

formal

leontaglelb

July 2024

1 Literature Review

It is a well established factum that taking sick leave is subject to an economic calculation on part of the workers, rather than being an orthogonal, merely health-concerned matter. Johansson and Palme (2005) begin their article with a quote by Nobel Laureate Ragnar Frisch: “Regarding the high absence rate at the Department: Acquiring minor diseases, such as colds or flu, is an act of choice”. Their paper is among many others –Paola et al. (2014), Markussen et al. (2012), Stearns and White (2018), Henrekson and Persson (2004)– which give empirical evidence of such a choice being driven by economic incentives, through an event study on exogenous institutional regime changes in the subject nation’s public insurance system. This line of research, though, is concerned with the actions of workers themselves and their subsequent effect on macroeconomic employment variables, whereas our main focus shall be the role played by physicians.

Our doctors’ utility function is composed of two terms: one concerning revenue, the other patients’ health. This is in line with the literature on physicians, which now commonly regards them as “altruistic” agents whose utility is to a higher or lesser degree dependent on that of the patients, a claim which has found empirical support in both medical students (Brosig-Koch et al. (2017), Hennig-Schmidt and Wiesen (2014)) as well as doctors themselves (Kesternich et al. (2015), Brosig-Koch et al. (2016)). Crea (2019) finds no evidence for this, whereas Godager and Wiesen (2013) do, and explore its heterogeneity across physicians. The fact that physicians are also concerned with revenue, rather than being purely altruistic, is also well evidenced, see Clemens and Gottlieb (2014), Hennig-Schmidt et al. (2011), Autor et al. (2014), and also Robertson et al. (2012) for a review on the matter. Therein lies the dilemma with giving physicians the status of gatekeepers for different services and certifications, like disability insurance (as in autor). As Markussen and Røed (2017, p. 1) put it: “In essence, the GPs [general practitioners] have been assigned the task of protecting the public (or private) insurer’s purse against the customers who form the basis for their own livelihood”.

Both factors being well established in the literature on physicians, one strand of it would seek to design an optimal contract for medical care in the presence of such an economic calculus, see Choné and Ma (2011) or Gaynor et al. (2023);

another, more in line with our approach, would evaluate the effects increased competition among doctors has on their rendered services. In general, Currie et al. (2023) propose that increased competition would lead to physicians offering more services that please the clients yet relatively hurt their own utility (like drug prescriptions), and less services which bring them, physicians, more utility, at the expense of patient utility (like unwanted, expensive surgical procedures). Iversen and Lurås (2000) and Iversen (2004) provide empirical evidence to support this: physicians with a shortage of customers will provide more services, thus obtaining more income *per customer*.

To our knowledge, the only article dealing specifically with sick leave certificate granting as a function of competition among physicians is Markussen and Røed (2017). Carlsen et al. (2020) deal with sick leave as well, but make only the narrower point that, in a Bayesian context, doctors have almost no incentive to distrust patients' self-reported, unverifiable symptoms. Markussen and Røed's methodology is similar to our own: after performing "raw" rgression analysis, they set-up a model of patient choice as a McFadden logit over observables X_i , including physician leniency (assumed observable), and as such can estimate the role leniency plays in demand for their services. In a parallel exercise, they conclude, with admittedly unclear causal interpretation (p. 1): "GPs are more lenientgatekeepers the more competitive is the physician market, and a reputation for lenient gatekeeping increases the demand for their services".

Despite the different subject matter, the main source of inspiration for this paper is Schnell (2017), and can be seen as an attempt to replicate her model and framework, initially devised for opioid markets, to the market for sick leaves. In repurposing her framework it underwent several key transformations, whose effect on physician behavior, in comparison with Schnell's original paper, will be laid out more clearly in the APPENDIX.

