THE NATURE OF THE SOCIAL FIRM:
ALTERNATIVE ORGANIZATIONAL FORMS FOR SOCIAL VALUE
CREATION AND APPROPRIATION*

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Abstract

Advancing the extant literature on how firms increase economic value through alternative organizational choices, I offer a novel framework examining these choices in the context of exchanges intended to yield social value, defined as the sum of social benefits to a given population minus their associated costs. I simultaneously examine three main organizational forms: the public bureaucracy, involving both public sponsorship and public management; public-private partnerships, with a mix of public sponsorship and private management; and the social enterprise, where private management receives private sponsorship from socially-oriented investors. I then propose a theory of alignment based on four main factors: the severity of the so-called profit-quality tradeoff (the extent to which managers can increase profits by neglecting social benefits); marketability conditions (as a function of beneficiaries’ structural or budgetary constraints); the measurability of social benefits (affected by the precision through which these benefits are measured); and institutional conditions influencing the effectiveness of public enforcement as well as the presence of socially-oriented private sponsors. I argue that each organizational form will have a distinct ability to self-enforce the creation and appropriation of social value conditional on those key conditions.

Key words

Social value, organizational alignment, incomplete contracts, self-enforcement, relational governance
INTRODUCTION

Decades of research in strategic management have examined the merits and costs of alternative organizational arrangements to manage economic transactions. Building on Coase’s (1937) fundamental insight, scholars have proposed theories of the efficient alignment of organization choices (Williamson, 1991)—that is, how exchange attributes affect the potential of each form to reduce transaction costs or increase economic value more generally (Nickerson, Hamilton, & Wada, 2001; Poppo & Zenger, 2002). Yet strategy scholarship has paid relatively less attention to how organizational forms differ in their ability to generate social value in the form of positive externalities or public services focusing on the needs of key beneficiaries (Klein, Mahoney, McGahan, & Pitelis, 2013; Mahoney, McGahan, & Pitelis, 2009; Quelin, Kivleniece, & Lazzarini, Forthcoming; Rangan, Samii, & Van Wassenhove, 2006). For instance, when and in which conditions will privately run hospitals or schools outperform their state-owned counterparts in the delivery of high-quality health or teaching? What if certain customers are constrained in their ability to pay for these and other services that could increase their standard of living?

Organizational economists examining this issue propose that social benefits are difficult to measure and enforce, thereby creating severe problems of contract incompleteness (Hart, Shleifer, & Vishny, 1997; Levin & Tadelis, 2010). If these hazards are acute, state ownership is warranted: private operators may be tempted to cut costs even in cases where these savings imply lower service quality and reduced social benefits, thus creating a cost-quality tradeoff. In similar vein, Williamson (1999: 325) argues that the lower-powered incentives of public bureaucracies mitigate probity concerns by avoiding, among other things, excessive “resource deployment from cost savings.” However, a large literature in management has discussed how private firms themselves are becoming more socially-oriented, running activities targeting disadvantaged populations and myriad stakeholders
Although these firms are usually subject to internal tensions arising for their need to simultaneously generate impact and profit from their operations (Battilana & Dorado, 2010), they are increasingly seen as an alternative organizational solution to deliver social value beyond the action of governments (Porter & Kramer, 2011). Still others have examined the role of hybrid arrangements such as public-private contracts and alliances (Brown & Potoski, 2003; Cabral, Lazzarini, & Azevedo, 2013; Kivleniece & Quelin, 2012; Rangan et al., 2006; Rufín & Rivera-Santos, 2012). In some cases, these contracts even include clauses measuring and rewarding for social benefits (Bugg-Levine, Kogut, & Kulatilaka, 2012; Social Finance, 2009), which suggests that there are varying degrees of contract incompleteness in socially-oriented exchanges.

These advances notwithstanding, we still lack a consolidated framework to assess the comparative ability of all these alternative forms to yield social value. Most research has focused on the unique contribution of certain organizational forms or on partial choices such as the decision between public and private ownership. I instead connect distinct strands in the literature by simultaneously examining three main forms or ideal types: the public bureaucracy, involving both public sponsorship and public management; public-private partnerships, with a mix of public sponsorship and private management; and the social enterprise, where private management receives private sponsorship (part of which can come from socially-oriented or “impact” investors). In education, for instance, all these three forms are observed: public schools, public-private contracts (such as charter schools) and private schools, which can target not only high-end segments but also low-income families (e.g. The Economist, 2015). In my model, private firms can resemble either for-profit or nonprofit organizations depending on the extent to which managers can appropriate residual rights.
I propose a novel framework explaining how each organizational form supports social value creation, defined as the sum of social benefits to a given population (as a function of service quality) minus their associated costs (Kelly, Mulgan, & Muer, 2002; Kivleniece & Quelin, 2012; Moore, 1995). The central mechanism in my argument follows from the incomplete contract literature by assuming that relevant social dimensions are difficult to measure and enforce, thus leading to the aforementioned cost-quality tradeoff (Hart et al., 1997). Yet I move beyond this literature in several important ways. I show how private operators may not only want to cut costs at the expense of quality but also focus on customer segments that are relatively more profitable, even if disadvantaged groups remain poorly served. I thus more generally talk about a profit-quality tradeoff. In addition, instead of simply assuming that contracting for social value is costly or unfeasible, I incorporate the possibility of external monitoring and describe variations in contract incompleteness based on the extent to which parties can measure and reward for positive social outcomes. Mechanisms to compensate actors according to measured social outcomes essentially allow public and private managers to appropriate economic gains from their social value they generate.

Consistent with previous work examining comparative organizational forms for social impact, I focus on cases where there are relevant social benefits not necessarily addressed by markets (e.g. Kaul & Luo, 2016; Rangan et al., 2006). Yet, in my model, the presence of market failure is not sufficient to explain which organizational form will lead to higher social value. Much in the spirit of Coase (1974), I argue that all forms can potentially create social benefits depending on the underlying contractual conditions affecting the relative gains of private and public managers. In this sense, my discussion resonates with the tradition in strategic management to examine not only processes of value creation but also value appropriation. Garcia-Castro and Aguilra (2015), for instance, discuss alternative conditions in which value appropriation can positively or negatively correlate with value creation. In
my framework, value creation follows from the ability of actors to appropriate long-term value. I describe the precise mechanisms through which organizational forms distinctively allow actors to appropriate value from choices that support value creation, conditioned on a host of important factors (such as the severity of the profit-quality tradeoff and the measurability of social benefits). I thus generate a more general, testable theory of organizational alignment applied to activities expected to yield substantial social benefits.

**SOCIAL VALUE CREATION AND APPROPRIATION**

**Social value creation**

Value creation and appropriation are central ideas in strategic management. *Economic* value is usually conceptualized as the difference in customer’s willingness to pay for a certain product or service minus the costs associated with their production (Adner & Zemsky, 2006; Brandenburger & Stuart, 1996; Garcia-Castro & Aguilera, 2015). This fundamental formulation has parallel with more recent work in strategy focusing on the public-public interface or, more generally, exchanges involving relevant social dimensions. Mahoney, McGahan and Pitelis (2009: 1043) introduce the concept of *global sustainable value creation* as “the sum of consumer and producer surplus at a given point in time,” thus incorporating benefits and externalities expected in the delivery of products and services. Similarly, Porter and Kramer (2011: 6) argue that organizations create *shared value* when their practices support the creation of economic value while at the same time addressing the needs of multiple stakeholders. Focusing on public-private partnerships, Kivleniece and Quelin (2012: 275) conceptualize *value creation* as “new and appropriable benefits to society for which it directly—as consumers—or indirectly—as taxpayers—is able and prepared to pay.”

A very similar notion has appeared in the public management literature, especially in a new research stream identified as *new public value management* (see for a review Bryson,
In an influential book applying strategic management principles to public administration, Moore (1995: 29) considers that public value is created when public bureaucracies deliver services valued by populations and when those perceived benefits exceed the costs of government action. In the same vein, Kelly, Mulgan and Muer (2002: 5) define public value added as “the benefits of government action when weighed against the costs (including the opportunity costs of the resources involved)” (p. 5). This definition becomes functionally equivalent to the concept of social or shared value if we consider that distinct organizations, public or private, can deliver social benefits, albeit at varying costs (Bryson et al., 2015: 64).

Consistent with this discussion, and borrowing from Hart et al. (1997), I formally define social value creation in each transacting period as

\[ S = B(q) - C_P(x, q) - C_M(x, q). \]  

In this specification, \( B(q) \) represents public benefits as an increasing function of managerial effort to increase service quality \( (q) \). For instance, student learning or the efficacy of health care increase when teachers and doctors are more dedicated to identify and solve critical problems. \( C_P(x, q) \), in turn, indicates production costs, such as the costs to hire professional work, maintain facilities, or improve delivery processes. These production costs decrease when managers pursue more efficient operations, as a function of \( x \), and increase when managers strive to guarantee superior quality, as a function of \( q \). Finally, \( C_M(x, q) \) are the costs managerial execution, that is, the personal costs incurred by managers as an increasing function of their efforts to reduce costs \( (x) \) or increase quality \( (q) \). As I explain later, there are also sunk, upfront implementation investments in the form of transaction-specific learning and customized assets, denoted by \( k \). Among practitioners, \( B(q) \) is often termed social impact (Brest & Born, 2013), while \( S \), after taking the required investments
into account, mirrors the notion of social return on investment (Nicholls, Lawlor, Neitzert, & Goodspeed, 2009).

As shown in the Appendix, with some additional assumptions on how benefits and costs vary with $x$ and $q$, there will be an optimal level of effort to reduce costs and increase quality, denoted as $x^*$ and $q^*$ respectively, leading to maximum social value. Throughout the main text, I will intuitively discuss the main effects and findings, leaving all formal demonstrations to the Appendix.

Customers and beneficiaries

In my analysis, I consider two types of beneficiaries. The first group is comprised of “regular” customers in the sense that they can pay for a product or service from which they derive direct benefits. I term this group as the unconstrained segment. The second group involves individuals who cannot afford a given service at optimal quality (as defined before) or who demand services that are not amenable to direct payment, that is, there are structural constrains to establish formal markets. Prisoners, for instance, do not directly pay for the correctional services within prisons. I refer to this latter group as the constrained segment.

I assume that only a portion $\theta$ of beneficiaries (such that $0 < \theta < 1$) will be able to pay for the service at the optimal quality, $q^*$. The higher the extent of beneficiaries who are constrained to pay for the service, the lower the $\theta$. If the service is not provided for this segment, then $B^c = 0$, while the unconstrained segment receives $B^u > 0$ if they agree to pay for the service. Thus, $\theta$ is a parameter that indicates the marketability of the social activity (Rainey, Backoff, & Levine, 1976). Marketability increases when firms, public or private, create formal marketplaces for the service or when policies seek to ameliorate purchasing constraints. For instance, governments may create voucher programs providing families with direct transfers to study in high-quality schools. Such policies will typically increase $\theta$.

