.

The students' perceptions of the percentage of students that cheat on a typical exam (PERCHT) was positive, as expected; however, this variable was significantly related to the occurrence of habitual cheating behavior in version three only. Version three was the only version in which PERCHT and KNOCHT were not included together. The fact that KNOCHT was highly significant within versions two and four points out that a friendship/acquaintanceship with someone who routinely cheats is a stronger explanatory factor in shaping the criminal “habits” of students in the classroom. By deleting KNOCHT in version three, student perceptions regarding the probability of capture through the information contained in PERCHT become significant. Knowing someone who routinely cheats on exams appears to provide more information regarding the probability of capture and the costs of such habitual criminal activity. By specifying the dependent variable as we do, we present a result that the study by Bunn, et al. (1992) fail to find. However, their evidence regarding PERCHT is slightly more robust than what is presented here.

In versions three and four, the variable CCAUGHT was found to be positively related to the occurrence of habitual illegitimate activity in the classroom. This result was not statistically significant in either version. Interestingly, the results of Bunn, et al., regarding CCAUGHT were identical—positive, but insignificant. Our “mixed” results regarding SEEC were also strikingly similar to those of Bunn, et al. (1992), even though our dependent variable was constructed differently. The negative sign of SEEC indicated that those students who had observed both other students cheating and getting caught might have been

deterred from cheating to a greater degree (or at all), however SEECC was insignificant in both versions (see Bunn, et al., 1992: 204-205). Finally, our results do point out that the perception of the degree of punishment is negatively related to degree of cheating behavior that occurs—contrary to what was reported by Bunn, et al., However, like the previous study, our finding was not statistically significant in any specification. As stated by Bunn, et al., perhaps the expected punishments were not having deterrent effects, but were reflecting the belief among students that they were not likely to get caught (because the question asks about the punishment, *if caught*).

## V. CONCLUDING COMMENTS

This study provides further evidence of the economics of illegitimate activities such as the costs and the benefits that determine such activity, like all economic activity. The ordered logit results of a statistical model of crime in the classroom suggest that GPA is inversely related to the *degree* of cheating behavior in the classroom (or the *habitual* nature of such behavior), while observing others who cheat, knowing others who routinely cheat, and the students' perceptions of the degree of cheating that occurs during a typical examination are all positively related to the *degree* of cheating behavior (crime) in the classroom. Because student attitudes toward cheating as a crime are not serious, a high incidence of *habitual* cheating appears to occur. In order to stem the incidence of crime in the classroom, more needs to be done to alter the costs of such crime—the probability of capture and the perceptions of punishment—either publicly or privately. These results support the important facets of crime and its incentives pointed out by Chadwick, Becker, Stigler, and others, and it appears that given students perceptions of the important “probabilities” involved in criminal calculus, they remain engaged in an act that is described as rational.

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## REFERENCES

- Barnett, D. H., & Dalton, J. (1981). Why college students cheat. *Journal of College Student Personnel, 11*, 545-551.
- Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy, 76*, 168-217.
- Bunn, D. N., Caudill, S. B., & Gropper, D. M. (1992). Crime in the classroom: An economic analysis of undergraduate student cheating behavior. *Journal of Economic Education, 23*, 197-207.
- Chadwick, E. (1829). Preventive police. *London Review, 1*, 252-308.
- Clotfelter, C. (1977). Public services, private substitutes, and the demand for protection against crime. *American Economic Review, 67*, 867-877.



- Ehrlich, I. (1973). Participation in illegitimate activities: A theoretical and empirical investigation. *Journal of Political Economy*, 81, 521-565.
- Gardner, W. M., Roper, T., & Gonzales, C. C. (1988). Analysis of cheating on academic assignments. *Psychological Record*, 38, 543-555.
- Greene, W. H. (1993). *Econometric analysis*. New York: Macmillan Publishing Company.
- Haines, V. J., Diekhoff, G. M., Labeff, E. E., & Clark, R. E. (1986). College cheating: Immaturity, lack of commitment, and the neutralizing attitude. *Research in Higher Education*, 25, 342-354.
- Houston, J. P. (1983). College classroom cheating, threat, sex and prior performance. *College Student Journal*, 17, 229-235.
- \_\_\_\_\_. (1986). Classroom answer copying: Roles of acquaintanceship and free versus assigned seating. *Journal of Educational Psychology*, 78, 230-232.
- Maddala, G. S. (1983). *Limited dependent variable models in econometrics*. Cambridge: Cambridge University Press.
- McCormick, R. E., & Tollison, R. D. (1984). Crime on the court. *Journal of Political Economy*, 92, 223-235.
- Nelson, T. D., & Schaeffer, N. (1986). Cheating among college students estimated with a randomized-response technique. *College Student Journal*, 20, 321-325.
- Reynolds, M. O. (1980). The economics of criminal activity. In R. Andreano, & J. Siegfried (Eds.), *The economics of crime*. Cambridge: Schenkman Publishing.
- Singhal, A. C. (1982). Factors in students' dishonesty. *Psychological Reports*, 51, 775-780.
- Stevens, G., & Stevens, F. (1987). Ethical inclinations of tomorrow's managers revisited: How and why students cheat. *Journal of Education for Business*, 63, 24-29.
- Stigler, G. J. (1979). Optimum enforcement of laws. *Journal of Political Economy*, 78, 526-536.
- Tom, G., & Borin, N. (1988). Cheating in academe. *Journal of Education for Business*, 63, 153-157.