Tracking cost savings from competitive tendering in the short and long run

Luis Angeles[1] and Robin G. Milne[2]

June 2015

[1] Adam Smith Business School (Economics), University of Glasgow. Gilbert Scott Building, Glasgow G12 8QQ, UK. Email: luis.angeles@glasgow.ac.uk
[2] Adam Smith Business School (Economics), University of Glasgow. Adam Smith Building, Glasgow G12 8RT, UK. Email: robin.milne@glasgow.ac.uk

Very many people have assisted in this study. It relied on the officers of the various Health Boards and NHS trusts to provide and, on occasion, give permission for one of the authors to access confidential information on the competitive tendering process. The staff at the Department of Health at the Scottish Office and Scottish Executive provided centrally collected information as a check on the completeness of the study. The Information and Statistics Division of NHS Scotland provided assistance in the interpretation of its annual publication Scottish Health Service Costs. ISD Library Services and the National Archives of Scotland both proved valuable sources on the development of competitive tendering policy within the NHS in Scotland, and Gordon Craig has advised on our interpretation of it. Fiona Brough helped with the collection of the earlier data, and Mary Latham assisted considerably in the preparation of the whole set of data for this analysis. Financial assistance in the early stages of the research was provided by the Nuffield Foundation. Needless to say, responsibility for errors and omissions remain with the authors.

Abstract

A major initiative of the Thatcher and Major Conservative administrations was that public sector ancillary and professional services provided by incumbent direct service organisations [DSOs] be put out to tender. Analyses of this initiative, in the UK and elsewhere, found costs were often reduced in the short run. However, few if any studies went beyond the first round of tendering.

We analyze data collected over successive rounds of tendering for cleaning and catering services of Scottish hospitals in order to assess the long term consequences of this initiative. The experience of the two services was very different.

Cost savings for cleaning services tended to increase with each additional round of tendering and became increasingly stable. In accordance with previous results in the literature, DSOs produced smaller cost reductions than private contractors: probably an inevitable consequence of the tendering process at the time. Cost savings from DSOs tended to disappear during the first round of tendering, but they appear to have been more permanent in successive rounds. Cost savings for catering, on the other hand, tended to be much smaller, and these were not sustained.

Keywords: Competitive Tendering; Scottish Hospitals; Cleaning services; Catering services.

JEL classification: H11, H51, H57.

1. Introduction

A prominent vehicle of the New Public Management has been the extension of competition in the provision of publicly funded services when previously it was not common. In the United Kingdom this was initiated by the Conservative government led by Margaret Thatcher (1979-1990), and taken forward by her successor John Major (1990-1997). Sometimes this was done by contracting out the services; in others, direct service organisations (DSOs) were permitted to bid. The aim was greater efficiency, translated into reduced costs. There was no presumption that service provision would change, though the opportunity could be taken to do so. In the UK context, DSOs working for the National Health Service (NHS) and local authorities were usually allowed to bid, whereas in central government this was less common.

Economists often evaluate the effect of competitive tendering on unit costs, say, £s per in-patient day, recognising that this could be due to changes in the prices of the resources used as well as their productivity. A large number of studies have been published along these lines, but overwhelmingly they cover the initial impact of introducing competition, what economists would call the 'short-term' (Australia Industry Commission, 1996, pp 535-9; and Sturgess et al. 2007a and 2007b). Reviews may be found in Domberger and Rimmer (1994), Boyne (1998) and Andrews (2011), and suggest that only Jensen and Stelling (2007) could reasonably be described as covering the long run.

Most studies of cost savings compare the cost of services after competitive tendering with its cost before, or compare the cost of services at sites facing competitive tendering with those not facing competitive tendering. Sometimes these scenarios are combined and panel data are used. The last has the benefit of capturing some of the differences between the observations compared which are not easily measured but do not change over the period studied, such as the effect of hospital configuration, but would have influences of their own on cleaning costs.

Studies by Szymanski (Szymanski and Wilkins, 1993; Bello and Szymanski, 1996; and Szymanski, 1996) are unusual in that they map the extent of cost savings as the age of the contract increases[3]. Other studies would tend to average out the cost savings, comparing the average before the start of the contract with the average after its start, for the period over which data are available. Knowing when contracts start allows us to follow Szymanski. In what is probably the most interesting comparator for this study, Szymanski (1996, table 2) finds significant cost saving when contracts were put out to tender, and that there were larger cost savings for private contractors than for DSOs. However, these costs savings became smaller with the age of the contract. In the case of private contractors, the decline in cost savings was modest, so that costs were still significantly lower than prior to tender after five years of contract; whereas for DSOs, the decline in cost savings was quite dramatic, and by the third year of the contract costs were no longer lower than prior to tender. Szymanski (1996) does not explore whether subsequent rounds of tendering lead to additional cost savings.[4]

[3] Neither Szymanski's nor this study's estimates of costs saved take account of the cost of putting the services out to tender, but rather refer to recurrent costs before and after the award of contracts.

[4] Contracts were typically awarded for a limited duration, say 3 years, after which the service was put out once again to tender. We refer to the first contract ever awarded for a given service at a given hospital as a "first round" contract, with subsequent ones being labelled as "second round", "third round" and so on. Contracts

This paper contributes to the literature on competitive tendering by expanding the scope of existing analyses. As discussed above, we explore the consequences of type of ownership (DSO vs. private contractor) and of the age of the contract, this last aspect over a longer time span than considered previously as our dataset of Scottish hospitals covers a period of 14 years (1985-1998). Because of the length of our time coverage, we are also able to differentiate between subsequent rounds of tendering, and explore any changes in cost savings from one round to another. To the best of our knowledge, this is the first paper that estimates the existence of cost savings from re-tendering taking into account the age of the contract.[5] As will become evident in what follows, we find such cost savings to be important. Finally, we also extend the analysis by incorporating the degree of competition in the tendering process as measured by the number of bids submitted.

The remainder of the paper is divided into six sections. We begin with a narrative of changes likely to impact on service costs over the period studied. This draws upon a more extensive outline in the appendix. This is followed by a description of the sources and nature of the data used. In the two sections that follow, we describe the methodology used in the evaluation and the results obtained. The paper concludes with a discussion of our results and how they compare with Szymanski's study just cited. Our general conclusion, both for the long – ie for second and subsequent rounds - as well as the short term, is that the impact on costs depends critically on the extent of competition for contracts and the scope private contractors have to determine wages and conditions of service.

2. Historic Background: Some key features and events

In this section we identify key features and events which have a bearing on the interpretation of the results of the statistical analysis. It refers to NHS hospitals in the Scottish situation, unless otherwise indicated. It draws upon the more detailed outline given in the Appendix.

Competitive tendering - to test the cost-effectiveness of different services at NHS hospitals - was largely an English initiative of the Conservative administration which had been re-elected in 1983. The activities put out to tender were cleaning services[6], catering services and laundry and linen services. Together, these three activities are referred to as hotel services. Similar measures were reluctantly introduced in Scotland. A timetable was published for cleaning and catering services the following year, with short and long term goals. Health Boards largely disregarded these directions from the Scottish Home and Health Department. Instead reluctant health boards were given cost-savings targets in the financial year 1985-86. It was not until 1987, when the Conservative administration was once more re-elected, that the Government in Scotland took a more robust approach, though it was still limited at first to cleaning and catering. Short term goals were set for partial implementation, later to include all hospitals which came within the mainland Health Boards.

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were often extended beyond the initial 3 years without retendering and, in some rare cases, they could also be terminated early.

[5] Gomez-Lobo and Szymanski (2001), in their study of the effect of competition on refuse collection costs, compare costs for the first and second rounds but only during the first full year of each contract. Their findings suggest that costs in the second round were higher (ibid, table 1).

[6] Cleaning services are also referred to as domestic services in the literature, as they may include tasks other than cleaning such as making beds.

Sometime later - too late to justify inclusion in this study - attention was once more given to laundry and linen services.

Before competitive tendering had been introduced, all cleaning and catering had been provided in-house by DSOs. All DSOs were given the opportunity to bid, and did so, at least in the first round of tendering. Commercial firms, selected on the basis of financial viability and technical competence, would be invited to bid and contracts were to be awarded on the basis of the price bid. Health Boards had to justify to the SHHD the award to DSOs if a short-listed private contractor put in a lower bid.

One major event was the rescinding of the Fair Wages Resolution in 1983, allowing private contractors to set wages and conditions of service independently. This only changed around 1993 with the eventual extension of the European Union's Acquired Rights Directive, to include contracts funded by public authorities. Since then, employees' wages and conditions of service have been protected should retendering result in the contract changing hands.

Wages comprise most of cleaning service costs, and about half catering costs. In the initial period DSOs were tied to Whitley Council terms and conditions set on a UK basis. The Whitley Council periodically revised the terms and conditions, usually at least once yearly; and in one occasion reduced the length of the working week from 40 to 39 hours. This situation changed formally with the introduction of NHS trusts, the first appearing in April 1992. By April 1995 all hospitals attached to mainland Health Boards had NHS trust status. In principle, trusts could set their own terms and conditions. Private contractors, subject to the Acquired Rights Directive, were not subject to such constraints.

The award of contracts had different implications for DSOs and private contractors. Private contractors had a legal status and price adjustments would include formulae for inflation. Changes to the contract would have to be negotiated between the client and contractor. DSOs had not such legal protection from their client Health Board/NHS trust, and in all probability the award was used to set only the service's first year's budget.

3. Data

Information was collected on the contracts awarded and the hospitals sampled, as follows.

3.1 Contracts

Only very limited information on contracts is in the public domain: for example, the announcement of the award of contracts in the media or occasionally in Hansard. The data used here were collected from the Scottish Health Boards and NHS trusts on a confidential basis, sometimes by trawling through their archives.

We limited the study to contracts awarded, rather than to the larger number that had been put out to tender. A number of contracts were put out to tender but not awarded, but we have little confidence that we would identify all such contracts, let alone have complete information for the purposes of this study.

The data on contracts awarded are thought to be more or less complete. Scotland's Department of Health had been monitoring competitive tendering from its very beginning. Later it created a database against which our own records could be compared, and gaps identified. If contracts have been overlooked, they are likely to have been very early in the study period and, for one or other reason, might have been for hospitals excluded from the sample studied.

The period studied begins when the policy was effectively introduced, the financial year ending 31 March 1985, and ends at the policy's demise in the financial year ending 31 March 1998. At its beginning, all hospital and catering services were in-house; in the case of laundry and linen services, there were just one or two very small commercial contracts. By its end, the Health Boards and NHS trusts had little choice but to put cleaning and catering services at most if not all hospitals out to tender and award a contract (Milne and Wright, 2000).

Over the period as a whole, contracts were often for more than a single hospital; and, especially later, some for more than a single service, for example, cleaning and portering.