Organizational forms and players
I examine three general organizational forms: public bureaucracy (PB), public-private partnership (PPP), and social enterprise (SE), explained below (see Figure 1). In the PB form, the government delegates the execution of the public service to a public manager whose work is monitored by a public supervisor (in a way that will be explained later). Although various models of PPP are found in practice (Engel, Fischer, & Galetovic, 2014), I consider a simple setting where execution is in the hands of a private manager monitored by a public supervisor appointed by the government, which also sponsors the activities of the private firm. In the SE form, execution is again under the responsibility of a private manager but there is no public supervisor. The SE is sponsored and monitored by a socially-motivated investor (Brigozzi & Tedeschi, 2014), referred to as an impact investor among practitioners (e.g. Brest & Born, 2013). The impact investor can capture part of firm-level profits but, especially in cases involving a high portion of constrained beneficiaries, may agree to promote direct transfers to the firm (such as donations) to support service delivery to that group (e.g. Santos, Pache, & Birkholz, 2015).

As shown in Figure 1, the boundaries of the government shrink as we move from PB to SE. PB involves both public sponsorship and management; PPP, a combination of public sponsorship and private management; and SE, both private sponsorship and management. PPP is a hybrid governance form because it combines public support/supervision and private execution (Cabral et al., 2010). In the SE form, although the government does not have direct monitoring or execution duties, it may set industry standards or incentives (e.g. tax breaks for donations).

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1 Some authors (e.g. Battilana & Dorado, 2010) also refer to SE forms as hybrids because they combine social and profit objectives. We can thus think of PB as a hybrid in the governance sense—that is, it combines private autonomous execution with public oversight (Williamson, 1999), even though this form also involves public and private actors with mixed motives and goals. See, for further discussion and clarification, Quelin et al. (Forthcoming).
Social value appropriation

Table 1 shows the per-period payoffs indicating the distribution of appropriated social value. I abuse notation and refer to $B(q)$, $C_P(x, q)$, and $C_M(x, q)$ simply as $B$, $C_P$ and $C_M$ respectively. Beneficiaries pay taxes ($t$) which help fund the spending activity the government (corporate taxes are included in production costs). To avoid extra complications, I assume that there is no fiscal constraint, so governments can always raise funds to support activities at the social optimum when necessary.

<Table 1 around here>

**PB form.** The public supervisor and the public manager receive wages $w_S$ and $w_M$ respectively. The supervisor’s wage is net of her individual monitoring costs, while the gain of the public manager is her wage minus the costs to execute the service, i.e., $w_M - C_M$. They both get a net payoff of zero in another activity within or without the public sector. Thus, any positive net wage can be interpreted as a distinctive payment that public bureaucrats receive. Although not in the table, as mentioned before the manager must incur upfront sunk investments, $k > 0$, assumed to be sunk. In the PB form, the government pays for all relevant upfront investments as well as all production costs, $C_P$.

**PPP form.** The government pays a fee ($f$) for the private manager to execute a given activity and, depending on the extent of unconstrained beneficiaries ($\theta$), the private manager can directly collect revenues from consumers at a price $p$ (e.g. water usage fees). The private manager now incurs not only the managerial costs to execute the activity but also production costs. Revenues minus production costs (e.g. per period profits net of managerial effort costs) are referred to as the residual of the operation (Fama & Jensen, 1983). Let $\psi$ denote the residual rights of the managers (such that $0 < \psi < 1$); thus, managers have the rights to capture a portion of $\psi$ of profits (excluding the cost of their managerial effort), while investors of the private firm will get a fraction of $1 - \psi$. With a high $\psi$, the manager is
essentially a large partner of a for-profit firm; with a low $\psi$, the private manager resembles the manager of a nonprofit firm. Given this formulation, when it comes to upfront investments, managers must incur $\psi k$, whereas investors, $(1 - \psi)k$. As before, managers can receive a net payoff of zero in an alternative activity.

**SE form.** In this case, constrained beneficiaries will directly pay for the service at a price $p$ (e.g. tuition in a private school), but the firm may also offer the service to constrained beneficiaries at no charge. Differently from the PPP form, now managers are free to choose different levels of effort in each segment—let $q^u$ and $q^c$ refer to the level of quality in the unconstrained and constrained segments respectively. To support the operations for constrained beneficiaries, the SE receives not only funding but also subsidized transfers or donations from impact investors, denoted as $d$. Impact investors, in return, can get a transfer $s$ from the government, in the form of subsidies or tax breaks for the social activity. As in the PPP form, investors can also capture a portion $1 - \psi$ of the residual of the firm, but should also sponsor the same portion of upfront investments.

**APPLYING THE FRAMEWORK**

**Sequence of decisions**

Although some decisions vary depending on the chosen organizational form, in all cases there is an *implementation* stage where parties agree on the underlying contract and incur the upfront costs $k$, and an *operational* stage where parties can additionally bargain and then deliver the service (Figure 2). As noted before, quality is an exchange dimension that is not enforceable through formal contracts (an assumption that I will relax later); yet parties can experience quality after a given period and then decide to continue or not the exchange in the future. This assumption of repeated interaction allows for a nexus of *relational contracts* between public managers/supervisors and the government, private managers and impact investors, and private managers and beneficiaries. Namely, they transact repeatedly and can
sever the ties depending on their past choices (as in Baker, Gibbons, & Murphy, 1994; Baker et al., 2002). Although some argue that relationship-based transactions are problematic in public settings due to procedural constraints to avoid personal considerations in the selection of partners (Rufín & Rivera-Santos, 2012), public administration scholars have more recently argued that governments usually keep recurring transactions conditional on past performance, as long as these transactions follow legitimized procedures (Bertelli & Smith, 2010).

Specifically, in my setting the operational stage is infinitely repeated and managers discount future payoffs with an interest rate $r > 0$. Impact investors, in turn, are socially-motivated and accept a rate $r^I$ lower or equal to $r$. All players are risk neutral (they maximize their expected payoffs) and knowledgeable of all revenue and cost parameters. Differences in decisions across forms are detailed below.

\[\text{Figure 2 around here}\]

*PB form.* At the implementation stage, the government starts by offering a labor contract to the supervisor and manager. To guarantee high quality in this specific public service, they are offered a distinctive, positive wage $w > 0$ (net of managerial costs), assumed to be equal to the net wage received by the supervisor ($w_M$). Prospective public managers compete for this distinctive wage and are equally capable to perform the service. (I will later consider the role of heterogeneous capabilities.) At the operational stage, the supervisor is tasked with guaranteeing the optimal level of quality, $q^*$, and perfectly observes managerial actions that will affect quality. In this environment, I admit the possibility of corruption. Namely, the manager can offer a bribe for the supervisor to accept any reduction in quality below $q^*$. The supervisor can accept or reject the bribe. Rejecting the bribe also implies that the supervisor will not accept any quality level inferior to $q^*$. The manager then chooses her managerial effort to cut costs and increase quality and the service is next delivered to the

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2 An alternative interpretation is that each operational transaction continues in the next period with probability $1/(1 + r)$ (Baker et al., 1994; Lazzarini, Miller, & Zenger, 2004).
beneficiaries. Although the corruption deal is only privately observed, beneficiaries experience the service and hence the level of quality is revealed in the next period. If low quality is revealed, then both the manager and the supervisor either lose their distinctive wage or are fired with probability $\varphi$ (such that $0 < \varphi < 1$), after which they both receive zero. Given that, $\varphi$ is a critical parameter. A low $\varphi$ characterizes a situation of low institutional development, while a high $\varphi$ indicates that the institutional context of the public bureaucracy is more attentive and accountable to service performance. Although labor contracts in the public bureaucracy are generally stable and weakly responsive to individual performance (Miller, 2000; Moe, 1984; Williamson, 1999), in some cases we observe novel human resource practices in the public sector penalizing unproductive personnel (see for instance the experiment reported in Dee & Wyckoff, 2015) or electoral pressure to improve public services when beneficiaries act as strong political constituencies (as in Acemoglu, Kremer, & Mian, 2008). All those forces should increase $\varphi$.

**PPP form.** This case is similar to the PB form except for the fact that upfront costs are paid by private actors, and execution is in the hands of private manager subject to a PPP contract. At the implementation stage, there is competition among private managers to sign the contract, assumed (for now) to be equally capable. Different from internal contracts in the public bureaucracy, however, external PPP contracts tend to be more unstable and subject to breach and renegotiation at the operational stage (Guasch, Laffont, & Straub, 2008; Rufín & Rivera-Santos, 2012). Thus, if quality is suboptimal, the private firm does not transact with the government anymore, receiving zero in the next period, and (as before) the supervisor loses her distinctive wage with probability $\varphi$. If quality is $q^*$, then the private manager can be hired again. Here, however, there is a possibility that governments may expropriate past investments by renegotiating and threatening to sever the recurring transaction. Pressure from external constituencies may in this case even prompt governments to force
reductions in fees or opportunistically change the private partner to reap value from the PPP contract (Kivleniece & Quelin, 2012; Moszoro & Spiller, 2012). For simplicity, I assume that the probability that these adversarial actions will happen will be inversely related to the extent of institutional development. More precisely, the probability that the private manager will be able to capture the same level of rents conditional on optimal service quality is $\varphi$. A low $\varphi$ thus implies that the government is unable to commit to a longer-term relationship with the private manager to compensate for her sunk implementation costs.

**SE form.** In this case, we have two relational contracts. The first occurs between the SE and unconstrained beneficiaries. They pay for the service and, if the service is found to be suboptimal, they will refrain from purchasing from the firm in the next period (in the same vein as in Klein & Leffler, 1981). In the case of constrained beneficiaries, their service is affected by the relational contract between the SE and impact investors. At the implementation stage, the impact investor offers a contract to the private manager involving a per-period donation $d$ to support expenses with unconstrained beneficiaries. Impact investors monitor quality and continue donating if and only if the private manager chooses optimal quality in the segment of constrained beneficiaries. Because impact investors are assumed to be socially-motivated, I rule out the possibility of corruption deals with managers.

