

Bennedsen, Morten; Schultz, Christian

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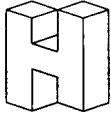
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# **Institut for Nationaløkonomi**

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## **OUTSOURCING, MARKET STRUCTURE AND ELECTIONS**

**Morten Bennedsen**

**Christian Schultz**

**Department of Economics** - Copenhagen Business School  
Solbjerg Plads 3, DK-2000 Frederiksberg

# Outsourcing, Market Structure and Elections.<sup>§</sup>

by

Morten Bennedsen  
Copenhagen Business School,  
DTRI, CEBR & CIE.

& Christian Schultz  
University of Copenhagen,  
DTRI, CES-ifo & CIE.

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**Abstract:** We make a positive analysis of the impact of market structure and political preferences on a (local) government's decision to outsource public service using the framework of Hart, Shleifer and Vishny (1997). We argue that although outsourcing is more attractive when the private market is competitive, the outsourcing decision will be the same in a competitive as in a monopolistic market. Second, we analyze how the price paid in a private monopoly market depends on how much the government cares about the benefits of the public service, and we provide conditions for when a "leftist, public service loving" politician outsources to a lower price. When this is the case and outsourcing is a salient issue in an election, the median voter prefers a more "leftist" government to be in charge of the outsourcing.

**Keywords:** Privatization, Outsourcing, Incomplete Contracts, Market Power, Elections.

**JEL:** D72, L33, L97.

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Corresponding author: Christian Schultz, Dep. of Economics, University of Copenhagen, Studiestræde 6, 1455 Copenhagen K, Denmark. Email: [Christian.Schultz@econ.ku.dk](mailto:Christian.Schultz@econ.ku.dk).

# 1 Introduction

The choice between governmental or private provision of public goods, services or facilities has been a topical issue in the OECD countries for decades. The government should provide high quality services for the citizens and at the same time charge low taxes. Outsourcing is often seen as an instrument to reduce costs and boost the budget of local and central governments.

In this paper we study a number of positive questions related to outsourcing: Which incentives does a government have to outsource public service? How are these incentives affected by the degree of competition in the relevant private market? How do these questions affect the incentives of voters when outsourcing is the salient issue in elections?

While our analysis applies to all kinds of outsourcing, these questions are inspired by recent experience with outsourcing of public transport around the world - and in particular in Denmark - since outsourcing has induced both cost reductions and concentration in the market structure. There is strong evidence for that outsourcing of local bus transportation yields cost reduction (see survey by Small and Gomez-Ibanez 1999). Various studies have found cost reduction in the interval 15-25 pct. Kennedy (1995) finds that in London the cost reduction from 1987 to 1992 were 16 pct, whereas Teal (1991) finds a cost reduction in the range of 25-30 pct. in outsourcing of local buses in US. In Denmark almost all public bus transport has been outsourced and outsourcing of train services has begun. Procurement prices in bus transportation has fallen 21-25% between 1990 and 1999.<sup>1</sup>

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<sup>1</sup>See Konkurrencestyrelsen (1999) and Færdselsstyrelsen (2002) for further evidence

Together with the privatization and outsourcing of local transportation, there has been a significant change in market structure. In the Copenhagen area the three largest companies have increased their compound market share from 44 pct. in 1990 to 90 pct. in 2002. Concurrently with this the decline in procurement prices has stopped: prices fell from 1990-1996 with 24% but subsequently increased with 24% in the period 1996-2002. Although, the authority responsible for outsourcing<sup>2</sup> finds that competition is still maintained in the market, the increased concentration is worrisome in the long run. The acknowledgment that the private markets for public service are not always perfectly competitive, highlights the need for a positive analysis of the interaction between market organization and a government's incentive to outsource or privatize. We provide such an analysis; for simplicity we consider the two extremes, perfect competition and monopoly, thus delineating the possible outcomes.

In a competitive market, the price paid by the government to the private provider is the competitive price, leaving no surplus profit to the firm. In an imperfectly competitive market, the government does not reap all surplus. When the number of private providers is low, they potentially have market power and can reap large parts of the benefits from outsourcing. Hence, it is tempting to argue that a politician, who (also) cares about the budget, may have a larger incentive to outsource when the (private) market is competitive, than when it is monopolistic. However, this reasoning does not take into account the strategic price behavior of the monopoly. The monopolist is not interested in pricing

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<sup>2</sup>The source is Hovedstadsrådets Udviklingsråd, which is the regional government authority responsible for outsourcing of busses.

himself out of the market. If he sets a higher price than the one the government is willing to pay, there will be no demand. The optimal price just makes the government indifferent between outsourcing and not. Hence, the conditions under which outsourcing will result are the same in the monopolistic and the competitive market, but the price is typically not.

