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Contractibility, Cost, and Quality**

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ABSTRACT

Outsourcing Public Services: Contractibility, Cost, and Quality*

We review the literature on public sector outsourcing to explore if the theoretical predictions from the incomplete contracts literature hold up to recent empirical evidence. Guided by theory, we arrange services according to the type and magnitude of their contractibility problems. The empirical studies point at rather favourable outsourcing outcomes, in terms of costs and quality, for services without severe contracting problems. The picture is more mixed for services with tougher contracting problems, with the weight of the evidence in favour of public provision. This difference between services is largely in line with the property-rights framework and theories of incomplete contracts.

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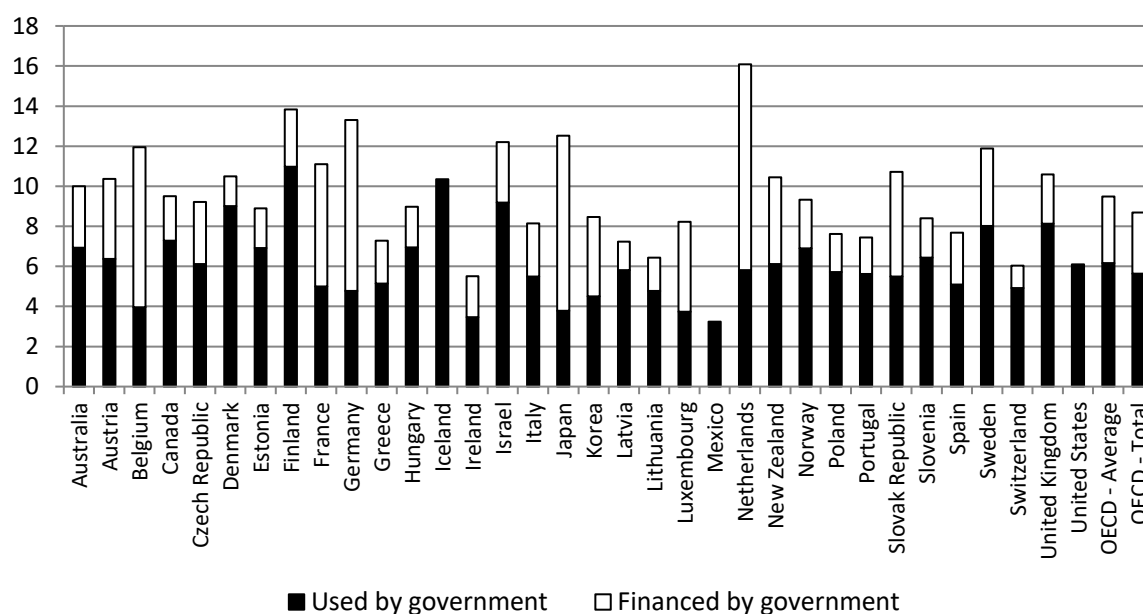
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1. Introduction

The cost of government production has been increasing for at least a decade and amounted to 23 percent of GDP in the average OECD country in 2016. Compensation to government employees made up the largest part of the cost and outsourcing has been an alluring option to keep public expenditures in check. General government outsourcing, either in the form of expenditures on goods and services used by government or expenditures on goods and services financed by government, amounted to 9.5 percent of GDP across OECD countries in 2016, with the highest shares (13–16 percent) in Finland, Germany, and the Netherlands, see Fig. 1 (OECD, 2018).¹

Figure 1. Expenditures on general government outsourcing as a percentage of GDP, 2016.



Notes: The expenditures on general government outsourcing consist of two parts: goods and services used by general government and goods and services financed by general government. Iceland, Mexico, and the United States do not account separately for goods and services financed by general government in their National Accounts.

Source: OECD (2018).

¹ The relationship between public sector outsourcing and public employment is analyzed by Potrafke (2019) in a panel of OECD countries.

The structure of government production raises the question of how outsourcing influences the cost and quality of public services. In this paper, we review the literature on public sector outsourcing of services with a focus on how the contractual environment affects cost and quality. We start by describing how ownership has been modelled in the theoretical literature and discuss the corresponding predictions for different contractual environments. Guided by theory, we then systematically arrange public services according to the type and magnitude of their contractibility problems and review the empirical literature according to this arrangement. The evidence is largely in line with the property-rights framework and theories of incomplete contracts. Services without severe contracting problems have rather favourable outsourcing outcomes whereas services with tougher contracting problems, such as employment placement and prisons, provide a mixed picture with the weight of the evidence in favour of public provision.

While economic research on outsourcing public services has been reviewed before – most closely related to our work are Domberger and Jensen (1997), Grout and Stevens (2003), Jensen and Stonecash (2005), and Petersen et al. (2018) – our survey differs in important respects.² Primarily, we put more emphasis on the economic theory of ownership and contracting. This emphasis is manifest both in an effort to take stock of theoretical work directly in appraising the virtues of different arrangements and to consistently assess evidence through the lens provided by theory, stressing the paramount role played by contractibility. As emphasised by Hart et al. (1997) private producers are often able to reduce costs, but given typical incompleteness of contracts, also have incentives to shirk on quality. We discuss the contractual underpinnings of this and stress that empirical work should seek to include quality indicators that are distinct from contracted measures of quality. In addition to

² Domberger and Jensen (1997) is an early paper that insightfully synthesizes theory and evidence, and provides a useful overview of considerations about ownership in outsourcing arrangements. Grout and Stevens (2003) also provide an account of theory in an encompassing review of the financing and delivery of public services, with some emphasis on the “Private Financing Initiative” in the UK. Jensen and Stonecash (2005) provide a discussion of the potential redistribution at the expense of workers following outsourcing arrangements; while this issue has been approached from several perspectives from different literatures, Jensen and Stonecash do not find a clear conclusion from these approaches, and do not find the evidence to clearly corroborate such redistribution. Petersen et al. (2018) review 49 international studies on contracting out published 2000–2014. Their review includes qualitative and quantitative studies, cross-sectional and panel studies.

the theoretical emphasis, we pick up more recent empirical studies. This is important for three reasons. First, we can include studies of employment placement, prisons, and residential youth care – three services that are relatively difficult to contract on. Second, since many of the early studies focused on time periods when competition was first introduced, there is a risk that the effects of outsourcing, and especially effects working via mechanisms of competition, have been overestimated. Third, the empirical literature has gradually moved towards more credible identification strategies, including randomised field experiments, and much of this development postdates previous reviews.