**Profit-quality tradeoff**

The more familiar tradeoff between quality improvement and cost (originally proposed by Hart et al., 1997) is easily seen in my framework. Because the private manager internalizes production costs as a function to her rights to the residual of the firm ($\psi$), compared to the public manager she will have higher incentives to maximize profits by choosing a positive level of effort for cost reduction, which will approach the social optimal level, $x^*$, as residual rights increase. This is not the case for the public manager, which does not control production costs: increasing $x$ will simply augment managerial costs ($C_M$) without
any benefit in reducing production costs ($C_P$). In other words, private management (under PPP or SE) will generally have an efficiency-based advantage over PB.

Yet the very fact that the private manager internalizes production costs implies that she will have higher temptation to cut expenses leading to superior quality. As seen in Table 1, while the public manager can only economize on managerial costs ($C_M$), the private manager can economize on managerial and production costs depending on the extent of managerial residual rights ($\psi C_P + C_M$). That is, the private manager will have higher incentives to cut costs via superior operational efficiency (a higher $x$), but it will also have higher incentives to reduce costs via quality deterioration (a lower $q$).

In the PB and PPP form, a public supervisor has veto rights over managerial decisions that could potentially undermine quality. Yet the possibility of substantial savings from quality reduction implies that managers can create and share short-term rents with the supervisor via bribes. The supervisor, however, will accept a bribe high enough that compensates for the foregone rents if low quality triggers the termination of her distinctive wage. The manager, in turn, will only offer a bribe that is proportional to costs savings that she can capture. Since, as noted above, these savings are higher under private management—especially when managers have high residual rights—then it follows that an increase in potential savings will destabilize the self-enforcement of optimal quality in the PPP form to a higher extent than in the PB form. The same is true for the SE form. Leaving aside for the moment long-term managerial incentives (which I discuss next), the relational contract with unconstrained beneficiaries as well as the relational contract with impact investors will also depend on the potential short-term savings that managers can privately capture by reducing quality. This logic, more formally presented in the Appendix, leads to the following:

**Proposition 1.** All else constant, an increase in quality-reducing potential savings decreases the social value generated by the PPP and SE forms compared to the PB form, especially when private managers have high residual rights.

*Proof:* See Appendix.
This proposition has relevant practical implications. Activities differ in the extent of potential savings on difficult-to-measure quality attributes—compare, for instance, simple facility maintenance contracts to complex research and clinical health services. Even in the same activity there might be substantial heterogeneity. Teaching bright students or keeping non-violent prisoners requires less managerial effort than teaching students with severe learning disabilities or running correctional facilities with a high portion of inmates convicted for serious crimes. Some critics of the private outsourcing of public services argue that private firms often “cherry pick” profitable activities and target populations that are easier to manage (Bernstein, 2013; Graham & Marvin, 1994). Yet Proposition 1 indicates that cherry picking may eventually increase social value if it reduces the extent of potential savings that private managers and public supervisors can capture. In other words, state-run facilities can target more complicated populations whereas privately-run units can manage segments where the cost-quality tradeoff is less pronounced. Competition among providers should drive down service fees given the lower costs of those “easier” segments.

As mentioned before, however, there is also another key tradeoff, which occurs because private managers in the SE form can choose to target both customer segments or only unconstrained customers, who can pay for the service. This tradeoff does not occur in the PB and PPP forms given my assumption that the government regulates the provision of services for all customers indistinctively. In the unconstrained segment, the private manager needs a sufficiently high price to cover all relevant costs and create long-term rents that will support self-enforcement. Higher rents will reduce the value (surplus) that customers can capture, but will increase the benefits of choosing high quality to preserve the long-term relationship. In the constrained segment, in contrast, the private manager receives support from the impact investor to cover the investment and operational expenses in that segment. If the manager fails to deliver high quality, the impact investor will cease the donation. But if
the unconstrained segment is highly attractive, then the relational contract with the impact investor will be destabilized. If the manager reneges on the agreement with the investor, then she will still be able to capture substantial profits by focusing solely on unconstrained customers. This is the reason why I adopt the more general term profit-quality tradeoff: managers may not only be tempted to cut costs, but also focus on profitable segments even if there is potential support from impact investors. Thus, social value creation in the SE form will mandate a moderate level of value that firms can capture in the unconstrained segment:

**Proposition 2.** All else constant, in the SE form, increasing the rents that private managers can appropriate in the unconstrained segment increases social value up to a certain point; excessive appropriation of rents in that segment can negatively affect the self-enforcement of high quality in the group of constrained beneficiaries.

Proof: See Appendix.

When this condition is not met, a possible solution could involve a separation of these two groups of beneficiaries: the SE form can be used in the unconstrained segment whereas the PPP or PB form could service the constrained group. Yet this separation would not be feasible in natural monopolies subject to technical scale economies such as electric or water services (Engel et al., 2014). A monopolistic SE catering to both segments may be value-destroying because the private manager may be tempted to focus on unconstrained customers—a segment that would likely be very profitable given the SE managers’ ability to command prices—, thus neglecting the needs of the constrained group. A more favorable condition for the SE form will typically occur when competition for services in the unconstrained segment is not too low, which would otherwise prompt private managers to renego on the relational contract with impact investors and focus on unconstrained beneficiaries only, but also when it is not too high, thus allowing private managers to capture sufficient rents to self-enforce optimal quality.

**Contextual factors affecting the long-term appropriation of value**
Even if the profit-quality tradeoff is relevant, private managers may have incentives to deliver optimal quality depending on contextual conditions affecting their long-term incentives. Let us first compare the PB and PPP cases, which have a similar public monitoring structure. Notice that an increase in institutional development, \( \varphi \), will facilitate the self-enforcement of optimal quality in both the PB and PPP forms. On the one hand, an improved institutional environment will increase the likelihood that public bureaucrats will lose their distinctive wages if they engage in the corrupt deal and choose low quality. On the other hand, stronger institutions will increase the expected long-term rents of private managers by reducing the odds of expropriation even if they choose high quality. Thus, institutions are insufficient to explain whether public or private management will prevail; their value-creating effect will critically depend on the relative long-term value captured by each type of manager, public or private, as the environment develops.

Improved institutions increase the value created by the PB form when public managers capture long-term rents in the form of distinctive wages. High-quality public bureaucracies are usually associated with competitive admission tests and in various cases extra compensation for functions with critical impact and responsibility (Cabral et al., 2010; Schneider, 1991). However, such distinctive compensation can become a liability if public managers are not accountable to service quality; they may simply capture higher rents without any corresponding increase in effort (e.g. Ree, Muralidharan, Pradhan, & Rogers, 2016). Thus, by increasing the probability of termination conditional on low quality, improved institutions should create long-term incentives for public managers to perform and preserve their distinctive compensation (similarly to what economists refer to as “efficiency wages” – see Shapiro & Stiglitz, 1984). In contrast, institutions will favor social value creation under the PPP form if private managers incur large upfront costs at the implementation stage, such as in the case of public-private alliance involving more intense
private participation in the design of facilities and processes (Bennett & Iossa, 2006; Quelin, Cabral, Lazzarini, & Kivleniece, 2015). To understand why, recall that private managers compete for their contract and hence receive a payment schedule that just covers their *ex ante* upfront investments. However, because these investments are sunk, at the operational stage they will tend to receive a flow of positive rents—more precisely, *quasi* rents, given that they exclude sunk implementation costs. In addition, private managers with higher residual rights ($\psi$) incur larger upfront investments and hence capture a larger chunk of *ex post* rents, which makes them relatively more committed to pursue high quality as long as they perceive a low probability of adversarial renegotiation. Therefore:

**Proposition 3.** All else constant, institutional development increases the potential social value of both PB and PPP forms, but its effect depends on the extent of value appropriated by managers. The value-creating effect of improved institutions will be larger in the PPP form than in PB form when private managers have high residual rights and incur substantial upfront investments at the implementation stage (which increase *ex post* rents at the operational stage); otherwise, that effect will be larger in the PB form when public managers receive distinctive wages to operate the service. **Proof:** See Appendix.

Because relational contracts in the SE form are between private actors, they are unaffected by the institutional parameter. We must therefore examine the long-term incentives that the private manager will face to deliver optimal quality to both constrained and unconstrained beneficiaries. If most customers are unconstrained—using our previous term, the service is marketable—the relative benefits of the SE firm increase if private managers have long-term incentives to deliver high quality, which tend to increase with managerial decision rights. Furthermore, funding in this case is easier because investors can naturally reap profits from the unconstrained segment to cover their upfront costs.

If however there is a substantial portion of constrained beneficiaries, then managers will need extra funding to support the operations for this particular segment. Yet, because this segment is unprofitable, investors will need to either receive transfers from the government (e.g. tax breaks for donation efforts) or accept a lower rate of return. In the
impact investing industry, there is heterogeneity of investors: some require market-based rates while others will accept a lower return if activities yield social value (see e.g. Bugg-Levine & Emerson, 2011; J.P.Morgan, 2010). Thus, a setting involving low marketability will require the latter type of investor and/or government transfers that compensate for the lower natural profitability of the segment. In addition, if the segment of constrained beneficiaries is relevant, investors can reap a higher portion of the operational cash flow to help fund their social investment. However, managerial rights cannot be too low because otherwise managers will have scant incentive to perform efficiently. Thus, with low marketability, managerial rights will have to be moderate. In other words, the SE will progressively resemble a nonprofit firm.³. Thus:

**Proposition 4.** All else constant, a large fraction of unconstrained beneficiaries (high marketability) increases the potential social value created by the SE form with high managerial residual rights. When the fraction of constrained beneficiaries is relevant (lower marketability), the potential social value of the SE increases when managerial rights are moderate and when impact investors accept below-market returns and/or benefit from government transfers to support social activities.

*Proof: See Appendix.*

**MEASURING AND REWARDING FOR SOCIAL BENEFITS**

I will now relax the assumption that quality is totally non-contractible. Consider a linear incentive contract with a fixed payment and a variable component of the form \( by \), where \( y \) is a signal of quality (that is, \( q \) is measured with error) and \( b \) is a bonus conditional on the imperfectly measured quality. In the SE form, the bonus is paid taking into account only the quality offered to constrained beneficiaries. This contract structure mirrors the mechanisms that have been termed “outcome-based contracts” or “social impact bonds” in the practice of social entrepreneurship and impact investing (Bugg-Levine et al., 2012; Santos et al., 2015; Social Finance, 2009). Drawing from Baker, Gibbons and Murphy (1994), I

³ In the limit, under severe marketability constraints, investors will not be able to withstand all required upfront investment and operational costs unless they act like philanthropists. This possibility can be easily accommodated in the model by assuming that investors can accept negative returns.
assume that the signal of quality $y$ is equal to $\mu q$, where $\mu$ is a random variable with mean 1, variance $\sigma^2 > 0$, and support such that $\mu q \geq 0$. The smaller the $\sigma^2$, the higher the *measurement precision*—for instance, a high realization of the variable will indicate a signal of high quality (a high $y$) even when actual $q$ is low. With a higher bonus, managers are more incentivized to pursue optimal quality. However, quality is costly and hence, if measurement precision is low, managers will exert a level of effort above the social optimum. These two opposing forces determine the bonus that maximizes social value.

