Time to revisit the agency theory and expand our thoughts on what motivates physicians?
A nudge to health economists

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Abstract

Health economists typically use agency theory to predict how physicians respond to various policy schemes. Empirical studies show that many schemes lead to unintended responses, indicating that current theoretical models fail to fully explain physicians’ behaviour. Drawing on key lessons from social psychology and public administration literatures, we propose to expand the principal-agent framework by unfolding physicians’ non-pecuniary motives to provide care using three components: patient benefits, intrinsic motivation, and societal benefits (externalities). We argue how each of these motivational components align with the existing agency framework and provide examples of how to measure the degree to which physicians are motivated by these components. Finally, we discuss how physicians’ non-pecuniary motives can be used to inform policymaking.

JEL: I10, I11

Keywords: Health care, agency theory, double agency, altruism, externalities, user orientation, intrinsic motivation, public service motivation, non-financial incentives
1. Introduction
Policymakers seek to affect physicians’ behaviour using tools such as payment schemes, accreditation schemes, and clinical guidelines. Studies find that these policy tools often lead to unintended responses (e.g., Cabana et al. (1999); Markovitz and Ryan (2017)). These findings indicate that we need to gain a better understanding of the factors that drive physicians’ behaviour.

Many health economists follow the footsteps of Arrow (1963) by assuming that physicians have an informational advantage over their patients and third-party payers. This assumption makes the principal-agent (PA) theory well-suited for modelling physicians’ behaviour. The principal-agent theory addresses the inefficiencies that may arise either because the physicians satisfy their own interests instead of their patients’ interests, or because the patients’ and their payers’ interests are nonaligned (the double agency problem). Using the principal-agent theory, health economists predict how different policy schemes affect physicians’ behaviour and whether these behavioural changes mitigate or accentuate inefficiencies in the health care market (Ellis & McGuire, 1986).

A central component of the principal-agent theory is physicians’ utility function, which describes different motives for providing health care. We argue that missing from the utility function are key non-pecuniary motives, which have been found to explain physicians’ behaviour. Drawing on insights from social psychology and from public administration literatures on work motivation, we propose to model physicians’ non-pecuniary motives for providing care using three components: patient benefits, intrinsic motivation, and societal benefits (externalities). We offer examples of how to measure the degree to which physicians are motivated by these components and discuss how these measurements may inform policymaking.

2. The single agency theory
As a starting point we outline the relationship between physicians and their patients using the conventional principal-agent framework in the health economics literature. The physicians (agents) are assumed to have more information than their patients (principals) about the needed care, and they choose the amount of care that maximises their own utility. Health economists typically model physician $i$’s utility from providing care, $q_i$, as a function of patient benefits, $b^p$, net income, $\pi$, and indirect costs of care such as loss of leisure time, $c$ (e.g., Dionne and Contandriopoulos (1985); Ellis and McGuire (1986)):

$$u_i(q_i) = \alpha_i b^p(q_i) + \gamma_i \pi(q_i) + \mu_i c(q_i) \quad (1)$$

This expression of utility presumes that physicians’ non-pecuniary gain from supplying care is modelled under a single component labelled “patient benefits”. The fact that physicians derive utility from satisfying patients’ needs is a well-known theoretical concept in health economics (Arrow, 1963). Empirical studies verify that physicians are altruistically motivated, although there is considerable variability in their degree of altruism, $\alpha_i$ (e.g., Douven, Remmerswaal, and Zoutenbier (2019); Godager and Wiesen (2013); Jensen and Andersen (2015)). This altruistic gain may, however, not be the only non-pecuniary reward physicians experience from providing health care.

Studies on public administration and its workforce suggest that an important distinction should be made between altruism directed towards specific patients, termed “user orientation”, and
“intrinsic motivation” to provide care (Grant, 2008). Physicians are intrinsically motivated whenever they derive utility from performing an activity itself irrespective of its rewards and benefits for themselves, for their patients, and for society at large (Ryan & Deci, 2000a). Physicians may therefore exert effort out of pure interest and enjoyment in a given activity. An example could be a physician who enjoys identifying the causes of an illness or initiating a state-of-the-art treatment.

The importance of intrinsic motivation for workers’ behaviour has been recognized in several studies (e.g., Cerasoli, Nicklin, and Ford (2014); Kuvaa, Buch, Weibel, Dysvik, and Nerstad (2017)). Corroborating these findings, recent empirical studies show that physicians’ (and other professionals’) intrinsic motivation can be crowded-in or crowded-out by different policy schemes. Jacobsen, Hvitved, and Andersen (2014) show that when obligatory student plans were perceived as a control factor, they crowded-out school teachers’ intrinsic motivation. Pedersen, Andersen, Jensen, Waldorff, and Jacobsen (2018) find that an accreditation scheme targeting general practitioners (GPs) crowded-in their intrinsic motivation to provide care. Physicians’ intrinsic motivation thereby appears to be important for explaining variation in behavioural responses to policy schemes.

