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Prosocial Motivation and Incentives

Timothy Besley[1,2] and Maitreesh Ghatak[1]

[1]Department of Economics, London School of Economics, London WC2A 2AE, United Kingdom; email: t.besley@lse.ac.uk

[2]Canadian Institute for Advanced Research, Toronto, Ontario M5G 1M1, Canada

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Abstract

This review explores the role of incentives in providing goods and services that have significant social returns not captured in private returns, and where outcomes and performances are not easy to measure. We discuss how the presence of prosocial motivation among agents involved in the provision of these goods and services changes the design of incentives. The review also emphasises how heterogeneous prosocial motivation puts a premium on selection of agents in this context. We also discuss alternative theories of prosocial motivation.

And hence it is, that to feel much for others and little for ourselves, that to restrain our selfish, and to indulge our benevolent affections, constitutes the perfection of human nature; and can alone produce among mankind that harmony of sentiments and passions in which consists their whole grace and propriety.

—Adam Smith [1976 (1759)], *The Theory of Moral Sentiments*, p. 18

1. INTRODUCTION

One of the central functions of effective polities is to organize the provision of goods and services that have large social returns above any private returns. If left to market-based price incentives, these goods and services will be underprovided. This underpins the traditional belief that markets are the most efficient way of producing private goods, whereas the government should take care of public goods and services while also correcting a range of market failures.

This view is no longer tenable for at least two reasons. First, a large body of evidence has accumulated on government failure due, for example, to corruption, waste, absenteeism, and poor quality of service (see, for example, Finan et al. 2017, World Bank 2004). Second, the increasing importance of private social-sector organizations such as nonprofits, nongovernmental organizations (NGOs), and social enterprises, as well as hybrid organizational forms such as public–private partnerships and contracting out, makes it too restrictive to equate the provision of public goods and services with provision through government agencies.

There is a need, therefore, to shift the focus away from government versus market provision and instead look at the wider incentives that providers face to generate insights into how public goods and services should be provided. Studying this requires a better understanding of the frictions that prevent an efficient allocation of goods and services with significant social returns.

This review builds a framework to develop the main ideas in an emerging literature that studies incentives in organizations with three core features: (*a*) the good or service being produced has a significant social component that is not captured by its market value; (*b*) outcomes and inputs are difficult to measure; and (*c*) some of those whose effort is needed are motivated agents, i.e., agents who care about the output that they produce.[1]

Outside of economics, exploring the implications of prosocial motivation would need scant justification, but there is a strong tradition of putting self-interest at the core of economic models. However, as the quote from Adam Smith above suggests, Smith was acutely aware of the importance of wider forms of motivation. Our focus fits into a broader line of research that models motivation beyond more standard selfish goals (see, for example, Akerlof & Kranton 2010; Benabou & Tirole 2006; Besley & Ghatak 2005; Bowles 1998, 2016; Kamenica 2012; Murdock 2003; Sen 1977).

The review develops an organizing framework for studying the link between motivation and incentives. It joins the theory of contracts and organizations with the focus in public economics on efficiently providing goods and services with social benefits. The literature on contracts and organizations has studied agency problems due to imperfect information and contractual incompleteness. However, the focus has mainly been on production of goods and services, where costs and benefits of actions are reflected in profits. Public economics has studied the importance of public good elements such as nonexcludability and nonrivalry. However, this field has traditionally

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[1]We depart from the standard models of agency in exploring nonpecuniary motivations of agents; however, after taking these motivations into account, agents are assumed to make choices subject to constraints, exactly as in standard economic models. As a result, the standard features of rational choice theory apply—for example, more choices will not make an agent worse off. This distinguishes our approach from that of behavioral economics.

spent little time on understanding the contracting frictions that underpin the reason why there is a public component in the first place. That said, Coase (1960) points out that the problem of public goods provision is fundamentally grounded in the difficulty of creating property rights for those who gain or lose, along with problems of what, in the language of modern contract theory, would be called measurability and contractibility.[2]

In our benchmark model, an organization is charged with delivering a good or service with social costs or benefits. It must design an incentive scheme for its workers, whose efforts determine the quality of the output. Workers may share the values of the organization, embodied in a form of prosocial motivation. We extend the benchmark model to incorporate measurement difficulties in the quality of the output, the possibility of multitasking considerations, and the selection of agents. We also explore alternative forms of nonpecuniary motivation: commitment to a mission, conforming to an identity, having reputational concerns, pursuing status, and being altruistic.

Although the approach is stylized, its logic is useful in a range of applications, such as providing education, health care, prisons, or policing. In all such cases, given the presence of social objectives, such as equal access, or externalities, the level of provision would fall short of socially desired levels if it were left to the market. Organizations that are set up to provide such services are populated by teachers, doctors, nurses, prison guards, or police whose professional ethics, along with a commitment to making the organization successful, play a key role in shaping their behavior. Although direct public provision plays a core role in these cases, some public services are also provided by NGOs and nonprofit organizations, and the ideas developed in this review are applicable to these examples, as well. Even in standard private for-profit firms, there are many aspects of business activity that have value not captured by profit; for example, firms must choose how far they pollute the environment or support disadvantaged communities. Harnessing prosocial motivation may also be relevant in those cases.[3]

Two robust messages emerge from the framework. First, nonselfish motivation and financial incentives are most often substitutes, justifying the limited use of monetary incentives in such contexts. Second, selection of agents based on their prosocial motivation matters for efficient provision; having a workforce that is committed to a prosocial cause may have beneficial consequences. This suggests a greater need to focus on a wider definition of human capital that includes commitment to prosocial goals.[4]

The wider policy context for this review is the perennial search by governments all over the world for more effective ways of delivering public services. Just how far standard payment by results is warranted has been at the center of debates that began in the early 1990s, spearheaded by work such as that of Osborne & Gaebler (1992), which focused on reforming the public sector and administrative services. The so-called new public management that was popular at the time suggested the possibility of an increased use of financial incentives. This led to a range of policy experiments, many of which have proven controversial in part because they were viewed as an affront to the traditional ethos of the public sector, where it is assumed that frontline workers are prosocially motivated (for a discussion of these issues, see LeGrand 2003). Finan et al. (2017)

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[2]While our focus is on applications where there are social benefits that are external to the organization, our analysis can also be applied to cases where these benefits are largely localized to the organization and are valued mostly by those who are associated with the firm. For example, a commercial research laboratory, an elite school, a sports club, or an artistic organization may all produce something that has some public good component but that is unlikely to be significant. However, the stakeholders (e.g., employees, alumni, fans) may care about the benefits over and above any pecuniary aspects of their involvement, and the other two features, agency problems and the presence of motivated agents, may well apply.

[3]Besley & Ghatak (2007, 2017b) and Hart & Zingales (2017) discuss topics, such as corporate social responsibility and social enterprise, that are relevant in this context.

[4]Ashraf & Bandiera (2017) offer a formulation around the idea of altruistic capital.

provide an excellent review of the state of knowledge in this area, particularly the set of papers based on evidence from field experiments on the use of incentives in the provision of public services, mostly looking at evidence from developing countries.

This article is organized as follows. In the next section, we review some of the background ideas relating to motivation in the context of public goods provision. Section 3 lays out a basic approach to studying motivation in a canonical principal–agent problem and considers some extensions. Section 4 then looks at different models of motivation that can be represented in the framework. Section 5 outlines some unresolved issues and future directions for research.

2. MOTIVATION AND PUBLIC SERVICE PROVISION

The broad idea of motivation in the context of public goods and services relates to a wider literature on the nature of motivation in economics. Bowles (2016) has emphasized the importance of prosocial motivation in a wide variety of situations, including market contexts. Bowles (1998) studies what happens when prosocial preferences are endogenous and depend on the socialization of citizens. Other commentators, such as Sandel (2012), have highlighted how different means of allocating resources—e.g., making greater use of markets and financial incentives—can affect the kind of societal values that emerge.

Having motivated public servants at the core of public service delivery is central to many socio-logical accounts of bureaucracy. Both Weber [1978 (1922)] and Durkheim (1956) see commitment to public service as the sine qua non of effectively functioning bureaucracies that deliver services to their citizens. The idea of mission motivation in public bureaucracies is also emphasized by Wilson (1989) and Tirole (1994). This idea contrasts with the standard economic theory of bureaucracy based on self-interest, as developed by Niskanen (1971).

There is no ample evidence of differences in motivation between sectors of the economy. Dur & Zoutenbier (2014, 2015) find strong evidence for greater altruism of workers that select into public sector occupations in cross-country data and in the German Socio-Economic Panel. Barr et al. (2011) use two proxies for intrinsic motivations based on a survey-based measure of health professionals' philanthropic motivations, as well as one based on an experiment to measure prosocial motivations. They find that both proxies predict health professionals' decisions to work in the nonprofit sector. Gregg et al. (2011) show that individuals who work in the nonprofit sector undertake more unpaid overtime than those who are employed in for-profit firms, giving evidence of stronger motivation to work for nonprofit goals by some workers.

Our core formulation of prosocial motivation is essentially identical to the idea of warm glow in the literature on charitable donations (see, for example, the discussion in Andreoni 2006). This is distinct from the standard model of altruism in economics because the utility that individuals receive is intrinsically linked to a person's involvement in a prosocial activity. With warm glow, an individual cares about their own donation over and above the public goods that it funds. In our framework, a worker cares about their contribution to a firm intrinsically over and above the output that it produces.