This is a general insight. In order to derive further results regarding the conditions under which outsourcing occur and what influences the price, we adopt the incomplete contracting framework of Hart, Shleifer and Vishny (1997) and derive the conditions under which the government finds outsourcing preferable. Central to their model is the idea that quality improving or cost reducing effort is non-contractible. The incentives to undertake such effort therefore depend on whether the service is produced in the government sector or outsourced. Quality improving and cost reducing effort will be higher under outsourcing. Since cost reduction affects quality negatively, the actual quality level may be higher or lower under public provision, whereas the cost level always is lower under outsourcing. These effects determine whether the government wishes to outsource or not and influence the price the government has to pay for outsourcing.

Our second insight relates to the impact political preferences has on the price the government will end up paying a private provider in a monopolistic market. The monopolist offers optimally a price, which exactly makes the government sector indifferent between outsourcing and retaining the production in-house. A government who is eager to outsource may therefore end up paying a higher price than a more reluctant government. We derive comparative static results on the price. Perhaps surprisingly, it is not always true that a government, who cares

more for the public service, ends up paying a higher price. If the extra focus on cost reductions, which result from outsourcing, has a very negative effect on the quality level of the service, a government who cares much for the service may find outsourcing unattractive. A monopolistic provider, will then have to charge a lower price in order to make such a government outsource. We provide the exact conditions under which a “more leftist”<sup>3</sup> government, caring more about the public service, will end up paying a lower price. We also show that the reverse result is possible in our model, namely, that a leftist government pays more for the public service.

Our third insight uses this price effect to show that sometimes voters would prefer a more leftist politician who cares more for the public service to be in charge of outsourcing this same service. The argument is that voters rationally take into account that the price the government is going to pay for outsourcing depends on how eager the government is to outsource. If the price is decreasing in the value the government puts on benefits, then the electorate will choose a government who is more leftist than the median voter. This government outsources and delivers a higher quality public service at a lower cost, than a government with the median voter’s preferences. If the price is increasing in the governments preference for benefits, voters face a trade off: a more leftist government delivers higher quality but at a higher cost. We derive the condition under which the electorate still chooses a more leftist government.

While our theory in principle applies to all sorts of governments, the analysis

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<sup>3</sup>For simplicity we denote governments with a strong preference for a given public good as leftist. Obviously there are many examples - such as defense and military - where this definition is doubtful.

of outsourcing to a monopolistic market seems particularly relevant in smaller economies or for areas, where the responsible government body is a regional government. Although we focus on the pure case of a monopoly, the effects identified in the paper are also relevant for situations, where the private firms bidding in government procurement auctions are able to soften competition either by legal or illegal means.

We would like to emphasize that although we use the framework of Hart, Shleifer and Vishny (1997), the forces at play behind our results would also be relevant if outsourcing was differently motivated than in the Hart, Shleifer and Vishny model. The model gives a consistent explanation of why private firms presumably are able to produce at lower costs but possibly at the expense of quality. This could also be the case, if outsourcing were motivated by the government's wish to circumvent very generous union contracts made between the government and unions previously. We believe that this motive have been important in many countries. It would lead to outsourcing at lower cost and (perhaps) at the expense of quality. For a further analysis of this the reader is referred to Bennesen (1999) and the empirical study by World Bank(1995). For our analysis of market structure and elections, the exact reason why this trade off occurs is not crucial. We adopt the framework of Hart, Shleifer and Vishny in order to found the analysis in a consistent well understood theoretical framework.

There is by now a large theoretical and empirical literature on outsourcing and privatization of public goods and services. The theoretical literature includes Laffont and Tirole (1991), Shapiro and Willig (1993), Shleifer and Vishny (1994), Schmidt (1996), Hart, Shleifer and Vishny (1997), Bennesen (1999) and the sur-



vey by Shleifer (1998). In general these studies focus on welfare effects from a normative perspective, i.e. which production mode yields the highest benefits for the societies. As stated above, our contribution is positive, i.e. we link the decision to outsource to the degree of competition in the market and consider the effects on prices and the implications for elections where outsourcing is a salient issue. The welfare effects of privatization have also been documented in a number of empirical studies, such as Vickers and Yarrow (1988) study of privatization in the UK, the World Bank's (1995) case based study of privatization, the World Bank's (1997) study of transition in China, the La Porta et.al. (1997) study of privatization in the US and the general survey by Megginson and Netter (1999). In section 6, we briefly review the indirect empirical evidence for the connection between outsourcing, market structures and political preferences.

