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Second opinions in markets for expert services: Experimental evidence☆

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ABSTRACT

We experimentally investigate the role of second opinions in markets where experts such as physicians both diagnose and provide the services. Physicians may exploit their informational advantage and overtreat their patients by providing a more costly and expensive treatment than necessary. We show that introducing costly second opinions significantly reduces the level of overtreatment. Lowering search costs leads to significantly more second opinions, but the overtreatment level does not decrease. Under low but not under high search costs, market efficiency rises with the introduction of second opinions, as the reduction in treatment costs due to less overtreatment exceeds the increase in incurred search costs.

1. Introduction

Information asymmetries are so prevalent in markets for physician services that they can be said to characterize these markets.[1] One particular asymmetry between physicians and patients is that for many health problems, patients cannot diagnose themselves. Instead, they have to rely on a physician to diagnose their problem, give a treatment recommendation, and provide the treatment. Physicians thus have an informational advantage over their patients with regard to the health problem and the appropriate treatment. Ex post, patients may observe whether their health problem was cured, at least in the short term, but they still might not know whether the provided treatment was actually necessary and/or whether the service charged was not a more expensive service than the one provided. Therefore, in many cases, physician services and health care services more generally are *credence goods*. The underlying asymmetry of information between physicians and patients characteristic of credence goods thus allows for physician-induced demand (PID).[2]

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[1] See, e.g., Gaynor (1994).

[2] Evans (1974) was the first to argue that physicians can influence the demand for medical care. McGuire (2000) defines physician-induced demand as follows: "Physician-induced demand exists when the physician influences a patient's demand for care against the physician's interpretation of the best interest of the patient" – i.e., the physician is not a perfect agent for the patient.

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In addition to the idiosyncrasies in each physician–patient relationship, the scope for the exploitation of the asymmetric information leading to physician-induced demand depends on the institutional and legal environment as well as market characteristics such as competitive pressure and the relevance of reputation-building. One potentially powerful instrument in these markets to curb overtreatment is the re-examination or threat of re-examination of physicians' diagnoses via second opinions. Health insurers in several countries (e.g., the US and Germany) encourage their insurees to search for a second opinion when they are recommended an expensive treatment in order to reduce mis-diagnoses and overtreatment. In Switzerland, some insurers even grant a discount of up to 15% if insurees search for a second opinion before undergoing surgeries such as artificial knee or hip joints or planned Caesareans.

In this paper, we experimentally investigate physician-induced demand in a credence goods set-up in which patients can obtain a second opinion from another physician. We focus on the important case of overtreatment, as it entails an inefficiency due to the fact that more complex treatments typically have higher costs, such that health care resources are wasted.[3] A typical example where overtreatment is a concern involves artificial knee joints. A study on German data found that in wealthier German municipalities, there are more knee surgeries even though there are fewer cases of arthrosis (Bertelsmann Stiftung, 2013).

Our experimental game is based on the general credence goods model developed by Wolinsky (1993) with exogenous prices as laid out in Sülzle and Wambach (2005).[4] Both Wolinsky (1993) and Sülzle and Wambach (2005) analyze overcharging; a minor reformulation leads to overtreatment incentives. Theoretically, this setting is interesting for several reasons. First, when customers can seek a second opinion at moderate search costs, the game has multiple equilibria: one in pure strategies in which no customer searches and all experts overtreat, despite the possibility of obtaining second opinions, and two in mixed strategies in which there is some searching and some overtreatment. Thus, introducing second opinions at moderate search costs does not necessarily reduce overtreatment in theory per se. Second, whether a reduction in search costs increases or decreases overtreatment and searching also depends on the equilibria played. Counterintuitively, overtreatment may increase with lower search costs. Third, given that second opinions are inefficient in themselves via incurred search costs and duplicated diagnosis costs,[5] it is not clear whether market efficiency improves with second opinions. The fact that theoretical predictions are not clear-cut motivates our approach to conduct a lab experiment. We conduct an experiment with a general credence goods framing; for the purposes of this study, we will refer to experts as physicians and customers as patients.

We find that introducing costly second opinions significantly reduces the level of overtreatment. The reduction in the actual overtreatment level between our baseline experimental condition[6] where patients cannot search for a second opinion and the conditions with search is about 40 percentage points. Furthermore, we find that although lowering patients' search costs leads to significantly more second opinions, the level of overtreatment does not change significantly. Market efficiency rises significantly with the introduction of second opinions when search costs are low, but not when they are high. Under low search costs, the reduction in treatment costs due to less overtreatment overcompensates the increase in total incurred search costs.[7]

1.1. Related literature

Credence goods. The seminal contribution on credence goods is Darby and Karni (1973), who introduce the term of credence goods for expert services and show that experts might have an incentive to overtreat customers. Pitchik and Schotter (1987) analyze an expert's strategic overtreatment recommendation when the customer can reject the expert's advice, and Wolinsky (1993) analyzes competition in markets for expert services with second opinions. Dulleck and Kerschbamer (2006) provide a unifying theoretical framework and a synthesis of many findings in the literature.

Dulleck et al. (2011) conduct the first experiment on credence goods markets, varying the market structure as well as liability and verifiability rules. Mimra et al. (2013) show how both the pricing regime and different reputation mechanisms impact experts' fraudulent behavior. The current paper contributes to the existing literature by experimentally analyzing how second opinions impact overtreatment incentives and market outcomes in expert markets.[8]

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[3] Overtreatment might also have adverse long-term effects lowering patient utility. Here, we concentrate on the cost inefficiency from overtreatment.

[4] Fixed prices are common in health care markets. Prices are either set as a result of a bargaining process at a central level (e.g., in the US) or according to legal regulations (e.g., in Germany) (Sülzle and Wambach, 2005). Other examples of credence goods markets with fixed prices are legal services and cab rides.

[5] In our set-up, diagnosis costs are zero for simplicity. However, the set-up could easily be modified to incorporate positive diagnosis costs.

[6] Note that we refer to the experimental treatments as "conditions" as opposed to physician "treatment".

[7] The efficiency results relate to the absolute level of market efficiency. In relative terms, market efficiency rises with the introduction of second opinions under both low and high search costs. Note, however, that the level of efficiency in the market naturally depends on parameter choices, especially with regard to the level of search costs and the difference in treatment costs.

[8] To the best of our knowledge, the only experimental work on second opinions in credence goods markets is an unpublished working paper by Pitchik and Schotter (1984). The authors focus on the impact of two expert types on the levels of overcharging and efficiency in the market. Whereas competent firms always diagnose the customer's problem correctly, incompetent firms sometimes incorrectly diagnose the problem. The authors find low levels of overcharging but no evidence that the levels differ between competent and incompetent firms. Reducing the number of incompetent firms leads to significantly less overcharging. The low levels of fraud compared to our results can be explained by the much lower search costs. In their set-up, search costs only make up 1/25th of the possible loss due to overcharging. As overcharging is purely redistributive, the authors introduce several new efficiency