Prosocial motivation as conceived of in this review can be thought of as a part of the profes-sionalization of public bureaucracies and public service delivery. Part of this professionalization involves formulating a code of contact that is internalized in the preferences of workers. There are examples where the codes are written explicitly.

The Law Society of England and Wales specifies the following code of conduct for its members as follows (see **http://www.lawsociety.org.uk/support-services/ethics/**):

> Ethics involves making a commitment to acting with integrity and honesty in accordance with widely recognized moral principles.

> Ethics will guide a professional towards an appropriate way to behave in relation to moral dilemmas that arise in practice.
>
> Ethics is based on the principles of serving the interests of consumers of legal services and of acting in the interests of the administration of justice, in which, in the event of a conflict, acting in the interests of the administration of justice prevails.

All of these statements are explicit exhortations to put values above self-interest.

The medical profession is also explicit about the values that professionals should adhere to. Perhaps the most famous statement of this is the Hippocratic Oath,[5] which states, among other things, that

> I will apply, for the benefit of the sick, all measures which are required, avoiding those twin traps of overtreatment and therapeutic nihilism...
>
> I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm...
>
> If I do not violate this oath, may I enjoy life and art, respected while I live and remembered with affection thereafter. May I always act so as to preserve the finest traditions of my calling and may I long experience the joy of healing those who seek my help.

The reference to the "joy of healing" in this quote is closely aligned with the idea of warm glow in agent motivation.

Our concept of agent motivation in public service contexts mirrors the idea of a public service ethos. Survey-based approaches, such as that used by Perry (1996), have developed structured questionnaires for measuring this ethos using six categories that try to elicit attitudes that can be used to measure having an outlook on life that is indicative of greater public service orientation: attraction to policy making, commitment to the public interest, social justice, civic duty, compassion, and self-sacrifice. These can be used to construct an overall measure of the strength of public service motivation. Moynihan & Pandey (2007) show that there are strong correlations between organizational form and the kinds of measures of motivation that form the basis of these Perry scores. Dal Bó et al. (2013) use these measures in their study of the selection of bureaucrats in Mexico as part of a recruitment drive; they study whether higher wages led to selection of more able or motivated workers.

The notion of a mission-oriented organization staffed by motivated agents corresponds well to many accounts of employees in nonprofit organizations. Weisbrod (1988, p. 31) observes that

> Non-profit organizations may act differently from private firms not only because of the constraint on distributing profit but also, perhaps, because the motivations and goals of managers and directors...differ. If some nonprofits attract managers whose goals are different from those managers in the proprietary sector, the two types of organizations will behave differently.

He also observes that

> Managers will...sort themselves, each gravitating to the types of organizations that he or she finds least restrictive—most compatible with his or her personal preferences (Weisbrod 1988, p. 32).

He goes on to cite evidence to support the idea that such sorting is important in practice in the nonprofit sector. For example, Ballou & Weisbrod (2003, p. 1917) state that "[w]hile the

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[5]This version was written in 1964 by Louis Lasagna, Academic Dean of the School of Medicine at Tufts University, and is used in many medical schools today.

compensating differentials may explain why levels of compensation differ across organizational forms, it does not explain the differentials in the use of strong relative to weak incentives.

3. MOTIVATION AND INCENTIVES

This section develops a stylized model of motivation and incentives with three features. First, the service being produced generates a nonpecuniary social benefit that is not reflected in the profit of the organization. This captures a classical externality such as environmental protection, prevention of communicable disease, social benefits from primary education, or policing. It could also be motivated by a goal of minimum provision in basic health care, education, or housing. Second, these benefits are measured imperfectly, limiting their use in incentive contracts. Third, the employees are willing to commit more effort for free in a prosocial cause.

3.1. Benchmark Model

The precise formulation developed in this review is based on the model of Besley & Ghatak (2005). However, there are several closely related formulations, including those of Delfgaauw & Dur (2008), Francois (2000, 2007), Francois & Vlassopoulos (2008), Hagen (2006), and Prendergast (2003, 2007, 2008), that develop the idea of the importance of nonpecuniary motivation in organizations, particularly those that provide public services.

3.1.1. Projects. Consider an organization with a single employee (the agent) who is entrusted with carrying out a task with a binary outcome, $y \in \{0, 1\}$, where $y = 1$ denotes success and $y = 0$ denotes failure. The agent's effort is normalized to be the probability of success and is denoted by $e \in [0, 1]$. The disutility of effort is $e^2/2$, i.e., it is quadratic in effort.

Success yields a financial return π and a social return S. The latter is the sum of returns to a community of N beneficiaries, i.e.,

$$S = \sum_{i=1}^{N} s_i.$$

Thus, the total payoff V is

$$V = \begin{cases} S + \pi & \text{if } y = 1 \\ 0 & \text{if } y = 0 \end{cases}.$$

We assume $V > 0$. In many applications, we have $\pi = 0$ (e.g., provision of some basic services, like primary health or primary education, where revenues are set only to cover cost), so that there are no profits associated with success and failure.[6]

> **Example 1.** In a health care application, the agent might be a doctor or a nurse whose actions affect the wellbeing of patients, including those who may not be able to afford treatment.

> **Example 2.** In an application to the justice system, the agents might be legal professionals, such as judges or lawyers, who care about the fairness of the outcome.

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[6]In some applications, it may even be reasonable to suppose that $\pi < 0$, i.e., the organization makes negative profits funded by an endowment or other source of funds.

Key decisions are made by a principal, who acts as a trustee on behalf of the beneficiaries. The principal has access to financial resources, e.g., from taxation, a financial endowment, or donations. Their objective function is

$$W = eV - C,$$

where C is the financial cost of provision. The only element of costs that we focus on is wage payment, with all other costs normalized at zero.

This formulation implies that payments to agents are viewed as costs. Thus, even if providers get some utility due to their prosocial motivation, the principal does not value this directly. Thus, the approach that we are using is similar to the study of political agency problems, where the view taken is that any rents that politicians get from delivering policies on behalf of voters are not welfare relevant when the focus is exclusively on the welfare of voters (for a discussion of such models, see Besley 2006). The parallel to this idea in our setting is that we care only about the benefits that running public services delivers for their beneficiaries (who may also be taxpayers or pay a service fee) but not the utility that providers receive. Thus, even if doctors do experience a joy of healing, we do not allow such payoffs to be used in deciding how to run the health system.

3.1.2. Agents. The payoff of the agent, who bears the disutility of effort, is

$$w + e(b + \theta) - \frac{e^2}{2},$$

where w is a flat component of their pay, b is an output-contingent aspect of their pay, and we refer to θ as motivation—the nonpecuniary payoff that the agent gets when the task generates a successful outcome. Having $\theta > 0$ is the essence of agent motivation in this setting. Crucially, we attach motivation not just to working in an organization but to good performance.[7]

We allow θ to vary in the population with I potential types, indexed by i, where

$$\theta_I \geq \theta_{I-1} \ldots \geq \theta_1 = 0.$$

Thus, a higher index i corresponds to greater nonpecuniary motivation. Let γ_i be the fraction of agents in the population of type i. Below, we mostly use a two-type setup with $\theta \in \{0, \bar{\theta}\}$, where $\bar{\theta} > 0$, a fraction γ of agents is motivated, and the remaining fraction $(1 - \gamma)$ is unmotivated or selfish. We focus on the case where $\theta_I \leq V$, i.e., even the most motivated agent does not fully internalize the value of the marginal social surplus.

We interpret θ_i as warm glow motivation rather than as conventional altruism. It is the fact that the warm glow is aligned with effort that produces a higher payoff for the beneficiaries, which makes the warm glow prosocial motivation. A conventional model of altruism would associate θ_i with the gains from beneficiaries, as embodied in S. Section 4.6 discusses the implications of this formulation.

We focus initially on the case where θ_i is observable, thus setting aside issues of self-selection by workers in particular occupations. This is issue is discussed in Section 3.2.3.

3.1.3. Full information. Consider first an environment in which the principal can write a contract with the agent that specifies the level of effort. In this case, effort will be set to maximize the payoff

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[7]Our results are not significantly affected if, in addition to this, there is a flat (not outcome-contingent) component of motivation relating to the rewards of entering certain occupations.

of the principal, who is assumed to act on behalf of the beneficiaries:

$$e^{**} = \arg \max_e \left\{ eV - \frac{e^2}{2} \right\} = V.$$

Since e is a probability, we normalize, so that $V < 1$. This is the first-best level of effort and serves as a benchmark. Achieving this effort level need not depend on being able to contract directly over effort. If the outcome can be measured, then it suffices to offer the agent a reward of $V - \theta$ to get the optimal effort level. Parallel to the concept of a residual claimant in the context of financial profits, we call this making the agent a social residual claimant, since in such cases, the agent captures the full marginal social benefit from their effort.