The organization of the paper is as follows. Section 2 introduces the incomplete contract model of outsourcing which forms the basis for the later developments. Section 3 investigates the government's incentive to outsource depending on whether the private market is competitive or monopolistic. Section 4 considers elections and the voters' choice. Section 5 expands the model to the case where quality is partially contractible and section 6 discusses indirect empirical evidence for our results and concludes the analysis.

## 2 The basic HSV model<sup>4</sup>

The government provides a service, which can be produced in-house or out-sourced. In both cases, the producer may perform quality improving effort,  $e_q$ , and cost reducing effort,  $e_c$ , resulting in plans, which may or may not be implemented. Effort is observable but non-contractible. If the plans are implemented, the government's utility is

$$\phi (B_0 + \beta\sqrt{e_q} - \sqrt{e_c}) - Y, \quad (1)$$

where  $B_0 + \beta\sqrt{e_q} - \sqrt{e_c}$  is the benefit,  $B_0$  and  $\beta$  are positive,  $Y$  is the government's expenditures on the service, and the parameter  $\phi > 0$  is the weight on benefits relative to expenditures. The parameter  $\beta$  represents the importance of quality enhancing effort relative to the detrimental effects of cost reducing effort for the government's benefit. A government with a high  $\phi$  is denoted a leftist government. The cost of producing the service is

$$C(e_c) = C_0 - c\sqrt{e_c}, \quad C_0 > 0, \quad c > 0.$$

### 2.1 In-house provision

Under in-house provision the government employs a manager at a market rate  $w$  (which is part of  $C_0$ ) and bears the cost of producing the service. The manager exerts quality improving and cost reducing effort. This is costly for him, with total income  $I$ , his utility is

$$u^m = I - e_q - e_c, \quad (2)$$

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<sup>4</sup>This section introduces our basic model, which in essence is a simplified version of Hart, Shleifer and Vishny (1997) extended with a preference parameter over the public good.

The gross gain from effort is

$$s(e_q, e_c, \phi) = \phi (\beta\sqrt{e_q} - \sqrt{e_c}) + c\sqrt{e_c}. \quad (3)$$

We assume that the government prefers positive level of cost reducing effort,

$$\phi < c. \quad (4)$$

The timing is as follows: First the manager spends effort  $e_q, e_c$  resulting in plans. Since effort is non-contractible, the manager has no direct incentive to perform effort. However, after effort is performed (and the associated utility cost is sunk for the manager), the parties can renegotiate his contract and decide whether to implement the plans or not. If negotiations break down, the government can replace the manager, but only a fraction  $(1 - \lambda)$  of the gross gains can be realized then. The idea is that a new manager does not have the detailed knowledge and human capital of the old manager.

The default utility of the manager in case of break down is therefore given by (2) with  $I = w$ . The gains from renegotiation are  $\lambda s(e_q, e_c, \phi)$ , which are split evenly, so the manager's income is  $w + \frac{\lambda}{2}s(e_q, e_c, \phi)$ . When choosing effort, the manager takes this into account so, the optimizing choices are

$$e_q = \left(\frac{\lambda}{4}\right)^2 (\phi\beta)^2 \text{ and } e_c = \left(\frac{\lambda}{4}\right)^2 (\phi - c)^2. \quad (5)$$

With these values and equal split bargaining, the government's utility from in-house provision is

$$u^{gh} = \phi B_0 + \left(1 - \frac{\lambda}{2}\right) \left(\frac{\lambda}{4}\right) (\phi^2\beta^2 - (\phi - c)^2) - C_0. \quad (6)$$

## 2.2 Outsourcing

Under outsourcing, the timing is as follows: First the government and a private firm concludes a contract stipulating that the firm produces the service for the price  $p_0$  and bears the associated costs. Again effort is non-contractible, so the decision of whether to implement the results is the firm's. After signing the contract, the private firm exerts efforts  $e_q$  and  $e_c$ . Finally, the contract can be renegotiated, but it cannot be terminated prematurely. If negotiations break down, the firm decides whether the quality improvements and cost reductions will be implemented. This is the crucial difference to in-house provision. Since the private firm bears all costs and is paid  $p_0$  regardless of quality, it will implement the cost reductions but not the quality improvement.<sup>5</sup>

