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**Competition, Quality and Contract Compliance**  
**Evidence from Compulsory Competitive Tendering in Local Government, Great**  
**Britain, 1986-2000**

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Abstract

The introduction of competition has frequently been found to cause costs to fall. There has, however, been a question whether this was partly achieved at the cost of quality. Auction theory predicts prices would fall the greater the competition to provide the service. There has been some debate, however, whether the smaller budgets would make contract compliance more difficult. Evidence is found in support of this hypothesis. We also find some evidence that the better recorded performance of the in-house DSOs during this period was due to the information advantage they had from being incumbents.

JEL classification: H57, L14, L15, L32 and L33.

Key words: Contract compliance; Contract performance; Competitive tendering; CCT; Local government; Auction theory.

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“The most important question is not the standards that are specified, but the extent to which they are being attained.” (Walsh and Davis, Competition and Service, 1993, paragraph 12.16)

## **1 Introduction**

Historically it has been common for the public sector in the United Kingdom, and elsewhere, to contract out the supply of public works, such as buildings, and supplies, such as stationary. The new Conservative Government of 1979 aimed to extend the role of competition and started with the Local Government, Planning and Land Act 1980 which required local authorities to put all public works above quite low financial thresholds out to tender. This was the beginning of what came to be known as compulsory competitive tendering [CCT]. Later initiatives sought to extend the principle of competition to services, such as building cleaning, and in this respect the United Kingdom was at the forefront.

Central and local government and the National Health Service were all affected. The varieties of arrangements included: the introduction of quasi-markets, for example, in the National Health Service, with health authorities and GP fundholding practices purchasing services from NHS hospital trusts (Le Grand and Barlett, 1993; and Croxson *et al.*, 2001); and the market testing of ancillary services, such as building cleaning and catering, throughout the public sector (Great Britain, 1991). The Conservative Government had several goals when market testing was introduced (Ascher, 1987), but there was no presumption that services would be contracted out. Similar initiatives have been introduced elsewhere (Domberger and Rimmer, 1994). Sturgess *et al.* (2007a and 2007b) provide a recent comprehensive survey.

A number of studies on the introduction of ‘market testing’, sometimes known as ‘competitive tendering and competition’, of ancillary services have identified significant cost savings when compared with the *status quo* (Domberger and Jensen, 1987; Gomez-Lobo and Szymanski, 2001; and Milne and Wright, 2004). Evidence of the effect on service quality has been much more limited. Those studies that do exist have typically found mixed results (Domberger and Rimmer, 1994; and Boyne, 1998). This study adds to the latter debate, and does so in the context of local government

services. It complements two case studies of the first and second rounds of tendering in England, commissioned by the Department of the Environment which was responsible for the implementation of compulsory competitive tendering in England. They drew on samples of 40 and 38 authorities, respectively, of which 32 were common to both (Walsh and Davis, 1993 and Austin Mayhead, 1997, respectively).

Domberger *et al.* (1995) and Domberger and Li (1995) are rare examples that test the *joint* effect of competition on cost and quality, and are based on a sample of 61 cleaning contracts in Australia. They found private tendered contracts cost less than their public non-tendered counterparts, "... without adverse effects on quality." Their conclusions in respect of quality did not go unchallenged (Fraser and Quiggin, 1999; and Quiggin, 2000). One difficulty is the multi-dimensionality of the service specification. Boyne (1998), in his review, draws attention to this, and cites the example of studies of refuse collection. Szymanski (1996) is one such, and models costs in terms of the point and frequency of collections; but he is also aware of other dimensions. Comparisons also require each dimension be weighted for an overall conclusion to be reached. This is now standard practice in public sector procurement through the use of key performance indicators, but was not at the time market testing was introduced. Alternatively, the weights are implicit in the contract price and, if the standards are not met, default procedures can be set in motion. *Ex post* contract quality is thus a function of its specification and 'contract compliance'.

Our use of the term 'contract compliance' requires some explanation. The traditional American use of this term describes conditions set by the client on a potential contractor, for example, on pay and conditions of service. The term is used here to describe whether the service provider has fulfilled the contract's service specification.

Studies comparing service quality rarely made the distinction between contract specification and contract compliance. Domberger and Hensher (1993), Walsh and Davis (1993) and Austin Mayhead (1997) are notable exceptions; but in no case is contract compliance modelled in terms of competition for local authority services of which we are aware.

The purpose of this paper is to test whether competition had an adverse effect on contract compliance. We conclude that it did. Unlike the majority of studies of public sector procurement, impact of competition is not measured in terms of its absence or presence so much as of differing degrees of competition. Rather similar results to this study have recently been published for the quasi-market for NHS hospital services in England (Propper *et al.*, 2008).

We begin by modelling contract compliance. We then identify the sample of contracts studied. This is followed by background information on public sector procurement, particularly featuring the Local Government Act 1988, so as to put the model in context. The data to be used are then described, to be followed in turn by the results of the analysis. The paper concludes with a discussion.

## **2 Modelling contract compliance**

### *Introduction*

Recent literature on contracts differentiates ‘classical’ contracts from ‘relational’ contracts (Walsh *et al.*, 1997, pp 33-39). In the case of the former, the terms of the contract are clearly defined, performance can be and is monitored and contract failure can be and is penalised, even to the extent of contract termination. The relational model is one where these conditions may not all hold or, if they do hold, discretion is exercised in the exchange between client and contractor: what might be described as a ‘partnership’.

