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Car mechanics in the lab––Investigating the behavior of real experts on experimental markets for credence goods☆

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ABSTRACT

Credence goods, such as car repairs or medical services, are characterized by severe informational asymmetries between sellers and consumers, leading to fraud in the form of provision of insufficient service (undertreatment), provision of unnecessary service (overtreatment) and charging too much for a given service (overcharging). Recent experimental research involving a standard (student) subject pool has examined the influence of informational and market conditions on the type and level of fraud. We investigate whether professional car mechanics – as real sellers of credence goods – react in the same way to changes in informational and institutional constraints. While we find qualitatively similar effects in the fraud dimensions of undertreatment and overcharging for both subject pools, car mechanics are significantly more prone to supplying unnecessary services in all conditions, which could be a result of decision heuristics they learned in their professional training.

1. Introduction

Credence goods are characterized by asymmetric information between sellers and consumers on the quality of service that yields the highest surplus from trade: While sellers learn that quality by performing a diagnosis, consumers are unable to judge which quality is the surplus maximizing one. Moreover, in many cases consumers are not even *ex post* able to observe the received quality. The seminal paper on credence goods is by Darby and Karni (1973), who added this type of good to Nelson's (1970) classification of ordinary, search and experience goods. Typical examples of credence goods are car repairs, medical services, software programming, or taxi rides in an unfamiliar city. Hence, despite of the uncommon name, credence goods are frequently consumed and economically important.

The informational asymmetries prevalent in markets for credence goods invite fraudulent behavior by sellers, implying that the search for institutions that increase efficiency on credence goods markets is a highly relevant topic in economics (see Dulleck and Kerschbamer, 2006, for a survey of the literature). In particular, credence goods markets typically suffer from

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the following types of cheating on consumers: (1) *undertreatment*, i.e., providing a quality that is insufficient to satisfy the consumer's needs; (2) *overtreatment*, i.e., choosing a higher quality than the surplus maximizing one; and (3) *overcharging*, i.e., charging for a higher quality than has been provided.

That fraud is more than a mere theoretical possibility in markets for credence goods has been documented, among others, by Domenighetti et al. (1993). The authors examine how patients' information affects the treatment they receive in hospitals and find that common surgical procedures are less frequent for patients perceived as being better informed. In a similar vein, Gruber and Owings (1996) show that the relative frequency of cesarean deliveries responds to the remuneration for it. While these and other field studies impressively document the existence of fraud, a general disadvantage of field data is the lack of controlled variation of factors predicted to be crucial by theory. Controlled variation is the key advantage of the laboratory. In the context of credence goods lab experiments have recently been conducted by Kerschbamer et al. (2009) and Dulleck et al. (2011). Those studies examine the influence of informational and market conditions on the type and extent of fraud, finding, among others, that liability clauses (preventing undertreatment) are key for the efficient provision of credence goods, whereas verifiability (preventing overcharging) fails to improve efficiency, although in theory it should. While providing important information on the impact of institutions on market outcomes, the experimental studies by Kerschbamer et al. (2009) and Dulleck et al. (2011) leave one important question unanswered: Do real world sellers of credence goods react in the same way to changes in the informational and institutional framework as university students do? This question touches on the issue of external validity of laboratory data.

In principle, there are two ways to address this question. The first one is to study the behavior of professionals in field experiments. Schneider (2012) and Balafoutas et al. (2013) are examples for this approach. Schneider (2012) brought his car for repair to different garages, sometimes suggesting the potential for repeated interaction in the future, sometimes inducing the impression that repeated interaction was highly unlikely. Based on data from 91 undercover garage visits, the author finds no evidence that a mechanic's concerns for reputation have an influence on the service provided; however it has an impact on diagnosis fees. Balafoutas et al. (2013) have studied the impact of perceived information on the type and extent of fraudulent behavior of taxi drivers. Based on the data from more than 300 undercover taxi rides, the authors find that taxi drivers exploit their informational advantage in a systematic way by taking passengers perceived as uninformed about the city on longer detours and charging unjustified surcharges to passengers perceived as uninformed about the tariff system.

While these field studies provide compelling evidence about the problems prevalent in credence goods markets, they do not directly address the question of external validity of results based on lab data generated with a university student subject pool. In particular, it is often argued that students are different from non-students in many respects and that those differences might translate to different behavior. So, for judging the external validity of student data one way is to compare the behavior of students to that of real professionals in the same environment. This is the way the issue of external validity is addressed in the current paper.[1] Specifically, we ask the question whether one would reach similar conclusions regarding the impact of informational and institutional constraints on the behavior on markets for credence goods by taking professionals from the target field of interest – the market for car repairs in the present case – as participants in lab experiments. In addition, we are also interested in quantitative differences across subject pools for a given institutional framework, but only to the extent that those differences have economically relevant implications for optimal institutional design. Addressing those issues seems important because the ultimate goal of lab experiments in the context of credence goods is to complement theoretical work in search for institutions that help to contain the amount of fraud in real world credence goods markets and because in the end experts – and not students – make the key decisions in such markets.

To address those issues we let 96 car mechanics take decisions as sellers in an experimental credence goods game and compare their behavior to that of 140 university students in the role of sellers. We find that car mechanics and students react qualitatively very similar to changes in the informational and institutional framework. Regarding quantitative differences across subjective pools within a given informational and institutional framework our most important finding is that car mechanics have a more pronounced tendency to supply unnecessary services in each institutional framework, albeit the difference to students is getting smaller across time. We argue that this difference in behavior is probably due to decision heuristics car mechanics learned in their professional training.

Several studies have compared the behavior of professionals and students in other environments. Many of them find that professionals' behavior is qualitatively similar to that of students. Examples include Siegel and Harnett (1964) who compare the behavior of students and employees in the industrial sale operation division of General Electric in a bargaining game and find that the two subject pools behave largely similar; Dyer et al. (1989) who compare the behavior of students to that of executives from construction companies in common value auctions and find that both exhibit the winner's curse and share also other relevant patterns; Cooper et al. (1999) who compare the behavior of students and managers in a market entry game, finding similar core behavior; and Potters and van Winden (2000) who compare the behavior of students and public relationship officers in a lobbying game and only find minor differences.[2] Those studies finding differences in behavior across

[1] A related external validity issue is that the lab is an artificial environment and as such might miss some behaviorally relevant features of the field. Addressing this dimension of external validity is beyond the scope of this paper.

[2] The impression that the majority of studies comparing the behavior of students and experts in standard lab experiments find qualitatively similar patterns is confirmed by Fréchette (2013). The author reviews 13 such studies and concludes (on p. 33) that "[i]n 9 of those 13, professionals are not