If negotiations break down the default utility of the firm and the government are respectively

$$u_d^f = p_0 - C_0 + c\sqrt{e_c} - e_c - e_q \text{ and } u_d^{go} = \phi(B_0 - \sqrt{e_c}) - p_0 \quad (7)$$

The gains from renegotiation equals  $\phi\beta\sqrt{e_q}$  and are split evenly. The firm's optimal choices are therefore

$$e_q = \left(\frac{\phi\beta}{4}\right)^2 \text{ and } e_c = \left(\frac{c}{2}\right)^2. \quad (8)$$

So the final utilities from outsourcing are

$$u^f = p_0 - C_0 + \frac{1}{4}c^2 + \frac{1}{16}\phi^2\beta^2, \text{ and } u^{go} = \phi B_0 + \frac{1}{8}\phi^2\beta^2 - \frac{1}{2}\phi c - p_0 \quad (9)$$

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<sup>5</sup>Strictly speaking, the firm is indifferent between implementing the quality improvement or not. However, in reality implementing the quality improvement plans will most likely increase cost. It is straight forward to model this formally; however, such a formalization adds nothing to the analysis. Hence, we choose to save notation and assume that the firm, when indifferent, chooses not to implement the quality improvement.

Comparing effort under outsourcing,  $o$ , and in-house production,  $h$ , yields

$$\frac{e_q^o}{e_q^h} = \frac{1}{\lambda^2} > 1 \text{ and } \frac{e_c^o}{e_c^h} = \frac{4}{\lambda^2 \left(1 - \frac{\phi}{c}\right)^2} > 1. \quad (10)$$

Both kinds of efforts are larger under outsourcing, but cost reducing effort more so. The firm's incentives to perform effort are stronger, since the government cannot replace the firm and reap part of the surplus if negotiations break down. For cost reducing effort a further effect adds to this: the public manager takes into account that cost reductions hurt the government and moderates the extra surplus to be shared. The private firm reaps all surplus from cost reductions and does not worry about the government's utility loss. This difference is crucial for the results in the following sections. The higher cost reducing effort leads to lower costs under outsourcing. The effect on quality is ambiguous, as cost reductions hurt quality.

### 3 The Government's incentive to outsource

We envision the government outsourcing through a bidding process, where the firm bidding the lowest price wins the contract. The winning price depends on the competitive environment. If the government is large and the private sector is competitive, it will be reasonable to assume that the price will equal the competitive price, where the firm earns no excess profit. In this case the government will reap the whole surplus from outsourcing. This will in principle also be the consequence if there are at least two bidders and the government holds some standard auction, for instance an English auction.

However if competition is weak and the firms have the ability to collude the

outcome will not necessarily be competitive. In particular, this may be the case if there are several governments - for instance counties - outsourcing and few firms bidding in each county. Firms then have an opportunity to share the market tacitly, taking turns being the one having the low bid.

In the extreme case where the private firm is a monopolist it is not evident how the contract price is determined. If there is one government and one bidder, the situation is effectively one of a bilateral monopoly. If there are many local governments facing one large firm, it seems likely that the firm has quite a large bargaining power. If the government invites tenders, the private firm will only need to submit a bid, which exactly makes the government indifferent between outsourcing and producing in-house. In this case the private monopoly will reap the surplus from outsourcing. In the sequel we will assume that this is indeed the outcome, when private contractor is a monopolist. In between the two extremes, perfect competition and monopoly; are various degrees of market imperfection. Although we consider the case of pure monopoly, we would like to stress that the analysis also has relevance if the bidding firms are able to soften competition through for instance bidding rings.

### **3.1 Outsourcing under competition**

If the private market is competitive, the bidding process results in a price, which allows the selected firm to earn its reservation profit or utility, which we normalize to zero. Using equation (9), we get

$$p^c = C_0 - \frac{1}{4}c^2 - \frac{1}{16}\phi^2\beta^2. \quad (11)$$

The government's utility under outsourcing can then be found from (9), while the government's utility from in-house production is given by (6). Comparing these expressions and simplify a bit, yields the following condition,

**Proposition 1** *a) When the private sector is perfectly competitive outsourcing is preferred by the government if and only if,*

$$\beta^2 > 2 \frac{\lambda(\lambda - 2) + (\lambda^2 - 2\lambda - 2) \frac{(1 - 2\frac{\phi}{c})}{(\frac{\phi}{c})^2}}{2\lambda^2 - 4\lambda + 3}. \quad (12)$$