In the classical model the contractor’s performance is centre stage, and contract failure could be interpreted as the contractor’s inability to live within the agreed price. As such, auction theory presents some useful predictions. In the relational model it is the client’s interpretation of contractor performance that is centre stage. We offer no general theory how that discretion might be exercised. However, the context of this study lends itself to some *ad hoc* predictions that may be tested for their consistency. The two models are taken in turn. The section completes with identifying some control variables.

## *Classical contracts and auction theory*

The starting point is that the contractor has a set of obligations to be met and a budget upon which to draw, both predetermined at the contract's start. The contractor bids in terms of an expected cost, and the difference between it and the tendered price is the expected economic rent earned. The smaller the expected economic rent, the more likely the contractor will cut corners, and therefore be at risk of contract non-compliance. What does auction theory have to say about the price tendered?

First, the market testing of local authority ancillary services in the United Kingdom was regulated and certain procedures had to be followed. It conformed to the first-price sealed-bid type. Being 'first-price', the lowest bid wins the contract, and its value is the lowest bid. We argue in section 4 below that this is what happened for the contracts being studied. Being 'sealed-bid', bidders can only guess its value to their rivals. There is a lower limit to ensure *any* profitability. To *maximize* that expected profitability the bidder must guess the bid of its most competitive rival, and price accordingly. This is one source of uncertainty. Offering a lower price reduces profit per unit but, by increasing the probability of success, can increase expected profit (Milgrom, 1989, pp 11-12). This extra profit is economic rent. The larger the number of bids, the smaller their dispersion, and hence the smaller the economic rent of the winning bid, and the less likely the contract will be compliant.

Second, the model of bidders' value. McAfee and McMillan (1988, p 63) argue that bidders' values in government procurement, the subject of this study, be modelled as independent-private-value. They use the following reasoning:

“... each firm knows its own expected cost: a firm that learns about a rival's expected cost may change its strategic behaviour, but it will not change its perception of its own expected cost.”

What makes this a model of *independent-private-value*, is that the value for each bidder is known to the bidder, and does *not* depend on the others' unknown values. In the model of *common-value*, in contrast, not only is the value to each bidder not

known, but that value is contingent on the values that other bidders put in the auction. The danger for bidders is that their value is out of line with others and a loss could be incurred, the so-called 'winner's curse'. In practice there is probably an element of both independent-private value and common-value.

How important is the choice of model of bidders' values? Laffont (1997) finds that, for a variety of models, the Bayesian Nash equilibrium winning bid tends to be lower the more bids that are tendered. To that extent, there is no difference between the models; and evidence from three sets of public sector contracts which tests the impact of the degree of competition on winning bid price supports this prediction (McAfee and McMillan, 1988; Gomez-Lobo and Szymanski, 2001; and Milne and Wright, 2004).<sup>1</sup>

The functional form, on the other hand, varies with the model; but attempts to differentiate bidders' values this way have been unsuccessful (Brannman *et al.*, 1987; and Gilberto and Varaiya, 1989). For the purposes of this study no particular model is assumed.

Third and finally, in the case of *asymmetric* common-value, better informed bidders would earn larger economic rents than their less well-informed competitors. Laffont (1997, p 21) goes so far as to suggest that the expected profits of the uninformed bidder would be zero. If the less well-informed were careful to avoid the winner's curse, the economic rent of the well-informed bidder would be larger still (Whitford, 2007, pp 72-73). Incumbents have such an advantage, so that any change of contractor puts the new contractor at greater risk of non-compliance.<sup>2</sup>

To conclude, we hypothesise that the number of bids and asymmetric information both influence how much economic rent contractors can earn, and hence their

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<sup>1</sup> However, as one of the referees notes, in certain circumstances increasing the number of bids might raise the winning bid (Riley and Samuelson, 1981). Assuming, as we do, that the winning bid is positively correlated with compliance – that is the higher the winning bid the greater the compliance – then a quite different outcome is predicted from the one hypothesised by us: namely, that greater competition would increase compliance.

<sup>2</sup> Apart from auction theory, the existence of sunk costs, for whatever reason, would favour incumbents when contract go out to tender (Vickers and Yarrow, 1988, pp 112-3).

likelihood of being contract compliant. Compliance is predicted to be less common the more bids there are and to be more common when incumbents retain the contract.

### *Relational contracts and client discretion*

Relational contracts arise if clients are unable to enforce the terms of the contract for some reason, or choose not to do so. In the context of this study, they refer to repeated interactions over the life of the contract between the authority (the principal) and the agent (whether DSO or private contractor), whose outcome is reported compliance. Some knowledge of the particulars of the markets studied is therefore necessary to see the possibilities for relational contracts. The brief discussion given here is followed up in more detail in section 4 below.

The model is tested on contracts for the services covered by the Local Government Act, 1988 which made competitive tendering compulsory for all local authorities in Great Britain for a specified range of ‘identified activities’ over a defined period. Typically, the activities had previously been produced in-house by direct service organisations [DSOs] or direct labour organisations [DLOs], both referred to subsequently as DSOs. The Act allowed continued in-house production for a predetermined period, but only after the DSO had demonstrated its cost effectiveness against external competition.