We therefore propose to expand physicians' utility function to include two non-pecuniary motives to provide care, i.e. patient benefits and intrinsic motivation. The physician-specific weights illustrate that the degree of altruism towards patients\(^1\), \(\alpha\), and the degree of intrinsic motivation, \(\delta\), may vary across physicians:

\[
 u_i(q_i) = \alpha_i b^p(q_i) + \delta_i(q_i) + \rho_i \pi(q_i) + \mu_i c(q_i) \tag{2}
\]

3. The double agency theory

The health economics literature recognises that physicians may face a double agency problem whenever the goals of specific patients and their third-party payer, representing insurers or the general population, are nonaligned (e.g., Blomqvist (1991); Makris and Siciliani (2013)). In such situations physicians may align with the interest of the third-party payer to avoid costs from moral hazard (e.g., Blomqvist (1991)). Another reason may be that physicians gain utility from improving the well-being of the general population by reducing negative externalities and/or increasing positive externalities from care. Physicians may for example find it meaningful to fight antibiotic resistance in the general population or to choose cost-effective treatments to prevent overrun health care budgets. While health economists acknowledge that physicians may seek to satisfy the third-party payers’ interests, their utility gain from this effort has – to the best of our knowledge – not been separately modelled in physicians’ utility function.

The public administration literature also recognises that altruists can be collectivists, such that concerns for people other than the specific patient may play a role for physician behaviour (Jensen & Andersen, 2015). The literature calls this concern “public service motivation” and conceptualises it as “an individual’s orientation to delivering service to people with the purpose of doing good for others and society” (Perry & Hondeghem, 2009). Several empirical studies show the importance of public service motivation for physicians’ behaviour (e.g., Jensen and Andersen (2015); Jensen and Vestergaard (2016)). Jensen and Andersen (2015) find that GPs who are more public service motivated prescribe a smaller share of broad-spectrum antibiotics.

\(^1\) The literature also refers to “altruistic motivation” towards patients as “user orientation” (Pedersen, Hess, & Kjær, 2016).
which is in the interest of society due to negative externalities, but not of immediate interest for the individual patient seeking a quick treatment.

Inspired by these findings, we propose to include societal benefits, $b^s$, in the utility function:

$$u_i(q_i) = \alpha_i b^p(q_i) + \delta_i(q_i) + \gamma_i b^s(q_i) + \rho_i \pi(q_i) + \mu_i c(q_i) \quad (3)$$

4. Instruments to measure physicians’ non-pecuniary motivation

So far, we have proposed to expand physicians’ utility function to include several non-pecuniary motives for providing care. However, for this expansion to be useful to researchers and policymakers, we need to predict how policy schemes may affect physician behaviour by measuring physicians’ non-pecuniary motivation. Fortunately, several empirical studies, mainly within the public administration literature, use validated questions to measure workers’ interest in patient benefits (user orientation) and society benefits (public service motivation) as well as their intrinsic motivation (e.g., Andersen and Kjeldsen (2013); Jacobsen et al. (2014)). Some of these studies are also specifically focused on physicians (e.g., Jensen and Andersen (2015); Pedersen et al. (2018)). These studies find that there is significant variation in physicians’ degree of non-pecuniary motivation and in how this motivation is affected by different policy schemes.

5. Discussion and concluding remarks

We argue that current theoretical models used by health economists to predict physicians’ behaviour leave important questions unanswered. For example, why do physicians adhere to guidelines and treatments that do not lead to either increased income or benefits to the patient and that require additional effort? An example could be prescription of small-spectrum antibiotics instead of broad-spectrum antibiotics, which requires additional diagnostic tests by the physician and does not improve the individual patient’s health. To answer such questions, we revisit the principal-agent theory and expand our thoughts on what motivates physicians to deliver health care.

Drawing on key lessons from social psychology and public administration literatures, we distinguish between three non-pecuniary motivational components: patient benefits, intrinsic motivation, and societal benefits (externalities). These components may not exhaust all possible non-pecuniary motives to provide care^2, but recent empirical evidence suggests that physicians respond to these motives and that their degree of motivation may be crowded-in or crowded-out by external interventions (e.g. Pedersen et al. (2018)). These motives may also be non-aligned, such that physicians are forced to trade-off conflicting concerns. We therefore propose that theoretical models include each of these motivational components in physicians’ utility function.

Predictions about behavioural responses to policy schemes are often based on the average physician’s utility. However, taking non-pecuniary motives into account may help us better predict physicians’ heterogeneous responses to policies. One could, for example, imagine that physicians, who are highly intrinsically motivated, operate more effectively under schemes that do not only reward their activity level but also facilitate autonomy and competency.

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^2 Reputation may for example also be an important motive to provide care. Physicians’ reputation is linked to others’ opinions about their generation of profit, $\pi$, patient benefits, $b^p$, and societal benefits, $b^s$. Thus, if reputation is a motive, it may affect physicians’ weighting of these components in the utility function.
development (Ryan & Deci, 2000b). Knowledge about physicians’ degree of non-pecuniary motivation may therefore help inform policymakers in choosing the most motivating frames when designing policies.

We recognise that predicting providers’ behaviour and designing effective policies are difficult tasks, especially in a setting as complex as the market for health care services. However, unfolding physicians’ non-pecuniary motivation is an important step forward in gaining a more complete understanding of physicians’ provision of health care. More empirical research is needed on the importance of these non-pecuniary motivations for provision of care. Hopefully, this paper is a nudge to health economists to further reflect on and measure providers’ motives.

6. References