Information is used on the following key contract characteristics: service – type and single vs multi; start date; end date; round; numbers invited to tender, including DSO; numbers submitting bids, including DSO; and ownership of the contract awarded, ie, DSO or commercial contractor.

3.2 Hospitals

Data on individual hospital activity is taken from the annual Information and Statistics Division publication Scottish Health Service Costs, a series started well before competitive tendering was introduced. One of its major purposes had been to provide comparative information on hospital performance, with hospitals separated into some fifty groups, for example, 'large general major teaching hospital'. Periodically the series were revised, but this is not thought to have had a material effect on the data we use, with two possible exceptions: the introduction of capital charges and the publication of functional cost data for the smaller hospitals, both taking effect in the financial year ending 31 March 1992. The latter refers to hospitals with less than an average of fifty staffed beds over the financial year.

Functional cost data from this publication are used to estimate the impact of competitive tendering. Our aim has been to create a balanced panel of hospital/contract data. This meant excluding hospitals that closed before 31 March 1998 and opened after 1 April 1984. The choice was then between: the larger sample of all sizes for seven years; and the smaller sample of the larger hospitals for fourteen years. The longer sample of 136 hospitals was chosen as giving the greater scope for tracking the effect of competitive tendering on costs so for up to three rounds of tendering.

Information is used on the following key hospital characteristics: unit functional cost (cleaning costs, £s per m^2; and patient catering costs, £s per patient week); size (average staffed beds); and activity (in-patient days; consultant and PAM out-patient attendances; day patients; day cases; and accident and emergency attendances). All data are on a financial year basis, with the financial year ending 31 March 1985 being referred to as 1985 (and so on for all years).

3.3 Price data

The financial data – on functional costs and wages - are deflated by the retail price index with January 1987 as the base month.

Labour costs are based on the annual New Earning Survey held in April. Most employees in the services studied are women working in manual jobs. NHS staff are paid on Whitley Council wages and conditions. The closest this pay scale comes for full-time manual women in Scotland in the New Earnings Survey is the bottom decile. Women in the services studied usually worked part-time, and so we use data on their hourly rate. The values are assumed to be constant for the whole of the financial year, to match the corresponding values on functional costs. Thus the hourly earnings data for April 1984 are assumed to apply to the financial year ending 31 March 1985.

Please refer to the Appendix for a set of descriptive statistics showing the evolution of competitive tendering among our sample of Scottish hospitals over the period 1985-1998.

4. Empirical analysis: methodology

Our baseline econometric specification is the following:

$$\log c_{i,t} = \alpha_i + \sum_w \sum_j \beta_{rj} roundyear\_rj_{i,t} + \Gamma X_{i,t} + \varepsilon_{i,t} \qquad (1)$$

In equation (1) $c_{i,t}$ is the real unit cost of cleaning or catering services for hospital *i* on the financial year *t*, α_i are hospital-specific fixed effects, $X_{i,t}$ is a set of control variables having an effect on real unit costs, and $roundyear\_rj_{i,t}$ is a group of dummy variables identifying the contract year and contract round of observation *i,t*. Within the double sum in (1), subscript *r* denotes contract rounds (*r = 1,2,3*) and subscript *j* denotes the contract year in each round (*j = 0, 1, 2,...*). For example, the dummy variable $roundyear\_23_{i,t}$ takes a value of 1 if hospital *i* is in the 3rd year of its 2nd round contract in year *t*. Our data allows us to capture 9 such dummy variables for first-round contracts, 6 dummy variables for second-round contracts, and just one dummy variable for third-round contracts (this last one for the case of cleaning services only)[7]. In addition to this, we also consider negative values of *j* for the first round (*j = -1, -2, -3*) – in other words, we include dummy variables identifying the years before the start of the first contract. This last set of dummies would capture any cost reduction effects that may be in place in anticipation of competitive tendering.

The set of coefficients β_{rj} offers a complete and fully flexible characterization of the effects of competitive tendering on real unit costs; allowing this effect to change from year to year, from round to round, and even estimating it for the years prior to its implementation. Since real unit costs are measured in logs the set of coefficients β_{rj} is approximately the percentage change in real unit

[7] For third round contracts there are only 9 observations, 6 of them belong to a single hospital and the remaining 3 are from three distinct hospitals in the first year of their third round contracts (see Appendix). We estimate a single dummy for these 9 observations, which is described as the effect on year 0 or later in third round contracts.

costs when their values are relatively close to zero.[8] The baseline category with respect to which all β_{rj} coefficients are calculated is formed by all observations which are four years or more before the beginning of the first contract.[9]

It is important to note that our empirical methodology implicitly assumes that contract extensions beyond the initial 3 years were not endogenous, i.e. not related to costs. Under this assumption, all coefficients β_{rj} - including those for which $j \geq 3$ - may be interpreted as year- and round-specific cost reductions. If, on the other hand, those firms being offered a contract extension beyond the initial 3 years are systematically different from the rest, an endogeneity bias arises. Fortunately, the direction of this bias may be confidently predicted if we consider that firms being offered a contract extension are likely to be more efficient than the rest. In this case, the coefficients β_{rj} with $j \geq 3$ would overestimate the true cost reduction effect of competitive tendering (the coefficient would be larger in absolute value than in the absence of selective contract extensions). We return to this issue below when discussing our findings.

Turning back to equation (1), the set of control variables $X_{i,t}$ includes the following:

- The quantity of services provided. For cleaning, this is the surface area cleaned in square meters. For catering, this is the number of patient weeks serviced. This variable is important as it captures the presence of returns to scale in the provision of cleaning or catering services. It is expected that larger quantities of cleaning and catering services can be provided at lower unit costs.

- Five separate variables capturing hospital size and characteristics. These are: the number of inpatients, outpatient attendances, day patients, day cases, and Accident and Emergency attendances.

- A dummy variable identifying contracts for multiple services. These may be contracts for cleaning and catering services held by a single company, but it may also be a mix of either cleaning or catering with another service. A negative coefficient on this variable would denote economies of scope, meaning that it costs less to supply several services in a single contract.

- The real wage per hour paid to the bottom decile of female Scottish workers. This corresponds rather well to the labour force employed in cleaning and catering services in Scottish NHS hospitals. The hourly rate was chosen because of the reduction in the length of the working week for NHS employees under Whitley Council terms and conditions.

All of the above controls are included in logs with the exception of the dummy for multiple contracts.

[8] The exact percentage change in real unit costs is given by $e^{\beta_{rj}} - 1$. We will use the approximation $e^{\beta_{rj}} - 1 \approx \beta_{rj}$ for coefficients smaller or equal to 0.20 in absolute value, and the exact formula otherwise.
[9] For hospitals that do not get a contract over the whole sample period, all observations are included in the baseline category.

Finally, we note that equation (1) includes hospital fixed effects but does not control for time effects. It is possible that a time trend in real unit costs is in place if changes in variables not captured by our model take place over the period of analysis (e.g. technological improvements). To deal with this eventuality, we consider two modified versions of model (1). First, we add a constant time trend (i.e. we introduce a variable taking a value of zero for 1985, 1 for 1986 and so on). Second, we introduce instead a full set of time dummies.

The second option is the most flexible one as it allows for time effects that change in size and direction from year to year, while the first option imposes a constant time effects in all years. However, we do not regard the second option as necessarily superior. The reason is that, as described in the Appendix, there is a marked time pattern in the implementation of competitive tendering with most hospitals entering the process in the years 1989, 1990 and 1991. Thus, time dummies for these three years would largely capture the effects of implementing competitive tendering for the first time. A constant time trend, on the other hand, would not conflate effects in this way and may therefore be preferable. In any case, all our models are estimated three times (no time effects, constant time trend, time dummies) and give the reader the option to compare these alternatives.

5. Empirical analysis: results

5.1 Baseline results

We start by running the three versions of equation (1) for all 136 hospitals in our sample.[10] Results are presented in table 1, where the first three columns refer to cleaning services and the last three columns to catering services. We report the coefficients of all dummy variables capturing the effects of competitive tendering, plus the coefficients on the quantity of services provided, the real wage, and the dummy for contracts with multiple services. The five variables controlling for hospital characteristics are always included but not reported for conciseness. We also report the time trend when included (columns 2 and 5), but do not report time dummies (columns 3 and 6). Finally, we indicate which coefficients reach conventional levels of statistical significance but do not report standard errors as these would make the table too cumbersome.

[Table 1]

The first column of table 1 estimates the effects of competitive tendering on the cost of cleaning services without controlling for time effects. This column indicates the presence of pre-contract effects in the form of a reduction in unit costs of about -6% in the year preceding the first contract. No statistically significant effects are found before that. This is then followed by large reductions in cost during the first two years of the contract, reaching -23% during year 1. These cost reductions tend to disappear over time, however, swiftly falling between years 2 and 5 and even losing statistical significance by year 6. The last two years for which we can estimate effects see a modest recovery in cost reduction, reaching -9% in year 8 or later.

[10] This includes hospitals that did not engage in competitive tendering over the sample period. There are 7 such hospitals for cleaning services and 13 for catering services.

The inclusion of a linear time trend reduces the magnitude of these coefficients across the board but the general pattern of effects remains in place. The pre-contract effect observed in column 1 is no longer statistically significant and the coefficient falls by half. The cost reductions during the first four years of the contract are still statistically significant at the 1% level with a peak effect of -20% in year 1 which, as before, falls rapidly thereafter. From year 5 onwards, the effects of competitive tendering are no longer statistically significant under this specification.

In column 3 we include a full set of time dummies which, as expected, captures much of the variation in the dependent variable. We still find sizeable effects of competitive tendering, however, with a cost reduction of -10% in year 1 (statistically significant at the 1% level) but not much evidence elsewhere.

An important advantage of our analysis is the capacity to identify cost reductions from subsequent rounds of contracts. The evidence from the first three columns of table 3 is that such cost reductions not only exist but they are considerably larger than the cost reductions obtained during the first round of contracts. Indeed, the estimates from column 1 imply a peak effect of -28% in real unit costs during year 1 of the second round contract; and much of the effect would still remain in place by the fifth year. Adding a time trend or time dummies reduces the magnitude of this peak effect to -22% in the first case and -19% in the second case – still very large magnitudes. In these two cases, however, the effect does not last beyond the fourth year of the contract.

Finally, we are even able to estimate the effect of a third round contract – bearing in mind that only four hospitals reach this stage in our sample. Here the effects are even larger, with cost reductions of -39% without controlling for time effects and -28% with a full set of time dummies.

To summarize, an intriguing pattern not previously discussed in the literature is uncovered by these results. Competitive tendering led to large cost reductions in the provision of cleaning services for Scottish hospitals, but that is only the beginning of the story. We observe that costs fall strongly during the first two years of the contract but tend to increase afterwards. As a consequence, no clear-cut cost reductions are in place after a period of 4 to 6 years. There is, however, a way out of this problem. Hospitals that put their services out to tender for a second time experienced a return of cost reductions which went further than previously. A very similar pattern is repeated, with peak cost reductions reached in the second year of the contract (the first full year) and tending to fall afterwards. There is even evidence that hospitals could reach still larger cost reductions by launching into a third round of tendering, for which our estimated coefficients are larger still.