From its very beginning the Local Government Act 1988 drew upon lessons on the award of contracts that had been learnt from the implementation of the Local Government, Planning and Land Act 1980. Strict procedures were laid down to prevent both ‘anti-competitive behaviour’ and the introduction of non-commercial considerations which might bias the client authority in favour of awarding the contract to DSOs. Commercial contractors continued to complain to the Department of Environment; but, as is noted later, in most cases the complaints were not accepted.

The situation in respect of the monitoring of contracts, the subject of this study, was different. The original 1988 Act was silent on this matter, though it was addressed subsequently, as we show later in this paper. Suffice it to note that Walsh and Davis

(1993, tables 10.4, 10.8 and 10.20) found DSOs were more compliant in the first round of tendering, using a variety of measures. They also noted this could be partly explained by the mix of activities that were perhaps less at risk of non-compliance. DSOs continued to be more compliant in the second round (Austin Mayhead, 1997, table 4.8). Private contractors complained client authorities were biased, but Austin Mayhead (1997, para 4.8.3) found “no ... evidence ... to support or refute these views.” Had they been justified, this study would find DSOs more compliant.

The title ‘DSO’ not only describes ownership, but a particular type of public ownership, sometimes described as ‘hybrid’ organisations (Vincent-Jones and Harries, 1996a). Having submitted a bid and won the contract, the DSO no longer had the full support of its parent authority, nor had it the full independence of a contractor. Instead the DSOs were tied to predetermined budgets, had to achieve a target real rate of return [of 5%, subsequently changed to 6%, on ‘net assets’, with the two exceptions of building cleaning and the management of sports and leisure facilities which was required only to break-even (Department of the Environment, 1994, para 7)]. Sometimes the relationship between the hybrid DSO and its client (parent) authority was fraught, as is recognised in the ‘hard split’, ‘soft split’ distinction. ‘Hard split’ denotes the physical separation of staff employed in DSO units from former colleagues, now responsible for monitoring its performance; ‘soft split’ denotes their close proximity. Several case studies found hard split arrangements “*conflictual* and antagonistic” (Shaw *et al.*, 1994, p 208, italics in the original). See also Vincent-Jones & Harries (1996a and 1996b). Soft split arrangements were generally more harmonious. On the basis of these studies we would expect contracts run by ‘soft split’ authorities to be more compliant.

### *Completing the model*

A number of control variables are included: first, the type of activity, such as building cleaning; second, the first year real value of the contract; and third, contract duration. It would be surprising if recorded compliance were the same for the different activities given the potential for differences in the contract specification, its monitoring and the imposition of penalties. Contract value is an instrument for the

size and complexity of the contract, but we have no *a priori* view of their combined impact on compliance. Its value is the outcome of the tendering process and, to that extent, a negative correlation between the extent of competition and contract value may be expected. We assume contract value to be exogenous with respect to compliance: certainly, in terms of the sequence of events, compliance follows from the degree of competition and the value of contract; it does not precede them. Finally, we test the robustness of our results for changes over time and regional differences.

Lack of information prevents us from testing whether the DSO was run under a ‘hard’ or ‘soft’ split arrangement, as suggested by the case study material cited above. The omission may not be material, given that Austin Mayhead (1997, table 9.4) found the overwhelming majority of blue-collar contracts – those studied here - were ‘hard’ split in the second round of tendering.

### **3 Sample studied**

Seven activities were initially covered by the Local Government Act, 1988: refuse collection, building cleaning, other cleaning (including street cleansing), catering (education and welfare), other catering, vehicle maintenance and ground maintenance. The management of sports and leisure facilities was added very shortly afterwards by Statutory Instrument. Others activities were added some years later, also by Statutory Instruments, but are not considered for inclusion because of the short history of their experience of CCT.

Catering is excluded from this study because of the difficulty predicting its economic rent. This can be best understood in terms of hospital catering, admittedly not the subject of study here. The client authority would put the provision of patient meals out to tender, for which the authority would pay. Staff meals, for example for doctors and nurses, could also be provided by the same supplier; but in this case the staff would pay and they would be a source of additional income for the provider. Staff meals could be so profitable that the contractor might even be willing to provide patient meals at a loss. In the local authority catering context, staff catering and its income generating prospects are likely to be much more important. Sports and leisure management is also excluded because the contract was for the management of the

service, not the provision of the service itself. The study concentrates on the remaining five activities.

#### **4 The Local Government Act 1988: the process of public procurement and monitoring**

This background to our study of the 1988 Act is divided into three parts. In the first part we recognise that there was already a history of public procurement in local government, and that existing arrangements were adapted and did not require legislation for their introduction. In the second part the arrangements of the 1988 Act and its accompanying statutory measures and guidance at its start are described. The final part identifies some of the key developments over the life time of the Act. The intention of this section is to provide background information on the effect of competition on contract compliance. The topics chosen and details given put competition in the context of auction theory, and contract compliance in terms of conforming to its specification. The information is limited to the five activities that constitute our sample and largely addresses the English experience. We refer to the few major departures in Wales and Scotland in the historic narrative.