As to demarcations, we do not systematically address the issues stemming from voucher systems and user choice; in particular, we do not deal with school choice. Neither do we analyse the welfare costs in the event of bankruptcy by private providers. Reflecting a division of studies in the empirical literature, we also leave out the determinants of outsourcing – e.g. corruption and “revolving door” mechanisms.³

We will devote the next section to reviewing the most important theoretical work related to the outsourcing of public services. In Section 3, we present and discuss empirical evidence, and in Section 4 we conclude.

2. Theory

In this section, we will discuss the theory relevant to the outsourcing of public services. We start by describing how ownership has been modelled in the theoretical literature, briefly discuss the relationship between ownership and competition, and thereafter focus on the implications for service contracting.

2.1 Models of Ownership

The notions of ownership and property rights are canonical within economics, but their conceptualization has been unsatisfactory in so far that the implications of ownership *as modelled* have seemed less profound than the implications of ownership seem to be *in practice*. One reason for this is that ownership can be completely neutralised by means of contracts as long as the assumption of complete contracting is

³ General determinants of government outsourcing have been hard to find (Bel and Fageda, 2009). Existing explanations include transaction costs (Levin and Tadelis, 2010), patronage (Lopez-de-Silanes et al., 1997), and ideology (Elinder and Jordahl, 2013).

maintained. The assumption of complete contracting proved, moreover, to be hard to relax in a tractable way for a long time.⁴

The “property-rights approach” to firm boundaries pioneered by Grossman and Hart (1986) and Hart and Moore (1990) was a breakthrough in this regard. The property-rights framework combines two key assumptions:

- a seemingly weak form of assumed contractual incompleteness – the existence of unforeseen contingencies that require renegotiation of a contract at delivery, and
- the notion of “residual control rights” defining ownership of an asset by the decision rights over its use under circumstances not covered by contractual obligations.

With these assumptions, any contractual relationship leads to bargaining over the ultimate surplus in renegotiation, and residual control rights are important since they determine outside options in this renegotiation. The framework thus captures a way in which ownership provides leverage in contractual relations in practice.

The standard property-rights model considers a setting where parties make relationship-specific investments prior to trade.⁵ The specificity is manifest in the investments being more valuable if trade takes place than if outside options are exercised; assets to which these investments are tied are called *specific assets*. The payoffs from outside options – which co-determine investment incentives – depend on asset ownership, and the level of relationship-specific investments thus depends on asset ownership.

The property-rights approach has been applied to service contracting in an influential paper by Hart, Shleifer and Vishny (1997) (HSV in the following).⁶ This paper provides a model that is close in spirit to the standard property-rights model but

⁴ The logic has been illuminated by e.g. Sappington and Stiglitz (1987), arguing that if a private firm can be controlled by a government/regulator privatization cannot hurt, and Williamson (1985) arguing that if a government/regulator can run a firm as well as a private owner and in addition make *selective interventions* to promote social welfare, public control cannot hurt.

⁵ The model is accessibly presented in Hart (1995).

⁶ Schmidt (1996) applies an incomplete-contracting framework to show how the assumption that the government has more information about a public firm leads to a rent-extraction problem for intervention in a private firm (due to private information); this is bad in terms of allocative efficiency, but good in terms of ex ante productive efficiency.

tailored to a contracting-out context. There are two parties in the model, the manager who runs the facility that may be subject to contracting, and the government. The manager runs the facility either as an employee who does not own the facility, or as an independent contractor who owns the facility. It is assumed that there is a reference way of managing the facility which can be contractually enforced, and that the manager can modify the operations by making two kinds of investments:

- an investment in finding out *improvements or innovations* in the way the facility is operated; and,
- an investment in finding out measures to *reduce costs* with potentially negative repercussions on the operations.

The distinction between the regimes stems from the residual rights of control over the facility manifest in the manager's power to implement the outcome of the investments. The employed manager needs permission to implement any investment (since the government retains residual control rights over the asset), whereas the independent contractor can implement cost-reductions without permission while still needing permission to implement improvements and innovations (since the government as the buyer can accept or reject offers to upgrade quality). A crucial assumption stemming from contractual incompleteness is that the contract is renegotiated after investments that need permission. In renegotiation, the surplus from the activity subject to renegotiation is split.

The main conclusions from the HSV model are that costs are lower when the manager is an independent contractor while quality – affected by improvement and innovation as well as the pursuit of cost-cutting – may be either higher or lower in that case. Thus, private production is superior when the deterioration of quality from cost reduction is sufficiently small relative to the importance of improvements and innovation.

The notion of ownership in terms of residual control rights in the presence of contractual incompleteness is intuitive, and the related fact that investment incentives arise naturally thanks to the dynamics of the model is a strength of the property-rights framework. The prediction that contracting out likely produces lower costs while the effects on quality are ambiguous is consistent with conventional wisdom; we will review the evidence in this regard below. On the other hand, it is important to point

out that the fact that contracts are always renegotiated makes it hard to think of incentive contracts within this framework; the practical importance of incentive contracts makes this a significant drawback. Finally, the HSV model does not deal with (ex post) competition, the topic which we now turn to.

2.2 Ownership vs Competition

Competition among potential providers serves the triple purpose of confining the provision of a service to those best suited for it, of increasing inefficiently low output, and of transferring a sizable fraction of the surplus to the buyers. Although the application of competition to service contracting has been quite widespread, there is no single dominant model that has been used.⁷

A useful benchmark is the Bertrand model of price competition; in its simplest form, it generates the prediction that firms with identical constant marginal cost will compete fiercely and that price will be equal to marginal cost.⁸ Much of service contracting is bought/procured on a special kind of marketplace, *viz.* by auctions based on competitive tendering. This process can be seen as a means of accomplishing price competition that – given that quality is unimportant or can be appropriately dealt with – comes close to marginal-cost pricing. While a reasonable way of looking at it, there are several important qualifications.⁹

- The auction process by construction leads to the key decision (bidding) being made under incomplete information about competitors; this incomplete information produces *information rents* and may also lead to inefficient quality levels.¹⁰

⁷ Snyder et al. (2001) note that competition has not been included in theoretical models of public sector outsourcing. The HSV model, for instance, does not have much to say about competition.