We note that the above conclusions would not change if we consider the potential endogeneity bias due to selective contract extensions. As we mentioned beforehand, correction of this bias would lead to smaller β_{rj} coefficients in absolute value for $j \geq 3$. In that case, we would see an even sharper reduction in cost savings after year 2, increasing the magnitude of our estimated reversal in cost savings but not its direction or the general findings so far.

Finally, it is also worth noting that controlling for time effects using a constant time trend (column 2) or a full set of time dummies (column 3) reduces the magnitude of the relevant coefficients but does not change the overall story.

We observe many – though not all – the elements of this story when we turn to catering services in columns 4 to 6 of table 1. Again, we find pre-contract effect of about -7% in the last year before the first contract. This effect survives the inclusion of a constant time trend but not the inclusion of time dummies.

First-round effects reach statistical significance at the 1% level in columns 4 and 5 but not so in column 6. Moreover, the effects are about half the magnitude of those estimated for cleaning services; with a peak cost reduction of -10% in year 0 and year 1. As was the case for cleaning services, these effects tend to disappear and they are no longer statistically significant by the time we reach year 4 or 5 of the contract.

The main difference between cleaning and catering services, however, appears when we look at the effects of second-round contracts. While these led to larger cost reductions than first-round contracts in cleaning, the opposite is true for catering. Indeed, we register cost reductions of no more than -8% in our second round coefficients and they all lose statistical significance in the presence of a time trend or time dummies. Third round effects cannot be estimated since no hospital reaches this stage for catering services in our sample.

While less markedly, the results for catering services still present a pattern of rapid decrease in costs during the early years of a contract followed by a return towards the initial levels. In this sense they are coherent with our analysis so far.

Turning our attention to our control variables, it is worth mentioning that we find evidence for strong returns to scale in the provision of both cleaning and catering services. This is reflected by the large negative coefficients on the quantity of services provided which in all cases reach statistical significance at the 1% level.

Multiple contracts appear to increase costs in the case of cleaning services but have no discernible effect for catering. Somewhat surprisingly, we do not find a statistically significant effect of the real wage on unit costs – albeit the coefficient has the expected positive sign in most cases.[11] Finally, a negative and statistically significant time trend is estimated for cleaning services in column 2, predicting a tendency of real unit cost to fall by 1.3% per year. No such trend is found for catering services.

We also note that our set of regressors does a much better job in explaining the variation of real unit costs for cleaning services than it does for catering services. Indeed, R^2 coefficients indicate that 60% of the variation in the dependent variable is explained in columns 1-3, while the corresponding figure for the last three columns is just 26%. For this, and for other reasons that we discuss below, much of the subsequent analysis will focus on cleaning services.

5.2 DSOs and private contractors

An interesting research question is whether cost reduction effects differ between DSOs and private contractors. Szymanski (1996, table 2) found evidence of this in the first round of compulsory

[11] Note that the real wage cannot be included in columns (3) and (6) since it is collinear with the set of time dummies.

competitive tendering of refuse collection services. It is reasonable to expect similar outcomes for NHS cleaning and catering services. First, pay and conditions of service are determined in quite different ways, with DSOs largely tied to Whitley Council. And second, Health Boards and NHS trusts are legally bound by their contract with private firms over the life of the contract; whereas for DSOs, the best they might hope for is that the budget is set for the contract's first year.

In order to study this question we select two subsamples from our 136 hospitals and run the three alternative specifications of equation (1) on them. Naturally, the first subsample includes hospitals whose contract was awarded to a DSO while the second one includes hospitals with a private contractor. However, because our analysis estimates the effects of competitive tendering over three successive rounds of contracts, we can only use hospitals which remained with a DSO (or a private contractor) over all contract rounds. This includes hospitals that changed from one private contractor to another, but excludes hospitals that changed from a DSO to a private contractor or vice versa.

Fortunately, this selection procedure results in two groups with large enough numbers of observations when we look at cleaning services. Indeed, for cleaning services we have 98 hospitals (1371 observations) whose contract always remained with a DSO and 23 hospitals (322 observations) whose contract always remained with a private contractor. We are thus excluding the 7 hospitals that did not engage in competitive tendering but also a group of 8 hospitals that changed their type of service provider.

For catering services, however, the selection procedure results in too small a group when we look at hospitals with only private contractors. While the number of hospitals with private contractors at the end of the sample period is relative large (17 hospitals in 1998), most of these hospitals started with a DSO in the first round of tendering. Indeed, there are only 6 hospitals whose catering contracts remained with private contractors since the first round. For this reason, and to keep the paper from growing too long, this section compares the cost reduction effects of DSOs and private contractors using cleaning services only. We will mention the results for DSOs in catering services briefly at the end of this section, and full results are available upon request.

Before turning to our estimates, it is worth investigating whether hospitals that use only DSOs and hospitals that use only private contractors are indeed comparable. To tackle this question, we estimate equation (1) without the $roundyear\_rj$ variables for all 121 hospitals which implement competitive tendering in cleaning services and for the years before their first contract begins.[12] In other words, we estimate a standard cost function for cleaning services before the start of competitive tendering. We add, however, a dummy identifying those hospitals belonging to our DSO-only group to see if, after controlling for all determinants of cleaning costs under consideration, hospitals whose cleaning services were to be assigned to a DSO differed systematically from those that were to use private contractors. The answer is no, as the dummy for DSO-only hospitals is never statistically significant and takes values suggesting a difference in real unit costs of no more than 2-3% (details available upon request).

[12] We try six alternative samples: four cross-sections (1985, 1986, 1987 and 1988) and two panels (1985-86 and 1985-88). Recall that competitive tendering is applied widely from 1989 onwards. Results are very similar in all samples.

Table 2 presents the results from estimating equation (1) for hospitals with only DSOs contracts (columns 1 to 3) and hospitals with only private contractors (columns 4 to 6) over the whole sample period. The outcome is quite remarkable.

[Table 2]

First, we notice that results for DSOs follow quite closely those obtained for all hospitals in table 1 – unsurprisingly since DSOs constitute the majority of cases. As was the case for all hospitals, we observe a pre-contract effect of -7% in the last year before the first contract; and this effect now remains statistically significant when we include a constant time trend. The peak effect during the first round contract is -24% with no time controls and -12% with a full set of time dummies – just a couple of percentage points higher than our estimates for cleaning services in table 1. As in table 1, the effect tends to die out over the subsequent years and loses statistical significance in the two specifications controlling for time effects. Finally, we also find second and third round effects which are each time of a larger magnitude than those of the preceding round. Again, the effects are slightly larger than those estimated for all hospitals but clearly in the same ballpark.[13]

When we look at hospitals with only private contractors, however, we see noticeable differences. In short, the magnitude of cost reductions is much larger and there is no tendency for the effects to disappear over time. In addition to this, controlling for time effects does not diminish the magnitude of the estimated cost reductions – it actually increases it.

The coefficients in column 4 of table 2 imply an estimated cost reduction of -35% in year 1 of the first contract, and while the effect diminishes by a quarter over the following 3 years, it then picks up again and regains this magnitude. When a constant time trend or time dummies are included these effects become even larger, with a cost reduction of as much as -42% and very few signs of the effect dying out over time.

The second and third round effects are once again much larger than for DSOs, with coefficients in the -0.6 to -0.8 range for the second round and in the -0.8 to -1.0 range for the third round. Such coefficients correspond to cost reductions of between -45% and -55% for second round contracts and between -55% and -63% for third round ones. Given that the estimated cost functions for DSOs and private contractors are otherwise very similar (see below), we regard the results of table 2 as strong evidence that private contractors were far more effective in cutting the cost of cleaning services during the period under observation. The estimated cost reductions of private contractors are about one and a half times that of DSOs in our regressions without time controls and about twice as large when time dummies are included. Private contractors do not show the strong reversal in cost reductions observed in first round DSO contracts after a couple of years. Interestingly, however, DSO contracts of the second round seem to be rid of this problem as well.

As mentioned above, the comparison between DSOs and private contractors is given further credibility when we consider that the two cost functions estimated are otherwise quite similar. Indeed, scale effects appear to be of the same magnitude for both groups of hospitals, as evidenced by the very similar magnitude of the coefficient on the quantity of service provided across all

[13] The slightly larger coefficients are probably explained by the fact that the effects of competitive tendering are calculated with respect to a different baseline scenario in tables 1 and 2. Indeed, table 1 includes hospitals that never got a contract in the baseline scenario, while table 2 excludes them.

regressions. The same can be said of the effect of multiple service contracts, which appear to increase unit costs by 12-13% for DSOs and by 13-14% for private contractors. The coefficients on other hospital characteristics such as the number of inpatients, outpatients and day patients are also in line with each other.

The exception to this is the effect of real wages. The real wage is not statistically significant in our regression of DSOs with no time effects (column 1), but becomes so when a constant time trend is included (column 2). For private contractors, however, the real wage is not only statistically significant in both regressions (columns 4 and 5), but the magnitude of its coefficient is much larger: 1.20 for private contractors against 0.5 for DSOs. This suggests that the costs of private contractors are more affected by changes in the market price of labour in a way that DSOs are not. A likely reason is that our measure of real wages is based on the Scottish labour market, and so would apply directly to private contractors. DSOs, on the other hand, are largely/wholly governed by Whitley Council, which sets wages and conditions for the United Kingdom as a whole. Be as it may, this difference in the coefficient on the real wage is unlikely to exert a large influence on our previous discussion. Indeed, real wages did not experience very large changes over the period under consideration, with an increase of 10% over the 14 years of our sample.

Let us point, finally, to the results obtained with DSO-only hospitals when we use data on catering services. As was the case for all hospitals in table 1, a peak effect of about -10% is obtained with no time controls or a constant time trend while the effect disappears with the inclusion of time dummies. The effects are short-lived and, again as in table 1, cannot be detected for any year of the second round contracts.

5.3 Competition and the number of bids

So far we have left the degree of competition in the bidding process outside of our analysis. We address this issue here by using our data on the number of bids submitted for each contract, which may be interpreted as a measure of the degree of competition for each contract. As the Appendix shows, competition was considerably higher for cleaning services than for catering. Auction theory and the related empirical literature would suggest that a more competitive environment leads to larger cost reductions (McAffe and McMillan, 1987; Gomez-Lobo and Szymanski, 2001; Milne and Wright, 2004)[14]. Moreover, accounting for the degree of competition may shed additional light on the differences between the performance of DSOs and private contractors, as private contractors were more likely to win contracts for which a larger number of bids were submitted (see the Appendix). Thus, the results of section 5.2 may be explained not by private contractors being intrinsically more efficient but simply by the fact they operated under more competitive environments.