##### *The background to the 1988 Act*

Local government already had a history of public procurement for capital projects and supplies in 1988, and procedures were in place to satisfy their fiduciary duty. It would not have been difficult to adapt them to the requirements of the 1988 Act, and what is described below largely stands apart from the 1988 Act which was directed at the public procurement of services. In terms of competition and contract compliance, we look at the award of contracts, selected characteristics of contracts, and the monitoring and default procedures used to ensure compliance.

We start with the process of awarding contracts. In terms of competition and auction theory, one of the first steps is the notification of the contract being put out to tender. This might be by advertisement or by reference to some list of approved contractors. Interested contractors could follow up, and would be sent a detailed specification by the local authority and be asked to complete a questionnaire to cover a wide range of

issues: for example, the firm's financial viability and technical competence. Armed with more detailed information about the activity being put out to tender, the contractor could choose to complete the questionnaire. With this information the local authority's evaluation panel would decide which ones to invite to tender. Invited contractors who were still interested could then decide to bid.

The data collected and subsequently analysed in this paper give some idea of the interest in tendering for the five activities studied. For each contract awarded, the average number of contractors (including DSOs) applying for a questionnaire was 16.6; the average number of questionnaires completed was 12.6; the average number of invitations to tender was 6.5; and the average number of bids submitted ['Tenders' in the model] was 2.8.

The contract's evaluation team would check the bids submitted had been properly priced and were technically feasible. Representatives of the DSO and contractors would be interviewed for further information and to seek assurances. The team would be interested in the intended rates of pay and conditions of service, with the retention and recruitment of suitable staff in mind. Work study would often have been used to assess whether the resources indicated were sufficient: expecting staff to work close to 100% performance, or even faster, would have required appropriate contract supervision and management, and might be considered to have left too small a margin for absenteeism and so create too great a risk of contract failure. These factors might have been considered by the team as sufficient to reject the bid even if it were lower, knowing that this decision would have to have been justified if it favoured the DSO over a contractor (Department of the Environment, 1988, para 33). The aim of the team was to identify the best priced tender which was likely to be contract compliant.

More recent experience of Private Finance Initiatives in Britain has given rise to the idea of selecting a preferred bidder, to be followed by a process of negotiation before the award of the contract. This is not what happened under CCT. Negotiation after the bids had been submitted was only permitted if all others who had submitted compliant bids were given the same opportunity (Department of the Environment, 1993a, paras 36-8). The notion of 'preferred bidder' did not apply then.

In the case of the services studied, fixed price would be the norm. How the price was set would depend on the circumstances. If the workload could be anticipated, such as for building cleaning, then the various elements of the specification would be priced and a total cost/total price be submitted. If the workload could not so easily be anticipated, such as for vehicle maintenance, then bills of quantities would be priced for the range of services put out to tender and, with projections for anticipated workload, a total cost/price be submitted, with variations if the actual workload differed from the anticipated workload by more than given margin. Contracts usually lasted at least three years and would have included variations in prices due to inflation, and in the total cost due to changes to the specification, as for example from the closure or opening of buildings during the life of the contract.

The passage of the 1988 Act meant that it was usually the first time the identified activities had been given a clear specification (Walsh and Davis, 1993, para 12.1). The beginning, therefore, was something of a learning process for local authorities, and the natural response was to rehearse on paper what had been done previously and the way it had been done. This meant in practice that specifications tended to be input based. Thus for building cleaning contracts, for each of the premises, a view might be taken of the type and frequency of cleaning and the standard expected. All three parameters could be varied according to the quality of cleaning required. To that extent, the quality of the service could be defined by the specification. This was the firm expectation of central government until quite late in the history of CCT (Department of the Environment, 1996a, paras 19-20 and 24); and it seems to have been largely accepted by local authorities (Austin Mayhead, 1997, para 4.1.4). The evaluation team thus had no need to balance price against quality of service. What it had to do was find the best priced quality compliant bid. If the price was well below what had been expected, well and good. If the price was well above what had been expected, then it might have been necessary to re-negotiate the contract, or put it out to tender using a new specification.

There would also have been a learning process in the monitoring of contracts and imposition of penalties. However, the commitment implied by contracts lasting at least three years gave all parties an incentive to come to some kind of accommodation. Furthermore, any contractor interested in expansion would want to

secure good references. Over the longer term some industry bodies, such as the British Institute of Cleaning Science, would also develop guides to standards, specifications and productivity rates and so reduce the margin of uncertainty in the bargaining between contractors and clients.

Later in the history of CCT, the Department of the Environment (1996a, paras 17-8) encouraged local authorities to think more in terms of output based specifications. No examples were given, but some idea can be obtained in the case of, say, refuse collection. The specification might indicate a weekly domestic collection, accompanied by a list of the dwellings and streets to be covered. The contractor would be free to decide what kind of bins be used and how the collection be organised. Output based specifications, such as this one, promise to be no more difficult to monitor and apply default procedures to than input based specifications.

