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**Outsourcing of Public Service Provision:
When is it More Efficient?**

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OUTSOURCING OF PUBLIC SERVICE PROVISION: WHEN IS IT MORE EFFICIENT?

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Abstract: We set up a model of public service provision to study the factors determining whether outsourcing to for-profit and not-for-profit producers of social services will enable a local government to achieve a given service quality at lower budgetary cost. Outsourcing provides an incentive for producers to lower quality in order to reduce costs. The cost reductions per se tend to be efficiency-improving, but to prevent a deterioration of service quality policy makers must spend more resources on monitoring quality. Moreover, the greater effort exerted under private service provision will have to be compensated by higher factor rewards. Hence public in-house provision may be more cost-efficient than outsourcing. This is particularly likely to be the case when the quality of the service is difficult to measure so that marginal monitoring costs are high. The paper shows that these results emerge both when politicians are benevolent and when they distribute rents in exchange for political support. We also show that risk aversion and uncertainty about the potential for cost savings implies a bias against outsourcing.

Keywords: Outsourcing, public goods provision, public sector reform

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OUTSOURCING OF PUBLIC SERVICE PROVISION: WHEN IS IT MORE EFFICIENT?

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1. The problem

Should publicly funded services to consumers be provided in-house by government institutions, or should service provision be outsourced to private producers? This is a hot issue in many countries where governments are experimenting with outsourcing in an attempt to reduce the cost of public service provision.

The economic debate on outsourcing and privatization was stimulated by a widely quoted empirical study by the World Bank (1995) which indicated that privatization typically lowers the cost of delivering publicly funded goods and services. This finding is also one of the main messages in the survey by Megginson and Netter (2001) of the privatization experiments undertaken by governments throughout the world since the early 1980s. Moreover, it is consistent with a number of theoretical studies predicting that since the workers and managers of state-owned enterprises usually do not benefit personally from efforts at cost reduction, government-owned enterprises will tend to have higher unit costs than private enterprises (see the survey by Shleifer (1998)).

But while private providers of public services may have a stronger incentive to keep down costs, some cost savings may be achieved by reducing the quality of the service delivered. At least this may happen if quality is difficult to measure and define in a contract which can serve as the basis for legal action. Indeed, those who are sceptical against outsourcing essential services such as the provision of health care and care for the elderly are often concerned that private provision will lead to deteriorating service quality because quality in these areas is difficult for outside regulators to monitor. Hence the crucial question is whether outsourcing can reduce the cost of providing a *given* quality of public services when quality is costly to monitor? This is the issue addressed in the present paper.

The incomplete contracting framework of Hart, Shleifer and Vishny (1997) implies

that when quality improving and cost reducing effort is non-contractible, outsourcing of public services will always lead to lower costs, whereas quality may be either higher or lower than under public provision. This suggests that the cost of providing a given quality level will not necessarily be lower under outsourcing.

In the model developed in the present paper the government may control the quality of public services by an appropriate choice of monitoring effort. The model therefore allows a systematic comparison of the budgetary costs of providing a given quantity and quality of public services under alternative organizational forms such as public in-house provision, provision by private for-profit producers, and provision by private not-for-profit organizations. The contribution of the paper is to offer a systematic account of the factors which will determine whether one or the other organizational form is more efficient. Contrary to the claim made by Shleifer (1998) that private provision of public services will almost always be more efficient, our model suggests that there may be plausible cases where public in-house provision is preferable.

The first part of the analysis assumes that politicians are benevolent, seeking to minimize the budgetary cost of providing a given service quality. This analysis points to a previously neglected factor which may make outsourcing less attractive: when the producers of public services have alternative employment opportunities and cost reductions require effort, the cost savings achieved under private provision may have to be compensated by higher factor rewards to producers, thus reducing the likelihood that the overall budgetary cost will be lower under outsourcing.

The subsequent part of the paper assumes that politicians attempt to maximize political support partly by keeping down the tax cost of public service provision and partly by distributing rents to public service producers. In equilibrium this vote-maximizing behavior generates positive rents to service providers, but the analysis suggests that this is unlikely to overthrow the qualitative results derived on the assumption of benevolent politicians.

Finally, the paper argues that in so far as outsourcing creates the preconditions for competition among alternative service providers, it may eliminate rent-seeking and generate efficiency gains even if a switch to private provision does not in itself guarantee improved efficiency.

Although inspired by some of the ideas of Hart, Shleifer and Vishny (1997), the model presented here is not a genuine incomplete contracting model. In that type of model it is typically assumed that product quality is not verifiable in a way that can serve as the basis for sanctions enforced by the legal system. By contrast, the model in this paper assumes that regulators can measure service quality by incurring monitoring costs and can impose sanctions on producers in case quality is found to be inferior. However, these sanctions need not be monetary fines imposed by the legal system; they could also take the form of reduced career opportunities for service workers or managers; suspension of normal pay rises; less attractive working conditions; moral disapproval imposing a loss of reputation on producers, etc. By relying on such informal sanctions, the regulator may not have to provide formal legal evidence to be able to punish inferior quality performance. Moreover, our model can encompass the special case where monitoring costs become so high that, for all practical purposes, the regulator cannot really sanction bad quality performance, as assumed in the incomplete contracting literature.

The fact that regulators cannot observe service effort and can only measure service quality at a cost reflects that they have less information on production conditions than the service producers. In this sense the present model stresses the asymmetry of information emphasized in the theory of regulation developed by Laffont and Tirole (1993).

Section 2 sets up the basic model of public service provision underlying most of the discussion. Section 3 analyzes producer behavior under public provision, private for-profit provision, and private not-for-profit provision, and section 4 compares the budgetary costs of service provision under the three alternative organizational forms, assuming a benevolent government. Section 5 considers the implications of uncertainty and risk aversion, with a special view to the potential role of non-profit organizations; section 6 analyzes whether rent-seeking behavior modifies the previous results, and section 7 discusses outsourcing as a means of fostering competition in public service provision. In section 8 we set up an extended model of public service provision to show that the main result of paper remains valid under more complex organizational forms where regulators must monitor managers who in turn must monitor workers. The findings of the paper are summarized in section 9.