   We need to be sure that any arrangement respects the participation constraint of the agent. To explore this formally, suppose that the outside option is worth $\bar{u}$. To satisfy this, the principal has the option to offer a payment of w (which can, in principle, be negative). Then, the agent's payoff at e^{**} will be

$$e^{**}V - \frac{e^2}{2} + w = \frac{V^2}{2} + w.$$

In this case, w can be adjusted to ensure that $(V^2/2) + w = \bar{u}$. If $\bar{u}$ is very low, then we would need to set $w < 0$ to make the participation constraint bind. In this case, the agent pays a franchise fee to the principal to work in the organization, which increases the beneficiaries' payoffs. An example would be a case where an NGO provides a government service and uses donations or its endowments to pay some of the cost. The payoff to the principal who acts on behalf of the beneficiaries is then

$$e^{**}V - w = V^2 - w = \frac{V^2}{2} - \bar{u}.$$

Setting $w < 0$ to reduce the agent to $\bar{u}$ may not be an option if the agent has limited wealth.[8] In this case, the agent will earn a rent. Such rents are not desirable, given that the principal wishes to provide the service as least cost. This is the most natural case in most applications, so, below, we focus on the cases where the agent has no wealth.

   Our focus on warm glow prosocial motivation does affect the participation constraint of the agent compared to a case of pure altruism. This is because the agent gets their warm glow utility only if they are employed to provide the service. However, a pure altruist would value the project even if another agent were employed to deliver it, thus affecting their perception of the outside option. We examine the implications of this formulation in Section 4.6.

3.1.4. Information frictions. In this section, we explore the case where effort cannot be observed and thus specified as part of the contract. This is the case studied in classical principal–agent problems. The principal now offers a compensation package to an agent whose motivation is θ that consists of two parts—a bonus, b, that is paid only when $y = 1$ and a fixed wage component, w.

   The principal now solves the following problem:

$$\max_{\{b,w\}} (V - b)e - w \qquad\qquad 1.$$

subject to

   1. the incentive constraint, which stipulates that the effort level maximizes the agent's private payoff given (b, w):

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[8]Capital markets would not help, as lending money to agents to buy such franchises would then lead to an agency problem between the agent and the lender.

$$e = \arg\max_{e \in [0,1]} \left(e\,[b + \theta] + w - \frac{e^2}{2} \right) = b + \theta,$$

and

2. the participation constraint of the agent, which requires the agent's expected payoff to be at least as high as their outside option:

$$e\,(b + \theta) + w - \frac{e^2}{2} \geq \bar{u}. \qquad\qquad 2.$$

To these two constraints we need to add a limited liability constraint to rule out the case where the principal franchises the project to the agent (as described above), thereby achieving the full-information outcome. Thus, we assume that, in any state of the world, the agent's income cannot be below a certain level $\underline{w}$, where $\underline{w} \geq 0$. Formally, this is

3. a limited liability constraint requiring that the agent be left with at least $\underline{w}$:

$$b + w \geq \underline{w}, w \geq \underline{w}. \qquad\qquad 3.$$

For simplicity, we set $w = \underline{w} = 0$ below. This reflects the assumption of limited wealth that we mention above, as well as the fact that nonpecuniary penalties are ruled out.

In choosing the level of financial incentives, the principal faces a trade-off between providing incentives to the agent (setting b higher) and keeping costs of provision low. The outside option of the agent plays an important role in determining b. As is standard in these models, the fixed wage is set at as low a level as possible (which happens to be $\underline{w} = 0$), since a higher wage has no effect on effort; thus, if the principal wants to reward the agent more, then it is better to raise the bonus b.

There are two cases that can arise depending on whether the participation constraint is binding.

Suppose, first, that the participation constraint is not binding. Recognizing that $e = b + \theta$, the principal will choose the bonus to solve

$$\max_{b} (V - b)(b + \theta).$$

This yields $b = (V - \theta)/2$ and an effort level of $(V + \theta)/2$. Thus, the principal sets incentive pay equal to half the difference between the societal valuation and the agent's valuation of success. Effort increases with θ but does not increase one for one, as the principal will adjust incentives in part to offset the effect of greater prosocial motivation. Since the agent is motivated, there is less need for a financial incentive.

The expected payoff of the principal in this case is $(V - b)\,e = [(V + \theta)/2]^2$, while that of the agent is $e\,(b + \theta) - \frac{e^2}{2} = (V + \theta)^2 / 8$. This will be the contract offered by the principal as long as the participation constraint of the agent is not binding, i.e.,

$$\frac{1}{8}(V + \theta)^2 \geq \bar{u}, \qquad\qquad 4.$$

which depends on V and θ being high enough relative to the outside option $\bar{u}$. Therefore, when the reservation payoff is low and the participation constraint does not bind, the agent earns an on-the-job rent that is increasing in θ.

The second case is one in which Equation 4 does not hold, in which case the participation constraint is not satisfied when $b = (V - \theta)/2$, and we have to solve for b directly from the participation constraint, i.e., $(1/2)(b + \theta)^2 = \bar{u}$. The optimal incentive pay, in this case, is set by the outside option but with a discount to reflect the agent's motivation. Putting this together

yields the following expression for the optimal financial incentive for providing the service:

$$b^* = \begin{cases} \frac{V-\theta}{2} & \bar{u} \leq \frac{1}{8}(V+\theta)^2 \\ \sqrt{2\bar{u}} - \theta & \text{otherwise} \end{cases}.$$

Regardless of whether the participation constraint binds, financial incentives and motivation are substitutes, i.e., a higher value of θ corresponds to lower b. The corresponding effort level is given by

$$e^* = \begin{cases} \frac{V+\theta}{2} & \bar{u} \leq \frac{1}{8}(V+\theta)^2 \\ \sqrt{2\bar{u}} & \text{otherwise} \end{cases}.$$

We see that effort is increasing in θ when the participation constraint is not binding. However, when constraint is binding, the effort put in by the agent is independent of θ; there is a one-for-one crowding out of incentives as the agent becomes more motivated. However, agent motivation is still beneficial, as it reduces the cost of employing the agent.

The expected payoff of the agent in this case is $\max\{(1/8)(V+\theta)^2, \bar{u}\}$, while the expected payoff to the principal is

$$W(\theta) = \begin{cases} \frac{[V+\theta]^2}{4} & \bar{u} \leq \frac{1}{8}(V+\theta)^2 \\ \sqrt{2\bar{u}}\left[V+\theta-\sqrt{2\bar{u}}\right] & \text{otherwise} \end{cases}. \qquad 5.$$

This is increasing in θ, as is expected from the discussion above.

Below, we describe four implications of the basic model. First, the framework underpins the importance of prosocial motivation, including the notion of public service ethos, which we discuss above. Even when the participation constraint binds, the benefit from hiring a motivated agent is that effort can be elicited at lower cost. Equation 5 shows that the expected social payoff is increasing in θ regardless of whether the participation constraint binds. Having a more motivated agent is always better for the beneficiaries, as it lowers cost of provision.[9]

Second, the model says that selection on motivation matters and affects the contracts that agents receive. Since θ is observable, the principal can tailor the bonus to the type of agent who has been hired. More motivated agents receive a lower bonus payment and yet produce higher effort. Thus, the public service ethos is valuable to the efficiency of provision. This does, however, raise the issue of self-selection when θ is unobserved, which we explore further in Section 3.2.3.

Third, all else equal, motivated agents are more likely to earn an on-the-job rent. Unless the participation constraint binds, more motivated agents earn greater on-the-job rents than less motivated agents. This rent comes from directly valuing the work that they do. Thus, we would expected motivated agents to report higher levels of job satisfaction. This expectation is indeed consistent with the results of a large empirical literature (for a recent review, see, for example, Ritz et al. 2016).

Fourth, as in standard principal–agent models, monetary incentives still elicit more effort. Thus, the model does not result in monetary incentives crowding out effort. A useful way of thinking about the difference between a standard model of material motivation and one with prosocial agent motivation is as follows. Since $e = b + \theta$, the elasticity of effort with respect to rewards is lower for more motivated agents. Thus, less incremental effort is created for each successive increment of financial rewards.[10] To see this formally, note that the incentive constraint $e = b + \theta$ implies

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[9]There is a large literature on the difference between public and private sector wages that bears directly on this issue. In general, there is heterogeneity across groups of workers and countries (for discussion, see, for example, Postel-Vinay 2015).

[10]Prendergast (1999) emphasises how the provision of incentives in firms depends on the size of this elasticity.

that

$$\frac{\partial \log e}{\partial \log b} = \frac{b}{b + \theta},$$

which is decreasing in θ. Although the model does not display crowd out of effort with incentives, there is a cross-sectional implication that looks similar to this. Suppose that there are different organizations with agents having different levels of θ. Those with higher θ will have lower incentives and higher effort. Thus, higher incentives will be associated with lower effort even though the relationship is not causal.

3.2. Extensions

In this section, we consider three extensions to the benchmark model of incentives with motivated agents that are relevant in organizations whose output generates social returns.

3.2.1. Poor measurement. While measuring output is an issue in all sectors, these difficulties are particularly acute in public service provision; there are well-known difficulties in measuring output reliably in health systems (see, for example, Propper & Wilson 2012) and in education (Woessman 2016). The framework that we are using can encompass these considerations, incorporating insights from those who have explored measurement problems in principal–agent problems, such as Baker (1992).

To explore this, suppose that $\pi = 0$, so that there is no signal of success or failure coming from financial flows. We also continue to set $w = \underline{w} = 0$.