Instead of departing from the assumption that the PB form has “low-powered incentives” (Williamson, 1999), I examine how incentive contracts will be optimally chosen in each case. Indeed, the optimal bonus for quality, $b$, is higher under private management. This prediction logically derives from the profit-quality tradeoff. In the PB, public managers do not fully internalize the costs of providing high quality and therefore do not need to be as incentivized as private managers in the PPP and SE forms. Also, because the tradeoff is more acute when private managers capture a larger portion of the operational cash flow, the optimal bonus increases with the extent of managerial residual rights. In other words, in my model, the typical low-powered incentives of public bureaucracies and nonprofit firms endogenously emerge from fundamental forces affecting social value creation and appropriation:

**Proposition 5.** *All else constant, incentive intensity (payment for quality) is highest under private management (PPP or SE) with high managerial residual rights and lowest under public management (PB).*

*Proof: See Appendix.*

Although measurement precision is expected to increase incentive intensity in general (Hölmstrom, 1979), an interesting question is whether improvements in precision will more highly affect intensity in one form compared to others. This question is important because, in recent decades, new methods to more precisely measure and identify social impact have been developed (e.g. Donaldson, Christie, & Mark, 2015; Kroeger & Weber, 2014) and there are
even orchestrated attempts to catalogue impact-related variables (Bouri, 2011). Yet, presumably, these improvements could equally benefit organizational forms with public or private management. As it turns out, the value-enhancing effect of increased precision is highest in the PPP and SE forms with high residual rights. Because the profit-quality tradeoff is more severe under private management, an improvement in measurement precision should reduce the gains that managers will appropriate by reducing quality, especially when they capture a large fraction of the operational cash flow.

Consider, for instance, what happens in the PPP form. Without the incentive contract, the private manager could potentially collude with the public supervisor and then choose minimal quality to increase the extent of quality-reducing savings. With the incentive contract, the best short-term response of the manager is to choose a level of quality that is compatible with the incentive structure imposed by the contract. Thus, the manager may deviate by choosing a level of quality that is below the optimum (given that quality is measured with error) but that is nonetheless above the minimal level that would have been chosen without the pay-for-quality contract. Consequently, the incentive contract will reduce the potential savings that the manager and the supervisor can capture if they deviate from optimal quality. And these gains from deviation will become progressively smaller as measurement precision increases, because the best short-term response of the manager will approach the social optimum. In other words, the contract will facilitate the self-enforcement of the relational contract (Lazzarini et al., 2004). The same logic applies to the relational contract between the manager and impact investor in the SE form, although with some nuance. Because quality-reducing savings in the constrained segment increase with the size of this segment, the precision-triggered improvement in the SE form will be larger when constrained beneficiaries are relatively more prevalent. In other words, higher precision in the SE form will be mostly beneficial when there are limits to marketability. Therefore:
**Proposition 6.** All else constant, an increase in measurement precision increases incentive intensity (payment for quality) to a higher extent in the PPP and SE forms compared to the PB form, especially when private managers have high residual rights.

*Proof: See Appendix.*

**Proposition 7.** All else constant, when there are large quality-reducing potential savings, an improvement in measurement precision in the context of pay-for-quality contracts increases the social value of private management (PPP or SE) to a higher extent than the social value of public management (PB). The precision-enhanced social value of the SE form is larger when there is a significant fraction of constrained beneficiaries.

*Proof: See Appendix.*

A corollary is that well-crafted pay-for-quality contracts, as a response to improved measurement technology, will invite more private participation even in activities where potential quality-reducing savings would otherwise call for public management.

**THE ROLE OF HETEROGENEOUS CAPABILITIES**

Up until now I have assumed that managers do not differ in their capabilities to reduce costs or increase social benefits, which does not reflect the complexity of public and private organizations combining myriad, heterogeneous capabilities (Klein et al., 2013). What happens when we relax this assumption? Private management is often justified with the argument that profit-based motives promote efficiency. Indeed, this effect is accommodated in the previous discussion: when subject to higher residual rights, private managers devote more effort to cut costs. Another common argument is that private firms have a broader set of capabilities unavailable to public managers (Rangan et al., 2006); this is akin to the widespread idea that markets aggregate diverse, heterogeneous capabilities not completely possessed by a single firm (Jacobides & Winter, 2005). Yet some authors contend that many important innovations came from learning efforts in public organizations, such as improvements in information technology, agriculture, and health (Graham, 2010; Mazzucato, 2011). To reconcile these alternative views, we could then argue that each form will be preferable depending on the underlying differences in managerial capabilities to run a given
social activity. But this entails a tautological argument: social value is enhanced when public or private managers possess value-enhancing capabilities.

At a more fundamental level, we need to identify how each form supports the development of superior capabilities (Argyres & Zenger, 2012). Suppose that, before the implementation stage, a manager invests in capabilities that reduce the marginal costs to offer high quality services or increase the marginal benefits perceived by beneficiaries—for instance, a manager discovers a cheaper way to treat a disease or a more effective teaching method to increase student learning. At the implementation stage (as per my assumption) managers compete to offer the service. The second most capable manager will accept a payment schedule—a wage in the PB form, a fee in the PPP form, and a donation in the SE form—that just covers her upfront investment. Being more capable, the former manager will therefore be able to outbid the latter and capture abnormal rents proportional this her cost- or benefit-based advantage (Peteraf, 1993). Following the previous section, I consider that (imperfect) incentive contracts are in place, so capable managers can increase profits not only be reducing costs but also by increasing social benefits.

In this setting, one might initially think that an increase in capabilities will lead to enhanced social value. However, this intuition is not always right. With lower marginal costs or higher marginal benefits to increase quality, the socially optimal level of quality increases. For instance, a more effective teaching technology will call for more effort to educate a given set of students and even enlarge the set of potential beneficiaries. Higher expected effort to deliver quality, however, will also increase costs and consequently magnify the profit-quality tradeoff: by reducing effort, managers will reap enlarged quality-reducing potential savings. In other words, superior capabilities may eventually undermine social value when higher expected quality increases costs and hence the gains from reneging on the relational agreement. We therefore should check conditions that will allow capable managers
to capture long-term rents even if short-term potential savings increase, an effect that tends to destabilize the self-enforcement of high quality.

I already discussed how long-term incentives in the PB and PPP forms greatly depend on the strength of institutions (Proposition 3). Here I propose that the capability-enhancing effect of institutions will be larger in the PPP form than in the PB form. In the latter, the outcome with no bribes (and hence high quality) mandates strong institutions: long-term rents increase when there is a high probability that public bureaucrats will lose their distinctive wage if they choose low quality. This requirement is even more stringent in the PPP form because under weak institutions the contract can be opportunistically severed even if the private manager does not deviate. Thus, an improvement in the institutional environment should have a stronger effect in the capability-enhancing potential of the PPP form by increasing the long-term benefits of enhanced capabilities even if potential savings increase. In addition, higher measurement precision always promotes capability development: low error in pay-for-quality contracts reduces the short-term gains that managers can capture if they deviate from the higher effort that is expected when there is high potential for social value creation. Therefore:

**Proposition 8.** All else constant, the PB and PPP forms will be more conducive to the emergence of social value-enhancing capabilities when the institutional environment is more developed and there is high measurement precision when pay-for-quality incentive contracts are in place. The positive effect of stronger institutions will be higher in the PPP form than in the PB form.

*Proof: See Appendix.*

In the SE form, because self-enforcement constraints are different between constrained and unconstrained beneficiaries, in what follows I separate between the conditions affecting each customer segment (in the PB and PPP forms this separation is immaterial given that managers cater to both segments indistinctively). In SE form, there is a basic relational contract between the impact investor and the private manager; there is no additional complication caused by the institutional environment affecting the enforcement of
contracts internal or external to the public bureaucracy. The SE manager can therefore reap long-term gains from this relational contract as long as exchange parameters reduce gains from short-term deviation. As discussed before, when incentive contracts are in place, improved measurement will precisely reduce those short-term gains. In the constrained segment, in turn, there is a basic relational contract between the SE manager and customers. Benefit-enhanced capabilities will tend to increase customer willingness to pay, which creates long-term gains to managers if they have sufficiently high residual rights. The same logic applies to costs: the extent of residual rights prompts managers to invest in cost-reducing capabilities. Therefore, as the fraction of unconstrained beneficiaries increases, capability development is facilitated when the SE acts more as a normal private firm, as opposed to a nonprofit with low residual rights. I thus arrive at my final proposition:

**Proposition 9.** All else constant, in the constrained segment, the SE form will be more conducive to the emergence of social value-enhancing capabilities when there is high measurement precision in pay-for-quality contracts. In the unconstrained segment, those capabilities will more likely emerge when private managers have high residual rights.

*Proof: See Appendix.*

**DISCUSSION AND CONCLUSION**

I argue that strategic analysis in the context of activities with potential impact requires an in-depth examination of how various actors not only share but also appropriate value. Essentially, social value appropriation is central to social value creation. The ability to capture value can either constrain or derail social value creation, depending on the underlying relational rents that managers can receive in their socially-oriented activities. Based on fundamental forces affecting how value appropriation affects social value creation, I offer a theory of alignment identifying conditions that will help self-enforce superior social benefits in light of the comparative costs and incentives of alternative organizational forms involving combinations of public and private sponsorship and management. Table 2 summarizes such conditions based on four key fundamental factors: the severity of the profit-quality tradeoff,
the marketability of social products and services, the measurability of social benefits, and institutional conditions influencing the strength of public enforcement and the involvement of socially-oriented private sponsors. The table also summarizes conditions affecting the ability of each organizational form to incentivize the development of value-creating capabilities. In sum, my framework allows for a systematic identification of various factors whose complex interplay determine the comparative ability of each form to self-enforce superior social value.