2. A simple model of public service provision

The client and the service worker

Suppose the government has decided to fund the provision of some social service such as health care, child care, home care, or long term care for the elderly. The representative client is served by a representative service worker who may be a public sector employee in case of public in-house provision or a private entrepreneur (producing for profit or not-for-profit) in the case of outsourcing. In all these cases the service worker receives remuneration for one unit of time. A fraction s of this time period is spent on actually serving the client, so the utility of the client is given by the concave utility function

$$u = u(s), \quad u' > 0, \quad u'' < 0. \quad (2.1)$$

The service worker may also spend a fraction e of his time on efforts to reduce the non-labor cost of providing the service. The remaining time $1 - s - e$ is spent on 'coffee breaks' or other pleasure activities generating utility on the job. Since the public policy maker/regulator cannot monitor the work process, she cannot control how the service worker decides to allocate his time. However, at random intervals the regulator pays a visit to the client to check his condition. If the client's well-being is found to fall below some required standard \bar{u} , the regulator can impose some form of utility-decreasing sanction (pecuniary or non-pecuniary) on the service worker.¹ We therefore assume that the service worker's welfare is given by the utility function

$$U^i = I^i + f(1 - s - e) - a(\bar{u} - u), \quad f' > 0, \quad f'' < 0, \quad a > 0, \quad (2.2)$$

where I^i is the real income of the worker under the organizational form i , $f(1 - s - e)$ is the worker's (money metric) utility from 'coffee breaks', and $a(\bar{u} - u)$ is the (money metric) expected disutility from sanctions imposed by the regulator. This specification assumes that the sanction is more severe the poorer the condition of the client, and that the service worker may be rewarded in case the client's welfare exceeds the target level

¹We take $u = u(s)$ as a measure of the worker's contribution to the general well-being of the client rather than as a broad measure of the client's 'happiness'. The assumption that the regulator can observe u by inspecting the client is our attempt to formalize the idea that, by supervising the specific conditions for which the service worker is responsible, the regulator can roughly judge how the worker has contributed to the welfare of the client.

\bar{u} . The variable a rises with the monitoring effort of the regulator and the severity of the sanction, but a positive value of a may also reflect that the service worker is altruistic towards the client. For example, we may assume that $a = pa^s + a^a$, where p is the probability that the regulator inspects the condition of the client, a^s is an exogenous penalty rate, and a^a is the worker's exogenous degree of altruism. Thus, by spending more resources on monitoring, the government can raise a via an increase in p .

Under public in-house provision ($i = p$) the worker's real income I^p is simply his real wage R^p :

$$I^p = R^p. \quad (2.3)$$

Under private for-profit provision ($i = \pi$) the worker is an entrepreneur who receives a fixed payment R^π per client from the government and bears the non-labor cost $C - g(e)$ of producing the service, where C is a fixed cost element, and $g(e)$ indicates cost-savings which depend positively on the worker's effort. Thus the producer's real income I^π under for-profit provision is given by his profit which is

$$I^\pi = R^\pi - [C - g(e)], \quad g(0) = 0, \quad g' > 0, \quad g'' \leq 0. \quad (2.4)$$

Alternatively, the service worker may be a not-for-profit entrepreneur ($i = n$) who cannot withdraw any cash profits from the firm but who may use any surplus on utility-generating perquisites P . Following Glaeser and Shleifer (2001), we assume that perquisites are imperfect substitutes for cash so that one euro spent on perquisites is only equivalent to $d < 1$ units of cash income. If the non-profit firm receives the payment R^n from the government and must bear the non-labor cost of production, the surplus available for perquisites is $R^n - [C - g(e)]$ which is equivalent to a real cash income of $d[R^n - C + g(e)]$. Thus we may write²

$$I^n = d[R^n - C + g(e)], \quad 0 < d < 1. \quad (2.5)$$

The specifications above capture the idea that there is a trade-off between providing service quality and keeping down costs: to achieve lower costs, the service producer

²In practice a non-profit organization may be allowed to pay out wages. If α is the share of the surplus which can be taken out as wages, and the remaining surplus is spent on perquisites which have a money metric utility value of \hat{d} per euro, our parameter d may be specified as $d = \alpha + \hat{d}(1 - \alpha)$. With $0 < \hat{d} < 1$, an increase in α will then raise d .

must spend more effort for this purpose, but this will reduce the attractiveness of his workplace unless he devotes less time to servicing the client. As a practical example, a service producer could choose to provide home care to a larger number of clients. *Ceteris paribus*, this would reduce the production cost per client served, but if clients live in different locations, the worker would have to spend more time on transportation, leaving less time to service each client.

Regardless of the organizational form, we assume that the service worker/entrepreneur has an outside option which enables him to attain the utility level \bar{U} if he were to seek employment or start up a business elsewhere in the economy. The public policy maker/regulator must therefore respect the recruitment constraint

$$U^i \geq \bar{U}. \quad (2.6)$$

Since the type of social services considered here are typically funded by local governments, we assume that the policy-making jurisdiction is too small relative to the size of the economy to be able to affect the value of the outside option significantly. Hence we treat \bar{U} as exogenously given.

The public budget

The local government's budgetary cost B of funding the social service is

$$B^i = R^i + c(a) + D[C - g(e)], \quad (2.7)$$

$$c' > 0, \quad c'' \geq 0, \quad D = 1 \text{ for } i = p, \quad D = 0 \text{ otherwise,}$$

where D is a dummy variable and $c(a)$ is the cost of monitoring the quality of the service provided (the cost of observing the condition of the client). Equation (2.7) reflects that when the government provides the service in-house, it must bear the non-labor costs of production, whereas these costs are borne by the private service providers under outsourcing.

The functions $g(e)$ and $c(a)$ are only defined for non-negative values of e and a , respectively. The assumption that $c'(a) > 0$ reflects that, for a given degree of altruism and a given disutility from the sanction, the regulator can only achieve an increase in a by spending more resources on monitoring, which is costly. An important assumption

in the analysis below is that a change of organizational form does not in itself affect the cost functions $c(a)$ and $g(e)$.

Let us now consider the incentives for time allocation under alternative organizational forms.