Suppose then that, rather than observing y or V directly, the principal receives a signal of whether there is success or failure, which we denote by $\sigma \in \{0, 1\}$, where

$$\text{Prob}\{\sigma = 1 : y = 1\} = \rho = \text{Prob}\{\sigma = 0 : y = 0\} \geq 1/2.$$

It is possible to observe failure when there is success and vice versa, and a higher value of ρ denotes a better signal: There is perfect measurability when $\rho = 1$, and when $\rho = 1/2$, the signal is completely uninformative about whether there is success and is thus not usable to incentivize the agent.

Rewards to the agent can only be made to depend on σ and not on y. The agent's expected payoff is thus

$$[e\theta + \{e\rho + (1 - e)(1 - \rho)\} b] - \frac{1}{2}e^2.$$

The incentive constraint is

$$e = \theta + (2\rho - 1)b.$$

Thus, effort is increasing in the quality of the signal, ρ, for any given level of the financial incentive. However, for $\rho < 1$, financial rewards elicit less effort. This will make using such rewards less attractive, and if $\rho = 1/2$, then financial incentives serve no purpose at all.

The principal's expected payoff is, in this case,

$$[eV - \{e\rho + (1 - e)(1 - \rho)\}b].$$

Substituting e from the incentive constraint and focusing on the case where the participation constraint does not bind, we find that the principal chooses b to solve

$$\max_b [\{\theta + (2\rho - 1)b\} \{V - b(2\rho - 1)\} - (1 - \rho)b].$$

This yields the following first-order condition for the choice of b for an agent with motivation θ:

$$b^* = \max\left\{\frac{1}{2(2\rho-1)}\left(V-\theta-\frac{1-\rho}{2\rho-1}\right), 0\right\}.$$

This immediately implies that measurement problems deter the use of financial rewards. The threshold for incentive pay is now $V > \theta + [(1-\rho)/(2\rho-1)]$, compared to $V > \theta$ when measurement is perfect. Even if $\theta = 0$, it may be optimal not to use financial incentives.

Thus, this extension of the basic model explains precisely the logic of why poorer measurement of output in the provision of public services can also explain why financial incentives are used relatively rarely in such instances. This dovetails well with some of the ongoing policy discussions about using pay for performance in pubic services. A good example is the case of teacher incentives, where there are doubts about whether having a testing regime for pupils is a sufficiently accurate basis for introducing performance-related pay. However, it is possible that the decision to introduce bonus pay is accompanied by attempts to improve the measurability of outcomes through new systems of performance management (increasing ρ). In this sense, measurement of output and bonus pay can be complements.

This discussion of measurement issues helps answer the question of why societies rely so heavily on prosocial motivation rather than incentives. If $b^* = 0$, then $e = \theta$, and the only way to elicit effort is through employing agents in providing the service who are motivated by concerns about the beneficiaries. This further underlines why appealing to a public service ethos and professional ethics is deemed so important in promoting the effective provision of public services. This discussion formally illustrates the rationale for the idealized notion of a Weberian bureaucracy staffed by motivated agents.

3.2.2. Multitasking. Multitasking is another frequently cited reason for economizing on incentive pay in public services. As we see below, it is also linked to measurement of outputs. Public service occupations rarely involve one-dimensional tasks. For example, school teachers are responsible not only for making sure that students do well in tests, but also for fostering a spirit of curiosity and instilling desirable social values. Considerations of multitasking are therefore often quite relevant in incentive design. In this case, as well, there is no qualitative difference between public service provision and the market economy. However, without prices to reflect the importance of tasks to the organization, it is difficult to create appropriate performance measures of the relevant outcomes based on profit incentives.

All work on multitasking owes a debt to the classic paper of Holmström & Milgrom (1991), who show that using incentive pay based on the output of one task may induce the agent to substitute away effort from other tasks where output is harder to measure, which may be detrimental to the principal's interest. They argue that incentive pay is less likely to be used even if measurement of outputs associated with some tasks are well measured because of interdependence between the tasks. Dixit (2002) emphasizes the importance of multitasking in public service settings and how this reduces the use of high-powered incentives.[11] In this section, we bring these insights to bear by extending the core framework discussed above to incorporate these ideas, maintaining a focus on the importance of prosocial motivation in incentive design.

In the benchmark model, more effort makes both π and S more likely, and so there is no trade-off between financial and social objectives. A multitasking model provides a canonical way to study such a trade-off. For example, if a school rewards teachers only on the test scores of their students, the teachers are likely to cut down the efforts aimed at imparting skills, such as curiosity

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[11]He also considers the importance of multiple principals in this context.

and civic values, that are hard to measure but nevertheless important. Overall, the outcome may end up being less desirable than if teachers are paid a flat wage.

To see this more formally, suppose that there are two tasks the output measures of which are $y_1 \in \{0, 1\}$ and $y_2 \in \{0, 1\}$. The agent has to put in two types of effort in these two tasks, e_1 and e_2, and the cost of effort for each task is $(1/2)\left(e_1^2 + \delta e_1 e_2\right)$ and $(1/2)\left(e_2^2 + \delta e_1 e_2\right)$, where we assume that $1 > \delta > 0$. This assumption implies that the tasks are substitutes, since committing more effort to one task increases the marginal cost of effort committed to the other.

We suppose that the principal values success in both tasks, taking into account both financial and social payoffs. The marginal benefits from higher effort in each task will be denoted by V_1 and V_2 for task 1 and task 2, respectively. The agent is motivated in relation to both tasks, receiving a nonpecuniary benefit from success in each task, denoted by θ_1 and θ_2. Although there is an element of prosocial motivation, this may not be perfectly aligned with goals being pursued by the principal in terms of the absolute and relative importance assigned to each task.

The principal can reward each task differently, with a financial incentive for success in each task being denoted by b_1 and b_2. We focus on the case where the participation constraint does not bind and also where $w = \underline{w} = 0$. As in the previous section, we allow the outcome to be mismeasured. However, we focus on this only in relation to one task: For task 2, there is a signal $\sigma \in \{0, 1\}$ such that

$$\text{Prob}\{\sigma = 1 : y_2 = 1\} = \rho = \text{Prob}\{\sigma = 0 : y_2 = 0\} \geq 1/2.$$

Output in task 1 is assumed to be perfectly measurable. Although this is an extreme case, it serves to illustrate somewhat precisely why making effort on each task substitutable for effort on the other and making only one task subject to measurement problems affect the way that incentives are crafted for both tasks, lowering the using of bonuses across the board.

In this case, the agent maximizes

$$(b_1 + \theta_1)\, e_1 + b_2\{\rho e_2 + (1 - \rho)(1 - e_2)\} + \theta_2 e_2 - \frac{1}{2}e_1^2 - \frac{1}{2}e_2^2 - \delta e_1 e_2$$

by choosing e_1 and e_2. This yields the following first-order conditions:

$$b_1 + \theta_1 = e_1 + \delta e_2 \text{ and} \qquad\qquad 6.$$
$$b_2(2\rho - 1) + \theta_2 = \delta e_1 + e_2.$$

The principal's problem is now to choose b_1 and b_2 to maximize

$$(V_1 - b_1)e_1 + V_2 e_2 - \left\{\rho e_2 + (1 - \rho)(1 - e_2)\right\} b_2$$

subject to Equation 6.[12] Solving this yields

$$b_1^* = \frac{1}{2}\left[(V_1 - \theta_1) - \delta\frac{(1 - \rho)}{2\rho - 1}\right]$$
$$b_2^* = \frac{1}{2(2\rho - 1)}\left[(V_2 - \theta_2) - \frac{(1 - \rho)}{2\rho - 1}\right],$$

assuming an interior solution.[13]

This multitasking model generates several additional insights into the design of incentives with motivated agents. If there is no substitutability in the tasks, i.e., $\delta = 0$, then there is no

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[12] Simultaneously solving for e_1 and e_2, we can obtain the following expressions for effort as a function of motivation levels and bonuses: $e_1 = [b_1 - \delta(2\rho - 1)b_2]/(1 - \delta^2) + (\theta_1 - \delta\theta_2)/(1 - \delta^2)$ and $e_2 = [(2\rho - 1)b_2 - \delta b_1]/(1 - \delta^2) + (\theta_2 - \delta\theta_1)/(1 - \delta^2)$.

[13] A corner solution at zero is possible and will prevail as $\rho \to 1/2$.

interdependence in the way that they are incentivized, and the factors that we discuss above, agent motivation and measurement, apply to each task separately. The tasks are also separated if $\rho = 1$, i.e., if there is no measurement error in either task. Thus, any new features are due to $\delta > 0$ and $\rho < 1$. We find that measurement error in task 2 spills over to task 1, flattening incentives across the board. This is a standard result in multitasking models. In this case, it highlights how having poor performance measurement can contribute to overall flat incentives of the kind that are often seen for tasks in organizations with prosocial missions. As $\rho \to 1/2$, it is not optimal to incentivize either task. The organization will rely exclusively on agent motivation in both tasks.[14]

3.2.3. Selection and incentives. In this section, we turn to selection and incentives. These are natural concerns in environments that reply on employing agents who care about the outcome directly. However, the assumption made above, that θ is observable, is not realistic in many contexts. Principals will wish to recruit the most motivated agents to perform a task, and many public organizations have elaborate recruitment processes for selecting people with high prosocial credentials for key public service roles. In this section, we briefly discuss the possibility of designing different remuneration packages to achieve self-selection (see Delfgaauw & Dur 2007, 2008, 2010; Prendergast 1999). As we see below, the main issue in the current model is to get the motivated agents to differentiate themselves from selfish agents, since the latter will tend to receive higher bonus pay. Intuitively, this implies reducing incentives paid to all types of workers. We explore to what extent this logic is correct in our framework. In addition to choosing different bonus levels, it is also possible to use different levels of the fixed wage.