⁸ With repeated interaction or heterogeneity, this conclusion is overturned. Another result within the framework is that product differentiation attenuates competition; this conclusion is important and also quite robust. A similar conclusion can be derived within the monopolistic-competition framework. An important general conclusion is that inefficient firms may survive in oligopolistic markets thanks to prices being kept high enough.

⁹ The basic observations about auctions can be accessibly found in Klemperer (1999).

¹⁰ This is reflected e.g. by bidders in first-price sealed-bid auctions making bids that exceed their true cost (in procurement auctions). Similar rents are generated in other auction formats by the “revenue equivalence theorem” stating that a broad range of auction formats generate the same expected cost for the buyer (Klemperer, 1999). Manelli and Vincent (1995) show that sequential take-it-or-leave-it offers may outperform procurement auctions when there is asymmetric information about quality.

- Auctions, on the other hand, may undermine the mechanisms generated by repeated interaction and product differentiation to sustain prices above marginal cost. The strict rules and the transparency of the auction process make it more difficult for firms to engage in tacit collusion.¹¹

As to differentiation, it can be neutralised in so far that if relevant qualities can be fully specified, price competition can take place conditional on those qualities.¹²

2.3 Service Contracting

The analysis of outsourcing of public-sector activities is closely related to the analysis of the make-vs-buy decision and the literature on the boundary of the firm.¹³ In this subsection, we will develop key aspects of this analysis towards our ends.

Contracting and contracting possibilities play a crucial role in the context of outsourcing. To make the distinction clear, one may consider a four-step ladder of possibilities for contracting on a variable, X , that can be thought of as relevant quality. In each case, we mention illustrative examples discussed further in Section 3.

1. If X can be specified in a contract, and the contract can be enforced at negligible cost – i.e. if a deviation can be identified by a court or arbitrator and an appropriate sanction can be applied – the variable is said to be perfectly contractible. Garbage-collection services seem to provide an example where this is reasonably close to being true.
2. If an imperfect measure of X can be contracted on, the quality provision problem suffers from *moral hazard*. Road maintenance and transportation exemplify this below – in both cases quality indicators, such as punctuality in transportation, provide garbled measures of exerted effort.
3. It may be that the parties to a relationship all know X , but this knowledge is not “hard” enough to be the basis for an enforceable contract. The variable is

¹¹ This, obviously, does not mean that collusion is ruled out; Klemperer (2002) goes through a number of examples of sophisticated collusion practices.

¹² Bulow and Klemperer (1996) prove an illustrative result on auctions stating that the benefit from attracting an additional bidder to a standard auction is higher than the benefit of replacing the auction with an optimally structured negotiation with the original set of bidders.

¹³ The property-rights approach – with its roots in transaction-cost economics – has developed from this inquiry; see Hart (1995) for a general introduction. A key observation is the importance of specific assets in explaining integration/outsourcing choices; this insight is corroborated in HSV.

then said to be *observable but unverifiable*; this is precisely the assumption made about investments in the property-rights framework described above. Prisons provide an example as the quality of guards and their use of force is difficult to specify such that a private contractor can be held accountable for quality shortfalls, as discussed by HSV. Fire protection is another example. Observations of slow and hesitant firefighters need not constitute any hard evidence of their neglect.

4. Finally, it may be that only the service provider knows X ; the good with quality X is then said to be a *credence good*. Residential youth care provides an example where crucial quality aspects have this property.

The possibilities are ordered down the ladder in the sense that empirically, credence goods necessarily entail elements of lack of verifiability and moral hazard, and it is hard to think of an outsourcing context with severe verifiability issues in the absence of moral hazard.¹⁴

A general observation is that moral-hazard problems as envisioned under 2 can be dealt with by providing incentives *ex ante*; *ex post* bargaining (or repeated interaction), on the other hand, needs to play a role in order to create incentives for unverifiable qualities as in 3. This is in line with the dynamic element in the property-rights model as discussed above.

The basic principal-agent model provides a useful framework for appraising the means of ascertaining appropriate action via direct *ex ante* incentives.¹⁵ There is a tension between providing strong incentives for the provision of the desired X and other considerations, such as the undesirable risk exposure that comes with punishment of a measured outcome that may have come about in spite of the underlying behaviour being as contracted, or effort substitution as conceptualised by the *multi-task model*.¹⁶ The multi-task model is defined by outcomes and associated performance measures having more than one dimension; the outcome of an instance

¹⁴ In purely theoretical terms, cases 2 and 3 are not unambiguously ordered in terms of contracting possibilities; there may, for example, exist trading arrangements that can cleverly utilize unverifiable information, as noted by Hermalin and Katz (1991), but such ways of eliciting soft information are particularly rare in the public sector.

¹⁵ Holmström (1979) and Grossman and Hart (1983).

¹⁶ We will adhere to the framework of Holmström and Milgrom (1991); a different set-up dealing with the same basic issues is developed in Baker (1992).

of outsourcing, for example, may be characterized by realized cost and quality, each with an imperfect performance measure. If the agent can allocate effort *across tasks*, it follows under some additional assumptions that strong rewards tied to performance in one dimension will make the agent re-allocate effort at the expense of the other dimension. Since monetary outcomes are often easier to measure than quality, there is a temptation to reward cost-savings more strongly than quality; the caveat coming from the multi-task model is that this may lead to inefficient effort substitution and unsatisfactory care for quality.

The multi-task model provides a framework for comparison across activities; activities where hard-to-measure qualities are relatively more important should be subject to weaker cost-saving incentives. This observation is normatively significant but it does not speak directly to trade-offs involving outsourcing. The application to outsourcing follows by the observation that monetary incentives are, in general, stronger in inter-organisational transactions than in transactions within an organisation; an independent contractor is expected to face stronger cost-saving incentives than would a public-sector manager working on the same task. While this fact is often acknowledged and subject to analysis in transaction-cost economics – see e.g. Williamson (1985, Ch. 6; 1999) – it is more seldom addressed within the formal contracting literature.¹⁷ A simple observation in this context is that if a principal has attenuated monetary incentives, such incentives will be passed on to the agent; there is a “trickle-down property” in incentive provision. This illuminates the observation that managers in non-profit firms often face weaker monetary incentives than managers in comparable for-profit firms.¹⁸

In dealing with verifiability issues, a fundamental insight of transaction-cost economics and the property-rights approach is the importance of ownership. When unverifiable payoffs are tied to an asset, the owner faces appropriate incentives without a need for contracting. While the analysis of *ex-ante* specific investment is an

¹⁷ Exceptions include Acemoglu et al. (2008) arguing that organizations deliberately create free-rider problems to weaken monetary incentives, and Andersson (2011) appealing to the property-rights literature in assuming that residual revenue streams are indivisible and subject to incomplete contracting; outsourcing amounts to transferring residual monetary incentives to the provider and the model predicts that direct incentives are stronger under outsourcing.