3. Producer behavior under alternative organizational forms

Public provision

Under public in-house provision the service worker is a public sector employee who maximizes the utility function (2.2) with respect to e and s , given the public regulator's monitoring effort as reflected in a , and given $I^p = R^p$. Although in general equilibrium a higher level of cost-reducing effort e would induce the public sector to pay higher wage rates (assuming the recruitment constraint (2.6) is binding), the individual service worker perceives that his wage R^p is independent of his own effort. Since effort involves a utility cost, the worker's optimal choice of cost-saving effort e will then be zero, so from (2.2) the choice of service effort will be determined by the first-order condition

$$f'(1-s) = au'(s), \quad (3.1)$$

stating that service effort is increased to the point where the marginal utility loss from extra effort is matched by the expected marginal utility gain from reduced sanctions. Equation (3.1) implies that

$$s = s(a), \quad s' = -\frac{u'(s)}{au''(s) + f''(s)} > 0. \quad (3.2)$$

In other words, by increasing monitoring intensity, the regulator can induce the worker to provide more service effort, but the regulator cannot induce any cost-saving effort, since she only observes the condition of the client but cannot observe whether the worker has actually tried to reduce costs.

Suppose the regulator adjusts a with the purpose of inducing a service effort \bar{s} which ensures that the client achieves the target welfare level $\bar{u} \equiv u(\bar{s})$. According to (3.1) the required value of a will then be

$$a^p = \frac{f'(1-\bar{s})}{u'(\bar{s})}. \quad (3.3)$$

Below we shall compare this benchmark monitoring intensity to the one which is needed to achieve the target client welfare level under outsourcing.

Private for-profit provision

The self-employed service worker's utility U^π under private for-profit provision is found by inserting (2.4) into (2.2). Thus the private for-profit service provider chooses s and e with the purpose of maximizing

$$U^\pi = R^\pi - [C - g(e)] + f(1 - s - e) - a(\bar{u} - u), \quad (3.4)$$

yielding the first-order conditions

$$f'(1 - s - e) = g'(e), \quad (3.5)$$

$$f'(1 - s - e) = au'(s). \quad (3.6)$$

Equation (3.5) says that the marginal gain from cost-saving effort (the right-hand side) must equal the marginal utility loss from additional effort. Equation (3.6) has the same interpretation as (3.1).

We assume that $g'(0) > f'(1 - s)$ when s is at its optimal level. It then follows from our earlier assumptions $g'' \leq 0$ and $f'' < 0$ that (3.5) guarantees a positive optimal level of e . Private provision thus provides an incentive for cost-reducing effort, so for a given monitoring intensity (a given value of a), (3.5) and (3.1) imply that a private for-profit service worker will want to divert some effort away from servicing the client towards cost-reducing activities, compared to the publicly employed service worker.

Suppose again that the regulator chooses a to induce the service effort \bar{s} which generates the target client welfare level \bar{u} . From (3.6) we find the required monitoring intensity to be (using the superscript π to indicate for-profit provision):

$$a^\pi = \frac{f'(1 - \bar{s} - e^\pi)}{u'(\bar{s})}. \quad (3.7)$$

Comparing (3.7) to (3.3), we see that securing a given client welfare level requires a higher monitoring intensity under private for-profit provision than under public in-house provision, since $e^\pi > 0$ and $f'' < 0$.

Private not-for-profit provision

According to (2.2) and (2.5) a not-for-profit service provider's utility U^n is

$$U^n = d[R^n - C + g(e)] + f(1 - s - e) - a(\bar{u} - u), \quad (3.8)$$

the maximization of which requires

$$f'(1 - s - e) = dg'(e), \quad (3.9)$$

$$f'(1 - s - e) = au'(s). \quad (3.10)$$

Assuming that $dg'(0) > f'(1 - s)$ at the optimal level of s , (3.9) ensures a positive level of e . However, since perquisites are less valuable than cash ($d < 1$), we see from (3.5) and (3.9) that the not-for-profit entrepreneur has a weaker incentive to exert cost-reducing effort than the for-profit service provider. Specifically, if the regulator adjusts a to ensure that $s = \bar{s}$, (3.5) and (3.9) imply that the cost-reducing effort will be lower under not-for-profit provision than under for-profit provision ($e^n < e^\pi$).

Inserting $s = \bar{s}$ into (3.10) and rearranging, we find the monitoring intensity needed to achieve the target client welfare level under not-for-profit provision:

$$a^n = \frac{f'(1 - \bar{s} - e^n)}{u'(\bar{s})}. \quad (3.11)$$

Since $e^\pi > e^n > 0$ and $f'' < 0$, it follows from (3.3), (3.7) and (3.11) that

$$a^\pi > a^n > a^p. \quad (3.12)$$

We will now use these results to analyze the budgetary costs of public service provision under alternative organizational forms.

4. Comparing budgetary costs of service provision under alternative organizational forms

Assuming that the utilities of clients, service workers and taxpayers all count in the social welfare function, a necessary condition for a second-best social optimum is that the budgetary cost of service provision is minimized for any given levels of welfare for clients and service workers. Hence the most efficient organizational form is the one

that minimizes B^i in (2.7), given that the client attains some fixed utility level such as $u = \bar{u} \equiv u(\bar{s})$, and given that the government's recruitment constraint $U^i \geq \bar{U}$ is met with equality.

We start by deriving the minimum budgetary cost of attaining $u = \bar{u}$ under public in-house provision where $e = 0$. From (2.2), (2.6), and the fact that a is adjusted to ensure $u = \bar{u} \equiv u(\bar{s})$, it follows that the local government must as a minimum pay the following wage rate to recruit a service worker:

$$R^p = \bar{U} - f(1 - \bar{s}). \quad (4.1)$$

The wage rate in (4.1) ensures that the service worker's utility level equals his exogenous outside option \bar{U} . According to (2.7) and (4.1) the budgetary cost under public provision then becomes

$$B^p = R^p + C + c(a^p) = \bar{U} - f(1 - \bar{s}) + C + c(a^p), \quad (4.2)$$

where a^p is given by (3.3), and where we have used our earlier assumption $g(0) = 0$.