We revert to the benchmark model with measurement problems or multitasking elements. To fix ideas, we consider only two types of agents, motivated ($\theta = \overline{\theta}$) and unmotivated ($\theta = 0$), and we use the subscripts M and U to label them. We also focus on the case where the participation constraint does not bind for the motivated agent. Using the logic above, if θ is observable, the motivated agent will receive a bonus $b_M = (V - \overline{\theta})/2$ and put in a higher level of effort $e_M = (V + \overline{\theta})/2$. The unmotivated agent will receive $b_U = V/2$ and commit effort $e_U = V/2$. What creates a self-selection dilemma is the fact that motivated agents are treated less well as than unmotivated agents, i.e., receiving lower pay.

To explore the case where agents' types are private information, note that the expected payoff of the motivated agent from the remuneration package above is $\hat{u}(\overline{\theta}) = [(V + \overline{\theta})^2]/8$, which we have assumed exceeds $\overline{u}$. For an unmotivated agent, the expected payoff is $\hat{u}(0) = (V)/8^2 < \hat{u}(\overline{\theta})$. Will this proposed remuneration package induce agents to reveal their type truthfully?

If a motivated agent masquerades as an unmotivated agent and chooses the contract $b = V/2$, then the effort level will be $e'_M = V/2 + \overline{\theta}$, which exceeds e_M. Their expected payoff will be $(1/2)(V/2 + \overline{\theta})^2$, which exceeds $\hat{u}(\overline{\theta})$. So, as we anticipated, the motivated agent is better off with the contract intended for an unmotivated type. The reverse is true for an unmotivated agent. Thus, all agents will pick the unmotivated agent's contract, and the motivated agent will get an even higher rent. There are two possible solutions to this: to offer only a single contract (a pooling contract) or to adjust the contracts to achieve self-selection. We focus on the former (for an exploration of separating contracts, see Delfgaauw & Dur 2008, 2010).

If the outside option, $\overline{u}$, is relatively low, then both kinds of agents earn a rent as long as $\hat{u}(0) > \overline{u}$. In this case, both will wish to work for the organization. The principal will offer $b = (V - \overline{\theta})/2$ or $b = V/2$ as the single contract, depending on whether motivated or unmotivated

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[14]For the measurement to spill over across tasks requires that the tasks cannot be unbundled, i.e., performed by different agents. Thus, this result applies only when there is genuine joint production.

agents are more abundant. However, if $\hat{u}(0) < \bar{u}$, then only the motivated workers will join the organization with a bonus of $(V - \bar{\theta})/2$. In this case, de facto, the screening problem is solved by having a sufficiently attractive outside option.[15] If $\bar{u} > \hat{u}(\bar{\theta})$, then the organization will have to offer an expected utility of $\bar{u}$ to both types of agents. In this case, the participation constraint will bind for both types. Following the logic of the basic model, we have $b_M = \sqrt{2\bar{u}} - \bar{\theta}$, while $b_U = \sqrt{2\bar{u}}$ and $e_M = \sqrt{2\bar{u}} = e_U$. The self-selection problem for the motivated types reappear under these circumstances. However, if the only contract put on the table has $b_M = \sqrt{2\bar{u} - \theta}$, then the screening problem is solved, since unmotivated agents will prefer to work elsewhere.[16]

This illustrates how the screening problem depends on the strength of the outside option. When that strength is low, both motivated and unmotivated agents will join the organization. As $\bar{u}$ goes up, the screening problem becomes easy to solve. The expected quality of public service provision will therefore be higher as $\bar{u}$ goes up, through better selection on motivation. This is consistent with the empirical evidence of Finan et al. (2017), who show that, despite the wage premium of public sector employees being higher in low-income countries than in high-income countries, the quality of provision is significantly lower.

There are many aspects of selection that could be explored. For example, Aldashev et al. (2018) develop a model of self-selection where motivational self-selection into the nonprofit sectors may be altered by the level of donations received by nonprofit firms, leading to more selfish workers being induced to work in that sector. Our framework has only a one-dimensional difference between agents. However, it is also interesting to contemplate differences in both ability and motivation, as have been studied by Delfgaauw & Dur (2010). In such contexts, there is a concern that low wages or incentive pay may appeal to low-ability agents, as well as to those with greater prosocial motivation. Dal Bó et al. (2013) and Ashraf et al. (2018) provide empirical evidence suggesting that higher wages or incentive pay actually selects agents who both have higher ability and are more motivated. This reinforces the importance of giving a prominent role to the study of selection in understanding organizations with missions that are wider than pure profit.

Our discussion of selection assumes that the alternative to having motivated agents is having selfish workers who care only about money. Auriol & Brilon (2014) add an interesting additional dimension by supposing that there can be malign workers who get warm glow from destructive behavior.[17] The mission-oriented sector then has to use monitoring to deter such bad workers from working there. In the equilibrium of Auriol & Brilon's model, bad workers work in the profit-oriented sector, which uses monitoring and bonus payments for good behavior to control the damage that such workers do.

4. MODELS OF PROSOCIAL MOTIVATION

The model developed above puts into sharp relief the role of motivation and how it interacts with the use of pecuniary incentives in shaping organizational effectiveness. In this section, we

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[15]Ghatak et al. (2007) discuss how the outside option affects the screening problem and how, in turn, the screening problem may affect the outside option.

[16]If, in addition to the nonpecuniary payoffs, a motivated agent receives a financial bonus when output is high, then they also receive a flat nonpecuniary motivation $\varepsilon\bar{\theta}$ by working in the organization (where ε can be small), which helps to solve the self-selection problem in the case where the participation constraint binds. The principal can then offer a contract that gives an expected payoff of $\bar{u} - \varepsilon\bar{\theta}$ to the M-type agent, which will not yield an expected payoff of $\bar{u}$ to the U-type agent.

[17]They use the example of pedophiles entering the childcare sector. In our framework, this would be an issue when θ is even higher for this type of worker than for good motivated workers.

focus more on the microfoundations or narratives concerning where the nonpecuniary motivation comes from.

We begin by discussing the idea that motivation comes from agents having strong views about how the provision of the relevant good or service is organized (mission preferences). We then discuss the idea of prosocial motivation related to the sociological concept of identity. Next, we explore prosocial motivation as a form of intrinsic motivation. We then consider a foundation based on signaling and reputation. Following that, we consider the link between motivation and rewards for status. Finally, we look at the possibility that motivation comes from a case of pure altruism, where the agent attaches a weight to the social surplus of the beneficiaries. We illustrate all of these possibilities with the core model developed above.

4.1. Mission Motivation

To introduce the idea of mission motivation, suppose that there is a variety of projects that can be undertaken, denoted by $k = 1, \ldots, K$. Associated with each project choice will be a payoff to the community of beneficiaries, V_k, and a payoff to the ith motivated agent, $\theta_{ik} \geq 0$. The idea of missions is that they are like a form of product differentiation in which public services can be provided in a plethora of different ways, following an approach introduced by Besley & Ghatak (2005). There are many real-world examples that capture the idea of heterogeneous missions, such as differences in views about the nature or priorities in health systems, the kinds of curricula that should be pursued in schools, and what kinds of crime should be the priority of criminal justice and law enforcement systems.

A natural benchmark case would be to suppose that the interests of beneficiaries should take priority over the interests of providers (the agent in–out model) when choosing a mission. This naive view would assume that optimal service provision should be governed by choosing k such that

$$k^* \in \arg \max_k \{V_k\}.$$

However, this ignores the fact that motivation of providers can matter to the efficiency of service provision, since, if providers are highly motivated (θ_{ik} is large) for some particular mission, then a project that may be well worth funding can be undertaken at lower costs. More broadly, this highlights the role of diversity of providers, in terms of the causes by which they are motivated, and of having a decentralized approach whereby providers are matched with projects such that their preferences are well aligned with the mission of the project, as opposed to a top-down centralized approach of public good provision.

To further illustrate these ideas, we focus again on the case where the participation constraint is not binding. Consider a mission k and a motivated agent with preferences θ_{ik}. The benefit of the beneficiaries net of the cost of provision is

$$W^k(\theta_{ik}) = \frac{(V_k + \theta_{ik})^2}{4},$$

and the optimal mission when employing agent i is therefore

$$\tilde{k}(i) \in \arg \max_k \{W^k(\theta_{ik})\}.$$

One striking implication of this is that the interests of the provider should optimally be taken into account even if they are not directly relevant to the social objective. This is because whether the provider likes the mission will affect the cost of employing them. This idea provides a microfoundation for a commonly used way of modeling the objective function of nonprofits. For

example, Newhouse (1970) models the objective function of nonprofit hospitals as depending in part on what physicians want.