[14] Given the contract and firms invited to tender, basically the contract was awarded on price. Auction theory suggests the more bids, the lower the successful bid is likely to be. When private contractors are successful, the bid they submit is the price they are paid and is the cost to the NHS. When DSOs are successful, the price will determine their budget, which may be more or less than the eventual cost to the NHS. Both cited empirical studies (Gomez-Lobo and Szymanski, 2001; Milne and Wright, 2004) found costs were lower the larger the number of bids for samples, albeit neither of them differentiated the ownership of the successful bid.

We modify our baseline econometric specification by adding the number of bids submitted for the current contract (if one is in place):

$$\log c_{i,t} = \alpha_i + \varphi bids_{i,t} + \sum_w \sum_j \beta_{rj} roundyear\_rj_{i,t} + \Gamma X_{i,t} + \varepsilon_{i,t} \qquad (2)$$

In equation (2), $bids_{i,t}$ takes a value equal to the number of bids received for the ongoing contract, if one is in place. Thus, if a first round contract receives 3 bids and is in place from 1990 to 1995 then $bids_{i,t}$ will take a value of 3 from 1990 to 1995 for this hospital. It is important to realize that in equation (2) the effects of competitive tendering are no longer given by the coefficients of $roundyear\_rj$ alone. Indeed, these coefficients would give the hypothetical effects of a zero-bid contract, which of course does not exist. The actual effect on year *j* and round *r* would be given by $\beta_{rj} + \varphi bids$. In what follows most of our interest will be focused on coefficient φ, but the preceding should be bore in mind in order to make comparisons with previous tables.

We run equation (2) on the same subsamples used in table 2 and present the results in table 3. Once again, these are quite revealing.

[Table 5]

As predicted by theory, the number of bids has a negative and statistically significant effect on real unit costs across all specifications. The size of the effect is large, with each additional bid leading to a decrease in costs of between 2.5% and 3% throughout the life of the contract. It is important to note that the effect of bids does not differ between private contractors and DSOs. Indeed, estimates for φ range from -0.025 to -0.033 for DSOs and from -0.025 to -0.027 for private contractors.

Equally important, the large differences in cost reduction between DSOs and private contractors are still present in table 3. Indeed, since the effect of bids is about the same for our two groups of hospitals, cost reductions for a given number of bids may be compared by comparing the coefficients on the $roundyear\_rj$ variables directly. For instance, columns 2 and 5 reveal that first-round cost reductions are larger for private contractors by about 20% on year 1 when facing the same degree of competition. Moreover, cost savings tend to diminish markedly over time for DSOs while those of private contractors are largely sustained. Second and third round coefficients indicate even larger differences, usually larger than those found in table 2.

The results of this section demonstrate that the superior cost-cutting capacity of private contractors found in section 5.2 was not due to a failure to control for the degree of competition in the tendering process. Had the average number of bids for DSO contracts been the same as for private contractors, private contracts would still have delivered larger cost reductions. Why, then, did private contractors cost the NHS less than their own DSOs?

While addressing this question is beyond the scope of our paper, we may offer some elements of an answer. First, DSOs were largely, if not wholly, covered by Whitley Council regulations for the whole period of the study, and this sets the terms and conditions of its staff. Private contractors, on the other hand, were free to set terms and conditions to reflect local labour market conditions. Staff, who would otherwise have been employed by the NHS in Scotland, would typically have been paid less. Second, most cleaning and catering staff were part-timers, and contractors could and did

reduce their hours worked to avoid National Insurance contributions. Third, contractors were likely to be more robust than NHS employers in expecting their staff to be flexible in respect of tasks and timetable in the working week. Fourth, these labour cost advantages would have been vital if private contractors were to win contracts since, until the Acquired Rights Directive came into force, private contractors had to overcome the 'below the line' severance costs of the incumbent DSO labour force that would have become redundant. The 'below the line' costs appear in the evaluation, but not as a cost of the service should the DSO retain the contract. And finally, later – on the retendering contracts - the Acquired Rights Directive came into force. This protected the terms and conditions of employees, but only of those on transfer to a new contractor. New employees had no such protection. In conclusion, private contractors were in a much better position to reduce wage costs, and had to do so in the first round of tendering of our sub-sample if they were to wrest the service from the incumbent DSOs. Wage costs were relatively much more important for cleaning than catering services, which explains why costs fell more for cleaning than they did for catering services[15].

Finally, we have also estimated equation (2) for catering services using all hospitals. The coefficient on the number of bids is small and not statistically significant. This may be due to the limited variation in the number of bids among catering contracts. About 70% of all catering contracts had 1 or 2 bids, rendering the estimation of coefficient φ difficult.

6. Discussion and Conclusions

The novelty of this study is the extended period of competitive tendering covered. In the preceding sections we traced how costs change over the life of a contract and with successive rounds of tendering, and explain why costs fell more for cleaning than for catering services and more for private contractors than DSOs. In this section we examine whether the distinctiveness of the sample studied limits its application. There are four ways in which our sample is distinctive. These are taken in turn.

The first distinction refers to the Scottish experience of testing the cost-effectiveness of NHS support services in Britain. We noted above the implementation of this policy was not popular in Scotland. Evidence of the resistance of Health Boards in Scotland and the accommodation to this by the Government can be found in the low take-up in the first few years. By end-September 1986, 43% of support services by value had been awarded in England, and 8% in Wales; but in Scotland it was only 2% by end-1986 (National Audit Office, 1987, paras 2.14, 4.8(a) and 5.5). However, by the early 1990s, its implementation for cleaning and catering in Scotland seems to have surpassed that in England (National Archives of Scotland, file HH101/4481).

The second distinction is the agency used to implement the policy of competitive tendering. In the UK, it was introduced in central government, local government and the NHS. In central government, the issue was simply one of engaging the Secretary of State responsible to take this initiative on board. In local government, with directly elected councillors, legislative measures by Parliament were required to ensure the policy had a statutory basis, against which councillors could be held

[15] More details may be found in the appendix.

accountable. In the NHS, some Health Boards members were appointed by Ministers, but others elected local councillors. Health Boards had a degree of autonomy in Scotland, which they were accustomed to exercise. It was only gradually and, even then, through the determination by an ideologically committed Minister that this policy was taken on board.

The third distinction refers to the services covered: in this case cleaning and catering, as distinct from, for example, refuse collection studied by Szymanski. We have shown the differences between cleaning and catering for NHS hospitals. All three services were covered by the Local Government Planning and Land Act, 1988. 'Building cleaning' corresponds most closely to cleaning, though it should be remembered that in local government, it would largely be office cleaning, rather different from hospitals. The closest correspondence for catering is probably 'catering (education & welfare)'. A similar ranking is found as between building cleaning and catering, in England and Wales, being 4.4 bids per contract, as against 1.4 bids, for the two services, respectively, for the period upto August 1992 (Local Government Management Board, 1992, pp 12 and 37). Refuse collection came some way between, with 3.4 bids (Ibid, p 18).

The fourth and final distinction recognises the context: in this study, NHS hospitals with a 24/7 service commitment. Again we use data on local government for comparative purposes, but this time for Scotland, and so offering the same geographic market. In both cases the data refer to all contracts that had been awarded up to that point in time: that is, those still running and those that had ended. The Local Government Planning and Land Act 1988, just as for the NHS, allowed DSOs to bid for contracts. The data suggest that competition was greater for contracts in NHS hospitals. Thus for cleaning, there were 3.4 bids for NHS hospitals, but only 2.3 bids for local authority buildings. In the case of catering, there were 2.4 bids for NHS schools, but only 1.7 bids for local authority schools 1992 (Local Government Management Board, 1996, p 80) .

Finally, Szymanski (1996) and Gomez-Lobo and Szymanski (2001), provide the most direct comparison for this study of how cost saved changed over time. Szymanski (1996) has similar results to what we obtain for cleaning services during the first round of tendering, even though his study refers to refuse collection, takes place in England and is administered by local authorities. The same results do not pertain to catering, which suggests the importance of securing sufficient competition for the service put out to tender. Gomez-Lobo and Szymanski (2001) compared the first full year of the first round with the first full year of the second one and found costs rose; whereas we found costs fell. However, the backgrounds to their study and our own differ. Their study of refuse collection was mostly of most contractors entering the market in England for the first time, and experiencing the so-called 'winners curse'; whereas for our study of Scotland, the contract cleaners had prior experience of tendering in England (Milne 1993a), and had to learn to put in more realistic bids. Our study suggests that, in a reasonably mature market, it is possible for DSOs to recapture the cost savings lost in the first round, and that successive rounds of tendering not only sustain the cost savings initially achieved, but may actually increase them. On the other hand, where competition is absent, as it was for catering, the policy of competitive tendering promises to have a very limited impact on reducing overall expenditures, especially bearing in mind that no costs of its implementation have been included.

References

Andrews , R (2011) 'NPM and the search for efficiency' in T. Christensen and P. Laegreid (eds), The Ashgate Research Companion to New Public Management, Farnham: Ashgate, 281-94.

Australia, Industry Commission (1996) Competitive Tendering and Contracting by Public Sector Agencies. Report (Australia Industry Commission) no. 48. Australian Government Publishing Service: Melbourne. [http://www.pc.gov.au/__data/assets/pdf_file/0003/6996/48ctcpsa.pdf Accessed 13 November 2013.]

Bello, Hakeem and Stefan Szymanski (1996). 'Compulsory competitive tendering for public services in the UK: the case for refuse collection', Journal of Business Finance & Accountancy, 23(5 & 6), 881-903.

Boyne, George A. (1998) 'Competitive tendering in local government: A review of theory and evidence', Public Administration, 76(4), 695-712.

Department of the Environment (1994) CCT and Local Government in England, Annual Report for 1993. Department of the Environment: London.

Domberger, Simon & Stephen Rimmer (1994) 'Competitive tendering and contracting in the public sector: a survey', International Journal of the Economics of Business, 1(3), 439-53.

Gomez-Lobo, Andres & Stefan Szymanski (2001) 'A law of large numbers: bidding and compulsory competitive tendering for refuse collection contracts', Review of Industrial Organisation, 18, 105-13.

Great Britain, HM Treasury (1986) Using Private Enterprise in Government: Report of a Multi-departmental Review of Competitive Tendering and Contracting for Services in Government. HMSO, London.

Great Britain, HM Treasury (1991) Competing for Quality: Buying Better Public Services, CM 1730, HMSO: London.

Hall, J (1984) 'MOD saves 40 per cent on cleaning costs', Contract Services, April/May, 6-7.

Institute for Fiscal Studies, Fiscal Facts, Tax tables, Indirect taxes, VAT. [http://www.ifs.org.uk/fiscalFacts/taxTables: Accessed 23 October 2013.]

ISD Scotland Home (undated) ISD Data Dictionary, Trusts – Internal Market (SMR METADATA). (http://www.datadictionaryadmin.scot.nhs.uk: access 21 October 2013.)