Under private for-profit provision where the worker-entrepreneur bears the non-labor cost $C - g(e^\pi)$, the recruitment constraint (2.6), the utility function (2.2) and the assumption that $u = \bar{u} \equiv u(\bar{s})$ imply that the government must at least pay the entrepreneur the following amount per client served:

$$R^\pi = \bar{U} - f(1 - \bar{s} - e^\pi) + C - g(e^\pi). \quad (4.3)$$

Inserting this into (2.7) and remembering that a is adjusted in accordance with (3.7), we obtain the minimum attainable budgetary cost under for-profit service provision:

$$B^\pi = R^\pi + c(a^\pi) = \bar{U} - f(1 - \bar{s} - e^\pi) + C - g(e^\pi) + c(a^\pi). \quad (4.4)$$

In a similar way, we find that under not-for-profit provision,

$$R^n = (1/d) [\bar{U} - f(1 - \bar{s} - e^n)] + C - g(e^n), \quad (4.5)$$

so that the budgetary cost becomes:

$$B^n = R^n + c(a^n) = (1/d) [\bar{U} - f(1 - \bar{s} - e^n)] + C - g(e^n) + c(a^n). \quad (4.6)$$

Let us now compare the budgetary costs under in-house provision versus outsourcing to a for-profit entrepreneur. Subtracting (4.4) from (4.2), we get

$$B^p - B^\pi = g(e^\pi) - \overbrace{[c(a^\pi) - c(a^p)]}^+ - \overbrace{[f(1 - \bar{s}) - f(1 - \bar{s} - e^\pi)]}^+. \quad (4.7)$$

The sign of this expression is indeterminate, indicating that outsourcing to a for-profit service provider is not necessarily efficient. The first term on the right-hand side of (4.7) is the additional cost arising under public provision because public employees have no incentive to exert cost-reducing efforts. This cost element is the basis for the popular claim that private provision tends to be more cost efficient. However, there are two other mechanisms making for lower costs under public in-house provision. The first one is represented by the term $c(a^\pi) - c(a^p)$ on the RHS of (4.7), reflecting the fact that the monitoring costs of achieving the target quality level is higher under for-profit provision where the service worker has an incentive to divert time from servicing the client towards cost-reducing activities (recall from (3.12) that $a^\pi > a^p$, implying $c(a^\pi) > c(a^p)$ since $c' > 0$). The second mechanism is indicated by the term $f(1 - \bar{s}) - f(1 - \bar{s} - e^\pi)$ in (4.7), capturing the fact that payments to service workers can be kept lower under in-house provision where workers exert lower effort. This additional source of cost saving under in-house provision - which stems from the fact that public as well as private service producers face a recruitment constraint when workers have an outside option - seems to have been neglected in the previous literature.

Taking a first-order approximation of the expression in (4.7) around $(e, a) = (0, a^p)$ and using (3.3) and (3.7),³ we find

$$B^p - B^\pi \approx \left[g'(0) - f'(1 - \bar{s}) + \frac{c'(a^p) f''(1 - \bar{s})}{u'(\bar{s})} \right] e^\pi. \quad (4.8)$$

This expression shows that outsourcing to a for-profit service provider is more likely to be efficient when (i) the marginal return to cost-saving effort $g'(0)$ is high; (ii) the marginal value of leisure activities on the job $f'(1 - \bar{s})$ is low; (iii) the marginal monitoring cost $c'(a^p)$ is low; (iv) the marginal value of on-the-job leisure is only slowly declining

³We use the fact that, according to (3.3) and (3.7),

$$a^\pi - a^p = \frac{f'(1 - \bar{s} - e^\pi) - f'(1 - \bar{s})}{u'(\bar{s})} \approx \frac{-f''(1 - \bar{s}) e^\pi}{u'(\bar{s})}.$$

(f'' is low); and (v) the marginal value of additional service to the client $u'(\bar{s})$ is high. The results (i) and (iii) should be self-explanatory. The explanation for (ii) is that when the marginal value of 'coffee breaks' is low, it only takes a modest increase in the remuneration of the service worker to compensate him for the cost-saving effort exerted under for-profit provision. The finding in (iv) reflects that, when the marginal value of on-the-job leisure is only slowly declining, there is a weaker incentive for the worker to reduce his service effort as his cost-saving effort increases, and hence the required increase in monitoring intensity under outsourcing is also smaller. Furthermore, the incentive to reduce service effort under outsourcing is weaker the greater the client's marginal utility loss from reduced service, since a sharp drop in client welfare implies a sharp increase in the worker's penalty in case the regulator checks the condition of the client. This explains the result (v).

Consider next the budgetary cost under public in-house provision compared to private not-for-profit provision. Subtracting (4.6) from (4.2), using (4.1), and taking a first-order approximation around $(e, a) = (0, a^p)$, we get

$$\begin{aligned}
B^p - B^n &= g(e^n) - \left(\frac{1-d}{d}\right) R^p - [c(a^n) - c(a^p)] - \left(\frac{1}{d}\right) [f(1-\bar{s}) - f(1-\bar{s}-e^n)] \\
&\approx \left[g'(0) - d^{-1} f'(1-\bar{s}) + \frac{c'(a^p) f''(1-\bar{s})}{u'(\bar{s})} \right] e^n - \left(\frac{1-d}{d}\right) R^p, \quad (4.9)
\end{aligned}$$

where we have exploited (3.3) and (3.11) to obtain an approximation for $a^n - a^p$. We see that the factors (i) through (v) (cf. above) which tend to make outsourcing to a profit-based firm attractive also increase the likelihood that outsourcing to a non-profit organization will improve efficiency. At the same time a comparison of (4.8) and (4.9) shows that there are cases where outsourcing to a non-profit firm would be undesirable even if outsourcing to a for-profit firm would improve efficiency.⁴ Moreover, by taking a linear approximation of (3.3), (3.11), (4.8) and (4.9), one can show that

$$B^n - B^\pi \approx (1-d)P + \left[g'(0) - f'(1-\bar{s}) + \frac{c'(a^p) f''(1-\bar{s})}{u'(\bar{s})} \right] \overbrace{(e^\pi - e^n)}^+, \quad (4.10)$$

$$P \equiv R^n - [C - g(e)]$$

⁴These are cases where the term in the square bracket in (4.8) is positive at the same time as the expression on the right-hand side of (4.9) is negative.

where P are the perquisites enjoyed by the not-for-profit entrepreneur. From (4.8) and (4.10) it follows that whenever outsourcing to a profit-based firm is desirable, the budgetary cost of choosing a not-for-profit service provider instead will always be higher, since $d < 1$. These results are not surprising, given that the non-profit firm is forced to reward effort through a less efficient form of remuneration (perquisites), and given that the recruitment constraint forces the government to ensure the same utility level for profit-based and non-profit service providers.

