Long Abstract for the 2024 SIDE Conference

An Experimental Design on the Crowding-Out
of Physician Motivation in Healthcare Systems under New Public Management

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| **Summary of the long abstract**This study proposes a controlled laboratory experiment to examine how physicians behave when overseen by a cost-conscious manager. Inspired by existing literature, this experiment will differ by highlighting the role of managers.Many public healthcare systems incorporate New Public Management (NPM) principles to improve efficiency and accountability, addressing the concerns about rising healthcare costs. However, these regulatory frameworks may (1) displace the patient-regarding motivation of physicians; and (2) alter the understanding about the reciprocal responsibilities of healthcare stakeholders, including patients.The experiment will explore these reciprocal responsibilities. Furthermore it will provide insights on (1) whether the physician behavior might increase healthcare expenditures, and thus the pressure healthcare budgets that was the very reason behind the reforms; and (2) on the possible drop in the benefits that patients receive from medical services when altruistic motivations are displaced. |

## Introduction

The present contribution aims at understanding the influence of institutions in the provision of medical care. The focus of this work is (1) the displacement of intrinsic motivation in doctors; and (2) the “social contract” outlining the reciprocal responsibilities among members of the medical care sector.

These two points fall under the wider umbrella of professionalism. Professionalism entails altruism, with “professionalism-as-altruism” being often described – from Arrow (1963) to Attema et al. (2023) – as a key component of medical care. But professionalism entails efficiency as well: since doctors should not waste resources, and must prioritize some patients over others when choosing to allocate money and time.

A choice is necessary because time and money are scarce resources. A “choice” is but a “cost” paid from a scarce common pool and used for some patients and not for others: thus “cost” and “sacrifice borne by others” are two sides of the same coin (Williams, 1996). In this sense, the marginal benefit of allocating the resource to someone should be higher than the marginal cost paid by the broader general public.

While efficiency is a valid concern, an allocation of resources that maximize overall welfare (i.e., a Pareto optimal allocation) might also be profoundly unjust. Intuitively, it is clear that in healthcare efficiency matters only if combined with equity, that can be understood for example as a minimum standard of medical care available to all members of the society (Enthoven, 1985).

The wave of reforms that falls under the umbrella of “New Public Management” (NPM) emphasized the importance of efficiency, following a perceived escalation in healthcare cost (Simonet 2008, 2013; Alonso 2015). Even if there is not a single “New Public Management model” that can be described (since every country adopted it with its own variations on the theme (Simonet, 2008) the general trend was three-pronged:

1. the convergence of administrators towards company managers;
2. the optimal contracting approach;
3. the incentives attached to precisely measured, cost-conscious, outputs.

The first implication is that management of hospital is no longer a prerogative of physicians: economists and business administration graduates are able to get management positions (Wilkesman, 2016, Simonet, 2013).

Secondly, physicians are positioned (with varying degrees of success depending on the country) under the supervision of cost-conscious managers, with the strategic or economic goals set by non-medical managers becoming more and more constraining for physicians (Wilkesman, 2016; Simonet, 2013)

Last, physicians respond to incentives: when they are provided overly precise guidelines they diminish their creativity accordingly, and may behave in a selfish or uncooperative way; moreover, incentives may crowd-out intrinsic motivations and corrode quality following their withdrawal (Doran et al.,2017; Frey 1997).

## Research relevance

### Scientific relevance and discussion of the innovation

This experiment aims to understand how institutions influence the economic behavior of doctors in hospitals. The term "institutions" can be interpreted in different ways, and it's debatable whether New Public Management (NPM) counts as one. The laws upholding of NPM didn't create the institution; instead, as mentioned in the introduction, they were a response to the widespread perception that healthcare was becoming too expensive and that doctors' lack of accountability was leading to a waste of resources. Similarly, NPM reforms are not solely the product of institutions. They appear to be a new, perhaps informal, understanding of the responsibilities shared by managers, doctors, and patients. In conclusion, this paper lies between law and economics, and aims at providing an economic analysis of institutional settings that are intertwined with the law.

Experimental designs addressing other-regarding motivations and payment systems, or involving medical and non-medical students, already exist in the literature (Godager & Wiesen, 2013; Martinsson and Persson, 2019; Hennig-Schmidt and Wiesen, 2014). However, to the Author’s knowledge, there is no contribution that focused on the self-enforcing agreement among the stakeholders in medical service provisions (i.e., the “social contract”), on how it is influenced by the preferences of physicians, and on how, in turn, physicians’ motivation can be displaced by the institutional conditions (Frey, 1997).

More in depth, this study aims at understanding the cascade effect of an archetype of NPM on economic motivation and on the “social contract”. Rather than focusing on the various declensions of NPM across healthcare systems, and in line with the stylized approach typical of experiments, the article offers insights on the potential risks of an approach centered on efficiency.