References

- Autor, D., Duggan, M. and Gruber, J. (2014). Moral hazard and claims deterrence in private disability insurance, *American Economic Journal: Applied Economics* **6**(4): 110–141.
URL: <https://www.aeaweb.org/articles?id=10.1257/app.6.4.110>
- Brosig-Koch, J., Hennig-Schmidt, H., Kairies-Schwarz, N. and Wiesen, D. (2016). Using artefactual field and lab experiments to investigate how fee-for-service and capitation affect medical service provision, *Journal of Economic Behavior & Organization* **131**: 17–23. Experimental and Behavioral Economics of Healthcare.
URL: <https://www.sciencedirect.com/science/article/pii/S0167268115000891>
- Brosig-Koch, J., Hennig-Schmidt, H., Kairies-Schwarz, N. and Wiesen, D. (2017). The effects of introducing mixed payment systems for physicians: Experimental evidence, *Health Economics* **26**(2): 243–262.
URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/hec.3292>
- Carlsen, B., Lind, J. T. and Nyborg, K. (2020). Why physicians are lousy gatekeepers: Sicklisting decisions when patients have private information on symptoms, *Health Economics* **29**(7): 778–789.
URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/hec.4019>
- Choné, P. and Ma, C. (2011). Optimal health care contract under physician agency, *Annals of Economics and Statistics* (101/102): 229–256.
URL: <http://www.jstor.org/stable/41615481>
- Clemens, J. and Gottlieb, J. D. (2014). Do physicians’ financial incentives affect medical treatment and patient health?, *American Economic Review* **104**(4): 1320–1349.
URL: <https://www.aeaweb.org/articles?id=10.1257/aer.104.4.1320>
- Crea, G. (2019). Physician altruism and moral hazard: (no) evidence from finnish national prescriptions data, *Journal of Health Economics* **65**: 153–169.
URL: <https://www.sciencedirect.com/science/article/pii/S0167629617307348>
- Currie, J., Li, A. and Schnell, M. (2023). The effects of competition on physician prescribing, *Technical report*, National Bureau of Economic Research.
- Gaynor, M., Mehta, N. and Richards-Shubik, S. (2023). Optimal contracting with altruistic agents: Medicare payments for dialysis drugs, *American Economic Review* **113**(6): 1530–1571.
URL: <https://www.aeaweb.org/articles?id=10.1257/aer.20210208>
- Godager, G. and Wiesen, D. (2013). Profit or patients’ health benefit? exploring the heterogeneity in physician altruism, *Journal of Health Economics* **32**(6): 1105–1116.
URL: <https://www.sciencedirect.com/science/article/pii/S0167629613001070>

- Hennig-Schmidt, H., Selten, R. and Wiesen, D. (2011). How payment systems affect physicians' provision behaviour—an experimental investigation, *Journal of Health Economics* **30**(4): 637–646.
URL: <https://www.sciencedirect.com/science/article/pii/S0167629611000452>
- Hennig-Schmidt, H. and Wiesen, D. (2014). Other-regarding behavior and motivation in health care provision: An experiment with medical and non-medical students, *Social Science & Medicine* **108**: 156–165.
URL: <https://www.sciencedirect.com/science/article/pii/S0277953614001622>
- Henrekson, M. and Persson, M. (2004). The effects on sick leave of changes in the sickness insurance system, *Journal of Labor Economics* **22**(1): 87–113.
URL: <https://doi.org/10.1086/380404>
- Iversen, T. (2004). The effects of a patient shortage on general practitioners' future income and list of patients, *Journal of Health Economics* **23**(4): 673–694. Contains contributions from the Grossman Symposium.
URL: <https://www.sciencedirect.com/science/article/pii/S0167629603001103>
- Iversen, T. and Lurås, H. (2000). Economic motives and professional norms: the case of general medical practice, *Journal of Economic Behavior & Organization* **43**(4): 447–470.
URL: <https://www.sciencedirect.com/science/article/pii/S016726810000130X>
- Johansson, P. and Palme, M. (2005). Moral hazard and sickness insurance, *Journal of Public Economics* **89**(9): 1879–1890.
URL: <https://www.sciencedirect.com/science/article/pii/S0047272705000290>
- Kesternich, I., Schumacher, H. and Winter, J. (2015). Professional norms and physician behavior: Homo oeconomicus or homo hippocraticus?, *Journal of Public Economics* **131**: 1–11.
URL: <https://www.sciencedirect.com/science/article/pii/S0047272715001449>
- Markussen, S., Mykletun, A. and Røed, K. (2012). The case for presenteeism — evidence from norway's sickness insurance program, *Journal of Public Economics* **96**(11): 959–972. Fiscal Federalism.
URL: <https://www.sciencedirect.com/science/article/pii/S0047272712000953>
- Markussen, S. and Røed, K. (2017). The market for paid sick leave, *Journal of Health Economics* **55**: 244–261.
URL: <https://www.sciencedirect.com/science/article/pii/S0167629616300893>
- Paola, M. D., Scoppa, V. and Pupo, V. (2014). Absenteeism in the italian public sector: The effects of changes in sick leave policy, *Journal of Labor Economics* **32**(2): 337–360.
URL: <https://doi.org/10.1086/674986>
- Robertson, C., Rose, S. and Kesselheim, A. S. (2012). Effect of financial relationships on the behaviors of health care professionals: A review of the evidence, *Journal of Law, Medicine & Ethics* **40**(3): 452–466.

- Schnell, M. (2017). Physician behavior in the presence of a secondary market: The case of prescription opioids, *Princeton University Department of Economics Working Paper* **5**: 383–410.
- Stearns, J. and White, C. (2018). Can paid sick leave mandates reduce leave-taking?, *Labour Economics* **51**: 227–246.
URL: <https://www.sciencedirect.com/science/article/pii/S0927537118300034>