Jensen, A. And P. Stelling (2007), `Economic impacts of Swedish railway deregulation: A longitudinal study', Transportation Research Part E: Logistics and Transportation Review, 43 (5), 516-34.

Local Government Management Board,(1992) CCT Information Service, Survey Report No. 6, November 1992, LGMB: London.

Local Government Management Board, (1996) CCT Information Service, Survey Report No. 14, December 1996, LGMB: London.

McAfee, R P and J McMillan (1987). Auctions and bidding, Journal of Economic Literature, 25(2), 699-723.

Milne, Robin G (1993a) 'Contractors' experience of compulsory competitive tendering: a case study of contract cleaners in the NHS', Public Administration, 71(3), 301-21.

Milne, Robin G (1993b) 'Competitive tendering of NHS hotel services in Scotland', Scottish Affairs 3, Spring 1993, 135-152.

Milne, Robin G & Duncan Osler (2000) 'Regulating public procurement in the Single Market: past, present and future' in L. Macgregor, T. Prosser and C. Villiers (eds.) Regulation and Markets beyond 2000, Ashgate: Aldershot, 269-296.

Milne, Robin G & Robert E. Wright (2000) 'Competitive tendering in the Scottish National Health Service: Was it compulsory, and did it make a difference?' Scottish Affairs, 31, Spring, 133-152.

Milne, Robin G & Robert E. Wright (2004) 'Competition and costs: evidence from competitive tendering in the Scottish National Health Service' Scottish Journal of Political Economy, 51(1), 1-23.

National Archives of Scotland, file HH101/3477 'Health Services Management Use of commercial contractors in National Health Service to provide cleaning, catering and laundry services: Scottish assessment. 1982-1984'. Edinburgh.

National Archives of Scotland, file HH101/3528 'National Health Service: Planning Use of commercial contractors by NHS for provision of domestic, catering and laundry services: Health Board responses. 1983-1985'. Edinburgh.

National Archives of Scotland, file HH101/4481 'Competitive Tendering'. Edinburgh.

National Audit Office (1987) Competitive Tendering for Support Services in the National Health Service, session 1986-7, HC 318. London: HMSO.

Rutherford, Donald (1995) Routledge Dictionary of Economics. Routledge: London.

Scottish Home and Health Department (1983). Circular 1983(GEN)13 'Use of commercial contractors by the NHS'. 7 September 1983. SHHD: Edinburgh.

Scottish Home and Health Department (1984). Circular 1984(GEN)14 'Use of commercial contractors by the NHS'. 22 June 1984. SHHD: Edinburgh.

Scottish Home and Health Department (1986). Letter to Health Board General Managers, 'Competitive tendering in the NHS'. 31 January 1986. SHHD: Edinburgh.

Scottish Home and Health Department (1987). No title. Letter to health board managers, dated 11 December 1997, deposited in the House of Commons Library. (Source: Hansard, 11 January 1988, w.a. col 160).

Scottish Home and Health Department (1988). Letter to Health Board General Managers, 21 February 1989. Quoted in Lanarkshire Health Board Agenda on 'Competitive tendering in Lanarkshire', dated 29 September 1988.

Scottish Home and Health Department (1989). Letter to Health Board General Managers, 'Competitive tendering in the NHS', 21 February 1989.

Scottish Office (1992). Circular SHHD/DGM(2)1992, 'White Paper – Competing for Quality. 7 January 1992. National Health Service in Scotland Management Executive: Edinburgh.

Scottish Office (1993a). NHS circular GEN(1993)4, 'Market Testing in the NHS: Transfer of Undertakings (Protection of Employment) Regulations 1981 (TUPE)'. 11 March 1993. National Health Service in Scotland Management Executive: Edinburgh.

Scottish Office (1993b). Market Testing in the NHS: Guidance for Health Boards and NHS Trusts. 6 October 1993. NHS Management Executive in Scotland: Edinburgh.

Scottish Office (1998) Circular MEL(1998)32 'Management of support services in the NHS in Scotland: Quality and value'. 29 April 1998. Department of Health: Edinburgh.

Scottish Office Department of Health (1997). Designed to Care, cmnd 3811. HMSO: Edinburgh

Serco Institute (2009) Payment on Performance: The Use of Competition and Contracting for Improving Public Services. A submission to the West Australian Economic Audit Committee, dated 27 February 2009. The Serco Institute. [http://www.serco.com. Accessed 13 November 2013.]

Sturgess, Gary L . et al. (2007a) Competitive Edge: Does Contestability Work? [http://www.serco-ap.com.au/media/78821/competitive_edge.pdf. Accessed 5 November 2014.]

Sturgess, Gary L. et al. (2007b) Competitive Edge: The Evidence. [http://www.serco.com. Accessed 13 November 2013.]

Szymanski, Stefan (1996). 'The impact of compulsory competitive tendering on refuse collection services', Fiscal Studies, 17(3), 1-19.

Szymanski, Stefan and Sean Wilkins (1993). 'Cheap rubbish? Competitive tendering and contracting out in refuse collection – 1981-88', Fiscal Studies, 14(3), 109-30.

Table 1

Baseline results, all hospitals

Dependent variable: real unit costs (in logs)						
	Cleaning services			Catering services		
	(1)	(2)	(3)	(4)	(5)	(6)
Pre-contract effects						
year -3	-0.00876	0.00451	0.0110	-0.0249	-0.0236	0.00103
year -2	-0.0263	-0.00574	0.0189	-0.0388*	-0.0368	0.00911
year -1	-0.0623***	-0.0339	0.0142	-0.0705***	-0.0679***	-0.000131
First round contract						
year 0	-0.162***	-0.126***	-0.0391	-0.105***	-0.101***	-0.0120
year 1	-0.259***	-0.207***	-0.103***	-0.105***	-0.0998***	-0.0180
year 2	-0.209***	-0.149***	-0.0570*	-0.0569**	-0.0516	-0.00442
year 3	-0.135***	-0.0710**	-0.0133	-0.0672**	-0.0616*	-0.0355
year 4	-0.0837***	-0.0181	0.0242	-0.0571*	-0.0511	-0.0218
year 5	-0.0538*	0.0210	0.0646*	0.00858	0.0150	0.0392
year 6	-0.0454	0.0462	0.0703*	0.0310	0.0387	0.0524
year 7	-0.0549*	0.0553	0.0501	-0.0351	-0.0258	-0.00887
year 8 and later	-0.0901***	0.0270	0.00517	-0.0302	-0.0195	0.00956
Second round contract						
year 0	-0.228***	-0.147***	-0.0983**	-0.0506	-0.0437	-0.0208
year 1	-0.321***	-0.242***	-0.193***	-0.0754*	-0.0683	-0.0349
year 2	-0.269***	-0.178***	-0.139***	-0.0796*	-0.0717	-0.0445
year 3	-0.255***	-0.151***	-0.129**	-0.0307	-0.0218	0.00299
year 4	-0.215***	-0.0977	-0.0947	-0.0567	-0.0464	-0.0259
year 5 and later	-0.207***	-0.0750	-0.0829	-0.0358	-0.0242	0.0104
Third round contract						
year 0 and later	-0.492***	-0.362***	-0.330***			
Quantity of services	-0.823***	-0.817***	-0.815***	-0.724***	-0.724***	-0.732***
Multiple contracts	0.112***	0.121***	0.0862***	0.00444	0.00467	-0.0158
Real wage	-0.254	0.112		0.241	0.273	
Hospital characteristics	included	included	included	included	included	included
Time trend	no	-0.0134***	no	no	-0.00109	no
Time dummies	no	no	included	no	no	included
N. of hospitals	136	136	136	136	136	136
N. of observations	1,903	1,903	1,903	1,902	1,902	1,902
R^2	0.597	0.600	0.609	0.264	0.264	0.278

Notes: the symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% level. The dependent variable is cleaning costs per square meter, deflated by the RPI, and catering costs per patient per week, deflated by the RPI.

Table 2

DSOs vs. private contractors, cleaning services

Dependent variable: real cleaning costs per m^2 (in logs)						
	DSOs			Private contractors		
	(1)	(2)	(3)	(4)	(5)	(6)
Pre-contract effects						
year -3	-0.0145	-0.00490	0.00686	-0.0643	-0.0873*	-0.133**
year -2	-0.0418**	-0.0272	0.0117	-0.111***	-0.149**	-0.228***
year -1	-0.0776***	-0.0569**	0.00858	-0.214***	-0.268***	-0.337***
First round contract						
year 0	-0.188***	-0.164***	-0.0555*	-0.283***	-0.354***	-0.401***
year 1	-0.272***	-0.238***	-0.121***	-0.429***	-0.514***	-0.551***
year 2	-0.236***	-0.196***	-0.105***	-0.357***	-0.459***	-0.503***
year 3	-0.167***	-0.123***	-0.0895**	-0.345***	-0.462***	-0.541***
year 4	-0.144***	-0.0969**	-0.0800*	-0.315***	-0.448**	-0.517**
year 5	-0.0967***	-0.0425	-0.0291	-0.386***	-0.534***	-0.522**
year 6	-0.0799**	-0.0155	-0.0376	-0.393***	-0.556**	-0.482*
year 7	-0.0727**	0.00237	-0.0611	-0.394***	-0.572**	-0.465*
year 8 and later	-0.105***	-0.0273	-0.0879	-0.445***	-0.641**	-0.568**
Second round contract						
year 0	-0.301***	-0.252***	-0.208***	-0.529***	-0.717***	-0.673**
year 1	-0.362***	-0.314***	-0.283***	-0.639***	-0.834***	-0.782***
year 2	-0.295***	-0.238***	-0.221***	-0.593***	-0.793***	-0.732**
year 3	-0.318***	-0.253***	-0.258***	-0.652***	-0.865***	-0.828***
year 4	-0.295***	-0.220***	-0.266***			
year 5 and later	-0.312***	-0.227***	-0.269***			
Third round contract						
year 0 and later	-0.517***	-0.427***	-0.429***	-0.839***	-1.065***	-1.035***
Quantity of services	-0.870***	-0.866***	-0.867***	-0.825***	-0.829***	-0.815***
Multiple contracts	0.121***	0.127***	0.0808***	0.133**	0.143**	0.174**
Real wage	0.333	0.499**		1.207**	1.216**	
Hospital characteristics	included	included	included	included	included	included
Time trend	no	-0.00822*	no	no	0.0158	no
Time dummies	no	no	included	no	no	included
N. of hospitals	98	98	98	23	23	23
N. of observations	1,371	1,371	1,371	322	322	322
R^2	0.641	0.642	0.656	0.787	0.787	0.799

Notes: the symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% level.