#### *The 1988 Act and the consequential legislation and guidance*

One major purpose of the 1988 Act was to ensure that testing the efficiency of DSO provision was extended to (manual) services. Another purpose was to built upon the strengths of the Local Government, Planning and Land Act 1980, and correct some of its perceived shortcomings, one of which was its failure to address ‘anti-competitive behaviour’ by some local authorities. The 1988 Act was therefore quite prescriptive about the process of procurement, and made certain requirements of local authorities. The Act was followed by a succession of Statutory Instruments, which had equal legislative force. The central government departments, responsible for the implementation of the Act, also issued a series of circulars to local authorities, whose purpose was to explain the legislative measures and give guidance on its implementation. Local authorities were consulted prior to Parliament’s passage of the Statutory Instruments and the Departments’ publication of circulars. We identify just some of the features of the legislation and advice on procurement and the monitoring of contracts when the 1988 Act first come into force. Those interested in learning more are referred to Cirell and Bennett (1990) and its subsequent updates. Typically the features applied equally to all ‘identified activities’.

Two novel features of the 1988 Act come in Sections 7 and 17. Neither section is comprehensive in definition; but their clear purpose was to prevent local authorities from putting contractors at a disadvantage compared to the DSO, or otherwise discourage contractors from bidding. Examples were given to illustrate both. Section 7 addressed ‘anti-competitive behaviour’ by local authorities. They were required to advertise the contract “... in at least one newspaper circulating in the locality in which the work is to be carried out and at least one publication circulating among persons who carry out work of the kind concerned ...” (Local Government Act, 1988, s 7(1)). Further, local authorities were also required to invite a minimum of three (external) contractors, if that number presented (Local Government Act, 1988, s 7(4)(a)). Section 17 addressed ‘non-commercial considerations’, and prevented local authorities from imposing conditions on contractors, for example, “... the terms and conditions of employment ...” (Local Government Act, 1988, s 17(5)(a)).

The 1988 Act also indicated DSOs have financial objectives “... as the Secretary of State thinks fit.” (Local Government Act, 1988, s 10(4)). The objective matched that currently applied to the 1980 Act and was set at 5% rate of return, with building cleaning exempt and required only to break even (Department of the Environment, 1988, paras 42-7).

Local authorities found to have acted anti-competitively or whose DSO failed to meet its financial objective could have been asked to take remedial action, and even be required to put the contract out to tender again (Local Government Act, 1988, Sections 13 and 14). In fact, the Department of the Environment found little evidence of anti-competitive behaviour; and, although it was not uncommon for DSOs to fall short of their financial objective, it was not common for the parent local authority to have to gone beyond the remedial measures it had already taken (Department of the Environment, 1996b, pp 13-4).

Statutory Instruments were used to define what was to be included within each of the ‘identified activities’, the timetable for the first round of tendering, the duration of contracts, and exemptions. The timetable was designed to avoid the chaotic experience of market testing of similar services in the NHS in the mid 1980s, and each local authority was given its own timetable for implementation for each of the

activities. The first round for four of the five activities for local authorities as a group started in August 1989 and was due for completion in January 1992 (LGMB, 1991, Appendix 2). As an example, the London borough of Islington had to have its building cleaning contract(s) start by 1 August 1989. Ground maintenance was treated differently, with all authorities having the same timetable, but required to put it out to tender in five annual tranches: 20% by 1 January 1990, 20% by 1 January 1991, and so on. Contract duration was given minimum and maximum lengths, that were activity specific, and also depended on whether or not the contract was wholly or mainly for educational establishments. Only activities whose value in the previous financial year exceeded £100,000 had to be put out to tender – the so-called *de minimis* threshold - and the whole activity had to be put out to tender. Local authorities were free to retain those smaller as an in-house service.

The Department circulars rehearsed many of the above statutory requirements, but they also included advice and guidance gained from the implementation of CCT. Issues covered related to the terms of the contracts, for example, the use of performance bonds and default procedures, and the evaluation of bids, for example, what should and should not be included when comparing the DSO with contractors. No attempt is made here at looking at developments of this mixed bunch of features over the life time of CCT. However, of particular significance to the topic of this paper are the importance of price and quality in the award of contracts and the packaging/bundling of contracts. As noted above, right from the start local authorities had to have ‘good reason’ to favour the DSO bid over lower priced tenders from contractors (Department of the Environment, 1988, para 33). Failure to provide ‘good reason’ could result in the charge of anti-competitive behaviour and a fresh tendering exercise. This is discussed as part of the next topic.

The above arrangements for England applied in equal force in Wales and Scotland. The Welsh Office administered CCT in Wales; and the Scottish Office, to be succeeded by the Scottish Government on devolution, administered CCT in Scotland.

*An historic narrative of the 1988 Act*

In the two preceding sub-sections we identified various characteristics of public procurement and the monitoring of contracts we thought could inform the effect of competition on contract compliance. In the immediately preceding sub-section we focussed on the Local Government Act 1988 at its start. In this sub-section we identify some of the changes to the Act over its life time, taking a chronological approach.

First, although attention was given to ‘anti-competitive’ behaviour by local authorities in the original legislation as it affected the evaluation of bids and the award of contracts, it was silent on their monitoring. This was remedied when new guidance was issued in 1991 (Department of the Environment, 1991), drawing upon the experience of the first round of tendering. Local authorities were now required to apply the same default clauses and default points systems equally to DSOs as to contractors, and that they reflect a “... genuine pre-estimate of the additional costs ...” (Ibid, para 37). In 1996 the Department of the Environment (1996a, para 29) noted: “Any default process should, where practical, allow the contractor [including DSOs] to remedy any default ...” (parenthesis inserted).