While the results in this section are intuitive, they also suggest that it may be very difficult to evaluate *ex ante* whether outsourcing is desirable, since little may be known about the shape of the cost functions $c(\cdot)$ and $g(\cdot)$ and the utility function $f(\cdot)$. However, at least two general conclusions suggest themselves. First, when the nature of the service is complex and multidimensional so that the quality delivered (and hence the effect on client welfare) is difficult to monitor, the marginal monitoring cost (and hence c') is likely to be high. In such circumstances outsourcing is less likely to be efficient. Second, if outsourcing is believed to be efficient, there is a case for choosing for-profit providers rather than not-for-profit organizations, unless the non-profit organizational form induces more altruism (by attracting more altruistic workers) so that monitoring service quality is significantly cheaper under not-for-profit provision.

5. Uncertainty, risk aversion and the potential role of non-profit firms

As already mentioned, there may be uncertainty about the (quantitative) properties of the cost functions and preference relations determining whether outsourcing is efficient. Moreover, the policy maker may be risk averse, being more eager to avoid an increase in the budgetary cost than to obtain a corresponding cost reduction. In general, uncertainty and risk aversion will tend to imply a bias in favour of the status quo (you know what you've got; you don't know what you'll get). If the status quo is public in-house service provision, uncertainty and risk aversion will make outsourcing less attractive. To illustrate this, consider a simple mean-variance framework where the policy maker's perceived

gain V from outsourcing to a for-profit service provider is given by

$$V = \mu^\pi - \eta \cdot E[(B^p - B^\pi - \mu^\pi)^2], \quad \mu^\pi \equiv E[B^p - B^\pi], \quad (5.1)$$

where μ^π is the expected budgetary cost saving from outsourcing, given that a is adjusted to maintain service quality, $E[(B^p - B^\pi - \mu^\pi)^2]$ is the variance of the expected gain, and $\eta > 0$ is a parameter indicating the policy maker's aversion to risk. Suppose further that the policy maker estimates that

$$g' = \bar{g} \text{ with probability } p, \quad g' = \bar{g} + h \text{ with probability } 1 - p, \quad (5.2)$$

where \bar{g} and h are positive constants. In other words, the marginal return to cost-saving effort can either take on a low value \bar{g} or a high value $\bar{g} + h$. To keep the analysis simple, we assume that the policy maker/regulator has gained perfect knowledge of the functions $c(\cdot)$, $f(\cdot)$ and $u(\cdot)$ via her interaction with the service worker and the client, so that the only uncertainty attaches to g' . Using the approximation (4.7) and noting from (3.5) that to a first-order approximation $e^\pi \approx [f'(1 - \bar{s}) - g'] / f''(1 - \bar{s})$, one can show that

$$V \approx \mu^\pi - \eta p(1 - p) h^2 (CS^\pi - CI^\pi)^2, \quad (5.3)$$

$$CS^\pi \equiv \frac{2\bar{g} + h}{-f''(1 - \bar{s})} > 0, \quad CI^\pi \equiv \frac{c'(a^p)}{u'(\bar{s})} - \frac{2f'(1 - \bar{s})}{f''(1 - \bar{s})} > 0, \quad (5.4)$$

$$\mu^\pi = \frac{(f'(1 - \bar{s}))^2 - \bar{g}^2}{f''(1 - \bar{s})} + CI^\pi \overbrace{[f'(1 - \bar{s}) - \bar{g}]} + ph(CS^\pi - CI^\pi). \quad (5.5)$$

The magnitude CS^π defined in (5.4) is an indicator of the incentive for the private entrepreneur to exert cost-saving effort: this incentive will be large if \bar{g} and h are large, and it will be small if the marginal value of 'coffee breaks' increases sharply as time is reallocated from breaks to cost-reducing activity, i.e., if f'' is numerically large. The variable CI^π in (5.4) captures the factors which tend to increase the budgetary cost when service provision is outsourced. Thus c'/u' reflects the cost of the more intensive monitoring which is needed to prevent a deterioration of service quality under outsourcing, and the magnitude $-f'/f''$ reflecting the curvature of the service worker's utility function indicates how much the worker's remuneration has to increase to compensate him for the extra effort exerted under outsourcing.

As the marginal return to cost-reducing effort varies, the private entrepreneur will vary this effort, but the mechanisms captured by the variables CS and CI will affect the budgetary cost in opposite directions as e^π changes. If CS^π happens to equal CI^π , the different influences on the budgetary cost will exactly offset each other. In that special case we see from (5.3) that risk aversion will have no influence on the policy maker's gain from outsourcing, since the variance of the budgetary cost saving $B^p - B^\pi$ will be zero.

However, in the general case where $CS^\pi \neq CI^\pi$, it follows from (5.3) that uncertainty and risk aversion will indeed reduce the attractiveness of outsourcing, as one would expect. We also see from (5.4) and (5.5) that the same factors which tended to make outsourcing attractive in the deterministic case (high marginal returns to cost-reducing effort, low marginal cost of monitoring, low marginal utility of 'coffee breaks', etc.) will also tend to make the expected budgetary cost reduction (μ^π) positive under uncertainty.⁵

One interesting implication of uncertainty is that it may reverse our earlier conclusion that policy makers will always prefer to outsource to a for-profit firm rather than to a non-profit organization. Specifically, using (4.9), (5.2), and the approximation $e^\pi \approx [f'(1 - \bar{s}) - dg'] / f''(1 - \bar{s})$, one finds that the variance of the expected gain from outsourcing to a non-profit firm (σ_n^2) is approximately given by

$$\sigma_n^2 \equiv E[(B^p - B^n - \mu^n)^2] \approx \eta p(1 - p) h^2 (CS^n - CI^n)^2, \quad (5.6)$$

$$\mu^n \equiv E[B^p - B^n], \quad CS^n \equiv \frac{d(2\bar{g} + h)}{-f''(1 - \bar{s})} > 0, \quad CI^n \equiv \frac{dc'(a^p)}{u'(\bar{s})} - \frac{2f'(1 - \bar{s})}{f''(1 - \bar{s})} > 0,$$

where CS^n and CI^n are indicators of the potential for cost savings and cost increases, respectively (analogous to CS^π and CI^π). Equation (5.6) implies that

$$\frac{\partial \sigma_n^2}{\partial d} \approx \left(\frac{2}{d}\right) \left[\sigma_n^2 - \frac{2f'(1 - \bar{s})(CS^n - CI^n)}{f''(1 - \bar{s})} \right]. \quad (5.7)$$