We can also endogenize the selection of agents along with missions so that providers are matched to beneficiary priorities. Thus, the principal now chooses a $\{k, i\}$ combination that is well aligned or matched in the sense that the most appropriate agent is chosen to deliver the particular mission that is chosen, i.e.,

$$\{\tilde{k}, i\} \in \arg \max_{\{k,i\}} \{W^k(\theta_{ik})\}.$$

This model opens up the possibility of heterogeneous missions simultaneously being pursued by different providers. This is reminiscent of a Tiebout-style model of local public goods provision where there are competing services provided to cater to the different tastes of providers (see, for example, Wooders 1999).

One simple way to illustrate this is for $K = 2$ and two types of agents, $I = 2$. Suppose that

$$\theta_{ik} = \begin{cases} \overline{\theta} & \text{if } i = k \\ 0 & \text{otherwise} \end{cases}.$$

Thus, agents are only motivated if they are working with their preferred mission. We assume that $V_1 = V_2$, so that beneficiaries do not care about the mission. Suppose providers of type 1 like mission 1, while providers of type 2 like mission 2.

In this case, sorting in heterogeneous public organizations reflecting the different kinds of prosocial motivation of providers can increase the expected payoff of the community. To see this formally, note that

$$W = \begin{cases} \frac{[V + \overline{\theta}]^2}{4} & \text{if } i = k \\ \frac{V^2}{2} & \text{otherwise} \end{cases}.$$

In particular, effort in a matched organization is $e = (V + \overline{\theta})/2$, while it is $e = V/2$ in a mismatched organization. Besley & Ghatak (2005) formalize how competition among organizations providing the public good for providers with different mission preferences will lead to perfect sorting and produce the most efficient outcome.

Our framework also underlines the value of diversity in the nonprofit sector, provided that there is a variety of views on the way in which collective goods should be produced (as represented by the mission preferences). Weisbrod (1988) emphasizes this role of nonprofit organizations in achieving diversity in public goods provision. For example, he observes that nonprofits will likely play a more important role in situations where there is greater underlying diversity in preferences for collective goods in the population. He contrasts the United States and Japan, suggesting that greater cultural heterogeneity is partly responsible for the greater importance of nonprofit activity in the United States. Our analysis of the role of competition in sorting principals and agents on mission preferences underlines the role of diversity in achieving efficiency. As argued by Besley & Ghatak (2005), better-matched organizations can result in higher effort and output. Thus, diversity may be good not only for the standard reason, namely, beneficiaries getting more choice, but also because it enhances productive efficiency.

Our model supposes that the principals who run firms act in the interest of beneficiaries. However, just as there are differently motivated agents, there can be principals with different perspectives. Instead of the principal being motivated by V, they may have a preference associated with success that reflects a warm glow from success. This case is particularly relevant, for example, if different potential suppliers can compete to provide a service, and if the principal is also a donor

who provides funding for a service.[18] In this case, any principal with personal wealth can set up an organization to provide a public service. If governments care about beneficiaries, then they can choose to whom they wish to give grants and other kinds of inducements to encourage selection of particular kinds of principals.

4.2. Identity and Motivation

Another way to interpret θ_i is as a reflection of a social identity adopted by a worker when they work in a public sector organization. Moreover, instead of being fixed and exogenous, as we assume above, prosocial motivation may be governed by actions undertaken by organizations or agents. The key insight of Akerlof & Kranton (2005, 2010) in their work on the economics of identity is that behavior that economists normally think of as governed by exogenously given preferences and standard trade-offs, such as that between labor and leisure, often depend on the self-image of individuals and their connection with others in a given social context.

Sociological theories have emphasized the social context–dependent nature of behavior. Analysts use social categories to describe different roles, and the notion of identity describes a person's self-image, which depends on how the person conforms to or departs from the norms for particular social categories in particular situations. For example, a teacher or a doctor, in dealing with a student or a patient, may be governed by some socially governed norms of good behavior, and departures from these norms may be costly even though standard economic models (such as the classical principal–agent framework) would dictate that individuals should simply take the most self-interested action.

Identity, then, corresponds to the self-classification of an individual, as well as the classification of the individual by others. In everyday life, such identities include family, gender, race, culture, language, and ethnicity. Identities also affect how people self-categorize themselves in workplace settings. For example, someone who may act in a (narrowly) self-interested way in an anonymous setting may act like a good team member or a helpful colleague in the workplace. Thus, being prosocial in particular contexts can be part of an assumed identity that then affects behavior.

It is beyond the scope of this review to discuss these ideas in depth, but we can adapt our basic framework to illustrate some of their obvious implications in the context of how motivation and incentives interact. Suppose that $I = 2$ and that each agent is ex ante identical. There is a default identify called $i = 1$ where $\theta_1 = 0$. We suppose that an agent can adopt an identity $\theta_2 = \overline{\theta} > 0$. This represents a person who identifies and internalizes the prosocial goals of the organization that they are working for, i.e., who becomes a motivated agent in the sense of this review. We discuss the choice process in more detail below. To start with, we suppose that it is costless to acquire the identify θ_2 and simply address whether there is indeed a demand for a prosocial identity.

To illustrate, we again take the case where the outside option is zero. With $w = 0$, the expected payoff of an agent when $i = 1$, i.e., the neutral identity, is $V^2/8$, whereas for the agent $i = 2$, who has the prosocial identity, it is $(V + \overline{\theta})^2/8$.

Thus, it is clear that there are gains to the individual from assuming a prosocial identity when they work for a public service organization, all else being equal. We also see above that beneficiaries also benefit from agents' prosocial identities. This observation motivates the idea that it could be worthwhile for an organization charged with delivering a public service to commit resources to promoting a prosocial ethos among its workforce. Equally, agents may themselves be willing to

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[18]Scharf (2014) explores warm glow motives among competing suppliers and shows how these motives can lead to inefficient selection of nonprofits.

undertake costly actions that create a prosocial identity if they realize that this actually leads to greater utility. In other words, assuming identities can be completely economically rational by allowing people to adapt to the organization in which they work and get more out of being a member of it.

What forms might these actions take? Akerlof & Kranton (2005) give the example of rituals at West Point, which are intended to socialize new recruits into being effective military personnel. Training programs upon entering an organization, which encourage people to see the benefits from the work that the organization does, are commonplace and can be understood as a form of socialization, making employees internalize prosocial objectives. Doctors who take the Hippocratic oath, as we discuss above, provide another example.

However, more generally, there is a question of how identity formation can be a strategic practice, rather than an unconscious process of social learning based on interactions with others. One could illustrate this in a simple way. Imagine that a firm can invest in motivational capital at pecuniary cost, m, which affects motivation. We can formally capture this by a function $\theta(m)$ that is strictly concave and increasing with $\theta'(\bar{m}) = 0$ for some $\bar{m} > 0$. As a concrete example, this could reflect the amount of resources that go into teaching medical ethics to doctors. The organization that is running the public service can choose an optimal investment to maximize its project-specific payoff, given by

$$\frac{\{V + \theta(m)\}^2}{4} - m.$$

The first-order condition for the investment in what we can call motivational capital, at an interior solution m^*, is

$$\theta'(m^*) \frac{V + \theta(m^*)}{2} = 1.$$

Since we assume that $\theta(m)$ is strictly concave, the second-order condition for a global maximum, $2\theta''(m) + \{\theta'(m)\}^3 < 0$, will hold at $m = m^*$. Otherwise, there will be a corner solution where $m = 0$ or $m = \bar{m}$.

We can see right away that a higher value of V encourages investment in motivational capital, as does the elasticity of $\theta(m)$ with respect to m. However, if there is no moral hazard, and if the motivational investment is chosen to maximize the joint surplus of the organization and the employee, then the level of investment will be higher, since the joint expected surplus is $\{3[V + \theta(m)]^2 / 8\} - m$. A more interesting and subtle insight is that, if organizations carry out this investment, then they may overinvest in motivational capital, since, if we maximize the employee's payoff, then the first-order condition is

$$\theta'(m) \frac{[V + \theta(m)]}{4} = 1,$$

which implies a lower level of m given the concavity of m.

While this exercise is very simple (for example, it does not consider the social aspect of investing in m, investment by the employees, or the role of competing organizations), it suggests that investment in motivational capital can be incorporated into the framework. Understanding better how motivation in organizations is encouraged as part of the firm's human resources management strategy is an important topic for future research.

4.3. Intrinsic Versus Prosocial Motivation

Prosocial motivation as we have modeled it can be equated with a certain kind of intrinsic motivation where agents undertake prosocial actions for their own sake or out of a sense of moral

duty. Weber [1978 (1922)] proposes the idea that some actions are undertaken as expressions of value, rather than because of the ends that they achieve. Many outcomes of prosocial motivation have been explicitly linked to moral considerations. A case in point is the work of Titmuss (1970), who emphasizes donating blood as a prosocial action based on intrinsic motivation. Gneezy & Rustichini (2000) interpret the behavior of parents in Israeli day care centers as a form of prosociality.

Psychologists such as Ryan & Deci (2000, p. 56) define intrinsic motivation as "the doing of an activity for its inherent satisfactions rather than for some separable consequence. When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards." They argue that there is considerable evidence that such motivation exists. The idea of intrinsic motivation has no direct link to whether the act being undertaken is prosocial. Indeed, one way to think of intrinsic motivation is as an act of pure selfish indulgence. This idea is also distinct because psychologists resist thinking about it as some kind of instrumental nonpecuniary motivation.