Table 3

The effects of competition on DSOs and private contractors, cleaning services

Dependent variable: real cleaning costs per m^2 (in logs)						
	DSOs			Private contractors		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Bids	-0.0293***	-0.0245***	-0.0330***	-0.0250**	-0.0246**	-0.0273**
Pre-contract effects						
year -3	-0.00650	0.00264	0.0203	-0.0688*	-0.0724	-0.127**
year -2	-0.0286	-0.0149	0.0333	-0.117***	-0.123*	-0.220**
year -1	-0.0626***	-0.0425*	0.0335	-0.223***	-0.232***	-0.323***
First round contract						
year 0	-0.0829***	-0.0741***	0.0745**	-0.189***	-0.202	-0.268*
year 1	-0.168***	-0.147***	0.00794	-0.332***	-0.347**	-0.416**
year 2	-0.127***	-0.101***	0.0233	-0.260***	-0.278*	-0.360*
year 3	-0.0540*	-0.0242	0.0340	-0.252***	-0.272	-0.388*
year 4	-0.0258	0.00618	0.0389	-0.225***	-0.248	-0.356
year 5	0.0198	0.0604	0.0773*	-0.302***	-0.327	-0.352
year 6	0.0331	0.0864**	0.0617	-0.306***	-0.333	-0.297
year 7	0.0357	0.102**	0.0293	-0.305***	-0.335	-0.264
year 8 and later	-0.00204	0.0684	-0.00728	-0.351***	-0.384	-0.341
Second round contract						
year 0	-0.121***	-0.0979**	-0.0147	-0.435***	-0.467*	-0.456
year 1	-0.173***	-0.152***	-0.0835	-0.526***	-0.560*	-0.542*
year 2	-0.106**	-0.0751	-0.0333	-0.458***	-0.492	-0.461
year 3	-0.132**	-0.0907	-0.0761	-0.515***	-0.551*	-0.539
year 4	-0.124**	-0.0679	-0.105*			
year 5 and later	-0.143***	-0.0758	-0.114*			
Third round contract						
year 0 and later	-0.261**	-0.222*	-0.197	-0.736***	-0.774**	-0.773**
Quantity of services	-0.858***	-0.855***	-0.853***	-0.831***	-0.832***	-0.819***
Multiple contracts	0.0963***	0.109***	0.0487**	0.127**	0.129**	0.166**
Real wage	0.164	0.401		1.358***	1.357***	
Hospital characteristics	included	included	included	included	included	included
Time trend	no	-0.0095**	no	no	0.0025	no
Time dummies	no	no	included	no	no	included
N. of hospitals	98	98	98	23	23	23
N. of observations	1,371	1,371	1,371	322	322	322
R^2	0.641	0.643	0.661	0.791	0.791	0.804

Notes: the symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% level.

Appendix for:

“Tracking cost savings from competitive tendering in the short and long run”

APPENDIX 1

A HISTORY OF COMPETITIVE TENDERING OF NHS HOTEL SERVICES IN SCOTLAND

What is described below refers to the situation in Scotland, unless the contrary is indicated. Health was a devolved power for Scotland long before the Scottish Parliament was re-established in 1999. The account largely draws on the exercise of this devolved power by the Department of Health/Scottish Home and Health Department [SHHD] as part of the Scottish Office/Executive. We take a chronological approach, but bring material together where there is a common theme. The regular circulars published by the Department of Health provide a useful framework upon which to hang this narrative.

1979, 3 May: The Conservatives are back in government.

One of the earliest initiatives of the Conservative administration was a set of Rayner scrutinies designed to identify inefficiencies in public administration. One of the earliest scrutinies put the Ministry of Defence cleaning services at its various establishments out to tender. Costs saved were put in the order of 40% (Hall, 1984), and gave a strong lead to the introduction of similar policies elsewhere in the public sector.

One such was the passage of The Local Government, Planning and Land Act, 1980, creating a statutory requirement for local authorities to put public works contracts out to tender, and indicated the ways in which it should be done. The Act came into force in Scotland on 1 April 1982. There were problems with its implementation, and it was not till many years later that similar legislation was used to extend compulsion to local authority manual *services*, and years later still to include *professional* services.

1983, 9 June: The Conservative administration is re-elected.

1983, 21 September: The Fair Wages Resolution was rescinded (SHHD, 1983, Appendix 1, para 9). Health Boards (the Scottish counterpart to the English district health authorities) and their subsequent successors, the NHS trusts, could no longer insist contractors match the pay and conditions of NHS staff, who would automatically be covered by the Whitley Council agreements (Rutherford, 1995, p 165). This had two consequences: first, and most obviously, it increased the opportunity of contractors to win contracts; and second, costs would tend to fall more than otherwise. In fact, the Health Care Services Section of the Contract Cleaning and Maintenance Association – the trade association for contract cleaners – agreed to match the basic Whitley rates of pay, though not their conditions of services, and this seems to have been a typical response (HM Treasury, 1986, Annex D paras 7-8).

Commercial firms expected to use a variety of ways to reduce labour costs. One was that employees be more flexible; a second was to reduce sickness absence. A third route was to reduce the weekly hours of staff already employed part time, to avoid National Insurance. From October 1984 to October 1985 the employers' National Insurance costs was 10.45% of gross earning. It then fell to a minimum of 5.0% in April 1987, 4.6% in April 1991, 3.6% in April 1994, and finally 3.0% in April 1995 (Institute for Fiscal Studies, unpublished data).

1983, 7 September: The first of several circulars was issued to Health Boards introducing competitive tendering as a policy they should follow (SHHD, 1983). The circular was largely an English initiative, and the Scottish Office's adoption of its English counterpart was less than enthusiastic (National Archives of Scotland, file HH101/3477). The circular was more or less identical to similar ones issued in England and Wales. The circular laid out the general principles that Health Boards were to follow. They include: being "…ask[ed] to test the cost-effectiveness of domestic, catering and laundry services" (para 1); "… the need to be satisfied with the credentials, technical competence and financial soundness of any company asked to tender" (para 10); the methodology to be used in the financial evaluation of the in-house [DSO] versus the best contractor bid; and that contracts should be awarded to the lowest bid, unless there are compelling reasons which have to be submitted to the Department of Health (para 7 and Appendix 1 para 21). However, they do not include a timetable to be followed. Finally, "[i]f little or no interest is shown by the private firms no further action should be taken." (Appendix 1, para 2).

We come back later to which services were targeted and when the lowest bid might be rejected. For the moment we note several adjustments to the evaluation of bids over the years, largely addressing the evaluation of the in-house bid when compared to the best commercial alternative. Over the years particular attention was given to the value added tax [VAT], redundancy costs, and the identification of in-house overhead costs. All could put the contractor's bid at a disadvantage.

VAT applied to whole of the contractor's bid, but it would only apply to that part of the in-house bid which constituted purchases, as against employees' costs. Given that VAT is applied to publicly funded services, at issue was largely a transfer of funds within the UK's finances. It therefore made sense for a Conservative administration, wanting to encourage the private sector, to ignore VAT in so far as it put the contractor at a disadvantage. In the period under consideration the disadvantage could have been large: VAT was 15% up to the financial year 1990-91, and 17.5% thereafter (Institute for Fiscal Studies). EC VAT was still a charge, but at a much lower rate, for example, 1.4% in 1988.

Severance costs could also prove significant and, unlike VAT, they were a real cost to the Exchequer when the incumbent was a DSO. Data collected in a separate study on severance costs for domestic contracts that had started in the period from 1985 to 1991 give some idea how large they could be (Milne 1993b). Domestic services were chosen because the wages element is proportionately much larger than for the two other services identified, catering or laundry and linen services. The guideline for evaluation in the first years of this policy was that severance costs be spread over the life of the contract, typically three years. Using this definition, then for the overwhelming majority of 'domestic only' contracts severance costs were at least 5% of the first year value, and in most cases at least 10%. Similar calculations for 'domestic and other' - where 'other' might be portering and/or catering - suggest severance costs were not quite so important, but not that much less important (Milne 1993b, table 3). On 18 November 1992 the spread was increased to a minimum of 5 and a maximum of 10 years (Scottish Office, 1992, para 5).

1984, 22 June: The second of the circulars was issued to Health Boards (SHHD, 1984). This sets out a timetable for the programme of competitive tendering. In the short term, by 31 December 1984, each health board should have put out to tender domestic and catering services at at least two hospitals (para 3). In the longer term was a three year programme, starting 1 April 1984 to put out

the remaining domestic, catering and laundry services (para 4). The three Islands Health Boards were exempt (paras 3-4). Progress in achieving these targets was to be monitored by the Department of Health which was to be provided with details of the three year programme by 30 April 1985. The National Archives of Scotland (file HH101/3528) indicate there was real resistance by several Health Boards to its implementation, even by some of the Government's own supporters. Instead several Health Boards sought to find savings through joint management/union efficiency reviews. By the end of 1986 only 2% of support services by value had been put out to tender (NAO, 1987, para 4.8(a)).

1985, July: Non-compliant Health Boards were given target cash savings for the financial year 1985-86 equivalent to at least 5% of their spend in 1984-85 on domestic, catering and laundry services (NAO, 1987, para 4.6).

1986, 31 January: The SHHD informs Health Board General Managers that much less progress had been made with implementation in Scotland than in England and Wales (SHHD, 1986).

1986, October: A rather firmer tone is taken by the SHHD than in July 1985 (NAO, 1987, para 4.20). The three Island Health Boards continue to be exempt; but *all* the other Health Boards are expected to put their support services out to tender by April 1988, one year later than the guidance given on 22 June 1984. Furthermore, cost savings targets are given, over and above the cost savings achieved prior to going out to tender: a minimum of 10%, even where it is difficult to attract competition. Health Boards are asked to submit their plans by April 1987.

1987, 8 April: National Audit Office report was published. This report draws Parliament's attention to the lack of progress Scotland had made when compared with England, and even Wales, and gives an historic account of events since 1983, an account upon which we have drawn above.

1987, 11 June: The Conservative Administration is re-elected for the second time. Michael Forsyth, a keen advocate of competitive tendering, is appointed Parliamentary Under Secretary of State responsible for Health at the Scottish Office. The April 1987 NAO report in April had highlighted Scotland's the lack of progress in competitive tendering for domestic, catering and laundry services, and Forsyth used his position to bring Scotland into line with England, at least in respect of cleaning and catering services. He was to be rewarded with promotion to Minister of State with responsibility for Education and Health on 7 September 1990. In 1992 he moved to the Home Office, eventually to return as Secretary of State at the Scottish Office in July 1995, where he remained until New Labour was elected in May 1987.

1987, 11 December: The Scottish Home and Health Department sets new targets and deadlines for the implementation competitive tendering (SHHD, 1987). They were more modest than those set in October 1986. The focus continues to be on domestic and catering services, and the three Islands Health Boards continue to be exempt. However, the more remote Health Boards – Borders, Dumfries & Galloway and Highland – are set targets of only 'at least one block' each of domestic and catering services (para 2.2); and the remaining Health Boards are set targets of at least two blocks' (para 2.1). The deadline for implementation continues to be the end of April 1988. But no mention is made of longer term programmes, except that tendering should be automatic when new facilities are brought into operation (para 2.3). This time Health Boards did not challenge the initiative (Hansard, 24 February 1988, w.a. 230; and 7 March 1988, w.a. 88).