¹⁸ This empirical observation is made e.g. in Roomkin and Weisbrod (1999); a simple theoretical analysis of incentives in non-profits is Glaeser and Shleifer (2001). Wübker and Wuckel (2019) compare mortality rates and costs of private for-profit and private not-for-profit hospitals in Germany.

integral part of the standard model, the relationship between the investment in a physical asset and the services produced by means of that asset is not. In practice, however, the production of many public services – such as transport and incarceration – uses facilities or equipment, the design and maintenance of which are important for the costs and quality of the service.

Outsourcing arrangement involving assets that need maintenance benefit from the user of the asset carrying the responsibility for and receiving the benefits from its maintenance; this is most simply implemented by having the user own the asset. Thus, in the context of outsourcing the operation of bus services, ownership of the buses should rest with the contractor.¹⁹ The bus example is not fully germane, however, since it involves rather non-specific assets. The problem constitutes a greater challenge when it comes to specific assets, such as a contractor operating a nursing home in a small town; if the contractor owns the nursing home but is replaced when the contract is renewed, the re-sale opportunities may be poor, and the investment incentives accordingly inefficiently weak. With specific assets, the returns on many investments are likely to accrue to both the contractor and the public body. There are thus a number of trade-offs in the optimal arrangement of asset ownership.²⁰

When it comes to credence goods, most theoretical work is concerned with direct consumer purchase.²¹ Features of credence goods, however, highlight the potential importance of *public service motivation*, viz. the notion that some workers have an intrinsic motivation either for work directly or for the output generated in service production as surveyed by Francois and Vlassopoulos (2008). It is often argued that such motivation is more prevalent in the public sector and in non-profit organisations; in particular, it is argued that a profit-motive unavoidably crowds out such motivation since the residual claimant cannot commit not to exploit such motivation. Gregg et al. (2011) find firm evidence that there is a significant difference

¹⁹ An exposition of pitfalls and mistakes in contracting of bus services is provided by Sclar (2000, Ch. 5).

²⁰ The intuition described is corroborated by theoretical work on the pros and cons of *bundling* the construction and the management of a facility for provision of services. Both Bennett and Iossa (2006) and Martimort and Pouyet (2008) address this issue and a conclusion emerging from both papers is that a positive externality of effort in the construction on the provision of services favors bundling. One may note that this is perfectly in line with the reasoning above in so far that appropriate maintenance seems bound to spill over positively on service provision.

²¹ Reviews of the economics of credence goods are provided by Dulleck and Kerschbamer (2006) and Kerschbamer and Sutter (2017).

in the propensity to “donate labour” between the for-profit and non-profit (including public) sectors of the economy; they also argue that this reflects a selection effect.

The next step is to synthesise the observations made in terms of ownership and contracting difficulty in a way that ties directly into the empirical analysis. First, we will articulate the interaction between ownership and competition in service contracting, and then go on to discuss the interaction with contracting issues.

In the choices defined by the degree of competition on the one hand and the involvement of private ownership on the other, the relevant options, in general, involve the following combinations:

- competition and significant involvement of private ownership, and
- monopoly provision under public ownership.

As to the other options, private monopoly – offering a no-bid contract to a monopolist – is almost unheard of, barring arrangements driven by right-out corruption, and competition involving *only* entities controlled by the public sector is rare in contexts where there is no user choice.²²

Could competition between publicly owned actors, albeit rarely observed, substitute for competition involving privately owned competitors? Clearly, this depends on the scale and scope of the market. On a general note, a reason for competition between public units to be less powerful is the difficulty for the public body responsible to commit to hard budget constraints; any expectation that a failed unit would be bailed out – e.g. by a capital injection or by its employees being offered similarly-attractive jobs elsewhere – would undermine the incentives to work hard to avoid failure.²³ In addition, there is a difference between public and private ownership in terms of the option value of a significant success; a private owner can gain

²² The concentration on two of the four combinations distinguishes service contracting from privatization of public enterprises; in the latter case the privatization of a monopoly is a relatively more attractive and common course of action (although it raises questions about regulation).

²³ See Eggleston (2008) for a formal development of soft budget constraints using the property-rights framework.

substantially from a drastically improving innovation, whereas such incentives are much weaker within the public sector.^{24, 25}

A related question is why it is often the case in practice that an activity is partially contracted out in the sense that some in-house provision is retained. There are a number of reasons for this. First, retaining in-house production guarantees the presence of an additional competitor and this is likely to discipline competition, in particular since an in-house competitor is unlikely to engage in collusive activities, and the benefits from additional private-sector competition are likely small when the private share of production is large. Second, there is an option value for a public body to have the capability to engage hands-on in an activity in case of, for instance, a failure of delivery by a contractor – including failure caused by bankruptcy – or in order to handle residual demand. Third, the practical knowledge of how a particular service is produced may improve the chances of outsourcing that service successfully. Finally, this may be a way of using public service motivation, with employees with strong such motivation sorting themselves into public employment, as corroborated by Gregg et al. (2011).

The conclusion that the introduction of private ownership and competition go together does not *per se* change the fact that different forces are set to work; therefore, the empirical task of assessing their relative importance remains.²⁶

In the absence of further complications in the form of contracting issues and challenges in finding appropriate ownership structures, the case would be closed; the economic argument for introducing private ownership and competition would be unambiguous. Such complications, however, are obviously important in practice. The *incentives for* compromising quality through effort substitution are clearly strengthened by the appropriability of cost-savings coming with private ownership (and probably aggravated by trickling-down effects of fierce competition); as to the *possibilities* for effort-substitution, there is a clear distinction between:

²⁴ This can also be phrased in terms of expansion incentives; as noted by Hoxby (2003) a distinctive element of for-profit schools (compared with non-profits) is the incentive to expand. Competition excluding profit motives would likely be weaker for this reason.

²⁵ On the other hand, any element of choice by users would make competition across public-sector units more powerful, as would a degree of genuine autonomy across such units. Both these conditions seem to be met in the UK National Health Service (NHS), see e.g. Propper et al. (2008).