While psychologists have a long history of studying these issues, it is only recently that economists have begun to study the implications of intrinsic motivation. Psychological research suggests a continuum between extrinsic and intrinsic motivation, as suggested, for example, by Ryan & Deci (2000), who, in turn, build on Deci & Ryan's (1985) self-determination theory. A range of psychological experiments have examined these different forms of motivation. Some economists have more squarely confronted the idea of intrinsic motivation and its consequences (see, for example, Frey 1997).

According to Ryan & Deci (2000), extrinsic motivation comes in four different varieties; these varieties can be mapped into the approach taken in this review. At one extreme, there are purely externally motivated rewards, as in the standard economic model discussed above (external regulation). Next comes behavior that is motivated by self-image or reputational concerns (introjection). In both of these cases, an activity is not valued for its own sake and is only a means to an end. Then, there are situations where an agent comes to value an action and endorses the goals associated with the task (identification). Next, there is integration, where the agent's sense of self is congruent with the task in hand. Intrinsic motivation is then the residual category, which refers to the inherent enjoyment and satisfaction from the task or its outcome.

One key idea in the intrinsic motivation literature is that incentivizing a task can lead to crowding out effort. This is conjectured, for example, in the early work by Titmuss (1970) on blood donation. Benabou & Tirole (2003) develop a model of intrinsic motivation where performance incentives are offered by an informed principal who can adversely impact an agent's perception of a task or of their ability. Incentives can be negative reinforcers in the long run if they serve as negative signals of the principal's view of the task. This contrasts with the core model developed above, where effort always responds positively to rewards. However, cross-sectionally, the model can produce something that looks like crowding out—specifically there will be a negative correlation between effort and bonuses in a population where θ_i is varying, since b_i is higher where θ_i is lower, and e_i is higher where θ_i is higher (even when the bonus is endogenously determined).

4.4. Signaling and Reputation

In this section, we review one particular approach to prosocial motivation and incentives based on the work of Benabou & Tirole (2006), simplified and adapted to the framework that we develop in this review. In their model, individuals care about their social reputation or self-respect, and rewards or punishments create doubt about the true motive for which good deeds are performed. What is key for their approach to work is that motivation comes from prosocial actions generating

a public signal that is valuable to the individual concerned. Creating a reputation for prosociality would have a number of benefits. One possibility is that it has market value—for example, if an individual who is prosocial is expected to be more trustworthy in general, a prosocial reputation would command a wage premium by helping overcome contracting problems in the firm, and as a consequence of this, it might be a valuable asset in the labor market.[19] It could also be that prosocial individuals have access to better social networks or pools of potential partners. It is not necessary to be specific about the source of the benefit for the purposes of studying how the reputation-based model works.

We demonstrate below how our core model can capture this idea. To this end, suppose that individuals are in part motivated by a reputational benefit of being recognized as a motivated agent, and suppose that there are only two types with $\theta \in \{0, \overline{\theta}\}$, with a fraction γ in a population having $\theta = \overline{\theta}$ and the remaining fraction $(1 - \gamma)$ having $\theta = 0$. Suppose also that the agent performing the task is a random selection among the population of agents. In effect, there is a pooling contract where all agents are treated the same. As above, there are two parts of the compensation, a bonus (b) and a wage (w).

We focus on the case where the outside option is zero and where the fixed wage is zero. This allows us to focus on the determination of bonus pay and how it is affected by signaling. Let $\{e_0, e_1\}$ be the effort of the nonmotivated and motivated agents, respectively, if they are asked to perform the prosocial tasks described in our core model. These efforts are determined in a signaling equilibrium.

The payoff of an agent with θ is

$$e\left[b + \theta\right] - \frac{1}{2}e^2 + \mu R\left(e : e_0, e_1\right), \qquad \qquad 7.$$

where $\mu R\left(e : e_0, e_1\right)$ is the reputational benefit from action e and μ is a parameter that represents the strength of the reputational motive. When choosing e, a given agent takes the choice of other agents (e_0 and e_1) as given.

We suppose that $R\left(e : e_0, e_1\right)$ is simply the probability that the agent is motivated, as perceived by those with whom they interact and who can observe whether they are successful in the task to which they is assigned. Thus, we have

$$R\left(e : e_0, e_1\right) = e\psi\left(\sigma = 1 : e_0, e_1\right) + \left[1 - e\right]\psi\left(\sigma = 0 : e_0, e_1\right),$$

where $\psi\left(\sigma = x : e_0, e_1\right)$ is the probability that the agent is motivated conditional on project outcome: success ($x = 1$) or failure ($x = 0$). We assume that those with whom the agent interacts use Bayes' rule to update their beliefs after observing σ, given a prior γ that the agent is motivated. This implies that, given a pair of effort levels $\{e_1, e_0\}$,

$$\psi\left(\sigma = 1 : e_0, e_1\right) = \frac{e_1\gamma}{e_1\gamma + e_0\left(1 - \gamma\right)}$$

and

$$\psi\left(\sigma = 0 : e_0, e_1\right) = \frac{\left(1 - e_1\right)\gamma}{\left(1 - e_1\right)\gamma + \left(1 - e_0\right)\left(1 - \gamma\right)}.$$

It is useful to define Z as the average level of effort in the population:

$$Z \equiv \left(1 - \gamma\right)e_0 + \gamma e_1.$$

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[19]This parallels the well-known career concerns model of Holmström (1999), where current actions reap future career rewards in the form of wage increases.

Then, R can be rewritten as

$$R = \gamma \left\{ e \frac{e_1}{Z} + (1-e) \frac{1-e_1}{1-Z} \right\}.$$

The first-order condition from Equation 7 is

$$b + \theta + \mu R_e (e : e_0, e_1) = e.$$

Then, we can write

$$R_e = \gamma \left(\frac{e_1}{Z} - \frac{1-e_1}{1-Z} \right)$$

$$= \frac{\gamma (1-\gamma)\overline{\theta}}{Z(1-Z)},$$

using the fact that $e_1 = Z + (1-\gamma)\overline{\theta}$ (while $e_0 = Z - \gamma\overline{\theta}$). We can see that $R_e > 0$, which suggests positive returns from putting in higher effort for the same level of incentive pay.[20]

Using the logic of the benchmark model, we find that, if society expects an agent to be prosocially motivated with probability γ, and if there are no reputational concerns ($\mu = 0$), then the bonus would be $b^* = (V - \gamma\overline{\theta})/2$. Then, from the incentive constraint, we obtain $e_1 = (V - \gamma\overline{\theta})/2 + \overline{\theta} = [V + (2-\gamma)\overline{\theta}]/2$, while $e_0 = (V - \gamma\overline{\theta})/2$. Without any reputational concerns, and given the fact that bonuses are adjusted for the fact that, with probability γ, the agent is motivated, motivated agents put in more effort, while unmotivated agents put in less effort compared to our benchmark model, where these types are known and the bonuses are adjusted accordingly.

Starting with this benchmark, suppose μ is small but positive. From the incentive constraint, $e = b + \theta + \mu R_e (e : e_0, e_1)$, we can see that both types of agents will put in higher effort due to reputational concerns. This means that, in addition to the direct effect of motivation that we study in our benchmark model, reputational concerns will alleviate moral hazard problems for all types of agents, irrespective of their level of motivation.

4.5. Status Rewards

The economic implications of the idea that humans have a craving for status has been widely studied (see, for example, Frank 1985). Societies often create nonpecuniary status rewards as a means of enhancing prosocial motivation. One old and classical example of an honor is the awarding of military medals for selfless sacrifice in battle. What is key to this argument is that recognition is a positional good that is valuable because it is scarce and brings social recognition. In this section, we explore how the possibility of being granted a status incentive can enhance motivation. Bradler et al. (2016) conduct a field experiment that finds that workers who receive better recognition for performance, apart from any material rewards, work harder.

The formal framework in this section comes from Besley & Ghatak (2008; for a related approach, see Auriol & Renault 2008). The principal is permitted to introduce a purely nominal reward—a positional good—to the agent in the event that the project that the agent is putting effort into is successful. We think of this as a recognition (e.g., a medal or an honor such as a "best teacher" award) being awarded for good performance in the framework laid out above. While not confined to public organizations, these recognitions are widely used in such contexts, most notably

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[20]A more complete treatment could also look at how the optimal level of b will adjust.

in the military. Moreover, such awards are frequently structured to reward wider contributions to the public good, rather than those who have simply excelled in increasing their wealth (for an interesting discussion of honors and awards from an economic perspective, see Frey & Gallus 2017).

In our model, there are many agents working in parallel on projects with social returns, and $\hat{e}$ is the fraction of these agents that produce successful projects. Apart from bonuses, they can also be given an award denoted by $\eta \in \{0, 1\}$ with entirely nominal value that generates utility of $H(\hat{e})$, where $\hat{e}$ is the fraction of agents in society who receive the positional good. We assume that $H_e(\hat{e}) < 0$ and $H(\hat{e}) = 0$ for $\hat{e} \geq \bar{e}$, where $\bar{e} \leq 1$. This formulation indicates a crowding effect—if everyone gets the positional good, then its value goes to zero.[21] We study a homogenous population where agents are entirely selfish but care about the status that comes from earning an honor.