A sufficient (but not a necessary) condition for the expression in (5.7) to be positive is that outsourcing is relatively attractive in the sense that the indicator of the potential for cost savings (CS^n) exceeds the indicator for the cost-increasing elements (CI^n). The for-profit organizational form is the special case where $d = 1$, so switching to non-profit

⁵From our earlier analysis it follows that when $g' = \bar{g}$, the for-profit service provider will choose $f'(1 - \bar{s} - e^\pi) = \bar{g}$, where $e^\pi > 0$. Since $f'' < 0$, this implies that $f'(1 - \bar{s}) < \bar{g}$. Hence we can be sure that CI^π enters (5.5) with a negative coefficient.

service provision involves a fall in d .⁶ Thus (5.7) indicates that when outsourcing appears attractive ($CS^n > CI^n$), the variance of the expected gain from outsourcing will be smaller when service provision is contracted out to a non-profit organization than when it is outsourced to a for-profit producer. Even if the expected reduction in budgetary costs is larger in the case of outsourcing to a profit-based firm, a highly risk-averse policy maker will therefore prefer outsourcing to a non-profit producer. The intuition for this result is that not-for-profit producers are less responsive to variations in the incentive to engage in cost-reducing activity at the expense of quality-enhancing effort. This reduces the variance in budgetary costs when the marginal return to cost-saving effort (g') varies.

Thus there may be a role for non-profit producers when uncertainty about the potential for cost-saving (and hence the value of σ_n^2 in (5.6)) is high. As we suggested at the end of the previous section, the non-profit organizational form may also be attractive in so far as it motivates workers with an idealistic bent to display more altruistic behavior.

6. The implications of rent-seeking

We have so far assumed that policy makers are benevolent, seeking to minimize the taxpayer's cost of ensuring a satisfactory public service level without paying more than is necessary to recruit service workers. Specifically, we assumed that the (public or private) service worker's remuneration R was kept so low that the recruitment constraint (2.6) was met with equality.

However, it is often argued that politicians use their control over the public sector to distribute rents to the providers of public goods and services in return for political support, thereby increasing the cost to the taxpayer (see, e.g. Shleifer (1998)). In this section we shall argue that such rent-seeking behavior will not significantly change the circumstances in which outsourcing is attractive from the perspective of taxpayers as well as politicians.

⁶In footnote 2 we noted that $d = \alpha + \hat{d}(1 - \alpha)$, where \hat{d} is the money metric utility value of one euro spent on perquisites, and α is the share of the firm's surplus which may be paid out in cash. A fall in d may be implemented through a fall in α which may be thought of as an institutional parameter controlled by policy makers.

Suppose the politician seeks to maximize the political support function

$$S = F(U - \bar{U}) - G(B), \quad F' > 0, \quad F'' < 0, \quad G' > 0, \quad G'' > 0. \quad (6.1)$$

According to (6.1) the politician can gain political support by increasing the rent $U - \bar{U}$ distributed to public service providers and by reducing the budgetary cost B of providing the target service level \bar{s} . In other words, the politician can increase his chance of reelection both by offering favors to public service suppliers - whether they are public employees or private entrepreneurs - and by reducing the citizens' tax bill. Moreover, the marginal gain in political support is assumed to be declining as rents are increased and budgetary costs are reduced. The utility of a service worker is still given by (2.2), and (2.7) still gives the budgetary cost of service provision. However, the politician now chooses the worker's remuneration R so as to maximize the political support function (6.1). From (2.2) and (2.7) we have $\partial U/\partial R = 1$ and $\partial B/\partial R = 1$, so the first-order condition for maximization of (6.1) with respect to R is

$$F'(U - \bar{U}) = G'(B), \quad (6.2)$$

stating that the marginal political gain from additional rent distribution must equal the marginal political loss from increased budgetary costs. Under the two alternative regimes of public in-house provision and private for-profit provision, (6.2) takes the form

$$F' \left(\overbrace{R^p + f(1 - \bar{s})}^{U^p} - \bar{U} \right) = G' \left(\overbrace{R^p + C + c(a^p)}^{B^p} \right), \quad (6.3)$$

$$F' \left(\overbrace{R^\pi - C + g(e^\pi) + f(1 - \bar{s} - e^\pi)}^{U^\pi} - \bar{U} \right) = G' \left(\overbrace{R^\pi + c(a^\pi)}^{B^\pi} \right), \quad (6.4)$$

where we have assumed that a is adjusted to ensure that clients attain the target utility level \bar{u} under both forms of provision. We know from (3.12) that $a^\pi > a^p$, implying $c(a^\pi) > c(a^p)$. Hence outsourcing can only lead to a lower budgetary cost ($B^\pi < B^p$) if $R^\pi - C < R^p$. When $B^\pi < B^p$, G' will take a smaller value in (6.4) than in (6.3), since $G'' > 0$. Then U^π will have to be higher than U^p , since $F'' < 0$, but with $R^\pi - C < R^p$, this can only be the case if

$$g(e^\pi) + f(1 - \bar{s} - e^\pi) > f(1 - \bar{s}). \quad (6.5)$$

From (4.7) we see that (6.5) is also a necessary condition for $B^\pi < B^p$ in the regime *without* rent-seeking. This is the basis for our claim that the same factors which would lead taxpayers to prefer outsourcing in a world with benevolent politicians are also likely to lead to a taxpayer preference for outsourcing under rent-seeking. Moreover, if outsourcing is more cost efficient, it will also be preferred by the politician who can then distribute the efficiency gain between the service worker and the taxpayer, thereby gaining increased political support from both groups. Thus the only difference compared to the case with benevolent politicians is that taxpayers will only reap part of the gain from outsourcing, while the remaining part will go to service providers.⁷

We may note in passing that the persistence of positive rents in political equilibrium will not only induce service providers to offer political support in return for rents; it may also open the door to bribery and corruption. This observation takes us to a discussion of the role of competition.

7. The role of competition

The analysis above allows for competition only in the limited sense that policy makers must compete with other employers to attract service workers. So far we have not explicitly considered the possibility that service provision can be opened to competition by specifying and announcing service requirements, calling for tenders and contracting with the supplier submitting the most favorable bid for some fixed term. Political willingness to outsource will typically be a precondition for competitive tendering, although in-house teams can be allowed to submit bids.