<Table 2 around here>

Contributions

I advance the extant literature on the organization of socially-relevant activities in several important ways. Although received work has expanded our knowledge of organizational forms comparatively address problems of externalities, public goods, or market failure more generally (e.g. Kaul & Luo, 2016; Rangan et al., 2006), in my model all forms can handle these problems depending on how parties can capture value from socially-oriented exchanges. In this sense, I build on Coase’s (1974) insight that the presence of social benefits is not a sufficient condition for public or private management; we must instead examine the potential of alternative arrangements to deliver those benefits at a given cost. In addition, I move beyond existing economics-based models rooted in problems of contract incompleteness and tradeoffs that emerge when private actors are incentivized to cut costs at the expense of quality (Hart et al., 1997; Levin & Tadelis, 2010). For instance, I show that a critical tradeoff emerges when private operations are tempted to focus on profitable customer segments, and then derive conditions that will self-enforce broader, inclusive private service delivery. Also, I derive conditions that will prompt actors, public or private, to deliver social benefits based on a nexus of informal, relational contracts (Bertelli & Smith, 2010; Gibbons & Henderson, 2012; Poppo & Zenger, 2002). Essentially, I discuss how actors commit to creating long-term social benefits even when they can capture short-term gains from
deviation (i.e. cutting costs at the expense of quality or neglecting beneficiaries that are constrained in their access to costly service quality).

I also relax the very assumption of contract incompleteness in exchanges involving large social benefits. The recent emergence of pay-for-success contracts—whereby service operators receive variable payments based on measurable social outcomes (Bugg-Levine et al., 2012; Social Finance, 2009)—fly in the face of theories assuming that quality (or, more generally, socially-relevant variables) are difficult to measure and verify. While still supposing some degree of incompleteness, I model situations where pay-for-success schemes can be implemented depending on the precision with which social benefits are measured. Arguably, these incentives can be applied to both public and private managers. Yet, one important result is that incentive intensity is found to be endogenously higher under private management with high residual rights, precisely because in this case the exchange is more susceptible to the aforementioned profit-quality tradeoff. For the same reason, an increase in measurement precision should proportionally create more social value in forms involving private management, especially when there is a relevant fraction of constrained beneficiaries. Examining the organizational consequences of increased measurement precision is particularly important because in recent years we have witnessed several practitioner-led initiatives to increase the precision through which social benefits (or “impact”) can be measured (Bouri, 2011; Donaldson et al., 2015). This result has also an important public policy implication: with the expansion of technologies to measure and reward for impact, private management can gradually be invited to participate in activities that were initially thought to be the sole responsibility of governments.

Another important contribution is that I expand existing discussions in strategy to generalize the process of value creation and appropriation beyond activities that are expected to deliver economic benefits only and beyond simple transactions between customers and
firms. Garcia-Castro and Aguilera (2015), for instance, recently proposed a framework to examine value creation and appropriation among multiple stakeholders. I go a step further by showing how the mechanisms of value appropriation explain the choice of alternative organizational forms intended to increase social value. I not only offer a precise operationalization of social value, but also show how the distribution of social value among various stakeholders supports the self-enforcement of exchanges with high social benefits. In this sense, my work also responds to recent calls for more research in strategy examining mechanisms and processes through which public and private actors create and appropriate social value (Klein et al., 2013; Mahoney et al., 2009; Quelin et al., Forthcoming).

Limitations and suggestions for future research

In this paper, to facilitate exposition, I focus on three ideal types involving combinations of public and private sponsorship and management. However, even these types can have more refined and mixed features. For instance, state-owned organizations themselves have been observed with mixed public and private capital (Bruton, Peng, Ahlstrom, Stan, & Xu, 2015; Musacchio & Lazzarini, 2014); public-private partnerships have various degrees of private involvement and public sponsorship (Kivleniece & Quelin, 2012); and social enterprises display myriad combinations of for-profit and nonprofit architectures (Ebrahim, Battilana, & Mair, 2014). While my model allows for a general view of major categories of socially-oriented forms, future work should delve deeper into the specificities of each form as well as their possible combination in the same or different exchanges. ALSO: those forms are not mutually exclusive. E.g. investors can support PPPs…

There is also an opportunity to refine and expand my proposed framework involving a mix of constrained and unconstrained beneficiaries. For instance, I briefly mentioned that government-sponsored vouchers can reduce customer constraints, thereby increasing marketability. Yet those government-sponsored transfers create their own new hazards.
Public regulators may not commit to preserve vouchers in the long-run, and there may be opportunistic arrangements between regulators and private firms (much in line with the corrupt deals I modeled between public supervisors and managers). In addition, limitations to marketability may derive from customer inability to assess service quality, even after successive interactions. An increase in measurement precision can therefore also help customers support relational, recurring interactions with firms.

Finally, while I describe how alternative forms create social value, my model is not intended to explain how forms will be chosen. Several additional institutional constraints may limit the adoption of certain forms even if they are, in principle, social value-maximizing. For instance, I argued that, if there is heterogeneity in the extent to which certain customer segments or activities create opportunity for savings at the expense of quality, then private firms may better focus on activities or customer segments where this tradeoff is less acute, thereby facilitating the self-enforcement of optimal quality. Yet private participation is often criticized with the very argument that private firms tend to self-select profitable customers (Bernstein, 2013; Graham & Marvin, 1994). Thus, moving beyond my emphasis on social value, scholars should also examine how alternative organizational forms respond to what public administration scholars refer to as public values: normative principles guiding the legitimacy of public policy and private action in areas with large social benefits (e.g. Bozeman, 2007). It would be particularly instructive to study how normative constraints may eventually thwart the adoption of certain organizational forms even when these forms allow for higher social value creation, as well as how these constraints emerge and evolve as public and private actors progressively learn from their socially-oriented efforts.

APPENDIX: FORMAL DEMONSTRATIONS

Assumptions and optimal social value
In my formulation of social value, I employ the following formal assumptions for benefits, \( B(q) \): \( \partial B / \partial q > 0 \) and \( \partial^2 B / \partial q^2 \leq 0 \) (i.e. social benefits increase with quality at a nonincreasing marginal rate); and \( B(0) = 0 \) (i.e., at zero quality, beneficiaries extract no benefit). With respect to the costs of managerial execution, I assume that \( \partial C_M / \partial x > 0 \) and \( \partial C_M / \partial q > 0 \), and likewise set \( \partial^2 C_M / \partial x^2 > 0 \) and \( \partial^2 C_M / \partial q^2 > 0 \) to guarantee concavity. Costs of production, \( C_P(x, q) \), are such that \( \partial C_P / \partial x < 0 \), \( \partial C_P / \partial q > 0 \), \( \partial^2 C_P / \partial x^2 \leq 0 \), and \( \partial^2 C_P / \partial q^2 \geq 0 \). In all cases, I assume for simplicity that \( \partial^2 C_P / \partial x \partial q = 0 \), i.e., efforts to reduce costs do not affect the sensitivity of costs to quality. Given these assumptions, the socially optimal levels of \( x \) and \( q \), denoted as \( x^* \) and \( q^* \), can be obtained from the maximization of \( S = B(q) – C_P(x, q) – C_M(x, q) – k \), as the solutions of the first-order conditions – \( \partial C_P / \partial x – \partial C_M / \partial x = 0 \) and \( \partial B / \partial q – \partial C_P / \partial q – \partial C_M / \partial q = 0 \). At these optimal levels, I also assume that social value is positive even after considering implementation costs, \( k \). That is, \( B(q^*) – C_P(x^*, q^*) – C_M(x^*, q^*) – k \geq 0 \). It is also convenient to normalize \( C_P(x^*, 0) = C_M(x^*, 0) = 0 \).

In what follows, I solve for the Subgame Perfect Equilibrium of the infinitely repeated game considering trigger strategies that will yield the highest possible punishment (e.g. Abreu, 1988; Baker et al., 1994). Although other punishment strategies can be chosen, this assumption allows us to unveil the minimal conditions that will support self-enforcement.

**Proof of Proposition 1**

From the payoffs in Table 1, we see that the public manager does not capture any value in cutting costs and hence will choose \( x = 0 \). Yet, by choosing the lowest quality, the manager economizes on her managerial effort, \( C_M(0, q^*) – C_M(0, 0) \). In contrast, the private manager with positive residual rights will internalize part of the benefits from cost reduction. Because \( \psi < 1 \), the manager chooses a level of \( x \) according to the first order condition – \( \psi \partial C_P / \partial x – \partial C_M / \partial x = 0 \), which implies an effort to cut costs below the social optimum \( x^* \).

Denote as \( x(\psi) \) her (increasing) chosen level of effort to cut costs as a function of \( \psi \), and
$$
\psi c(\psi) = \psi C_P(x(\psi), 0) + C_M(x(\psi), 0)$$
as the total costs paid by the manager when quality is zero. When \psi approaches 1, the private manager internalizes all benefits from cost reduction and therefore \( c(\psi) \) approaches 0 as per our assumption that \( C_P(x^*, 0) = C_M(x^*, 0) = 0 \). Given our assumption that quality-reduction savings are independent of \( x \) denote as \( \Delta C_P = C_P(x, q^*) - C_P(x, 0) \) and \( \Delta C_M = C_M(x, q^*) - C_M(x, 0) \) the potential quality-reduction savings on production and managerial costs respectively for any given \( x \). \( \Delta C_P \) and \( \Delta C_M \) thus measure the extent of potential savings if the manager reduces quality.

**PB form.** Suppose that the distinctive wage that the supervisor receives (net of monitoring costs) is \( w_S = w > 0 \). The supervisor is offered a bribe \( \lambda \geq 0 \) to accept the lowest possible quality (\( q = 0 \)). In an infinitely repeated payoff flow with discount rate \( r > 0 \), the value that the supervisor receives is given by \( V_S^\beta = w + V_S^\beta/(1 + r) = w(1 + r)/r \) if high quality and \( V_S^0 = w + \lambda + (1 - \phi)V_S^0/(1 + r) = (w + \lambda)(1 + r)/(1 + r - \phi) \) if low quality (i.e. the supervisor accepts the bribe \( \lambda \) and still receives the distinctive wage in the next period with probability \( 1 - \phi \)). The supervisor will thus have incentives to accept the bribe if \( V_S^\beta \leq V_S^0 \) or \( \lambda \geq \phi w/r \). The public manager, in turn, receives \( V_M^{q^*} = w_M - C_M(0, q^*) + V_M^{q^*}/(1 + r) = [w_M - C_M(0, q^*)]/(1 + r) \) if high quality and \( V_M^0 = w_M - C_M(0, 0) - \lambda + (1 - \phi)V_M^0/(1 + r) = [w_M - C_M(0, 0) - \lambda]/(1 + r - \phi) \) if low quality (i.e. the manager bribes the supervisor and runs the risk of losing the distinctive wage with probability \( \phi \)). Define the gain from deviation from optimal quality, \( g \), as the difference between the short-term payoff of the public manager when she chooses \( q^* \) minus the payoff that she gets by maximizing her short-term payoff (in this case, \( q = 0 \)). Thus, \( g = \Delta C_M = C_M(0, q^*) - C_M(0, 0) \). Also, denote the short-term payoff from not deviating (i.e. from choosing \( q^* \)) as \( \pi^{q^*} = w_M - C_M(0, q^*) \). The manager will thus have incentives to bribe if \( V_M^{q^*} \leq V_M^0 \) or \( \lambda \leq g - \phi \pi^{q^*}/r \). In the set-up stage, competition in public labor markets guarantees that \( w = w_M - C_M(0, q^*) \) (i.e. the wage that the manager receives minus the effort to achieve high quality is equal to net wage of the
supervisor). Thus, \( \pi^u = w \). Because, as discussed before, the supervisor will only accept a minimum bribe such that \( \lambda \geq \varphi w/r \), we should expect that no bribe will thus be offered and accepted, and hence the optimal quality enforced, if \( g - \varphi \pi^u/r = \Delta C_M - \varphi w/r < \varphi w/r \), or

\[
\Delta C_M < 2\varphi \frac{w}{r}.
\]  