²⁶ For recent papers exploring the effect of competition, see e.g. Milne et al. (2012) and Dackehag and Ellegård (2019).

- *contracted quality* where effort-substitution incentives are eliminated by contracting; and,
- *post-contracting performance* where effort-substitution is likely to play out.

Focusing on contracting and quality, an important overall point is that movement towards the involvement of private ownership and the introduction of competition call for an endogenous response in terms of contracting arrangements; in particular, it calls for a heavier reliance on contracting. This creates an incentive for stronger monitoring and better measurement of quality and overall performance. This, in turn, has a clear implication in terms of service contracting:

- The better the prospects for contracting based on appropriate performance measures, the more attractive are arrangements involving private ownership and competition.²⁷

This observation gives a clear theoretical prediction for the occurrence and success of service contracting. It gives, moreover, scope for a theoretical analysis of movement towards or away from private ownership and competition based on an assessment of such characteristics in each case.

3. Empirical Evidence

The empirical literature on public sector outsourcing and competitive tendering is voluminous with a great number of contributions. In this section, we take stock of the recent empirical literature on the consequences of outsourcing public services. In doing so, we systematically group the services into the four groups discussed in Section 2 with different kinds of contractibility problems and also rank the services along a one-dimensional assessment of their contracting difficulty. We have selected the services in order to fit each step on the four-step ladder of possibilities for contracting presented in Section 2, and to span the full range of contracting difficulties, from very small (garbage collection) to very large (prisons and residential youth care). To focus on contracting, the included services are such that user choice is

²⁷ This is not to say that contractibility characteristics are irrelevant for the workings of monopolized public provision, but that the (absolute) attractiveness of monopolized public provision can reasonably be assumed to be less sensitive to the contracting characteristics stressed.

either absent or severely limited (leaving out, e.g., education vouchers). For each service, we try to include the relevant published articles but exclude case studies and cross-sectional studies that do not deal with selection bias. We include studies in which outsourcing was carried out or introduced as a possibility (sometimes a service is tendered but retained in-house).

After the pioneering studies in the 1970s and 1980s, the empirical literature has gradually moved from cross-sectional studies to studies based on panel data and more credible identification strategies. A few recent papers use randomised field experiments. Accounting for more recent studies is also important since the effects of outsourcing are likely to be the largest when the public sector is first opened up for competition. The 1980s may have been a period when unusually large benefits from outsourcing could be reaped. Consistent with this presumption, the earlier literature showed large benefits from contracting and singled out competition as the main cause. Later studies tend to show smaller benefits and give about equal weight to ownership and competition as the explanation.²⁸ The development in many countries towards more public sector outsourcing has thus increased the relevance of the theoretical literature with its focus on ownership and the “property-rights approach”.

Empirical investigations of the effects of outsourcing face several methodological problems which should be characterised before reviewing the empirical papers. The comparability of public and private units is perhaps the most obvious one. In a study of the privatisation of Czech companies, Gupta et al. (2008) show that more profitable companies were privatised first in order to maximise state revenue and to improve the goodwill of the extensive privatization program. Studies of outsourcing face similar selection problems. An important advantage of public sector outsourcing – compared with uncontested public production – is the ability to choose between production units with different characteristics. One should expect efficient and well-managed firms to be overrepresented when public sector contracts are awarded, and the previous studies have not been able to distinguish this selection effect of competition from the pure – or average – effect of private ownership.

²⁸ Angeles and Milne (2016) find that renewed tendering is necessary to maintain and increase cost savings in their study of the provision of cleaning and catering services in public hospitals in Scotland over the period 1985–1998.

Given that most empirical studies have been cross-sectional, self-selection bias is a major concern (i.e. outsourcing may be chosen by regions with particular characteristics affecting cost and quality). Panel data help, but do not fully solve the problem. The measurement of costs poses additional problems of data availability. Sclar (2000) critically examines such obstacles and stresses the need to distinguish between avoidable and unavoidable costs, and to include all of the transaction costs that a contract gives rise to, including the costs stemming from the risk that the contractor fails to deliver. Most empirical studies compare contracted payments with costs for in-house production in a rather non-transparent way (see, e.g., the highly cited study by Domberger et al. 1995).²⁹

Our focus on outsourcing implies that we do not review studies of full-fledged privatization or general comparisons between public and private units of production.³⁰ It is, however, instructive to briefly reflect upon the privatisation of state-owned enterprises. While the absence of a contractual relationship after such a full-fledged privatisation invalidates generalisations to public sector outsourcing, there are two reasons why the privatisation of state-owned enterprises provides useful input to our investigation. First, differences between the public sector and private organisations provide a basic motive for public sector outsourcing – and such differences are easier to identify in cases of complete privatization that also include the financing of the service. Second, in the case of perfect contractibility, the outcomes of public sector outsourcing and pure asset privatisation should be approximately the same, providing a theoretical benchmark against which public sector outsourcing can be compared.

The weight of the evidence suggests that private firms produce goods and services more efficiently than state-owned enterprises do. Literature reviews by Megginson and Netter (2001), Sheshinski and López-Calva (2003), Megginson (2005), as well as more recent empirical work,³¹ suggest that the differences are attributable both to ownership and to competition. For our purposes, the implication is that public sector outsourcing holds the promise of improving economic efficiency –

²⁹ Domberger et al. (2002) provide a distinct exception by including tendering costs, legal fees, and the ongoing transaction costs associated with contract management of vehicle and warehousing maintenance.

³⁰ Fewer studies compare public sector outsourcing with *laissez-faire*. One such example is Meriläinen and Tukiainen (2019) on residential waste collection in Finland.

³¹ See e.g. Bartel and Harrison (2005), González-Páramo and Hernández Cos (2005), and Okten and Arin (2006).

in so far as the improvements are not overturned by transactions costs, including from the difficulty of contracting.

A general conclusion from numerous studies is that outsourcing reduces the costs of most public services, although the magnitude of the savings has been debated. Mainly relying on the Australian review study by the Industry Commission (1996), Domberger and Jensen (1997) conclude that outsourcing may produce savings in the order of 20 per cent without sacrificing service quality. Grout and Stevens (2003) confirm that competitive tendering has reduced the costs of several services, notably garbage collection and laundry services. Jensen and Stonecash (2005) similarly conclude that outsourcing reduces government expenditure, although in certain circumstances this may partly come at the expense of service quality.