Second, in the original legislation local authorities were required to invite a minimum of three contractors – ie not including the DSO - to bid for contracts, if that number presented. In 1991 this threshold was raised to from four to six, depending on the size of the contract (Department of the Environment, 1991, para 33). This guidance did not have a statutory basis. Related to this is the generation of contractor interest in tendering. Except for ground maintenance, activities could be put out to tender as a single contract. On this basis, most firms that might have been interested in tendering would have been too small to compete. Local authorities were therefore encouraged to be open to packaging district wide contracts, and “... seek the views of the relevant trade associations on the kind of packaging which is most common in that industry.” (Department of the Environment, 1991, para 28).

Third, the European Union’s Procurement Directives were extended to include services, and came into force in January 1994. Public sector contracts for certain services had to follow a set of prescribed procedures, resulting in some modification

to those appearing in the 1988 Act. One in particular was the publication of contracts in the Official Journal of the European Community.

The Directive was also prescriptive in respect of the process of awarding contracts. Two features of particular interest to this study are the selection of firms invited to bid and the evaluation of bids submitted. In the former case the local authority's selection of firms could variously be open, restricted or negotiated. In Britain the 'restricted' option has generally been preferred (Department of the Environment, 1973), and probably did not deviate from customary practice. In the latter case there has been a choice between lowest price and 'most economically advantageous', which gives scope for value for money. In Britain the latter has generally been preferred (Hansard, 26 April 1999, w 19). By this time the Department of the Environment had accepted that quality sometimes could not be fully specified in the contract, and that some weight should therefore be given to other considerations than price. Austin Mayhead (1997, table 5.13) in the context of blue collar activities, found that 91% of contracts were awarded to the lowest bid in the first round of tendering, and 85% in the second round. In several cases the lowest rejected bid benefitted contractors, so the issue of 'anti-competitive behaviour' would not have arisen. Quite likely the rejection arose from concerns by the evaluation teams that the rejected bids were under-resourced and likely to be non-compliant.

At its start the Directive's threshold for its application was ECU 200,000, equivalent to £141,000 (Office of Public Service and Science, 1993a, para E8). Given the 1988 Act threshold of £100,000 per annum and that contracts generally lasted at least three years, then activities covered by the 1988 Act were potentially also covered by the Services Procurement Directive. Of the five services studied, only ground maintenance was not covered by the Services Procurement Directive (Department of the Environment, 1993b, pp 5-6).

The fourth change came as a consequence of another European Union Directive, the Acquired Rights Directive of 1977. The Directive created three issues of particular interest to this study. The first relates to its application to local authority contracts. After some delay the Directive became part of UK law in 1981 under the Transfer of Undertakings (Protection of Employment) Regulations [TUPE], and was conceived

by the British government of the time to apply only to commercial, ie non-governmental undertakings. This was not the original intention of the Directive, and there was a period of considerable uncertainty about its application to local authority (and National Health Service) contracts in the early 1990s: see, for example, (Office of Public Service and Science, 1993b). It was only some time later that Cirrel and Bennett (1998, para 19.17) concluded: “Most contractors now accept that, for blue collar CCT at least TUPE will virtually always apply ...”. This extended period of legal uncertainty is likely to have deterred both local authorities from putting the activities out for retender sooner than they had to, and firms from tendering.

The two other issues arise from TUPE and the protection given to employees’ wages and conditions of service on the transfer of the undertaking.<sup>3</sup> First, the Directive has limited the ability of contractors to compete with the incumbent (DSO or contractor) on price, and thus frustrated one of the key elements of the 1988 Act noted above in the context of ‘non-commercial considerations’. And second, an inevitable consequence was that incumbent firms have had to disclose to potential competitors the numbers of staff that would be affected by the transfer and their terms and conditions of service, thus reducing the asymmetric advantage incumbency has given them over their competitors.

The fifth change was to the duration of contracts. A Statutory Instrument increased the minimum and maximum durations for some activities in October 1995.

The sixth event of some potential significance was local government reorganisation to create unitary local authorities on a selective basis in England. Some reorganisation had already taken place in 1986, with the establishment of London Boroughs and Metropolitan Districts. The 1992 Local Government Act sought to extend this, and reorganisation was carried out over four successive annual waves, starting in April 1995 and ending in April 1998. The consequence was that contracts that were due for renewal by local authorities that were subject to reorganisation were extended until

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<sup>3</sup> The Department of the Environment (1995) advised local authorities that, quite apart from the Directive, in pension arrangements are a condition of service, and comparable provision should be made on transfer..

well after the reorganisation had been implemented. The London Boroughs and Metropolitan Districts, of course, were not affected.

The seventh and final event was the election of New Labour in May 1997. New Labour was committed to end CCT and replace it by 'Best Value'. Under Best Value, market testing still had a part to play, but it would no longer be automatically compulsory. Other contractual arrangements were to be encouraged, and compulsion was seen as a last resort if other measures failed (Davis and Walker, 1998). It was not until January 2000 that the original legislation was repealed in England and Wales through the Local Government Act, 1999. Until then, New Labour introduced Best Value through a series of pilot projects proposed by some of the local authorities; other local authorities experienced only minor changes to the Conservative legislation already in place. One such change was the raising of the threshold for mandatory market testing from £100,000 in nominal prices to £150,000 in April 1998.