*b) Outsourcing is therefore more likely:*

*1) The higher is  $\beta$ , i.e., the more important quality improvements are to the government relative to the disutility of cost reductions.*

*2) The less important the quality deteriorating effects of cost reductions are relative to the achieved cost reductions, as measured by  $\phi/c$ .*

*3) For  $\frac{\phi}{c} < \frac{7}{3} - \frac{2}{3}\sqrt{7} \approx .57$ , increases in the manager's specific knowledge,  $\lambda$  makes outsourcing less likely; for higher  $\frac{\phi}{c}$ , increases in  $\lambda$  makes outsourcing more likely.*

Part b) of the Proposition follows from straightforward differentiation on condition (12). A higher  $\beta$  makes outsourcing more likely. The intuition behind this follows from that outsourcing increases both investment in quality and cost reduction. A higher  $\beta$  means that the quality improvement is more important for the government than the adverse effect of cost reductions. Through renegotiation it, thus, provides stronger incentives for the manager to invest in quality and this results in that the government ultimately finds outsourcing more attractive.

As long as the government prefers a positive level of cost reduction,  $(\frac{\phi}{c}) < 1$ , a higher  $\frac{\phi}{c}$  makes outsourcing less likely. A higher  $\frac{\phi}{c}$  imply that the harm of cost

reductions weights more relative to the cost reduction itself in the governments preferences. Since the private manager always has stronger incentive to cost reduction, this makes outsourcing less likely.

When  $\frac{\phi}{c}$  is low a higher  $\lambda$  makes outsourcing more likely, while the opposite occurs for high  $\frac{\phi}{c}$ . Recall that  $\lambda$  is the manager's share in the renegotiation and a measure of his specific knowledge. The higher is  $\lambda$ , the more incentives he has to perform effort, as is clear from equation (10). A higher  $\lambda$  means the public manager's effort level approaches that of the private firm's. But it is also clear from equation (10) that the effect of changing  $\lambda$  is different for the two kinds of effort. When  $\frac{\phi}{c}$  is small, the effects are almost the same, and raising  $\lambda$  makes public provision more like private provision with respect to both kinds of effort. The benefits of outsourcing therefore become less clear and outsourcing less likely. When on the other hand  $\frac{\phi}{c}$  is high, the public managers effort response to changing  $\lambda$  is larger on quality improvements than on cost reduction. In this sense a distortion occurs, and this makes outsourcing relatively more interesting.

### 3.2 Monopolistic private provider

A monopolistic private provider charges the highest possible price: the government's reservation price,  $p^m$ , which makes the government indifferent between outsourcing and in-house production. As with the competitive sector, the firms outside option has value 0. Hence, the lowest price the monopolist is willing to offer is the competitive price  $p^c$ . Outsourcing thus only occurs under monopoly if  $p^m$  is not lower than  $p^c$ . If  $p^m$  is lower, then the government is only willing to outsource at a price, which the monopolist will not accept. In this case outsource-



ing will not occur. But it would not occur in a competitive market either, as the government is not willing to outsource at the competitive price. This proves the first part of Proposition 2 below.

Regardless of the market structure outsourcing occurs if it maximizes the joint surplus. The market structure determines who reaps this surplus, the price paid to the private service provider depends on the market structure. Thus, the budget impact of outsourcing is quite different in a monopolistic market and in a competitive market. Using the expressions for  $u^{go}$  and  $u^{gh}$  we can find  $p^m$ .

**Proposition 2** *1. The government's outsourcing decision is the same in a monopolistic and a competitive market, so outsourcing occurs in a monopolistic market iff condition (12) is fulfilled.*

*2. The monopolist charges the price*

$$p^m = \frac{1}{8} \left( (1 - \lambda)^2 \phi^2 \beta^2 + \lambda (2 - \lambda) (\phi^2 + c^2) - 2 (2 + 2\lambda - \lambda^2) \phi c \right) + C_0. \quad (13)$$

*3. a) The more effective quality improving effort is, i.e. the higher  $\beta$ , the higher is the monopoly price.*

*b) An increase in the effectiveness of cost reducing effort increases the monopoly price if*

$$\frac{\lambda (2 - \lambda)}{2 + (2 - \lambda) \lambda} > \frac{\phi}{c}$$

*and decreases if the inequality is reversed.*

*c) An increase in the government's benefit from the service, i.e. an increase in  $\phi$ , increases the monopoly price if*

$$\frac{\phi}{c} > \frac{2 + (2 - \lambda) \lambda}{(1 - \lambda)^2 \beta^2 + \lambda (2 - \lambda)}$$

*and decreases it if the inequality is reversed.*

Part 3 of the Proposition follows from differentiation of  $p^m$  and a few simplifications. The intuition behind that a higher  $\beta$  leads to a higher price is the following. We noticed above that for a higher  $\beta$  makes outsourcing more attractive at a competitive price, due to the increased incentives for the private manager to invest in quality improvement. The monopolist supplier naturally takes advantage of this and raises the price offered to the government.