Quite a few of the earlier studies included in previous reviews relied on rather weak identification strategies. In this review, we set stricter criteria for including empirical studies. We include only studies that account for selection bias in a relatively credible way. Where to draw the line is a judgment call and we have chosen to include studies handling selection by means of instrumental variables, matching models or panel data with fixed effects, but to exclude cross-sectional studies relying on control variables. In fact, the previous reviews have also included a few cross-sectional comparisons without control variables, which we consequently exclude too.

Our empirical review is presented in Table 1, which contains seven public services, each with a short summary of studies on outsourcing. We divide the services into the four groups of contracting possibilities presented in Section 2 (perfect contractibility, moral hazard, unverifiable quality, and credence goods). In addition to this grouping, we assign an ordinal measure of contracting difficulty to each service. The ordinal measure is based on two similar surveys sent to city managers and mayors by Brown and Potoski (2003) and Levin and Tadelis (2010). From Brown and Potoski's survey we use the variable Service measurability and from Levin and Tadelis' survey we use the variable Contracting difficulty. It seems appropriate to combine these two variables as they are conceptually related and their Spearman correlation coefficient is 0.92 for the 29 services that are included in both surveys. We use five ordinal values of contracting difficulty: very low, low, intermediate, high, and very high.

The services range from garbage collection, which we classify in the perfectly contractible group with very low contracting difficulty, to residential youth care,

which we classify in the credence good group with very high contracting difficulty. One service, cleaning and housekeeping, which we classify as perfectly contractible is not included in either of the two surveys and we have to rely on our own judgment when assigning a contracting difficulty to it (low). Table 1 contains more on the classification and the contracting difficulty measure. The ranking produced by the ordinal measure of contracting difficulty confirms our claim in Section 2 that the four groups of contracting possibilities can be ranked according to such a measure. Accordingly, our classification of services into four groups may provide a complementary interpretation of the empirical findings in Brown and Potoski (2003) and Levin and Tadelis (2010).

As in previous reviews, we find that public sector outsourcing tends to reduce costs, although there are studies that find the opposite result – especially among the services with contracting difficulties. These studies notwithstanding, the weight of the evidence supports the prediction of the HSV model that outsourcing reduces costs.

While the HSV model does not make any general prediction with respect to quality, the model's underlying mechanisms contain a more specific prediction. Quality will be higher under private (compared to public) production, when it is relatively insensitive to cost-cutting efforts. Since the sensitivity depends on the contractibility of quality, one should test whether quality is relatively higher under private production when the quality of the service in question is relatively easy to stipulate in a contract.³² This, moreover, is also an implication (under some plausible additional assumptions) of the multitask contracting model.

Our empirical review indicates that service quality is unaffected or improved when quality is easier to contract upon, whereas the evidence is mixed for services with more severe contracting problems.

The studies that explicitly compare quality under outsourcing and in-house production indicate that contracting difficulty matters. For the perfectly contractible services (garbage collection; cleaning and housekeeping) most studies find that outsourcing maintains or increases service quality.

³² The HSV model also predicts that service quality will be higher under private (compared with public) production when quality is sensitive to improvement efforts. Unfortunately, this hypothesis seems to be more difficult to test.

In the group of services characterised by moral hazard (road maintenance; public and student transportation; employment placement), quality differences are only explicitly addressed in the studies on employment placement, where quality is lower with outsourcing than in public production.

Prisons are characterised as a service with unverifiable quality and moral hazard. The weight of the evidence on quality is in favour of public prisons. Finally, residential youth care is characterised as a credence good and private facilities seem to have lower quality for this service.

It is notable that quality data are absent in several studies of services for which contracting problems imply that opportunities of quality shading, i.e. a negative effect of outsourcing on quality, are present. Quality shading is in other words likely to occur in the cases that are difficult to study.³³ In view of this, subjective quality measures from user surveys seem interesting to analyse as they contain aspects of quality that are difficult to contract on.

³³ Propper et al. (2008) compare how the observability of dimensions of quality are affected by an increase in competition.

Table 1. Contracting difficulty and the cost and quality effects of outsourcing

Service	Contractibility group	Contracting difficulty	Cost and quality effects of outsourcing	References
Garbage collection	Perfect contractibility	Very low ^a	Mostly cost savings without loss of quality.	Szymanski & Wilkins (1993); Szymanski (1996); Reeves & Barrow (2000); Gomez-Lobo & Szymanski (2001); Ohlsson (2003); Bae (2010); Máñez et al. (2016); Gradus et al. (2018)
Cleaning and housekeeping	Perfect contractibility	Low ^b	Outsourcing reduces costs. Quality is observed in two studies and the effects point in different directions.	Domberger et al. (1995); Milne & Wright (2004); Angeles & Milne (2016); Toffolutti et al. (2017)
Road maintenance	Moral hazard	Intermediate ^c	Cost savings whilst maintaining ex post quality.	Blom-Hansen (2003); Petersen & Houlberg (2016)
Passenger transportation	Moral hazard	Intermediate ^d	Mostly cost savings, but in-house cheaper in two studies of Minnesota (Lazarus & McCullough 2005; Thompson 2011). Few reliable quality measures.	Lazarus & McCullough (2005); Roy & Yvrande-Billon (2007); Tukiainen (2008); Zullo (2008); Iseki (2010); Thompson (2011); Walter (2011); Sarriera et al. (2018)
Employment placement	Moral hazard	High ^e	In five randomized experiments, there is either worse quality and higher costs or no difference with outsourcing.	Winterhager et al. (2006); Bennmarker et al. (2013); Behaghel et al. (2014); Laun & Skogman Thoursie (2014); Krug & Stephan (2016); Rehwald et al. (2017)
Prisons	Unverifiable and moral hazard	Very high ^f	The weight of the evidence on quality is in favour of public prisons. No reported cost effects.	Farabee & Knight (2002); Bales et al. (2005); Spivak & Sharp (2008); Duwe and Clark (2013); Powers et al. (2017)
Residential youth care	Credence good, unverifiable and moral hazard	Very high ^g	One study finds higher recidivism and lower costs in private facilities, and the other study finds no difference in quality.	Armstrong & MacKenzie (2003); Bayer & Pozen (2005)

Notes: ^a Garbage collection is easy to contract on; either the garbage is taken away or not. In a ranking of contracting difficulty, “residential solid waste collection” is ranked at place 57 out of 64 services according to Brown and Potoski (2003) and at place 27 out of 29 services according to Levin and Tadelis (2010). “Commercial solid waste collection” is ranked at place 62 out of 64 services and at place 26 out of 29 services according to the same surveys.