### Societal relevance and policy insights

The societal relevance of this research is grounded on the relevance that good health has in the context of sustainable development. The attention to the smooth functioning of healthcare infrastructures emerges from Goal 3 (target 3.c) and Goal 9 (target 9.1) of the 2030 Agenda for Sustainable Development (UN 2015). These experiment work, in the metaphor Hennig-Schmidt et al. (2011) as a “wind tunnel” to test institutional changes in developing countries.

At the same time, bringing to focus the “social contract” in healthcare and the threats to patient-regarding behavior might allow to improve the national regulatory frameworks

In this sense this work can perhaps be seen as contribution to the larger puzzle of “governing the commons” in the healthcare sector (McGinnis, 2011). In a period of resource scarcity and increased pressures on balance sheets, workers, and patients; this contribution helps to understand under what circumstances a New Public Management institutional setting might, eventually, adversely impact on the common pool of resources for medical services.

## Related literature and rationale for an experiment

### Background literature

At the beginning of 2024, Finocchiaro Castro et al. published a systematic literature review of laboratory experiments on the supply of healthcare services. The results offer an overview on how profits influence the supply of medical services. However, incidentally, it is possible to note the ever growing attention to the altruistic behavior of physicians.

One of the premises of this work was the convergence between hospital administrators and company managers, it is thus interesting to compare the behavior of prospective economists and medical students. Such an experiment was run by Ahlert et al. (2012), and found that participants tended to be “either ‘selfish’, ‘Rawlsian’, or ‘maximizing the number of recipients’” with differences due to the neutral or medical framing of the task and – of course – to the educational background.

In fact, Attema et al. (2023) investigate the formation of physician altruism, tracing it back to education and finding that medical students behave more altruistically already at the beginning of their studies. Furthermore, Attema et al. (2023) find that all medical students exhibit a high aversion to advantageous inequality although eventually physicians with similar (different) levels of altruism select similar (different) specializations, in line with previous experiments (Godager & Wiesen, 2013).

These findings support Arrow’s (1963) remarks on the expected altruistic behavior of the physician. But, why do physicians agree *ex ante* on curing patients and also do cure them *ex post*, even though they could choose to maximize their profit (or at least prioritize profits over patients’ benefits)? A broader variant of this “compliance problem” has been tackled by many scholars (Gauthier, 1986; Aoki, 2001; Faillo et al., 2015).

One possibility, is that explored by Binmore (2005). In *Natural Justice* (2005) Binmore finds that in the “game of life” Adam and Eve reach an equilibrium in a repeated Prisoners Dilemma by playing the “game of moral” under the veil of ignorance. What provides a solution to the game of moral – a solution that cascades into the game of life – is the “social contract”, that coincides with the Nash Bargaining solution.

Although it would be farfetched to summarize healthcare with a Prisoner’s Dilemma, the fact that the “game of life” is a *repeated* game reminds Arrow’s (1963) remark that: “*[…] the patient expects that the same physician will normally treat him on successive occasions*”*.* Arrow also noted that“*This expectation is strong enough to persist even in the Soviet Union […]*”.

Nevertheless, Binmore (2005) seems well aware of how the healthcare sector may be a test field for compliance to social contracts, as the provided heart transplants example suggests that one-shot games sometimes do manifest in healthcare. Incidentally, he also stresses the importance of physician choices in a world of scarce resources.

Anyways, since to a certain extent experiments have proven that physicians commit *ex ante* and behave *ex post*,it is possible to suppose that some sort of “understanding” exists, and that it somehow compels a doctor to cure a patient. Moreover, the patient must know that (i.e., common knowledge exists about the fact that) doctors prefer to comply with this understanding.

This resonates with Arrow’s (1963) considerations on profit, that in the healthcare sector is looked suspiciously by patients, doctors, and healthcare sponsors alike. In fact, Arrow found profit and delegation of choice inherently incompatible, as if profit would disturb the existing “understanding”.

This is exactly the point where this contribution comes in, as it aims at studying if (and under what circumstances) New Public Management might misalign physicians’ incentives and patient-regarding preferences. Again, although this contribution is rooted in economics, the connection to law should not be disregarded: as law plays a role in the creation, maintenance, and disruption of institutions.

In this case the institutional transformation captured by a change in the law might twist the expectations of physicians, patients, and hospital managers. In other words, institutions and laws generate incentives; in turn, incentives may crowd out the motivation of physicians (Frey 1997) and eventually might redefine the reciprocal responsibility of the healthcare main stakeholders (the “understanding “that represents the current “social contract”).

### Proposal for an experimental design

Why this paper follows an experimental approach and not other methodologies, such as econometrics, field studies, and qualitative interviews? First of all, experiments, field studies, and econometric analysis are complements, not substitutes. For example, both the data for experiments and the data from field studies can be used in an econometric analysis (Galizzi & Wiesen, 2018).

Nevertheless, these methodological approaches are different. Experiments allow for a controlled variation that proves useful – in the present case – to pinpoint what *caused* a change in the behavior of the physician (Falk & Heckman, 2009).