An increase in the effectiveness of cost reducing effort makes both types of managers increase their cost cutting effort, which in general harms the government as is clear from  $u^{go}$  and  $u^{gh}$ . The private firm makes more cost reducing effort than the government manager and therefore the marginal effect of such effort is smaller for the private firm. Whether an increase in the effectiveness makes the firm or the manager put in more effort is thus not apriori clear. If the private firm reacts stronger than the public manager, the government is compensated in the price, the condition for this to be the case is given in part 3b of the proposition.

Finally, a change in the government's preference for benefits,  $\phi$ , may increase or decrease  $p^m$ . If  $\beta \approx 0$  the right hand side approximates  $\frac{\lambda^2 - 2\lambda - 2}{\lambda(\lambda - 2)}$ , which is no less than 3 in the relevant range for  $\lambda$ . In this case an increase in  $\phi$  decreases the price. This is a case where the negative effects of cost reducing effort clearly dominates the positive effects of quality improving effort. In this case, outsourcing is less attractive and this is the more so the higher is  $\phi$ . Consequently, the monopolist has to charge a lower price. In this case a leftist government will outsource to a lower price than a right-wing government.

If, on the other hand,  $\beta \approx \infty$ , we get  $\frac{\partial p}{\partial \phi} > 0$ . In this case, the quality improving effort is the most important. As the private firm will engage in more

such effort, outsourcing is attractive - and the more so the higher is  $\phi$ . Hence, we have that governments more interested in benefits will not necessarily pay more or less, the crucial feature is the importance of the effects of quality improving vs cost reducing effort on benefits. The next section will look at this issue in more details.<sup>6</sup>

## 4 Voting and outsourcing

In this section we take one step back and look at which politician voters elect into office, if the salient issue in the election were the privatization question.

Voters are interested in the service and dislike costs, just like the government. They have the same kind of utility function as the government but they value the benefits differently. Voter  $\rho$  values benefits with the parameter  $\rho$ , so  $\rho$  takes the place of  $\phi$  in the voter's utility function.

We assume that voters are rational and realize that electing a government, who puts weight  $\phi$  on benefits, will result either in-house service production or in outsourcing at a price set by the monopolist at a level which exactly makes the government outsource. We thus implicitly assume, that political promises prior to an election are cheap talk. In the end, if elected, politician  $\phi$  is going to maximize her utility and voters realize this. The election therefore becomes a game of delegation for the voters.

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<sup>6</sup> To complete the analysis of what determines the monopoly price, it may be noticed that the cross derivative

$$\frac{\partial^2 p_0}{\partial c \partial \phi} < 0.$$

The government who cares a lot about quality is compensated even more when  $c$  is high.

Let  $e_q(\phi)$  be the levels of quality improving effort resulting if government  $\phi$  outsources, i.e.  $e_q(\phi)$  is given by equation (8). The level of  $e_c$  does not depend on  $\phi$  as is clear from (8).

To highlight the effect of strategic voting, we focus on the case where the government wishes to outsource, i.e. where condition (12) is satisfied. Voter  $\rho$ 's utility if government  $\phi$  is in office is

$$v(\phi, \rho) = \rho B(e_q(\phi), e_c) - p^m(\phi).$$

Voter  $\rho$ 's preferred type of government satisfies

$$\max_{\phi} v(\phi, \rho).$$

The first order condition for an interior maximum is

$$\frac{\partial v(\phi, \rho)}{\partial \phi} = \rho \left( \frac{\beta^2}{8} \right) - \frac{\partial p^m(\phi)}{\partial \phi} = 0. \quad (14)$$

From differentiating equation (13) we observe that  $\frac{\partial^2 p^m(\phi)}{\partial \phi^2} > 0$ , hence, the second order condition for maximum is satisfied.