^b Cleaning and housekeeping is slightly more difficult to contract on than garbage collection but problems of moral hazard and verifiability can relatively easy be overcome by means of an inspection. Since neither Brown and Potoski nor Levin and Tadelis include cleaning and housekeeping in their survey, the ordinal measure of contracting difficulty is based on our own judgment.

^c Road maintenance is classified in the moral hazard group since exerted effort is difficult to observe. The contracting difficulty of “street repair” is ranked 42/64 by Brown and Potoski and 17/29 by Levin and Tadelis.

^d Passenger transportation is classified in the moral hazard group; even though punctuality can be observed, it provides a garbled measure of exerted effort. The contracting difficulty of “operation of bus transit systems” is ranked 38/64 by Brown and Potoski.

^e Successful employment placement is both observable and verifiable, but since effort exerted with a particular job seeker is not, we classify employment placement in the moral hazard group. The contracting difficulty of “personnel services” is ranked 13/68 by Brown and Potoski.

^f Prisons are classified in the unverifiable and moral hazard group since quality is very difficult to observe. The contracting difficulty of “prisons/ jails” is ranked 15/64 by Brown and Potoski.

^g Residential youth care is classified as a credence good (implying it is unverifiable and also characterized by moral hazard) since the seller knows much more about service quality than the buyer. The fact that the buyer is a local public sector bureaucrat (rather than the youth under treatment) makes the service similar to prisons, but more difficult to contract on given that rehabilitation is harder to measure than incapacitation. The contracting difficulty of residential youth care may be seen as a combination of prisons and (see g above) and “Drug and alcohol treatment programs” which are ranked 2/64 by Brown and Potoski and 2/29 by Levin and Tadelis.

We will proceed by taking a closer look at the different empirical studies, organised by the type of service studied.

3.1 Garbage collection

Garbage collection – characterised as perfectly contractible and as having very small contracting difficulty – is by far the most studied service. In addition to the studies meeting our inclusion criteria for handling selection bias, there are also several older cross-sectional studies that do not meet our criteria. The included studies either point at cost savings (without loss of quality) or no cost difference in response to outsourcing. Three panel studies with fixed effects and relatively large samples stand out as the most credible ones. In the first among these studies, Szymanski and Wilkins (1993) report the same cost reduction for contracting out to a private company and in-house production as long as the service is put up for tender. In the second study, Szymanski (1996) finds that outsourcing reduces costs. In the third study, Gradus et al. (2018) find cost savings with private production certain years, but also that the cost-advantage is even larger with inter-municipal coordination. The remaining studies mostly find cost savings. This is the case in Reeves and Barrow (2000), whereas Máñez et al. (2016) find that it takes two years until municipalities that contract out become more efficient. Gomez-Lobo and Szymanski (2001) find that competitive tendering reduces costs. Bae (2010) finds no cost differences in a production function estimation. In-house production is found to be cheaper in one cross-sectional study (Ohlsson, 2003), which has a small sample but tries to control for selection bias. In sum, outsourcing and competitive tendering seem to have reduced the costs and increased the efficiency in garbage collection.

3.2 Cleaning and housekeeping

Cleaning and housekeeping are characterised as perfectly contractible and having low contracting difficulty. Among the four studies that we include, two use panel data and include fixed effects for the observed units. The first, Milne and Wright (2004), finds cost savings but does not estimate the effect on quality of service. The second, Angeles and Milne (2016), shows additional cost savings after each additional round of tendering, controlling for measured quantity but not for inspected quality of service. The two

remaining studies also use panel data, but without unit fixed effects. Domberger et al. (1995) find significant cost savings and no evidence of quality shading. On the other hand, Toffolutti et al. (2017) also find lower costs, but higher incident rates of MRSA infections when hospital cleaning was outsourced. To sum up, all four studies show that outsourcing lowers costs, but the quality effects are more uncertain with one study pointing at reduced quality and one study at unaffected quality.

3.3 Road maintenance

Road maintenance is characterised by moral hazard and an intermediate level of contracting difficulty. We have found two studies from Denmark, which point at substantial cost savings from contracting out (Blom-Hansen 2003; Petersen and Houlberg 2016). The first of them uses pooled cross-sectional regressions, whereas the latter is more ambitious and employs panel regressions with either clustered standard errors or municipality fixed effects. Both studies find that a 1% increase in private involvement leads to a 0.2% expenditure reduction. The reductions seem to come without loss of quality, although the studies contain quality measures only for some of the observations.

3.4 Passenger transportation

Passenger transport is characterised by moral hazard and an intermediate level of contracting difficulty. Several studies of public and student transportation have been conducted in recent years, although quality measures are generally sparse. Most of the studies report cost savings from outsourcing (Roy and Yvrande-Billon 2007; Iseki 2010; Walter 2011; Sarriera et al. 2018). Among these studies, Iseki (2010) is perhaps the most credible one, attempting to address the endogeneity of contracting using a comparably large panel. Zullo (2008) is another credible panel study which finds that demand response contracting is associated with lower costs than in-house operations, whereas motor bus services exhibit the same costs for both modes of production. Sarriera et al. (2018) use a large bus-transit agency panel and find that contracting out reduces unit cost, but not cost growth. They also find that private production cost savings are larger when there is some public production. On the other hand, in-house production is cheaper in two studies of student transportation in Minnesota. In-house is 20% cheaper than contracted

transportation in Thompson's (2011) panel study, which also reports preliminary evidence that contractor drivers experience higher accident rates, possibly due to larger driver turnover. In-house production is also cheaper in the cross-sectional study (with instrumental variables) by Lazarus and McCullough (2005) if only in non-rural school districts. Tukiainen (2008) focuses on competition in public procurement. Based on nonparametric tests, he concludes that new competitors do not necessarily bring any benefits. The general pattern is that outsourcing reduces costs of passenger transportation, whereas quality effects are unknown due to lack of data on service quality.