Our analytical framework suggests at least three potentially beneficial roles for competition among alternative service providers. First, in the presence of uncertainty about cost functions and other production conditions under outsourcing, competitive tendering with participation from in-house teams may be a way of testing the relative efficiency of alternative organizational forms. As emphasized by Lundsgaard (2002, p. 83), par-

⁷The size of the rents distributed to service producers may depend on the ideological bias of politicians. Bennedsen and Schultz (2003) show that a 'leftist' politician with a preference for public in-house provision may be able to outsource at a lower budgetary cost because the private supplier realizes that he will have to sacrifice some rent to induce the politician to outsource.

ticipation of in-house producers requires a transparent separation of production units within government agencies to avoid cross-subsidization, and rules on cost calculations and auditing to ensure a credible and neutral competitive bidding process.

Second, given that a decision to outsource has been made, competitive tendering may be a way of ensuring that the license to produce is contracted out to the most cost-effective producer. For example, in terms of our model, different potential service providers may have different levels of our fixed cost variable C , and a producer with a lower level of C would tend to offer his service at a lower price.

Third, opening up to competitive tendering may be a way to eliminate or at least reduce rents to service providers and thus reduce the associated risks of corruption. Of course, this requires a fair and transparent bidding process which may be hard to establish in the first place if corruption is a problem.

To sum up, if outsourcing - or the willingness to consider outsourcing as an option - brings about the necessary preconditions for fostering competition among service providers, there is a greater chance that it will generate efficiency gains even if a switch to a private monopoly supplier would not in itself improve efficiency. At the same time, the factors which tend to make outsourcing to a single private provider unattractive - such as a complex service product whose quality is difficult to measure and specify - will also make it difficult to establish competitive tendering.

8. An extended model of public service provision

We have so far assumed that the service-producing firm comprises only a single agent who is a public sector employee under public provision and a self-employed entrepreneur under private provision. We will now show that the mechanisms described above will also unfold under more complex organizational forms.

Specifically, we now assume that the firm is run by a manager who hires workers to service clients. Under public in-house provision the manager is a public sector employee, but under private for-profit provision he is a capitalist who owns the firm (in the interest of brevity, we do not consider private non-profit provision). The manager cannot directly observe and control the effort exerted by service workers, so he must devote some of his

time to checking the condition of clients as an indirect way of monitoring workers. The manager also spends time on cost-reducing activities and on activities which increase his personal utility (taking customers or colleagues out for lunch, etc.). The public policy maker/regulator must still devote resources to monitoring the condition of clients, just like the manager. If the regulator finds that service quality is below the norm, he imposes a (pecuniary or non-pecuniary) sanction on the manager. Similarly, the manager imposes a sanction on service workers if he finds quality to fall short of the norm.

In the following, we set up the model in detail and consider its implications.

Worker behavior

The fraction of management time devoted to monitoring the condition of clients is denoted by m . This is the frequency by which the representative worker's service effort is checked. If the client's condition u is found to fall short of the norm \bar{u} defined by the regulator, the manager imposes a sanction on the worker which is proportional to $\bar{u} - u$. For convenience, we set the proportionality factor equal to unity. The worker spends a fraction s of his time servicing the client whose welfare is still given by $u(s)$. The remaining fraction $1 - s$ of the worker's time is spent on 'coffee breaks' generating utility $f(1 - s)$. The worker's expected disutility from sanctions is $m[\bar{u} - u(s)]$, so the first-order condition for maximization of the worker's expected utility is

$$f'(1 - s) = mu'(s), \quad (8.1)$$

from which it follows that

$$s = s(m), \quad s' = -\frac{u'(s)}{mu''(s) + f''(s)} > 0. \quad (8.2)$$

These results are quite parallel to (3.1) and (3.2). If utility functions are quadratic so that $u''' = f''' = 0$, one can easily show from (8.2) that $s'' < 0$. We assume that this property also holds more generally, implying diminishing returns to the manager's monitoring effort.

Management behavior

Apart from monitoring service quality, the manager of the service firm spends a fraction e of his time on cost-reducing activities, generating cost savings $g(e)$. The remaining part of the manager's time is spent on activities which yield personal utility

$h(1 - e - m)$, where $h' > 0$ and $h'' < 0$. Under public in-house service provision the manager receives the wage rate R^p plus a bonus amounting to a fraction β of the cost savings he achieves. The bonus $\beta g(e)$ might take the form of cash income, but it might also be an expected utility gain deriving from improved career opportunities.

At the same time the manager incurs expected disutility $a[\bar{u} - u(s)]$ from sanctions imposed by the regulator. Recalling that $s = s(m)$, the manager's total expected utility under public in-house provision will then be

$$U^p = R^p + \beta g(e) + h(1 - e - m) - a[\bar{u} - u(s(m))]. \quad (8.3)$$

Importantly, we assume that $\beta < 1$, i.e., part of the benefits from cost savings accrue to the general taxpayer rather than to the manager himself. The public manager chooses m and e to maximize U^p , implying

$$h'(1 - e - m) - au'(s(m))s'(m) = 0, \quad (8.4)$$

$$h'(1 - e - m) - \beta g(e) = 0. \quad (8.5)$$

Equation (8.5) defines e as an implicit function of m with the property

$$e'(m) \equiv \frac{de}{dm} = -\frac{h''}{\beta g'' + h''} < 0, \quad (8.6)$$

so we may write (8.5) as $h'(1 - e(m) - m) - au'(s(m))s'(m) = 0$ from which it follows that m is a monotonically increasing function of a (since the derivative in (8.6) is numerically smaller than or equal to one, given that $g'' \leq 0$):

$$\frac{dm}{da} = \frac{-u's'}{(1 + e')h'' + a[u'' \cdot (s')^2 + u's'']} > 0. \quad (8.7)$$

Thus the regulator may control the manager's monitoring effort - and hence indirectly the service quality $s = s(m)$ - through an appropriate choice of a .

Under private for-profit provision the owner-manager of the service firm receives the payment R^π from the local government, incurs non-labor production costs equal to $C - g(e)$, and hires a representative service worker at the wage rate W^w . Hence the owner-manager's profit is

$$I^\pi = R^\pi - [C - g(e)] - W^w, \quad (8.8)$$

and his expected utility is

$$U^\pi = I^\pi + h(1 - e - m) - a[\bar{u} - u(s(m))], \quad (8.9)$$

which is maximized when

$$h'(1 - e - m) - au'(s(m))s'(m) = 0, \quad (8.10)$$

$$h'(1 - e - m) - g(e) = 0. \quad (8.11)$$

From (8.10) and (8.11) it follows once again that $m = m(a)$ with $m' > 0$, so the regulator can still achieve the desired service quality via the choice of a .