Let  $\phi(\rho)$  be the preferred type of government for voter  $\rho$ . The Implicit Function Theorem then implies that

$$\frac{d\phi(\rho)}{d\rho} = -\frac{\left( \frac{\beta^2}{8} \right)}{\frac{\partial^2 v(\phi(\rho), \rho)}{\partial \phi^2}} > 0$$

so a voter with a higher  $\rho$  prefers a higher  $\phi$ . A political candidate preferred by the median voter,  $\rho^{med}$ , will, therefore, be able to win the election against any other candidate. Hence, we assume that the outcome of the election is indeed that the median voter's preferred politician wins.<sup>7</sup>

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<sup>7</sup>As shown by Besley and Coate (1997), this is indeed an equilibrium of a more extended,

Recall that politician  $\phi$  only outsources if (12) is fulfilled. Obviously, the condition may be violated if the politician is sufficiently leftist. Let  $\tilde{\phi}$  denote the value of  $\phi$  such that politicians with higher  $\phi$  prefers not to outsource. A voter with  $\rho < \tilde{\phi}$ , who prefers a more leftist government will of course not prefer a government who will not outsource. The highest  $\phi$  possibly preferred by voter  $\rho$  will be  $\tilde{\phi}$ .

Summarizing the results of this section

**Proposition 3** *Assume condition (12) is satisfied for voter  $\rho$ .*

a) *If  $\frac{\partial p^m(\rho)}{\partial \phi} < 0$ , the voter prefers a politician who is more leftist than herself.*

b) *If  $\frac{\partial p^m(\rho)}{\partial \phi} > 0$ , the voter faces a trade off. A more leftist politician offers better quality but at a higher price. Such a politician is preferred iff*

$$\frac{2\lambda(2-\lambda) - \beta^2(1-2(1-\lambda)^2)}{4+4\lambda-2\lambda^2}\rho < c. \quad (15)$$

*otherwise the voter prefers a more rightist government than herself.*

**Proof:**

Since  $v$  is concave in  $\phi$ , voter  $\rho$  will prefer a government with a  $\phi > \rho$  if  $\left. \frac{\partial v(\phi, \rho)}{\partial \phi} \right|_{\phi=\rho} > 0$ , while a government with lower  $\phi$  will be preferred if  $\left. \frac{\partial v(\phi, \rho)}{\partial \phi} \right|_{\phi=\rho} < 0$ .

When  $\frac{\partial p^m(\rho)}{\partial \phi} < 0$  the derivative of  $v$  evaluated at  $\phi = \rho$  is positive and voter  $\rho$  prefers a government with  $\phi > \rho$ : a more leftist government.

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citizen-candidate model, where any citizen can run for power at a small cost. They assume the winning candidate implements her preferred policy and they show that an equilibrium exists where the candidate preferred by the median voter wins the election.

If  $\frac{\partial p^m(\rho)}{\partial \phi} > 0$ , (13) we get that the voter prefers a more leftist government iff

$$\rho \left( \frac{\beta^2}{8} \right) > \frac{1}{4} \left( ((1 - \lambda)^2 \beta^2 + \lambda(2 - \lambda)) \rho - (2 + 2\lambda - \lambda^2) c \right),$$

which yields (15)  $\square$

When the outsourcing price is decreasing in  $\phi$ , a leftist government offers a double advantage: it delivers a higher quality and a lower price. When the outsourcing price increases in  $\phi$ , the voter faces a trade off: higher quality at a higher price. Condition (15) reflects this trade-off. The condition tends to be fulfilled the higher is  $c$  and the lower is  $\rho$ . In this sense the more rightist voter is more likely to vote to the left of herself. If the left hand side is negative the condition is of course fulfilled, regardless of the value of  $c$  and  $\rho$ . This will be the case if  $\beta$  is sufficiently high.

## 5 Outsourcing when quality is partly contractible

So far we have assumed that all quality improving and cost reducing effort  $e_q, e_c$  are non-contractible. However it seems reasonable to assume that parts of quality improvements or cost reductions are contractible. While contractible quality does not affect the government's decision of whether to outsource, a voter cannot disregard that a government who is more interested in benefits also will spend more resources on contractible quality improvements. In this section, therefore, we briefly expand the model including some contractible quality improving effort. One could easily introduce contractible cost reductions along the same lines, but as will become clear this would add nothing, so we will for simplicity abstain from that. We now assume that the total benefit is  $B + X$ , where  $X$  reflects changes

in benefit stemming from contractible effort and the variable  $B$  reflects effects of non-contractible effort focused on so far in the paper.<sup>8</sup>

Increases in contractual quality is related to contractible effort,  $k$  as

$$X(k) = \chi\sqrt{k}.$$

Government  $\phi$ 's preferred contractual quality satisfies  $\max_k \phi\chi\sqrt{k} - k$  and is given by

$$k(\phi) = \frac{1}{4}\phi^2\chi^2$$

The monopolistic private firm will offer this contractual quality and claim the associated costs. So, for the government the addition of contractual quality to the model does not change the in-house/outsourcing trade off, since the government easily could demand that the same optimal contractible quality was produced in-house. At the contracting stage the firm offers a contract specifying a price and a contractible quality  $X$ , which makes the government indifferent between privatizing and producing in-house.