1988, 1 September: The date of an unpublished letter from SHHD to general managers, indicating that Health Boards should continue "… tendering for further blocks of catering and domestic services including multi-service contracts." (SHHD, 1988).

1989, 21 February: Health Board General Managers given notice that Ministers are 'particularly keen' to extend competitive tendering to linen services (SHHD, 1989, para 4).

1991, 1 April: The introduction of capital charges, throughout the public sector. With the possible exception of laundry, in most cases this should not have made much difference in the evaluation of in-house versus commercial providers. Thus in the case of cleaning, the costs are largely wages. In the case of catering, it was normal practice to give contractors the same free access to the hospital's kitchens as DSOs would have had. Needless to say, contractors choosing to use their own plant would have had to bear the capital costs incurred.

The case of laundry and linen services was rather different. First, capital charges would be significant: for example, in the financial year 1991-92, these averaged £4.14 per 100 articles, 21% of total unit costs for the 56 NHS laundries on which information was reported (Scottish Health Service Costs, year ended 31 March 1992, p 254). Second, when competitive tendering was introduced in 1983, it was probably envisaged that contractors would use their own plant; and the lack of spare commercial capacity in Scotland (NAO, 1987, para 4.3) explains why laundry and linen services were dropped at first in Scotland. However, shortly afterwards the Department of Health was willing to allow contractors to use NHS plant (SHHD, 1986, Appendix D). Whether or not contractors chose to take up this possibility, the imposition of capital charges on NHS laundries would have made it easier for contractors to win on price.

1991, 18 November: The publication of the Treasury White paper Competing for Quality (Great Britain, 1991). This reviews the progress of market testing of publicly funded services and makes suggestions for new directions. As its title suggests, there is now a recognition that: "Competition does not mean invariably choosing the cheapest service: it means finding the best combination of quality and price which reflects the priority of the service." (Ibid, p 1).

1992, 1 April: The first NHS (hospital) trusts were set up. Trusts have been designed to separate the purchaser:provider roles of health board and hospital. When first set up, they were designed to create competition in the provision of services. Previously, Health Boards responsible for implementing competitive tendering at their local hospitals tended to be mutually supportive. With the creation of NHS trusts, responsibility for the tendering of hospital support services was transferred to the hospitals trusts and, in the competitive environment, trusts tended *not* to be mutually supportive in its implementation. The last NHS trusts started on 1 April 1995; and all the hospitals in the mainland Health Boards now had trust status (ISD Scotland Home, undated).

1993, 11 March: Scottish Office produces a circular on its current understanding the application of the European Union's Acquired Right Directive as applied to the competitive tendering of *publicly* funded services (Scottish Office, 1993a). Uncertainty still existed; but was now confined to whether a 'transfer of undertaking' would have taken place when the contract changed hands. It was not

until 1994, at least for cleaning and catering contracts that, in most usual instances, a transfer of these services would be considered to have taken place, and so TUPE applied.

The purpose of Acquired Rights Directive has been to protect the wages and conditions of service of employees on their transfer to a new employer, much as had been the Fair Wages Resolution until 1983. This does not mean that changes to wages and conditions could not be negotiated with new employer; nor that new recruits would enjoy the terms and conditions of those transferred. One consequence is that incumbent providers would be expected to provide information to potential competitors on the wages and conditions of its staff when the contract went out to tender, so that that those invited to tender could calculate the financial implications of taking on existing staff. Health Boards whose DSOs were the incumbent, usually complied; but one suspects incumbent contractors were much less likely to do so. A further consequence is that Health Boards no longer need to add redundancy costs to external bid in the evaluation, as transferees were expected to continue to enjoy comparable superannuation benefits.

1993, 1 July: European Union Services Procurement Directive came into force. The enabling British took effect on 13 January 1994 (Statutory Instrument 1993/3228); and covered contracts at or above the original threshold ECU 200,000 (around £140,000) net of VAT. The threshold was reviewed every two years, but in respect of the services studied seems to have remained unchanged at least until 31 December 1999 (Milne and Ostler, 2000, fn 26.)

Two groups of services – A and B - are identified. Part A services, the so-called 'priority' services, have been expected to follow the full range of procedures for going out to tender; and this would have applied to cleaning. Part B services, the so-called 'residual' services, have only been required to have an award notice published in the Official Journal of the European Community (OJEC); and this would have applied to hotel and restaurant services – and hence catering (Department of the Environment, 1994, p 6). Laundry and linen services were not listed at all. Public bodies were free to use the full force of the Directive, and it seems it was not uncommon for the Scottish Health Boards and NHS trusts to have done so in the sample of contracts in this study. The aim of the Directive was to enhance the European Single Market, by ensuring minimal discrimination against non-national companies. There is little evidence that the Directive did more to encourage international competition in the services (Milne and Ostler, 2000). However, advertising through OJEC provided a useful vehicle to reach potential contractors, whatever their nationality.

Two conditions of particular interest attached to the procurement of 'priority' services: the selection of firms invited to tender; and the evaluation of tenders submitted. In respect of invitations to tender, the choice has been between 'open', 'restricted' and 'negotiated'. The normal practice has been 'restricted' (Milne and Ostler, 2000), and differs little from the practice preceding the Directive, with its emphasis on a contractor's technical competence and financial viability. In respect to the evaluation of bids submitted, there has been the choice between the 'most economically advantageous' or 'lowest cost'. Before the Directive, SHHD guidance regularly indicated the lowest bid; and Health Boards wishing to award contracts to DSOs which did not submitted the lowest bid had to justify their action to the Department. The White paper, Competing for Quality, issued by the British Government allowed for considerations other than price in the evaluation, and this is consistent with 'most economically advantageous'. Writing later, the Secretary of State for Social Security indicated this was the criterion that had been used (Hansard, 26

April 1999, w. a. col 19), and it seems to have predominated among contracts in this study that we identified in OJEC. Nevertheless, Scottish Office guidance continued to emphasise the importance of price (Scottish Office, 1993b, para 52).

1993, 6 October: The Scottish Office published a booklet, whose purpose "… consolidates the information issued to Health Boards since 11 December 1987. All previous circulars and letters about competitive tendering are cancelled with the exception of GEN(1993)4" (Scottish Office, 1993b).

1997, 1 May: New Labour is elected, with a manifesto to introduce 'best value' to replace 'compulsory competitive tendering' in local government.

1997, 9 December: Publication of New Labour's White paper for the NHS in Scotland (Scottish Office Department of Health, 1997). The main focus is on clinical services, within a context of partnership between the NHS as employer and the staff employed. It also includes a brief reference to the value and quality of support services (para 125).

1998, 29 April: Publication of Scottish Office circular which follows up the 1997 White paper and provides guidance on the management of support services (Scottish Office, 1998). It spells out what principles matter in addition to cost, for example, 'quality of service' (para 3). It also indicates, after benchmarking, how services may be improved, of which 'market testing' is one of several identified, but only to be considered after these other alternatives have been rejected. The tide had turned against competitive tendering as the default procedure to improve on the costs and quality of support services, at least for the present. This circular echoes the principles of 'best value' without using the term.

In conclusion, competitive tendering was first seriously introduced by the Conservative administration for support services at NHS hospitals in Scotland in September 1983. However, it met serious resistance at first, and Health Boards that resisted going out to tender were given significant target savings to achieve. Once competitive tendering was taken on board, the emphasis in the selection of firms was on technical competence and financial soundness, and in the evaluation of bids on price.

Initially Health Boards and NHS trusts were 'asked', subsequently 'required' to put domestic and catering services out to tender (see also Milne and Wright, 2000). After some delay, due to the lack of commercial competition in Scotland, laundry and linen services were added to the list. Other services, such a portering were also added, but at the initiative of the health board or NHS trust. Competitive tendering continued to be an option after April 1998, but New Labour in Scotland believed 'collaboration' rather than 'competition' should be the way forward when managing support services.

A number of changes were made affecting the competitive position of commercial firms vis à vis DSOs. Perhaps one of the more significant was the application of TUPE from about 1994.

APPENDIX 2

DESCRIPTIVE STATISTICS

The implementation of competitive tendering in the sample of 136 Scottish hospitals can be visualized in Figure 1. The top panel refers to cleaning services and presents the percentage of all hospitals without a contract, the percentage with a contract awarded to a DSO, and the percentage with a contract awarded to a private contractor. The lower panel shows the corresponding numbers for catering services.

[Figure A1]

In both panels we see that no contracts were awarded in 1985 and 1986, and only a small percentage of hospitals begun the process in the years 1987 and 1988. Then comes a period of three years, 1989 to 1991, where the majority of Scottish hospitals put their cleaning and catering services out to tender. The number of hospitals with a contract for cleaning services passes from 3 in 1988 to 112 in 1991 (out of a total of 136 hospitals in our sample). For catering services the transition is similarly abrupt: from 4 hospitals in 1988 to 106 in 1991. After 1991 the percentage of hospitals which had not put cleaning and catering services out to tender continues to decline for a couple of years, albeit at a much slower pace, and eventually stabilises. By 1998, the last year of our sample, there are still 5% of hospitals without a contract for cleaning services and 10% without a contract for catering services.

As for the type of firm winning these contracts, DSOs easily outnumber private contractors. In cleaning services, out of 129 hospitals with contracts in 1998, we find 101 hospitals whose operator was a DSO against 28 hospitals which used a private contractor. In catering services there were 123 hospitals with contracts in 1998 and 106 of them were with DSOs.

As discussed before, we contribute to the existing literature by considering the effects of a second and even a third round of contracts. This refers to hospitals that put a service out to tender, awarded a contract for a certain number of years and, once the contract expired, put the service out to tender again and awarded a new ("second round") contract. Contracts were usually awarded for an initial period of 3 years, but it was not unusual for them to be extended. Second round contracts would therefore be awarded after 3 or more years since the beginning of the first round contract, and the same is valid for third round contracts with respect to second round ones.[1]

The distribution of contracts among first, second and third round contracts is given in table 1. For cleaning services, first round contracts start in 1987, second round contracts in 1991, and third round contracts in 1993 (only one of these until 1998, when three more appear). For catering services first round contracts start in 1987 and second round contracts start in 1992.

[Table A1]

Another dimension of the tendering process which we look at is the number of bids made on each contract, a measure of the degree of competition. Figure 2 presents histograms of the number of bids per contract for cleaning services (upper panel) and catering services (lower panel). The figure makes clear that a higher degree of competition existed for cleaning services. Only 10% of cleaning

[1] It was also possible for contracts to be terminated early, but only three such cases are present in our sample.

contracts received a single bid, while contracts receiving 2, 3 and 4 bids were much more common and make the majority of observations. For catering services, on the other hand, single bid cases are more than 40% of the total, followed by slightly less than 30% of cases with 2 bids and much smaller percentages for contracts with 3 bids or more. The maximum number of bids recorded across both types of services is 10, but cases of more than 6 bids are very rare.