(a1)

**PPP form.** Now the manager is private and thus incurs both production and managerial costs. The private manager receives \( V_M^{\lambda^*} = \psi(f + \theta p - C_R(x(\psi), q^*)) - C_M(x(\psi), q^*) + \varphi V_M^{\lambda^*}/(1 + r) \) if high quality and \( V_M^0 = \psi(f + \theta p - C_R(x(\psi), 0)) - C_M(x(\psi), 0) - \lambda = f - \lambda \) if low quality (i.e. the private manager loses the contract if low quality and continues with probability \( \varphi \) if high quality). Now the private manager’s gains from the deviation allows her to economize on both managerial and production costs, the latter being a function of her residual rights. Thus, now \( g = \psi \Delta C_P + \Delta C_M = \psi C_R(x(\psi), q^*) - \psi C_R(x(\psi), 0) + C_M(x(\psi), q^*) - C_M(x(\psi), 0) \) and \( \pi^u = \psi(f + \theta p - C_R(x(\psi), q^*)) - C_M(x(\psi), q^*) \). The manager will then have incentives to bribe if \( V_M^{\lambda^*} \leq V_M^0 \) or \( \lambda \leq g - \varphi \pi^u/(1 - \varphi + r) \). As before, the supervisor will accept any bribe such that \( \lambda \geq \varphi w/r \). Thus, no bribe will be offered or accepted if \( g - \varphi \pi^u/(1 - \varphi + r) < \varphi w/r \). In the set-up stage, competition among service providers ensures a fee \( f \) and price \( p \) that is just sufficient to cover the private manager’s upfront costs, \( \psi k \), when high quality is delivered. That means that \( V_M^{\lambda^*} = \psi k \), which implies \( \pi^u = \psi k (1 - \varphi + r) \). Using this fact, bribing will not occur and hence the optimal quality will be self-enforced if

\[
\psi \Delta C_P + \Delta C_M < \varphi \left( \frac{w}{r} + \psi k \right). 
\]  

(a2)

**SE form.** Suppose that prices are given by \( p = B(q^*) - \varepsilon \), where \( \varepsilon \geq 0 \) represents customer surplus, and are set above production and managerial costs—i.e., \( p \geq C_P(x^*, q^*) + C_M(x^*, q^*) \). The private manager’s per period profits are given by \( \pi^u = \psi[B(q^*) - \varepsilon - C_P(x^*, q^*)] - C_M(x^*, q^*) \) and \( \pi^c = -\psi C_P(x^c, q^c) - C_M(x^c, q^c) \) in the unconstrained and constrained segments respectively. We can also instantly check that the per-period profit-maximizing
level of quality in this unconstrained segment will be \( q^u < q^* \), while in the constrained segment the manager will maximize her profits by choosing \( q^c = 0 \). To assess whether the optimal quality can be self-enforced, let us begin with the unconstrained segment. Denoting \( B^* = B(q^*) \), the private manager will deliver high quality in that segment if the long-term gain from choosing \( q^u = q^* \), given by \( \theta \{ \psi[B^* - \varepsilon - C_P(x(\psi), q^*)] - C_M(x(\psi), q^*) \}(1 + r)/r \), is not lower than the short-term gain from choosing low quality and not selling to the consumer again, which is given by \( \theta \{ \psi[B^* - \varepsilon - C_P(x^*, 0)] - C_M(x^*, 0) \} \). As in the PPP case, the extra total costs paid by the manager under optimal quality, \( \psi C_P(x(\psi), q^*) + C_M(x(\psi), q^*) - \psi C_P(x(\psi), 0) - C_M(x(\psi), 0) \), can be written as \( \psi \Delta C_P + \Delta C_M + \psi c(\psi) \). The last term derives from the fact that, when \( \psi < 1 \), the manager chooses a level of effort to cut costs that is lower than the optimal level. The manager will thus choose \( q_u = q^* \) if

\[
\psi \Delta C_P + \Delta C_M < \psi \left( B^* - \varepsilon - c(\psi) \right) \frac{1}{1 + r}.
\]

By catering to the constrained segment, the private manager will benefit from donations from the impact investor. Denote as \( \pi^{u,q^*} \) and \( \pi^{c,q^*} \) the per-period profits when optimal quality is chosen in the unconstrained and constrained segments respectively. If the manager chooses high quality in both segments, then she gets a long-term payoff of \( (1 + r)[\theta \pi^{u,q^*} + (1 - \theta)\pi^{c,q^*} + d]/r \). However, assuming that (a3) holds, the private manager can receive the donation \( d \) but renege on the delivery of optimal quality in the unconstrained segment and then focus on the unconstrained segment afterwards without the donation. Thus, by deviating, the manager gets a long-term payoff of \( \theta \pi^{u,q^*} + (1 - \theta)(\pi^{c,q^*} + g) + d + \theta \pi^{u,q^*}/r \), where \( g = \psi \Delta C_P + \Delta C_M \) is the short-term gain from economizing on quality in the constrained segment. Thus, the manager will not deviate if \( r(1 - \theta)g < (1 - \theta)\pi^{c,q^*} + d \). The impact investor will donate if entry by the private manager is not profitable without the donation, i.e., if \( \theta \pi^{u,q^*} + (1 - \theta)\pi^{c,q^*} < \psi rk \). Competition among private managers for the donation will thus yield a donation that will make the stream of long-term profits equal to \( \psi rk \). That is, \( d = \)

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\[\psi_{rk} - \theta \pi^u - (1 - \theta) \pi^e \psi^s.\] Recalling that \(\theta \pi^e \psi^s = \theta [\psi(B^* - \varepsilon - C_P(x(\psi), q^*)) - C_M(x(\psi), q^*)]\)

\[= \theta [\psi(B^* - \varepsilon) - \psi \Delta C_P - \psi C(x(\psi))],\] then \(d = \psi_{rk} - \theta [\psi(B^* - \varepsilon) - \psi \Delta C_P - \psi C(x(\psi))] - (1 - \theta) \pi^e \psi^s\) and therefore the manager will not deviate if \(r(1 - \theta)g < \psi_{rk} - (1 - \theta) \pi^e \psi^s - \theta [\psi(B^* - \varepsilon) - \psi \Delta C_P + \Delta C_M + \psi C(x(\psi))].\) Because \((1 - \theta) \pi^e \psi^s = (1 - \theta) \{\psi [-C_P(x(\psi), q^*)] - C_M(x(\psi), q^*)\} = (1 - \theta) \{\psi \Delta C_P + \Delta C_M - \psi C(x(\psi))\},\) the last inequality becomes

\[\psi \Delta C_P + \Delta C_M < \psi \frac{\psi_{rk} - \theta [B^* - \varepsilon - c(\psi)]}{r - \theta (1 + r)}. \tag{a4}\]

Comparing the left-hand side of inequality (a1) to the left-hand side of inequalities (a2)-(a4), we clearly see that managerial costs equally affect all forms; however, compared to the PB form, the PPP and SE forms are more difficult to self-enforce given the term \(\psi \Delta C_P,\) which increases with the extent of residual rights captured by the manager. \(\blacksquare\)

**Proof of Proposition 2**

Combining (a3) and (a4), and denoting as \(\Pi^u = \psi \theta(B^* - \varepsilon - c(\psi))\) as an indicator of the revenues captured by the private manager the unconstrained segment as a function of \(\psi\) (adjusted for the cost “inefficiency” when there is suboptimal effort to cut costs, \(c(\psi)\)), we conclude that the SE manager will choose optimal quality in both segments if both inequalities hold, or

\[\theta(1 + r)(\psi \Delta C_P + \Delta C_M) < \Pi^u < \psi_{rk} - (\psi \Delta C_P + \Delta C_M)(r - \theta (1 + r)). \tag{a5}\]

Inequality (a5) indicates that value capture in the unconstrained segment must be sufficiently high to guarantee self-enforcement of optimal quality in that segment, but also sufficiently small to support the self-enforcement of the relational contract with the impact investor in the constrained segment. \(\blacksquare\)

**Proof of Proposition 3**
Comparing the high-hand sides of inequalities (a1) and (a2), we see that an increase in \( \varphi \) will favor the self-enforcement of the PPP form to a large extent than the PB form when 

\[ \frac{w}{r} + \psi k > 2 \frac{w}{r} \text{ or } \psi k > \frac{w}{r}. \]

**Proof of Proposition 4**

From the proof of Proposition 1, the private manager will profitably cater to both unconstrained and constrained segments if 

\[ d \geq \psi rk - \theta \pi^* + (1 - \theta) \pi - \theta \psi(B^* - \epsilon) + \psi \Delta C_P + \Delta C_M + \psi c(\psi). \]

Yet the impact investor should afford this minimal amount. From Table 1, we know that they receive a payoff of 

\[ (1 - \psi)R - d + s \]

where 

\[ R = \theta(p - C_P) + (1 - \theta)(-C_P) = (1 - \psi)[\theta(B^* - \psi) - \Delta C_P - c(\psi)] - d + s, \]

which must be higher or equal to the return on the amount invested, \( r^l(1 - \psi)k \). Thus, for this payoff to be nonnegative we need 

\[ d \leq (1 - \psi)[\theta(B^* - \psi) - \Delta C_P - c(\psi) - r^l k] + s. \]

Combining these two inequalities, the impact investor will be able to support the SE only if 

\[ \left[ \theta(B^* - \psi) - \Delta C_P - \Delta C_M - c(\psi) \right] - [\psi r + (1 - \psi)r^l]k + s \geq 0 \]

(a8)

The first term in brackets indicates the “natural” profitability of the SE and increases with the fraction of unconstrained beneficiaries, \( \theta \). Thus, a high portion of unconstrained beneficiaries will facilitate funding of the SE. Managerial rights will also tend to reduce the production inefficiency term, \( c(\psi) \); and, given the right-hand side of (a3), will increase long-term incentives to deliver optimal quality. The second term in brackets represents the weighted cost of capital as a function of residual managerial rights. When \( \theta \) is small, supporting the SE will require higher funding from impact investors (i.e. lower \( \psi \)) accepting a below-market return rate (i.e. \( r^l < r \)). Funding can also be facilitated if the investor receives government transfers, \( s \).