We consider how awarding medals to all agents who produce a positive output level affects the choice of monetary incentives. To get a simple closed-form solution, suppose that

$$H(\hat{e}) = \begin{cases} \theta - \phi\hat{e} & \text{if } \hat{e} \leq \theta/\phi \\ 0 & \text{otherwise} \end{cases}.$$

We assume $\phi \in (0, 1)$. Thus, $\bar{e} = \theta/\phi$ is the critical fraction of agents producing high effort above which the value of status goes to zero.[22] We assume that $\theta < V$, so that even if an individual is the only person receiving the award, it is not sufficient to motivate them to put in the first–best effort level.

Since getting an honor depends on how many others receive the honor, there is now interdependence in decisions. Thus, we need to characterize a Nash equilibrium between the agents in the economy who take $\hat{e}$ as given. In this case, we have

$$e \in \arg\max_e \left\{ e\left[b + H(\hat{e})\right] - \frac{e^2}{2} \right\},$$

which implies that $e = b + H(\hat{e})$. In this case, solving for $\hat{e}$ yields

$$\hat{e}(b) = \frac{\theta + b}{1 + \phi},$$

which we assume is less than θ/ϕ, so that the honor is scarce enough for it to have value. Assuming that the outside option of the agent is zero, we have

$$b^* = \arg\max_b \left\{ \frac{\theta + b}{1 + \phi}\left[V - b\right] \right\}.$$

Repeating the logic that leads to the characterization of b and e in our benchmark model, the optimal contract sets $b = \frac{V - \theta}{2}$, and the corresponding effort level is

$$e = \frac{V + \theta}{2(1 + \phi)}.$$

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[21]It is possible to consider more explicit microfoundations for this preference. Consider a simple career concerns setting. Suppose that there are high-ability types in the population who always produce high output and that a fraction α of the agents is of that type. Status (and possibly future rewards) comes from being of this type. Other agents are of the standard type who produce a positive output with probability e. Then, with common effort level $\hat{e}$ among the low-ability agents, the probability that the agent is a high type conditional on having received the award is $\alpha/[\alpha + (1 - \alpha)\hat{e}]$, which is decreasing in $\hat{e}$.

[22]One possible interpretation of this formulation is that, if $\theta = \phi$, $(1 - \hat{e})$ is the percentage of workers not succeeding and the relevant group to which a successful worker feels superior.

Thus, even though agents are selfish, their belief in the value of the honor is sufficient for them to behave as if they are motivated, and bonuses are lower by exactly the value of the honor if an agent was the only one to receive it. However, because there is crowding, i.e., $\phi > 0$, overall effort is lower than in the case where θ is intrinsic prosociality. Moreover, a higher value of crowding makes society worse off, as there is less effort for a given amount of bonus pay.

It is interesting to ask whether society should introduce status rewards for prosocial behavior. It is clear that there is a trade-off. On the one hand, it would allow some reduction in bonus pay where the status award is costless. On the other hand, crowding would lower effort, since there would be a negative externality inflicted by other agents in society putting in high effort, as that devalues the status award. Comparing the payoffs to society in both cases, we find that a sufficient condition for a status award to be valuable is $\theta / V > \phi$, i.e., it is valuable as long as the value of the award is high enough and crowding is sufficiently small.

4.6. Altruistic Motivation

As we discuss above, the core idea of prosocial motivation is that it has an egoistic component because individuals care about their own contribution to the social good. A more conventional view of altruism supposes that behavior is motivated only by the payoffs experienced by others. In this section, we explore the difference between a pure altruism model and the motivated agents approach. We model this by allowing agents to attach a weight to the welfare of the beneficiaries.

Motivation is given by $\theta_i = \lambda_i [V - b]$, where $\lambda_i \in [0, 1]$ reflects the extent of altruism. One immediate difference from our core model is that we deduct b from the payoff to reflect the fact that higher financial bonuses reduce the surplus of beneficiaries. This direct dependence of θ_i on b means that we need to modify the formal analysis. Specifically, the incentive compatibility condition implies that effort maximizes

$$e \{b + \lambda_i (V - b)\} - \frac{e^2}{2} + w.$$

The first-order condition, assuming an interior solution, implies $e_i = \{b + \lambda_i (V - b)\}$. With $\lambda_i > 0$, increasing incentives does not increase effort one for one, and if $\lambda_i = 1$, then there is no effect of incentives on effort. This is because the agent perceives bonuses as reducing the benefits to beneficiaries one for one. However, with $\lambda_i = 1$, the agent will choose the effort level that is best for the beneficiaries of the service even without being given any incentives.

Altruistic motivation also changes the participation constraint, since an altruist will care about the project outcome even if they are not selected to be the agent who actually provides the service. Thus, an individual's utility if they are not the agent but if an agent j is involved is

$$\bar{u} + e_j \lambda_i [V - b_j] - \lambda_i w,$$

where e_j is the level of effort, and b_j is the incentive pay offered to agent j.[23]

To explore the implications of this, we suppose that all potential agents are identical, so that the subscript on λ_i can be dropped. The participation constraint must be binding even if $\bar{u} = 0$. This is because the agent will conjecture that the project will take place with another identical

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[23]The issue is somewhat subtle, as this is based on each agent believing that, if they are not involved in production of the good, then an equally altruistic agent will be. One could model the entry game, in which each potential provider chooses whether to put themselves forward. This game has multiple pure strategy equilibria if the good is not provided when no agent comes forward. The symmetric mixed strategy solution would create a positive probability that the good is not provided, although this would be small in a large population of potential agents.

agent even if they are not involved. The only way to guarantee that an agent comes forward to provide effort is by increasing the fixed component of compensation so that

$$w = \bar{u} + \frac{e^2}{2} = \bar{u} + \frac{[b + \lambda\,[V - b]]^2}{2}.$$

Somewhat paradoxically, therefore, altruism actually raises the cost of employing an agent; the agent needs to be given the full cost of their effort, which remains true even if $\lambda = 1$.

To solve for the optimal level of the bonus, note that the objective function of the principal acting on behalf of the beneficiaries is

$$[b + \lambda\,[V - b]]\,[V - b] - \frac{[b + \lambda\,[V - b]]^2}{2} - \bar{u}.$$

Maximizing this by choosing b yields the optimal financial bonus equal to

$$b^*(\lambda) = \max\left\{\frac{V\,(1 - 3\lambda + \lambda^2)}{(1 - \lambda)\,(3 - \lambda)}, 0\right\}.$$

This raises the possibility that, with altruism, no incentive pay is offered, and there is full reliance on altruistic incentives. Indeed, this will occur for a critical value of $\lambda \geq \underline{\lambda}$ where $\underline{\lambda} \in (1/3, 1/2)$, i.e., if the altruistic motive is sufficiently strong.

4.7. Taking Stock

This section shows that the specific model of agent motivation matters for the design of incentives. Perhaps this is not surprising, as there are many deviations from pure self-interest, and there is no reason to expect them to have common implications. A common theme, however, is that standard implications of self-interest models need modifying. To make practical use of the insights from the models requires some insight into the underlying psychology of prosocial motivation, i.e., knowing what drives prosocial behavior in particular cases. The personnel economics of prosocial behavior looks like an interesting field where empirics and theory can be brought together and is part of a wider agenda aimed at merging insights from psychology into the economics of organizations (see Kamenica 2012)

5. CONCLUSION

This article has reviewed the literature on the interaction between alternative models of agent motivation and the use of incentive pay in organizations that provide goods and services the returns of which have a major social component that is not captured in profits. Economic activities with these features are also typically subject to severe measurement problems regarding outcomes and performance. We have reviewed different forms of motivation that have been suggested in the existing literature and tried to provide a unifying framework for thinking about them.

The focus has been on developing a theoretical framework that incorporates the concept of prosocial motivation into a standard principal–agent model, and on exploring how this model interacts with the use of incentive pay. However, the framework may also be useful in thinking through the implications of practical efforts to utilize and reward actions that have a social component. There is a large and growing empirical literature that looks at the impact of incentives on performance in areas where prosocial motivation is deemed to be relevant. Moreover, there have been increasing efforts to explore these issues in field experiments such as those of Ashraf et al. (2014), Berg et al. (2018), Deserranno (2017), Muralidharan & Sundararaman (2011), and Rasul

& Rogger (2013). Finan et al. (2017) provide an excellent review of this evidence, and Ashraf & Bandiera (2018) review the literature on the related issue of how incentives and social relationships interact in economic settings.

If the world is indeed populated by motivated agents with nonpecuniary goals, then a whole host of questions arise about how to put such motivation to good use. Although we have applied these ideas to studying incentives, there is a wider agenda that studies how organization structure (e.g., for-profit versus nonprofit firms) and external factors such as market forces and social norms shape prosocial motivation and drive selection on motivation to organizations and sectors.[24] There is a wide variety of unexplored questions that will help to guide policy toward better delivery of public services to citizens in a variety of settings. Moreover, there is the potential to unify the more standard approach to the economics of incentives with more sociologically and psychologically informed approaches.

DISCLOSURE STATEMENT

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[24]Besley & Ghatak (2017b) use the idea of motivated agents to study the role of social enterprises alongside more traditional forms of organization, such as for-profit and nonprofit firms. More work is needed on the forces that affect the dynamics of motivation in society (for an evolutionary perspective, see Besley & Ghatak 2017a) and on what measures can foster the adoption of prosocial identities.

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