Suppose that under both forms of provision the regulator chooses a so as to induce a management monitoring effort \bar{m} which in turn will motivate the worker to exert a service effort ensuring the desired condition of the client, $u(s(\bar{m})) = \bar{u}$. When m assumes the same value \bar{m} in (8.5) and (8.11), it follows that cost-saving effort will be lower under public than under private provision, since $h'' < 0$, $g'' \leq 0$ and $\beta < 1$:

$$e^p < e^\pi. \quad (8.12)$$

This result is due to the fact that the manager faces a weaker incentive for cost-reducing activities under public provision where he does not reap the full benefit himself. Given $m = \bar{m}$, $e^p < e^\pi$ and $h'' < 0$, we see from (8.4) and (8.10) that the regulator must spend more resources on achieving the desired service quality under private provision where the manager has a stronger incentive to divert attention from monitoring quality to reducing costs:

$$a^\pi = \frac{h'(1 - e^\pi - \bar{m})}{u'(s(\bar{m}))s'(\bar{m})} > a^p = \frac{h'(1 - e^p - \bar{m})}{u'(s(\bar{m}))s'(\bar{m})}. \quad (8.13)$$

The budgetary cost of public versus private provision

We may now derive the local government's budgetary cost of achieving the target service level $u = \bar{u}$ under the two alternative forms of provision. In both cases the (binding) recruitment constraint implies that the service worker's total utility $W^w + f(1 - s(\bar{m}))$ must equal his outside option \bar{U}^w , i.e.:

$$W^w = \bar{U}^w - f(1 - s(\bar{m})). \quad (8.14)$$

The manager also has an outside option \bar{U}^m , so under public in-house provision he must at least earn a wage rate equal to

$$R^p = \bar{U}^m - \beta g(e^p) - h(1 - e^p - \bar{m}), \quad (8.15)$$

and under private provision he requires a profit equal to

$$I^\pi = \bar{U}^m - h(1 - e^\pi - \bar{m}), \quad (8.16)$$

where we have used the fact that no sanctions are imposed when $m = \bar{m}$.

Recalling that under in-house provision a fraction $1 - \beta$ of any cost saving accrues to the local government, and using (8.14) and (8.15), we find that the budgetary cost of in-house service provision becomes

$$\begin{aligned} B^p &= W^w + R^p + C - (1 - \beta)g(e^p) + c(a^p) \\ &= \bar{U}^w - f(1 - s(\bar{m})) + \bar{U}^m - h(1 - e^p - \bar{m}) + C - g(e^p) + c(a^p), \end{aligned} \quad (8.17)$$

where we remember that $c(a)$ is the regulator's cost of monitoring service quality.

Under private provision where the private owner-manager bears all costs of production, we may find the budgetary cost by using (8.8), (8.14) and (8.16):

$$\begin{aligned} B^\pi &= R^\pi + c(a^\pi) \\ &= \bar{U}^w - f(1 - s(\bar{m})) + \bar{U}^m - h(1 - e^\pi - \bar{m}) + C - g(e^\pi) + c(a^\pi). \end{aligned} \quad (8.18)$$

Subtracting (8.18) from (8.17), we obtain the local government's gain from outsourcing:

$$B^p - B^\pi = [g(e^\pi) - g(e^p)] - [c(a^\pi) - c(a^p)] - [h(1 - e^p - \bar{m}) - h(1 - e^\pi - \bar{m})]. \quad (8.19)$$

Comparing (8.19) to (4.7), we see that the trade-offs involved in outsourcing are essentially the same whether service is provided by a single worker or whether it is produced by a worker who is supervised by a manager. Since $e^\pi > e^p$ and $g' > 0$, the term in the first square bracket on the right-hand side of (8.19) is positive, reflecting that the public manager has a weaker incentive than his private counterpart to engage in cost-saving activities. The term in the second square bracket in (8.19) is also positive, since $a^\pi > a^p$ and $c' > 0$. This term represents the cost of the extra public monitoring effort needed to ensure the target service quality under private provision where the manager has a stronger incentive to engage in cost-saving effort rather than monitoring the worker. The positive term in the third square bracket captures the fact that the private owner-manager must be rewarded by a higher cash income because the stronger incentive for cost savings induces him to work harder than the public manager.

Overall, it is still impossible to say a priori whether outsourcing will improve efficiency, but like before, a reduction in budgetary costs is more likely the greater the marginal return to cost-saving effort, the lower the marginal value of pleasure activities on the job, and the lower the regulator's marginal monitoring cost.

9. Summary

This paper has set up a model of public service provision to study the factors determining whether outsourcing to for-profit and not-for-profit producers of social services will enable a local government to achieve a given service quality at lower budgetary cost. We found that outsourcing provides an incentive for service producers to shift resources from quality-enhancing to cost-reducing activities. The cost reductions per se tend to be efficiency-improving, but to prevent a deterioration of service quality, policy makers must spend more resources on monitoring service quality. Moreover, the greater effort exerted under private service provision will have to be compensated by higher factor rewards when workers have an outside option. For these reasons public in-house provision may be more cost-efficient than outsourcing. This is particularly likely to be the case when the quality of the service is difficult to measure so that marginal monitoring costs are high.

In the absence of uncertainty, our basic model implied that for-profit provision will generally be more efficient than non-profit provision, unless the non-profit organizational form induces more altruistic behavior. However, risk aversion combined with uncertainty about the potential for cost savings implies a bias against outsourcing when public in-house provision is the status quo. Uncertainty may also imply that outsourcing to a non-profit service producer becomes more attractive than outsourcing to a for-profit producer when the policy maker's degree of risk aversion is high.

The basic version of our model assumed a benevolent policy maker. Extending the analysis, we found that rent-seeking behavior is unlikely to change the circumstances in which outsourcing becomes attractive for policy makers and taxpayers. We then argued that competition among alternative service providers will have a number of beneficial effects. In these circumstances outsourcing may become more attractive, since (potential or actual) outsourcing is typically a precondition for fostering competition. Finally, we

showed that the main result from our basic model carries over to a more complex setting with a 'double' monitoring problem where service workers are monitored by managers who in turn are monitored by a public regulator.

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