**Proof of Proposition 5**

To facilitate the analysis, now I will adopt specific functional specifications for the benefit and cost functions. Specifically, 

\[ B(q) = \beta_0 + \beta q \]

where \( \beta_0, \beta > 0 \); 

\[ C_P(x, q) = \frac{1}{4} - x + \]
\(\gamma q^2\) where \(\gamma > 0\); \(C_M(x, q) = x^2 + q^2\). \(\beta\) and \(\gamma\) are particularly important parameters; they measure respectively sensitivity of benefits and costs to quality. From (1), the social value function becomes

\[ S = \beta_0 + \beta q - \frac{1}{4} + x - x^2 - (1 + \gamma)q^2 - rk. \]  
(a7)

The optimal effort levels to cut costs and increase quality are now expressed in closed form as \(x^* = \frac{1}{2}\) and \(q^* = \frac{1}{2}\beta/(1 + \gamma)\). With this functional specification, we are aligned with our previous normalization that \(C_P(x^*, 0) = C_M(x^*, 0) = 0\).

**PB form.** If inequality (a1) is met, then there is no need of an incentive contract because the optimal quality will be self-enforced with the relational contract. I will thus focus on the more interesting situation where self-enforcement will be difficult. The public manager is now subject to a linear contract with a fixed payment \(w_0\) and variable compensation \(b\mu q\), which implies that she receives a payoff of \(w_M - x^2 - q^2 = w_0 + b\mu q - x^2 - q^2\) in each period. The public manager thus optimizes by setting \(x = 0\) and \(q = \frac{1}{2}\beta\mu\).

Substituting these values into (a7) and noticing that \(\sigma^2 = E(\mu^2) - E(\mu)^2 = E(\mu^2) - 1\), the expected social value is given by \(E(S) = \beta_0 + \frac{1}{2}\beta b - \frac{1}{4} - \frac{1}{4}(1 + \gamma)b^2(1 + \sigma^2)\). The optimal bonus that maximizes \(E(S)\) is therefore

\[ b_{PB^*} = \frac{\beta}{(1 + \gamma)(1 + \sigma^2)}. \]  
(a8)

**PPP form.** Keeping the fixed payment components \(f\) and \(p\) as before (see the Proof of Proposition 1), now the private manager will receive a variable compensation of \(b\mu q\), thus receiving a payoff equal to \(b\mu q + \psi(f + \theta p - \frac{1}{4} + x - \gamma q^2) - x^2 - q^2\). The private manager thus optimizes by setting \(x = \frac{1}{2}\psi < x^*\) and \(q = \frac{1}{2}\beta\mu(1 + \psi\gamma)\). The expected social value is then \(E(S) = \beta_0 + \frac{1}{2}\beta b(1 + \psi\gamma) - \frac{1}{4}(1 - \psi) - \frac{1}{4}b^2(1 + \sigma^2)(1 + \gamma)(1 + \psi\gamma)^2\). The optimal bonus that maximizes \(E(S)\) is therefore

\[ b_{PPP^*} = \frac{\beta(1 + \psi\gamma)}{(1 + \gamma)(1 + \sigma^2)}. \]  
(a9)
In both cases, given the optimal bonus, the expected quality will be $E(q) = E(b\mu/2) = \frac{1}{2}\beta/(1 + \gamma)(1 + \sigma^2)$ which is strictly lower than the social optimal $q^* = \frac{1}{2}\beta/(1 + \gamma)$ due to measurement error.

**SE form.** This is similar to the PPP case, except for the fact that the incentive contract will only apply to the faction $1 - \theta$ of constrained beneficiaries and will depend on the extent of residual rights captured by the manager, $\psi$. Namely, the manager receives a fixed donation component, $d_0$, plus a variable term as a function of the size of the unconstrained population, $(1 - \theta)b\mu q^\prime$. The private manager maximizes its long-term profit stream where per period profits are given by

$$\theta\{\psi[\beta(B(q^u) - \varepsilon)] - \frac{1}{4} + x^u + \gamma(q^u)^2\} - (x^u)^2 - (q^u)^2\} + d_0 + (1 - \theta)\{b\mu q^\prime + \psi[-\frac{1}{4} + x^c + \gamma(q^c)^2\} - (x^c)^2 - (q^c)^2\}.$$  

Thus the manager will choose $x^u = x^c = \frac{1}{2}\psi < x^* \text{ and } q^u = q^* = \text{ if (a3) holds.}$  

In the constrained segment, the incentive compatible choice induced by the contract will be $q^u = \frac{1}{2}b\mu/(1 + \psi\gamma)$. The optimal bonus that will maximize $E(S)$ will thus be functionally similar to the bonus of the PPP form:

$$b^{SE*} = \frac{\beta(1 + \psi\gamma)}{(1 + \gamma)(1 + \sigma^2)}. \quad (a10)$$  

Thus, comparing (a8) to (a9) and (a10), we immediately see that the optimal bonus is highest in the PPP form, followed by the SE with high residual rights (high $\psi$), the SE with low residual rights (low $\psi$), and the PB form.

**Proof of Proposition 6**

This proposition also follows directly from the comparative examination of (a8), (a9) and (a10). Denoting $1/(1 + \sigma^2)$ as the precision in impact measurement, a unit increase in precision will increase the bonus by $\beta(1 + \psi\gamma)/(1 + \gamma)$ in the PPP and SE forms, and $\beta/(1 + \gamma)$ in the PB form. A reduction in $\psi$ will make the private bonus progressively similar to the PB form.

**Proof of Proposition 7**
I start by examining the self-enforcing inequality constraints in each case, as a function of the optimal bonus indicated by (a8) and (a9):

**PB form.** Let us apply the same logic as in the proof of Proposition 1. No bribing will be feasible if \( E(g) - \varphi E(\pi^q) / r < \varphi w / r \). By choosing \( x = 0 \), the public manager gets a short-term payoff of \( w_0 + b\mu q - q^2 \). The short-term gain from deviation, \( g \), is the difference between the short-term payoff when \( q = q^* = \frac{1}{2}b\mu/(1 + \gamma) \) and the short-term payoff when quality is incentive-compatible, i.e., \( q = \frac{1}{2}b\mu \). Given the optimal bonus given by (a8), the expected gain from deviation is now

\[
E(g) = \left[ \frac{\sigma^2}{1 + \sigma^2} \right] \left[ \frac{\frac{1}{4}b^2(1 + \gamma)^2}{(1 + \gamma)(1 + \psi\gamma)} \right].
\]

The term \( \frac{\frac{1}{4}b^2(1 + \gamma)^2}{(1 + \gamma)(1 + \psi\gamma)} \) corresponds to \( \psi \Delta C_P + \Delta C_M \), i.e., the difference in production and managerial costs incurred by the manager when \( q = q^* \) and \( q = 0 \), i.e., \( (1 + \psi\gamma)q^2 \).

Comparing (a11) to (a1), because the term \( \sigma^2/(1 + \sigma^2) \) is strictly lower than 1, we conclude that the presence of an (imperfect) incentive contract will actually help self-enforce high quality, precisely because it will reduce the gains from deviation.

**PPP form.** Also as shown in the proof of Proposition 1, no bribing will be feasible if \( E(g) - \varphi E(\pi^q)/(1 - \varphi + r) < \varphi w/r \). Given the incentive-compatible choice \( x = \frac{1}{2}\psi \), the private manager’s short-term payoff is \( b\mu q + \psi(f + \theta p) - \frac{1}{2}\psi(1 - \psi) - (1 + \psi\gamma)q^2 \). The expected short-term gain from deviation is now \( E(g) = \left[ \sigma^2/(1 + \sigma^2) \right] \left[ \frac{\frac{1}{4}b^2(1 + \psi\gamma)^2}{(1 + \gamma)^2} \right] \). The term \( \frac{\frac{1}{4}b^2(1 + \psi\gamma)^2}{(1 + \gamma)^2} \) corresponds to \( \psi\Delta C_P + \Delta C_M \), i.e., the difference in production and managerial costs incurred by the manager when \( q = q^* \) and \( q = 0 \), i.e., \( (1 + \psi\gamma)q^2 \).

Competition among private service providers will lead \( f \) and \( p \) to be set such that \( E(\pi^q) = \psi k(1 - \varphi + r) \). Thus, optimal quality will be self-enforced in the PPP form if
Comparing (a12) to (a2), we again see that the incentive contract decreases the left-hand side of the inequality and hence facilitates the self-enforcement of optimal quality. It is also straightforward to see that a reduction in measurement error will reduce the left-hand side of inequality (a11) to a higher extent than the left-hand side of inequality (a10).

**SE form.** From the proof of Proposition 1, the private manager will choose high quality in the constrained segment if

\[
(1 - \theta)E(g) < (1 - \theta)E(\pi_{c,q^*}) + d_0.
\]

The expected gain from short-term deviation, \( g \), is identical to the PPP form except that it only applies to a fraction \((1 - \theta)\) of the population, i.e.,

\[
(1 - \theta)E(g) = (1 - \theta)\sigma^2/(1 + \sigma^2)[\nu(1 + \sigma^2)/(1 + \gamma^2)]
\]

\[
= (1 - \theta)\sigma^2/(1 + \sigma^2)\left[\psi(C_P + C_M) + \psi(C_P - C_M) - \psi(c)\right].
\]

The fixed portion of the donation, \( d_0 \), will be set so as to guarantee profitable entry with high quality chosen in both segments, that is,

\[
E\{d_0 + \theta\pi_{c,q^*} + (1 - \theta)\pi_{c,q^*}\} = E\{d_0 + \theta[\psi(B^* - \epsilon) - \psi(C_P - C_M - \psi c)] + (1 - \theta)\pi_{c,q^*}\} = \psi rk.
\]

Thus, \((1 - \theta)E(\pi_{c,q^*}) + d_0 = \psi rk - \theta[\psi(B^* - \epsilon) - \psi(C_P - C_M - \psi c)]\). Inequality \((1 - \theta)E(g) < (1 - \theta)E(\pi_{c,q^*}) + d_0\) then becomes

\[
(\psi C_P + \psi C_M)\frac{\sigma^2}{1 + \sigma^2} < \psi\frac{rk - \theta[B^* - \epsilon - c]r - \theta(1 + r - \frac{1}{\sigma^2})}{r - \theta(1 + r - \frac{1}{\sigma^2})}.
\]

which, combined with (a3), leads to the following condition to guarantee self-enforcement of high quality in both segments:

\[
\theta(1 + r)(\psi C_P + \psi C_M) < \Pi^u < \psi rk - (\psi C_P + \psi C_M)\frac{\sigma^2[r - \theta(1 + r)] - \theta}{1 + \sigma^2}.
\]

Different from the previous cases, now the effect of the incentive-compatible contract depends on parameter \( \theta \). Namely, the right-hand side of inequality (a14) will decrease more as a function of \( \sigma^2 \) when the size of the constrained segment is relatively large (i.e. a low \( \theta \)).