3.5 Employment placement

Employment placement is characterised by moral hazard and a high level of contracting difficulty. The study by Winterhager et al. (2006) uses propensity-score matching to study the effect of a German reform that introduced job-placement vouchers and competition between public and private job placement activities. The estimated employment frequency is 6.5 percentage points higher among recipients than non-recipients of vouchers one year after treatment. Five recent studies on employment placement are particularly interesting since they randomise the selection of unemployed persons to private or public placement agencies. The Danish study by Rehwald et al. (2017) finds that private providers of employment services for highly educated job-seekers deliver more intense, more employment-oriented, earlier, but costlier services than public providers. However, there is no significant difference in job-finding rates. The French study by Behaghel et al. (2014) stands out in that the impact of intensive job counselling is twice as large when delivered by the public employment service compared with private providers. According to the authors' interpretation, the difference is explained by a contract structure, with a relatively high payment at enrolment, which makes it profitable to enrol a lot of job-seekers but to concentrate efforts on those who are easier to place. The public employment service is also found to have a larger impact in the German study by Krug and Stephan (2016), although the difference is more moderate than in France and fades away over time. Neither of the two Swedish studies (Benmarker et al. 2013; Laun and Skogman Thoursie 2014) finds any general difference between public and private provision of employment services.

Overall, public provision of employment placement seems to be at least as good as outsourcing to private providers. Note, however, that clients could choose between private providers in two of the studies (Winterhager et al. 2006; Laun and Skogman Thoursie 2014) and that private provision is at least as good as public provision in those two studies.

3.6 Prisons

Prisons are characterised by unverifiable outcomes and moral hazard, and a very high level of contracting difficulty. None of the five included studies is methodologically strong. Three studies use matching estimators (Farabee and Knight, 2002; Duwe and Clark, 2013; Powers et al., 2017), one uses proportional hazards regression (Spivak and Sharp, 2008), and one uses maximum likelihood with controls for inmate characteristics and type of crime (Bales et al., 2005). Farabee and Knight (2002) find lower recidivism among female inmates released from private than from public prisons in Florida, but no difference among released male inmates. Also for Florida, Bales et al. (2005) find no significant difference in recidivism between public and private prisons. On the other hand, Spivak and Sharp (2008) and Duwe and Clark (2013) find significantly greater hazard of recidivism among inmates released from private prisons in Oklahoma and Minnesota. Powers et al. (2017) compare inmates released from a private reentry centre in Colorado with inmates released from public facilities in the same state. They find no difference in overall rates of recidivism or in the time to return to prison. However, inmates released from the private facility were more likely to return to prison for a new offence. Taken together, the reported quality effects from outsourcing are somewhat mixed, but with the weight of the evidence in favour of public prisons. Presumably due to lacking data, no effects on costs are reported in the included studies.

3.7 Residential youth care

Residential youth care is a credence good, characterised by unverifiable outcomes and moral hazard, with a very high level of contracting difficulty. Compared with prisons, rehabilitation is more important, and the provider has private information on whether a certain treatment is needed or not. The most credible study in this area is Bayer and Pozen (2005), who study juvenile correctional facilities in Florida using linear

probability regressions of individual recidivism with multiple fixed effects and clustered standard errors. They find that private facilities are less expensive, but have higher rates of recidivism than public and non-profit facilities. The authors also conduct a cost-benefit analysis which suggests that the for-profit facilities provide less value for money. Relying on detailed survey data and a linear hierarchical model, Armstrong and MacKenzie (2003) find no significant differences in self-reported quality among juvenile delinquents in Florida. Overall, the evidence from the two studies of residential youth care is inconclusive, but if anything, mildly in favour of public provision.

4. Conclusion

In our review of theoretical work, we stressed the property-rights framework for understanding ownership and the importance of contractibility issues for deeper insights into the pros and cons of contracting arrangements.

We share with much of the literature on outsourcing public services some asymmetry in the treatment of contracting with private actors on the one hand, and in-house production on the other. It seems desirable for the literature generally to invest more in the understanding of the internal workings of public-sector bodies.³⁴ Other desirable extensions of the theoretical literature would be to incorporate competition, not-for-profit providers, and bankruptcy in models of outsourcing.

As expected from theory, the consequences of outsourcing differ with respect to contracting difficulties. We have documented quite favourable outcomes in terms of costs and quality for several services that do not suffer from severe contracting problems. This is the case for garbage collection, cleaning and housekeeping, road maintenance, as well as passenger transportation. The evidence for services with higher contracting difficulty is more mixed. Several studies indicate that outsourcing gives rise to lower quality. In employment placement, the service with the most credible studies, public provision seems to be at least as good as outsourcing to private providers. Also for prisons, the

³⁴ See Prendergast (2003) for a step in this direction.

weight of the evidence favours public facilities. For residential youth care, the evidence is inconclusive as private facilities combine lower costs with lower quality.

We conclude that outsourcing works better in the absence of contracting problems, and in many instances fails for services with high contracting difficulty. However, the existence of successful cases of outsourcing of services with high contracting difficulty suggests that public in-house provision should not be seen as a foregone conclusion. It is intuitive that outsourcing of services with high contracting difficulty requires considerable attention to detail, which risks being neglected. We, therefore, recommend further studies to focus on the formulation and follow-up of contracts in services that are characterised by contractibility problems.

Our empirical review has identified several dimensions in which there is room for improvement in future empirical studies. With the exception of the recent studies of employment placement that use randomised experiments, most studies have been unable to make use of exogenous variation in outsourcing. Since contracting out employment placement is less favourable in the studies based on randomised experiments, it is conceivable that private providers oftentimes can get a favourable case mix that is difficult to account for. It would also be valuable to compare the costs in private and in public production (rather than to compare private prices and public costs). In doing so, the studies should also be more transparent about how the costs in private and public production have been computed. The inherent difficulty of measuring outcomes that are difficult to contract on should be given more attention. In so far as measured quality coincides with contracted quality, this should be acknowledged. Finally, to the extent that it is possible to measure dimensions of quality that are difficult to contract on, this should be exploited and emphasised.

In this paper, we have chosen to exclude services with user choice. In view of this, we should mention that for many services the attractiveness of outsourcing may increase with the introduction of user choice – as was indeed indicated among the studies of employment placement. As an example, Chandra et al. (2016) study the U.S. health care sector, which presumably suffers from severe contractibility problems and a lack of proper financial incentives. They find that higher quality hospitals have higher market share and grow faster, and that the relationship is especially strong for patients with

greater scope for hospital choice. Other relevant user choice studies can be found in the vast literature on school choice.

In addition, technological advances in many sectors may improve the verifiability and observability of quality. Examples include electronic personal health records; GPS tracking in areas such as security, transportation, and elderly home care; and online consumer ratings of services.

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