European Economic Review 82 (2016) 212–230

Contents lists available at ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eer

The labor market return to academic fraud

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ARTICLE INFO

Article history:
Received 24 November 2014
Accepted 19 November 2015
Available online 29 December 2015

JEL:
D82
I21
J21
J24
C21

Keywords:
Academic fraud
Labor market signaling
Selection on unobservables
Partial identification

ABSTRACT

Academic fraud by undergraduate students is pervasive, but should it be taken seriously as an economic problem? Our research suggests so. Using a unique data set from the Caucasus, we estimate a large positive effect of academic fraud on the probability of employment. Econometrically, we deal with endogenous selection into academic fraud and possible measurement error in the reporting of academic fraud using partial identification techniques. The findings demonstrate that incentives to commit academic fraud are strong and point towards the potentially damaging consequences of academic fraud in broader settings.

1. Introduction

University students cheat, bribe and plagiarize. It happens everywhere and it happens a lot. Not even elite institutions are immune to the problem (recently at Harvard University, 125 undergraduate students were accused of cheating in a take-home final exam). Just over one third of people surveyed in the US by Transparency International perceive the education system as corrupt or extremely corrupt (Transparency International, 2013). Although ubiquitous, academic fraud may not necessarily be an economic problem. Our research, however, suggests otherwise.

What precisely do we mean when we talk about academic fraud? Abstractly, we refer to the actions undertaken by university students with the intention to manipulate the quality signal that they send into the labor market.[1] Simply put, academic fraudsters pretend to be better types than they actually are. Academic fraud manifests in many different ways: from cheating in tests and plagiarizing in essays to outright payment of bribes. Our *prima facie* research question is 'What is the causal effect of academic fraud on labor market outcomes?'

Economists will not be surprised that academic fraud is widespread: the incentives are strong. Opportunities to commit academic fraud are numerous, the payoff is high relative to the cost and the perceived risk. Students want better grades to

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[1] More broadly, academic fraud is an umbrella term that spans a wide range of ethically, if not legally, dubious actions by various players in the education market. Academic fraud can be committed by students, teachers, researchers, and educational institutions; it can happen at all levels of education. Transparency International (2013) is full of examples of academic fraud of varying connotation.

http://dx.doi.org/10.1016/j.euroecorev.2015.11.005
0014-2921/

manipulate and distort the quality signal that they send into the labor market. Good grades are associated with better job offers. This may be especially important to young persons who tend to have higher rates of time preference. Furthermore, among young persons, university students tend to have the highest earnings potential and therefore face higher opportunity cost of an adverse labor market outcome, perhaps raising the temptation for academic fraud.

Why is it important to study the effects of academic fraud? Academic fraud reduces total welfare of a society. While it benefits those who commit it, academic fraud creates a cost that is borne by the honest; it creates negative externalities. The analogy to the used car market is striking: fraudsters could be regarded as 'lemons' whose existence creates asymmetric information. Akerlof (1970) asserts that in "a market in which goods are sold honestly or dishonestly;quality may be represented, or it may be misrepresented. […] The cost of dishonesty, therefore lies not only in the amount by which the purchaser is cheated; the cost also must include the loss incurred from driving legitimate business out of existence."

Academic fraud weakens the quality signal that job market candidates, fraudsters and non-fraudsters alike, send to potential employers. This should concern both non-fraudsters and employers. Spence (1973) presents his theory on job market signaling in which the level of education signals productive capability. A critical assumption is, of course, that the costs of signaling are inversely related to productive capability. The signaling described by Spence (1973) can be interpreted as signaling at the extensive margin: people choose education levels to signal their types. The type of signaling we consider is at the intensive margin: given that people are at university, they can choose to exert effort to achieve good grades. The costs of signaling are therefore inversely related to productive capability. The possibility of academic fraud, however, reduces the costs of sending a positive signal. The possibility of academic fraud will be particularly attractive for those people who face high marginal costs of sending a positive signal (if they were to do it truthfully).[2]

Despite the gravity of the problem in the perception of people and the potential social costs, we are not aware of any research in economics that attempts to empirically quantify the labor market returns to academic fraud. Lack of data and endogeneity are likely the two main explanations. To narrow this research gap, we use a unique data set from the three Caucasus countries of Armenia, Azerbaijan and Georgia that contains information on academic fraud, labor market outcomes and a rich set of explanatory variables that enable us to proxy for, among other things, a person's ability, access to corrupt networks, locus of control and risk preferences. In the corresponding survey, conducted in 2008, respondents were asked if they have ever paid a bribe or given gifts with the intention to obtain a better grade.

From an econometric perspective, we are confronted with a binary outcome variable (employment) and a binary main explanatory variable, academic fraud. Accordingly, our principal vehicle to estimate the effects of academic fraud on employment is the probit model. However, there are two sources of endogeneity that can lead to biased estimates. First, academic fraudsters may differ in unobserved ways to non-fraudsters. If, for example, academic fraudsters would tend to attain better labor market outcomes even if they had not committed fraud, then our causal effect estimates may be, in the 'worst case', entirely spurious. A conventional way to deal with this possibility is to use an instrumental variable and a bivariate probit model. In our application, however, we do not have available a persuasive instrumental variable and we are reluctant to solely rely on functional form assumptions for identification of causal effects. (Altonji et al. (2005) explain the drawbacks of the bivariate probit model when instruments are weak or absent.) Instead, we use a parametric partial identification approach proposed by Altonji et al. (2005b). This approach acknowledges that unobserved heterogeneity can never be fully and adequately accounted for (in particular in the absence of an instrumental variable). The main idea of this approach is to study the 'worst case' scenario: how large would the amount of selection on unobservables need to be, relative to the amount of selection on observables, to explain away the entire casual effect of academic fraud? This so-called selection ratio can be quantified as we explain and pursue in Section 4.

The second source of endogeneity is measurement error in the main explanatory variable; some survey respondents may not answer questions about academic fraud truthfully. Such misreporting can create bias in the causal effect estimate if persons who do not answer truthfully in the survey differ in unobserved ways from persons who do answer truthfully. *A priori*, it is not clear which direction this bias will point to. In Section 5.1, we use nonparametric partial identification methods in a three-pronged approach. First, we use potential outcomes terminology to motivate the causal effect of academic fraud as a particular average treatment effect. Second, we need to be transparent and precise about the subpopulation for which we partially identify that average treatment effect. Because true academic fraud status is unobserved, we cannot identify an ATE for the population at large but only for the subset of people who respond truthfully (this subpopulation consists of non-fraudsters who respond that they did not commit fraud as well as fraudsters who respond that they did commit fraud). Third, we derive that, under a weak set of conditions, endogenous misreporting will bias the ATE estimate downward. The strength of this analysis lies in its agnosticism with regard to endogenous misreporting: it does not matter how many persons actually misreport and it does not matter what type of person tends to misreport.

In Section 5.2 we turn to simultaneously addressing the two econometric problems of selection on unobservables and measurement error. We revisit the selection ratio of Section 4 and ask the hypothetical: what would the value of the selection ratio be equal to, if we observed actual academic fraud instead of reported academic fraud? While in the absence of the actual data we cannot point identify this hypothetical selection ratio, we are able to bound it from below. Conveniently, we derive a bound that depends on the selection ratio that is based on reported (rather than actual) academic fraud status.

[2] Also see Arrow (1973) and Stiglitz (1975) for related work as well as Riley (2001) for a review.