Moreover, Galizzi & Wiesen (2018) pointed out that experiments allow to deal with selection bias and behaviors difficult to observe; Hennig-Schmidt et al. (2011) emphasize that experiments allow to randomly allocate participants effectively obtaining a *ceteris paribus* situation. Finally, Hennig-Schmidt and Wiesen (2014) proved that experiments can be used to study otherwise unobservable behavior, such as altruism.

Experiments also allow to exogenously change variables such as norms and institution (Galizzi & Wiesen, 2018). This is particularly useful for studies like this very one, that aim to study other-regarding motivation and its crowding out. Within the current regulatory framework, it would unfeasible to have two hospitals behave in different ways, while a counterfactual is necessary to measure the impact of norms and institutions on physicians’ altruism.

Of course experiments have weaknesses too. The most intuitive one is external validity, that anyways is common to both experiments, field studies, and research relying on qualitative interviews; the latter two need to have precautions in place to guarantee that the findings are in line with the experiences and perspectives of the respondents, that the studies can be replicated, and that they are not influenced – not even unwillingly – by the researcher (Lincoln et al., 1985).

# References

Ahlert, M., Funke, K., & Schwettmann, L. (2012). Thresholds, productivity, and context: an experimental study on determinants of distributive behaviour. Social Choice and Welfare, 40(4), 957–984. https://doi.org/10.1007/s00355-012-0652-8Alonso (2015)

Aoki, M. (2001). Toward a comparative institutional analysis. Cambridge, MA: The MIT Press.

Arrow, K. J. (1963) Uncertainty and the welfare economics of medical care. Bull World Health Organ. 2004 Feb;82(2):141-9. Epub 2004 Mar 16. PMID: 15042238; PMCID: PMC2585909.Attema et al. (2023)

Binmore, Kenneth (2005). Natural justice. New York: Oxford University Press.

Doran, T., Maurer, K. A., & Ryan, A. M. (2017). Impact of provider incentives on quality and value of health care. Annual Review of Public Health, 38(1), 449–465. https://doi.org/10.1146/annurev-publhealth-032315-021457Enthoven (1985)

Faillo, M., Ottone, S., & Sacconi, L. (2015). The social contract in the laboratory. An experimental analysis of self-enforcing impartial agreements. Public Choice, 163(3–4), 225–246. https://doi.org/10.1007/s11127-015-0246-yFalk & Heckman (2009)

Finocchiaro Castro, M., Lisi, D. & Romeo, D. Experimental evidence on the role of shared protocols as coordination device on clinical best practices. Sci Rep 14, 9363 (2024). https://doi.org/10.1038/s41598-024-60186-4

Frey, B. S. 1997. Not Just for the Money. Edward Elgar Publishing; in italian Frey, B. S. (2008). Non solo per denaro. Le motivazioni disinteressate dell’agire economico.

Galizzi, M. M., & Wiesen, D. (2018). Behavioral experiments in Health Economics. Oxford Research Encyclopedia of Economics and Finance. https://doi.org/10.1093/acrefore/9780190625979.013.244

Gauthier, David P. (1986). Morals by agreement. New York: Oxford University Press.

 Godager, G., & Wiesen, D. (2013). Profit or patients’ health benefit? Exploring the heterogeneity in physician altruism. Journal of Health Economics, 32(6), 1105–1116. https://doi.org/10.1016/j.jhealeco.2013.08.008

Hennig-Schmidt H, Wiesen D. Other-regarding behavior and motivation in health care provision: an experiment with medical and non-medical students. Soc Sci Med. 2014 May;108:156-65. doi: 10.1016/j.socscimed.2014.03.001

Hennig-Schmidt, H., Selten, R., & Wiesen, D. (2011). How payment systems affect physicians’ provision behaviour—An experimental investigation. Journal of Health Economics, 30(4), 637–646. https://doi.org/10.1016/j.jhealeco.2011.05.001

Lagarde, M., & Blaauw, D. (2017). Physicians’ responses to financial and social incentives: A medically framed real effort experiment. Social Science & Medicine, 179, 147–159. https://doi.org/10.1016/j.socscimed.2017.03.002

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills, CA: Sage Publications, Inc.

Martinsson, P., & Persson, E. (2019). Physician behavior and conditional altruism: The effects of payment system and uncertain health benefit. Theory and Decision, 87(3), 365–387. https://doi.org/10.1007/s11238-019-09714-7McGinnis (2011)

Simonet, D. (2008). The New Public Management theory and European health‐care reforms. Canadian Public Administration, 51(4), 617–635. https://doi.org/10.1111/j.1754-7121.2008.00044.x

UN (2015) - A/RES/70/1 - Transforming our world: the 2030 Agenda for Sustainable Development

Wilkesman (2016) in Public accountability and health care governance. (2016). Palgrave Macmillan UK eBooks. https://doi.org/10.1057/978-1-137-47299-1

Williams, A. (1996). QALYs and ethics: A health economist’s perspective. Social Science & Medicine, 43(12), 1795–1804. https://doi.org/10.1016/s0277-9536(96)00082-2