[Figure A2]

The larger the number of bids, the lower the likelihood that the contract would be awarded to a DSO rather than a private contractor. This is shown in table 2, where all awarded contracts are grouped by the number of bids received and we indicate whether the winning firm was a DSO or a private contractor. DSOs were present in the bidding process for most of the contracts studied. One-bid contracts were all awarded to DSOs. For multiple bid contracts, the percentage awarded to DSOs falls with the number of bids, reaching a low of 47.4% for cleaning contracts with 6 or more bids and 33.3% for catering contracts with 5 bids.

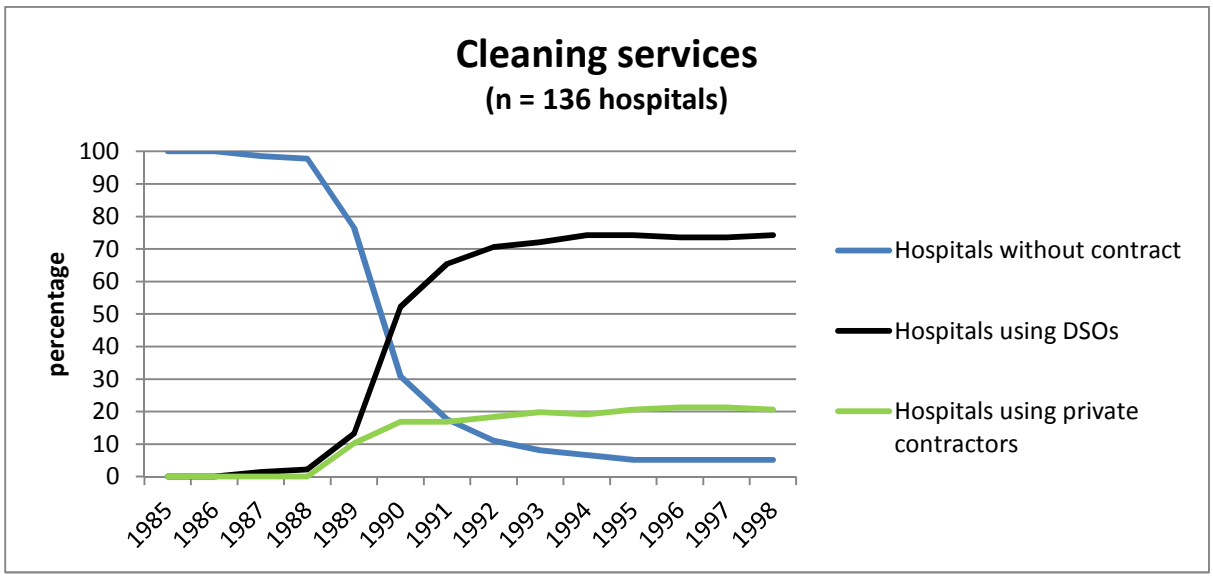
[Table A2]

It is important to note that over the period under study Scottish hospitals were changing rapidly in dimensions other than the implementation of competitive tendering. Between 1985 and 1998 our sample of Scottish hospitals reduced markedly the total number of overnight stays patients spent in them by sending people back home earlier or by having them referred as outpatients. As a result, the total number of overnight hospital stays ("inpatient days") in these Scottish hospitals fell from 98,200 in 1985 to 63,100 in 1998 – a drop of more than a third. The number of overnight stays is closely related to the number of staffed beds in a hospital, and thus to cleaning and catering costs.

Furthermore, hospitals with a private contractor were usually larger than hospitals whose services were given to a DSO. A good way to measure this is by calculating the average number of staffed beds of hospitals with private contractors and hospitals with DSOs on the year in which the contract was awarded. When we do this for cleaning services we find that hospitals with private contractors had an average of 448 staffed beds, while the figure for hospitals with DSOs is 280. Similar results were found in England for the first round of tendering for these two services (NAO 1987, table 3). All of the above calls for carefully controlling for hospital characteristics when estimating the effects of competitive tendering on cleaning and catering costs, which is precisely what we do in the empirical section of the paper.

Figure A1

The implementation of Competitive Tendering in Scottish Hospitals



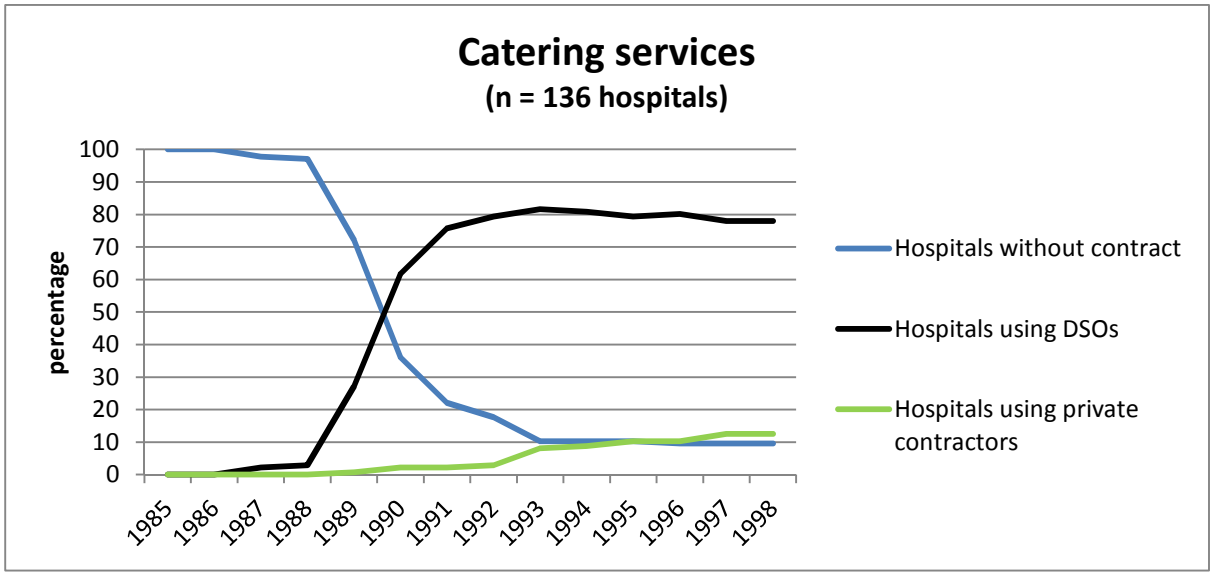


Figure A2

Histograms for the number of bids per contract

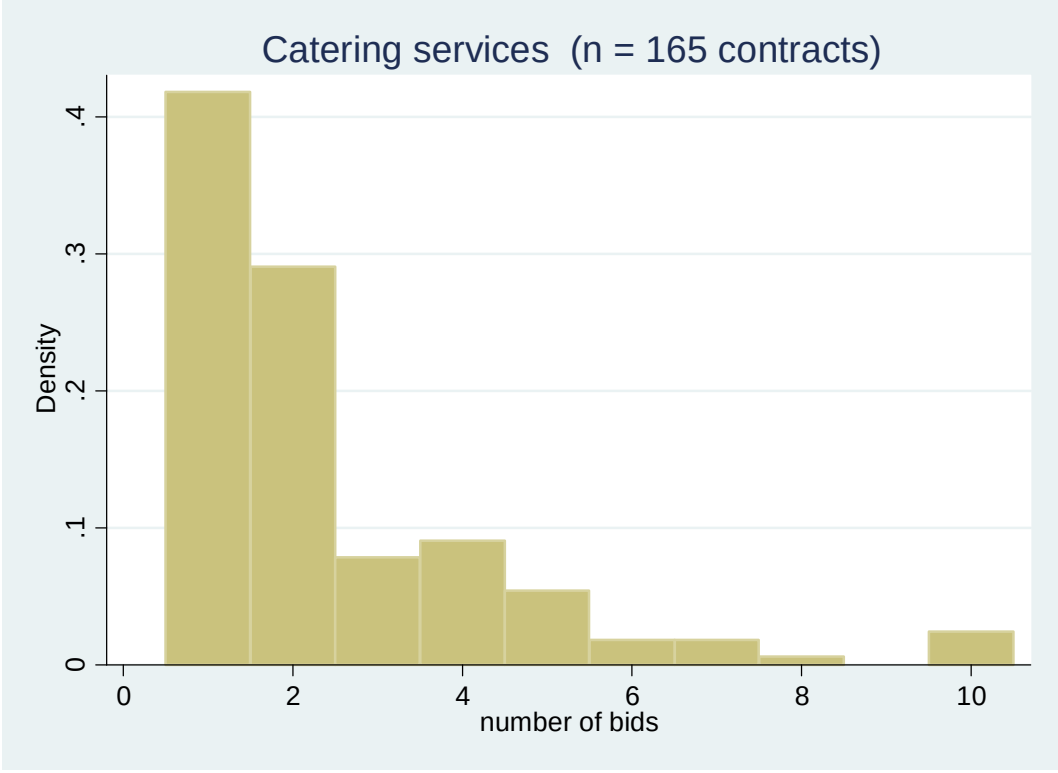


Table A1

Descriptive statistics for contracts and rounds

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Cleaning services														
Hospitals:														
without contracts	136	136	134	133	104	42	24	15	11	9	7	7	7	7
with contracts	0	0	2	3	32	94	112	121	125	127	129	129	129	129
With contracts:														
in first round	0	0	2	3	32	94	111	118	109	108	98	96	93	83
in second round	0	0	0	0	0	0	1	3	15	18	30	32	35	42
in third round	0	0	0	0	0	0	0	0	1	1	1	1	1	4
Catering services														
Hospitals:														
without contracts	136	136	133	132	98	49	30	24	14	14	14	13	13	13
with contracts	0	0	3	4	38	87	106	112	122	122	122	123	123	123
With contracts:														
in first round	0	0	3	4	38	87	106	108	104	103	94	90	87	81
in second round	0	0	0	0	0	0	0	4	18	19	28	33	36	42

Table A2

DSO and private contractors: winning rate by number of bids

Cleaning services

	1 bid	2 bids	3 bids	4 bids	5 bids	6+ bids	Total
Total number of contracts	18	48	35	40	19	19	179
Of which:							
DSO won	18	39	26	29	11	9	132
Private won	0	9	9	11	8	10	47
% won by DSO	100.0	81.3	74.3	72.5	57.9	47.4	

Catering services

	1 bid	2 bids	3 bids	4 bids	5 bids	6+ bids	Total
Total number of contracts	69	48	13	15	9	11	165
Of which:							
DSO won	69	43	10	10	3	8	143
Private won	0	5	3	5	6	3	22
% won by DSO	100.0	89.6	76.9	66.7	33.3	72.7	