This ends our narrative for England. We turn now, briefly, to the very few major differences in Wales and Scotland. These arose from the reorganisation of local government and the election of New Labour.

In the case of reorganisation, unitary authorities were established for all local authorities in both countries from 1 April 1996. In anticipation of this, there was a moratorium on CCT from 1 April 1994 in Wales and 1 April 1995 in Scotland. As will be evident, this marked the end of CCT in these two countries for these five activities.

In the case of the election of New Labour, the two countries took forward the replacement of CCT by Best Value on a more informal basis, and CCT was effectively dropped until the rescinding of the relevant legislation: the Local Government Act 1999 in the case of Wales; and the Scottish Parliament's Local Government in Scotland Act 2003.

## **5 Data and descriptive statistics**

The implementation of CCT by local authorities was closely monitored by the constituent central government departments but, otherwise, information of contracts was not collected centrally. Instead, the local authorities in England and Wales, initially through the Local Government Training Board and later through the Local Government Management Board, maintained a database of contracts of their own. The Convention of Scottish Local Authorities performed a similar role in Scotland; and in 1993 these two sources were combined. Starting in April 1990, periodical reports were published which central government,<sup>4</sup> amongst others, used as a source of information at the national level. This study draws upon the original data base and refers to contracts awarded.

Participation by member local authorities was voluntary, but the opportunity to share their experience was the incentive to take part and, as far as one can tell, coverage was largely complete. Even at the later stages, when the continuance of CCT was very much in doubt, more than ninety percent of participating local authorities continued to take part (Horwood, 2002). However, routine information was provided on only select questions, and this limits the size of the sample that could be included in this study. Although CCT did not start in earnest until 1989, the Local Government Training Board collected information on contracts which had started earlier, and are included in the analysis. Information on these few early starters was likely supplied some time after their start, unlike the information on later contracts.

Our dataset covers 1363 contracts for which we have information on our measures of competition and contract compliance. Data are available for contracts starting from 1986, before the implementation of the CCT legislation, and continuing to those starting in 2000, shortly before the repeal of the relevant legislation. As we mentioned above, our analysis covers the five activities for which the theoretical mechanisms stressed seem to be most relevant: Ground maintenance, Building cleaning, Vehicle maintenance, Street (and other) cleaning, and Refuse collection. The number of contracts awarded each year to these five activities is given in table 1.

[Insert table 1]

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<sup>4</sup> For example, see Department of the Environment (1996b).

Our measurement of contract compliance is based on a seven point scale, and was part of a questionnaire issued periodically to local authorities. In several but not in all respects the scale is an unambiguous record of default measures taken. However, as was indicated in the context of relational contracts, authorities have discretion in setting the specification, monitoring performance and imposing penalties in the case of default. So, had the authority chosen the relational contractual route, the outcome measure would have had a subjective element. The data refer largely to a snapshot at some point in the life of the contract. Information was collected for 29% of the contracts over the period 1986-2000 (see table 1).

Authorities were asked to rank contracts in terms of compliance, with answers varying from best [‘No problems’] to worst [‘Contract terminated’]. Table 2 gives all seven available answers and their frequency across all completed questionnaires. As can be noticed, each of the first four possible answers contains a sizeable share of the total observations – from 17% to 36%. The last three answers, on the other hand, are very rarely chosen: each of them constitutes about 1% of all answers. Based on these answers we construct a measure of contract compliance where higher values denote better compliance. We assign to the first three answers of the questionnaire (a, b and c) the values of 4, 3 and 2, while the value of 1 will be reserved for the last four answers of the questionnaire (d to g) and corresponds to the cases with most problems of compliance.

[Insert table 2]

Table 3 presents the distribution of our measure of compliance for each of the five activities we consider. For the 1363 contracts on which we base our empirical analysis, 24.9% of cases register a value of 4 (“No problem”), 36.7% a value of 3 (“minor warnings”), 18.6% a value of 2 (“default notices but no damages/payments withheld”) and 19.7% have a value of 1 and encountered more serious problems. This distribution is reproduced quite closely for the three activities of Ground maintenance (almost half of the sample); Street cleaning and Refuse collection. Building cleaning, on the other hand, had a considerably worst compliance record than the average; while Vehicle maintenance had a considerably better one. This ranking is consistent

with the experience of England during the first round of tendering (Walsh and Davis, 1993, table 10.3). Curiously, questionnaires were most commonly completed for building cleaning – indeed for *all* identified building cleaning contracts - and least commonly (14%) for vehicle maintenance contracts. So part of the variation of compliance by activity may reflect the willingness of authorities to complete the questionnaires.

[Insert table 3]

Our measure of competition is the number of bids tendered for each contract, a variable that we refer to as Tenders. A larger number of tenders imply a higher degree of competition to be awarded the contract. Following our previous discussion, we hypothesize that more competition may result in underbidding and in a lower likelihood of compliance, in other words we expect the coefficient of Tenders to be negative. Tenders will be initially assumed to be exogenous, but the possibility of endogeneity will be explicitly addressed in the next section.

