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Medical insurance and free choice of physician shape patient overtreatment: A laboratory experiment☆

Steffen Huck[a,b], Gabriele Lünser, Florian Spitzer[c,d], Jean-Robert Tyran[d,e,f,g,*]

[a] WZB, Berlin, Germany
[b] UCL, London, United Kingdom
[c] Department of Economics, Vienna University of Economics and Business, Austria
[d] Vienna Center for Experimental Economics (VCEE), University of Vienna, Austria
[e] Department of Economics, University of Vienna, Austria
[f] Department of Economics, University of Copenhagen, Denmark
[g] Centre for Economic Policy Research (CEPR), London, United Kingdom

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ABSTRACT

In a laboratory experiment designed to capture key aspects of the interaction between physicians and patients, we study the effects of medical insurance and competition in the guise of free choice of physician, including observability of physicians' market shares. Medical treatment is an example of a credence good: only the physician knows the appropriate treatment, the patient does not. Even after a consultation, the patient is not sure whether he received the right treatment or whether he was perhaps overtreated. We find that with insurance, moral hazard looms on both sides of the market: patients consult more often and physicians overtreat more often than in the baseline condition. Competition decreases overtreatment compared to the baseline and patients therefore consult more often. When the two institutions are combined, competition is found to partially offset the adverse effects of insurance: most patients seek treatment, but overtreatment is moderated.

1. Introduction

We study the economic incentives emanating from two key institutions in the medical market – competition and insurance – conceptualizing interaction as the provision of a credence good. Markets for credence goods are characterized by a high degree of asymmetric information between those supplying and those demanding the good or service. Medical treatments are a prime example of credence goods, and an economically important one.[1]

The specific interaction we study is as follows. A patient is confronted with a medical problem and chooses whether to consult a physician. The medical problem can be severe in which case only a severe (and costly) treatment can provide a cure.

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* Corresponding author at: University of Vienna, Department of Economics, Oskar-Morgenstern-Platz 1, 1090 Vienna, Austria.
E-mail addresses: steffen.huck@wzb.eu (S. Huck), florian.spitzer@wu.ac.at (F. Spitzer), jean-robert.tyran@univie.ac.at (J.-R. Tyran).

[1] Other examples of credence goods are car repairs (e.g. Schneider, 2012) or taxi rides in a foreign city (e.g. Balafoutas et al., 2013a). Both studies provide field experimental evidence. For an overview of the theoretical literature, see Dulleck and Kerschbamer (2006). The seminal paper on markets for credence goods is Darby and Karni (1973).

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Alternatively, the problem could be mild, such that a mild (and cheap) treatment is sufficient for a cure. Information about the type of problem is asymmetric: after examining the patient the physician knows what kind of treatment the patient needs, but the patient does not. We induce incentives for overtreatment (that is, to provide the severe treatment when the problem is in fact mild) by choosing experimental parameters such that the physician makes more money from the severe treatment. Reputational incentives disciplining physicians are weak because the patient only learns that he has been cured, but not whether the treatment he received was appropriate.[2] Such markets are likely to be beset by overtreatment and low efficiency.[3]

We study how basic forms of medical insurance and competition shape overtreatment and other outcomes in this setting. We study competition in the guise of patients being able to freely choose among physicians.[4] This type of competition has been shown to be rather effective in markets for experience goods (Huck et al., 2012). Competition is powerful in such markets because reputational incentives are strong and can discipline sellers to provide good quality. But with credence goods, building effective reputations is difficult because patients cannot tell whether a severe treatment was necessary. Nevertheless, we find that competition has surprisingly strong beneficial effects. It clamps down on overtreatment (the incidence falls by about two thirds) encouraging patients to consult more often as they can now be more confident not to be overtreated.

The second institution we investigate is insurance. We expect insurance to invite moral hazard, as it shields the individual patient from the adverse monetary consequences of overtreatment. The insurance we study socializes the cost of overtreatment. As physicians anticipate or become aware that patients are less wary under the umbrella of insurance, they have an additional incentive to overtreat. We expect reduced wariness to mitigate the disciplining effect of reputational concerns. Indeed, this is what we find: the consultation rate is much higher with insurance than in the baseline, and overtreatment is more common as a consequence.

By virtue of a 2-by-2 design we can also study interaction effects. We find that competition has powerful effects both in the absence and in the presence of insurance. In the latter case, competition cuts overtreatment in half and boosts the share of consulting patients. Thus, competition partly mitigates the adverse effect of insurance while keeping incentives to consult strong. As a result, the combination of both institutions produces the highest level of public health among the institutional settings studied here. This combination is however also associated with the highest expenditures for health (measured by the total transfer from patients to physicians). At least in the setting studied here, it does not seem possible to decrease expenditures without decreasing public health at the same time.

In our experimental design, competition involves observability of market shares. Patients do not only have the possibility to choose the physician they want to interact with but they can also observe by how many other patients a physician has been consulted in the past. Hence, we can only draw conclusions about the joint impact of competition and observability of market shares. To be able to disentangle these two effects, we conduct two additional control treatments in which patients are able to choose their physician but market shares cannot be observed. The results of these control treatments indicate that the positive impact of competition is mainly driven by free choice and not by observability. In the remainder of the paper, we focus on our four main treatment conditions[5] and describe the additional treatments as well as their results in Sections 4.3 and 4.4.

We think our results speak to ongoing debates about how to devise efficient systems in health care. Free choice of physician and the availability of medical insurance are among the most relevant institutional choices to make in the design of a health care system. For example, there is an ongoing debate in various countries whether elements of co-payment should be increased to overcome moral hazard problems associated with health insurance. Health care systems also strongly differ by the degree to which patients are allowed to choose their physician: With a general practitioner-centered model, patients are usually assigned to a physician in their district and possibilities to consult different physicians are restricted – in contrast to health care systems with free choice of physician. We think that our study sheds new light on these important debates by virtue of the ability to measure and control important aspects of the patient-physician interaction. For example, we unambiguously observe all instances of overtreatment and we control the cost it entails. In the field, overtreatment often goes unnoticed and its costs can only be roughly estimated. Our treatment variations also allow us to isolate the effects of institutional changes to a much higher degree than is possible in the field. However, circumspection is advised in extrapolating from our highly stylized setting to the actual policy debate which is embedded in a rich medical-technical,

[2] A key difference between credence and experience goods is that overcharging or overprovision cannot easily be detected (see Dulleck et al., 2011 for a discussion).

[3] Iizuka (2007) for instance reports evidence from the Japanese prescription drug market where physicians do not only prescribe but also dispense drugs. They show that prescriptions are to some extent influenced by mark-ups and hence not only by factors that are relevant to the patient's state of health.

[4] Note that this type of non-price competition is typical for patient-physician interactions in which prices are regulated. See Huck et al. (2016) for an experimental study of price competition in a market for experience goods. We use "competition" and "free choice of physician" interchangeably in the remainder of the paper.

[5] We will use the expression "impact of competition" as a synonym for the impact of competition in the guise of "informed choice," i.e. for the joint impact of being able to choose a physician ("pure competition") and the observability of market shares ("market information"). The primary reason to focus on the main treatment conditions is to keep the structure of the paper clear and concise. Moreover, it seems sensible to vary the observability of market shares and pure competition at the same time. Patients can only react to the market shares they observe if they are able to choose a physician in the first place. The presence of pure competition should therefore promote the emergence of institutions facilitating the observability of markets shares.

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