Voter  $\rho$ 's utility if government  $\phi$  is in office is now

$$v(\phi, \rho) = \rho[B(e_q(\phi), e_c) + \chi(k(\phi))] - p_1(\phi).$$

The price  $p_1$  is determined as in the last sections with the addition of the costs of contractible effort:

$$p_1(\phi) = p^m(\phi) + k(\phi) = p^m(\phi) + \frac{1}{4}\phi^2\chi^2,$$

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<sup>8</sup>In the local bus example from the introduction, the  $X$  could include things like changes in the driving schedule, size of busses and environmental standard of busses. Examples of non-contractible items captured by  $B$  are driving speed and the behavior of the chauffeur.

Voter  $\rho$ 's preferred type of government satisfies  $\max_{\phi} v(\phi, \rho)$ . The first order condition for maximum is

$$\frac{\partial v(\phi, \rho)}{\partial \phi} = \rho \left( \frac{\beta^2}{8} \right) + \frac{\rho - \phi}{2} \chi^2 - \frac{\partial p^m(\phi)}{\partial \phi} = 0. \quad (16)$$

Comparing with (14) of the last section we see that the difference is the term  $\frac{\rho - \phi}{2} \chi^2$ . When we evaluate the first order condition at  $\rho = \phi$ , this term vanishes. This implies that all arguments used in the proof of the previous section are still valid and that the Proposition is also true - in exactly the same form - even though contractible quality is included. The intuition comes from the Envelope Theorem: When changing  $\phi$  a little from  $\rho$ , the first order effect from changing contractual quality is zero, as contractual quality is chosen optimally from the point of view of voter  $\rho$ , when we evaluate the first order condition at  $\phi = \rho$ .

We conclude that the addition of contractual quality does not change the main insight of our analysis.

## 6 Discussion

Our analysis provided three positive predictions about the incentives to privatize. First, the decision to privatize should be independent of the degree of competition in the (private) market for the public service. Second, local governments who care more about the public service will sometimes receive the service to a lower price in the private market. Finally, when this is the case voters may prefer a more leftist, public service loving politician to be in charge of the privatization.

The monopoly-theory of private provision derived in this paper suggests that the contractual price should vary across local governments depending on how



eager they are to outsource. There are few empirical studies linking market structure and political preferences to the decision to outsource and/or the price a local government pays to a private contractor.

Lopez-de-Silanes et.al. (1997) analyze the decision to outsource public service in a sample of almost all U.S. counties. Not surprisingly, it is found that right-wing counties are more likely to privatize. This is consistent with our model where a higher  $\phi$  reduces the likelihood of outsourcing. However, they do not study the impact of market structure on the privatization decision nor the relationship between market structure, political preferences and the price paid to private service providers.

Lopez-de-Silanes (1997) investigates the determination of privatization prices in a large sample of Mexican state owned enterprises. He does not directly analyze the impact of political preferences. With respect to market structure, he shows that the size of the government's ownership in a given market and privatization prices are positively correlated. On the other hand, it is also shown that for a given governmental stake, the price is not affected by the number of government owned enterprises. This is interpreted as it is not the expected post privatization monopoly rent that increases the market price, rather the price is higher in sectors where there is a lot of political attention.

Finally, the most direct evidence for the relationship between political preferences and procurement prices we have found relates to a Swedish study of procurement in elderly service among 280+ Swedish municipalities Suzuki (2003)). This study shows the share of outsourced elderly care increases when politicians are more right wing and that the unit cost of elderly care decreases when there

are more outsourcing. It concludes that the latter effect is lower in municipalities with a large share of right wing politicians. This is clearly consistent with our result that right wing governments can end up paying a higher price for a given amount outsourcing than left wing governments when the private supplier has market power.

The relationship between outsourcing prices, market concentration and political preferences is, in general, an open empirical question. Further insight into this would increase our understanding of when local governments outsource and the general welfare and specific budget implications of such decisions.

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