**Proof of Proposition 8**
I will examine how an increase in $\beta$ and a decrease in $\gamma$ change the self-enforcement constraints for each organizational form.

**PB form.** From the Proof of Proposition 7, we know that the self-enforcement of high quality will be feasible in the PB form if $E(g) - \varphi E(\pi^\phi) < \varphi w_l/r$, where $E(g) = [\sigma^2/(1 + \sigma^2)][1/4\beta^2/(1 + \gamma)^2]$. By choosing high quality, the public manager gets $w_0 + b\mu q^* - (q^*)^2$ in each period. Given the optimal bonus from (a8) and the fact that $q^* = \frac{1}{2}\beta/(1 + \gamma)$, we get that $E(\pi^\phi) = w_0 + [(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2/(1 + \gamma)^2]$. Thus, the self-enforcing constraint becomes $[(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2/(1 + \gamma)^2] < (\varphi/\psi)(w_0 + [(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2/(1 + \gamma)^2]) + \varphi w_l/r$. Deriving the left- and right-hand sides of the constraint by $\beta$ and then by $-\gamma$, in both cases we learn that the right-hand side will grow larger than the left-hand side if

$$r < \frac{\varphi(1 - \sigma^2)}{\sigma^2}. \quad (a15)$$

**PPP form.** Also from the Proof of Proposition 7, the self-enforcement constraint in the PPP form is $E(g) - \varphi E(\pi^\phi)/(1 - \varphi + r) < \varphi w_l/r$, where $E(g) = [\sigma^2/(1 + \sigma^2)][1/4\beta^2(1 + \psi\gamma)/(1 + \gamma)^2]$. The per-period profit of the private manager if she chooses high quality is $b\mu q^* + \psi(f + \theta p) - \frac{1}{2}\psi(1 - \varphi) - (1 + \psi\gamma)(q^*)^2$. Given the optimal bonus from (a9), $E(\pi^\phi) = \psi(f + \theta p) + [(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2(1 + \psi\gamma)/(1 + \gamma)^2]$. Thus, the self-enforcing constraint becomes $[(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2(1 + \psi\gamma)/(1 + \gamma)^2] < [\varphi/(1 - \varphi + r)](\psi(f + \theta p) + [(1 - \sigma^2)/(1 + \sigma^2)][1/4\beta^2(1 + \psi\gamma)/(1 + \gamma)^2]) + \varphi w_l/r$. Now marginal increases in $\beta$ and $-\gamma$ will facilitate self-enforcement if

$$r < \frac{\varphi - \sigma^2}{\sigma^2}. \quad (a16)$$

Comparing the right-hand sides of (a15) and (a16), as $\varphi$ approaches 1, the right-hand side of all constraints will increase and approach $1/(1 + r)$. However, an increase in $\varphi$ will increase the minimum $r$ to guarantee self-enforcement to a higher degree in the PPP form (a16) than in the PB form (a15). We can also immediately check that all constraints will become non-binding as $\sigma^2$ approaches zero.
Proof of Proposition 9

Let us start by the unconstrained segment. The self-enforcement constraint in the relational contract with the impact investor is \( r(1 - \theta)E(g) < (1 - \theta)E(\pi^{c,q^*}) + d_0 \). \( E(g) \) and \( E(\pi^{c,q^*}) \) are identical to the PPP case (see the proof of Proposition 8). Thus, marginal increases in \( \beta \) and \( -\gamma \) will facilitate self-enforcement if

\[
r < \frac{1 - \sigma^2}{\sigma^2}.
\]

(a17)

Thus, again, the constraint will become non-binding as \( \sigma^2 \) approaches zero. The self-enforcement constraint in the unconstrained segment, in turn, is given by (a3), which, substituting terms, will be \([\frac{1}{2} \beta \gamma (1 + \gamma) / (1 + \gamma)^2] < \psi [\beta_0 + \frac{1}{2} \beta^2 (1 + \gamma) - \epsilon - \psi c(\psi)] / (1 + r)\].

Deriving the left- and right-hand sides with respect to \( \beta \), self-enforcement will be facilitated by a marginal increase in \( \beta \) if

\[
r < \frac{2\psi + \psi \gamma - 1}{1 + \psi \gamma},
\]

(a18)

and similarly with respect to \( \gamma \) if

\[
r < \frac{3\psi + \psi \gamma - 2}{\psi \gamma - \psi + 2}.
\]

(a19)

We can check that the right-hand sides of (a18) and (a19) increase with \( \psi \), thus increasing the critical interest rate to support self-enforcement. In fact, as \( \psi \) approaches 1, both constraints approach \( r < 1 \).

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Figure 1. Organizational modes for social value creation (thick lines denote the boundaries of the public sector)

Public sponsorship

Government

Supervisor (public)

Manager (public)

Government

Supervisor (public)

Manager (public)

Government

Impact investor

Private management

Public bureaucracy (PB)

Public-private partnership (PPP)

Social (private) enterprise (SE)

Figure 2. Sequence of decisions and actions

Set-up stage

Public bureaucracy (PB) and Public-private partnership (PPP)

$G$ offers contract

$M$ and $S$ accept or reject contract

$G$ pays

$M$ and $S$ bribe to $S$

$M$ offers or rejects bribe

Upfront sunk investment

Operational stage

$M$ delivers service

Social enterprise (SE)

$I$ funds $M$

$M$ sets price for $B^u$

$B^e$ purchases service; $B^r$ receives service

$M$ can cater again to $B^e$ and $B^r$ funded by $I$

Note. $G =$ government; $B =$ beneficiary ($B^u =$ unconstrained, $B^r =$ constrained); $M =$ manager (public or private); $S =$ supervisor (public); $I =$ impact investor (private)
Table 1. Appropriation of social value in each period (excluding upfront investments)

<table>
<thead>
<tr>
<th></th>
<th>Public bureaucracy (PB)</th>
<th>Public-private partnership (PPP)</th>
<th>Social (private) enterprise (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beneficiaries</strong></td>
<td>$B - t$</td>
<td>$\theta(B^u - p) + (1 - \theta)B^c - t$</td>
<td>$\theta(B^u - p) + (1 - \theta)B^c - t$</td>
</tr>
<tr>
<td><strong>Government</strong></td>
<td>$t - C_p - w_S - w_M$</td>
<td>$t - f - w_S$</td>
<td>$t - s$</td>
</tr>
<tr>
<td><strong>Supervisor</strong></td>
<td>$w_S$</td>
<td>$w_S$</td>
<td></td>
</tr>
<tr>
<td><strong>Investor</strong></td>
<td>$(1 - \psi)(f + \theta p - C_P)$</td>
<td>$(1 - \psi)R - d + s$ where $R = \theta(p - C_P^u) + (1 - \theta)(-C_P^c)$</td>
<td></td>
</tr>
<tr>
<td><strong>Public manager</strong></td>
<td>$w_M - C_M$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Private manager</strong></td>
<td>$\psi(f + \theta p - C_P) - C_M$</td>
<td>$\psi R + d - \theta C_M^u - (1 - \theta)C_M^c$</td>
<td></td>
</tr>
</tbody>
</table>


Table 2. Conditions that increase the potential of each organizational mode to increase social value

<table>
<thead>
<tr>
<th>Condition / Capability</th>
<th>Public bureaucracy (PB)</th>
<th>Public-private partnership (PPP)</th>
<th>Social (private) enterprise (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Profit-quality tradeoff</strong></td>
<td>Large potential savings associated with quality reduction.</td>
<td>Small to moderate potential savings associated with quality reduction. A condition involving moderate savings can be supported when private managers have low residual rights.</td>
<td>Small to moderate potential savings associated with quality reduction. A condition involving moderate savings can be supported when private managers have low residual rights. If the segment of constrained customers is relevant, there should also be moderate profitability in the unconstrained segment especially when private managers have high residual rights.</td>
</tr>
<tr>
<td><strong>Marketability of services</strong></td>
<td>Low marketability, that is, a high portion of constrained customers.</td>
<td>Low to moderate marketability.</td>
<td>Moderate to high marketability, that is, a high portion of unconstrained customers.</td>
</tr>
<tr>
<td><strong>Institutional conditions</strong></td>
<td>High institutional development with respect to how the internal (public) labor contract is responsive to managerial performance. This effect is enhanced when public managers receive distinctive wages conditional on past performance.</td>
<td>High institutional enforcement with respect to how the internal (public) labor contract is responsive to managerial performance and how the external (private) contract is protected from opportunistic breach. This effect is enhanced when private managers have high residual rights and incur transaction-specific upfront investments.</td>
<td>Presence of impact-oriented investors with high monitoring capability. When the segment of constrained customers is relevant, there should be moderate residual rights and impact investors should also accept a reduction in financial return and/or receive transfers from the government.</td>
</tr>
<tr>
<td><strong>Measurability of quality (social benefits or impact)</strong></td>
<td>High error in the measurement of quality. Moderate error can be supported when private managers have lower residual rights.</td>
<td>Low to moderate error in the measurement of quality. Moderate error can be supported when private managers have lower residual rights.</td>
<td>Low to moderate error in the measurement of quality when the segment of constrained customers is relevant. Moderate error can be supported with lower managerial residual rights.</td>
</tr>
<tr>
<td><strong>Development of heterogenous capabilities</strong></td>
<td>Benefit-enhancing and cost-reducing capabilities emerge when institutions are fairly developed and when there is high measurement precision in pay-for-quality contracts.</td>
<td>Benefit-enhancing and cost-reducing capabilities emerge when institutions are highly developed and when there is high measurement precision in pay-for-quality contracts.</td>
<td>In the unconstrained segment, superior capabilities emerge when managers have high residual rights. In the constrained segment, capability development is facilitated with improved measurement precision in pay-for-quality contracts.</td>
</tr>
</tbody>
</table>