Figure 1 presents a histogram of Tenders. About 10% of contracts received only 1 bid, in which case the degree of competition was arguably minimal. The mode of the distribution is for the case of 3 tenders, and the frequency decreases after this value. Although the maximum number of bids we have recorded in our sample is 32, observations with more than 10 bids are very rare and constitute about 3% of our sample.

[Insert figure 1]

The bivariate relationship between Tenders and Compliance is shown in table 4, which calculates the average value of Compliance for each number of tenders. No trend in Compliance can be detected when passing from 1 to 5 tenders, with an average value fluctuating around 2.75. Between 5 and 9 tenders, however, there is a noticeable trend towards lower values of Compliance, which reaches an average of 2.12 for 9 tenders. Within this range Tenders had the expected effect. The difference in average compliance between 5 and 9 tenders is 0.63, which is a large change when we consider that the standard deviation of our compliance measure is 1.07.

From 10 tenders upwards we observe a change of trend towards lower values of compliance. Although this concerns only a small part of our total observations, we will study the possibility of non-linearities in the relationship between competition and compliance in our empirical analysis.

[Insert table 4]

Auction theory also predicts that incumbents have an advantage due to asymmetric information, and so we would expect incumbents to be more compliant than non-incumbents. The database does not allow us to identify all incumbents because winning firms are characterized simply as a DSO or as a private contractor. Thus, if we observe that a contract formerly in the hands of a private contractor is now given to a private contractor we have no way of knowing whether the new winner is the incumbent or not. On the other hand, if the contract is given to a DSO the first time it is offered then we know we are facing a situation where the incumbent has won. It follows that the effect of incumbency can be estimated at least partially by comparing contracts won by incumbent DSOs to contracts won by non-incumbent DSOs (that is, where the contract was previously held by a private contractor).

We create two dummy variables to identify these two cases and compare their coefficients. If information asymmetries imply better compliance for the more informed party, we would expect the coefficient of incumbent DSOs to be larger than the coefficient of non-incumbent DSOs.

Besides tenders and dummies for incumbent and non-incumbent DSOs, we consider a set of control variables in accordance with our previous discussion regarding different determinants of contract compliance. First, we control for the value of the contract - measured in £s at 2000 prices by means of a public sector GDP deflator - and the duration of the contract in years. The year in which the contract started is controlled for by the use of time dummies. We include dummy variables for each economic region of England plus Scotland and Wales (with London as the excluded category). Finally, we use dummy variables for each of the five selected activities and the squared number of tenders to look for non-linearities.

Table 5 offers summary statistics for the main variables used in our regressions.

[Insert table 5]

## 6 Empirical analysis

Our analysis proceeds in three steps. First, we derive our main results using simple OLS focusing on the role of tenders on compliance and discussing how different controls may affect this relationship. We then repeat the exercise under the assumption that our dependent variable, compliance, offers only an ordinal rank of outcomes. Regression analysis using ordered probit would thus be adequate for this type of variable. Finally, we pay attention to the potential endogeneity of our dependent variable and estimate our results using an instrumental variable approach.

### *OLS regressions*

Our empirical specification is as follows:

$$\text{Compliance} = \alpha + \beta \text{Tenders} + \Gamma X + \varepsilon \quad [1]$$

Where Compliance and Tenders are as discussed above, X is a set of control variables, and  $\alpha$ ,  $\beta$  and  $\Gamma$  denote coefficients to be estimated. The model thus assumes that Compliance is a cardinal measure taking discrete values between 1 and 4. The difference between any two contiguous values is assumed to be equal.

Results are presented in table 6. Column 1 is our baseline regression, and includes as a set of standard control variables the Contract Value, Contract Duration, Time and Region dummies. The coefficient on Tenders is negative, statistically significant and has a value of -0.038. We also note that larger contracts – as measured by the log of their value – tend to have more problems of compliance and that longer contract duration is associated with better compliance.

[Insert table 6]

The coefficient of Tenders may suffer from omitted variable bias for a number of reasons that we address in turn. First, some of the activities under consideration may be inherently more problematic and, at the same time, be characterized by higher competition. To make sure that Tenders is not just picking up these differences we introduce dummy variables for the activities of Building cleaning, Vehicle maintenance, Street (and other) cleaning and Refuse collection. Ground maintenance, the largest activity by number of observations, is our excluded category.

Column 2 shows that the coefficient on Tenders is somewhat smaller after this change (-0.030) but remains clearly statistically significant. In accordance with the data from table 3, Building cleaning has a considerably worse record of compliance than the rest while Vehicle maintenance is noticeably less problematic.

Next we turn to the investigation of the effects of asymmetric information by including the dummies for incumbent and non-incumbent DSOs discussed before. Besides being important in their own right, these variables eliminate another source of potential omitted variable bias since DSOs were much more likely to win bids in which few tenders were present. Thus, the negative coefficient on Tenders from the previous two regressions may just be picking up the effect that more tenders imply a lower likelihood of a DSO being awarded the contract.

Results are reported in column 3 and support the hypothesis that information asymmetries increase the likelihood of compliance for the more informed bidders. The coefficient on incumbent DSOs is positive and statistically significant, implying a better compliance record for them, while the effect is negative and non-significant for non-incumbent DSOs. The difference between the two coefficients is large (0.278), but an F-test for the equality between them cannot reject the null hypothesis (p-value of 0.177). We note, however, that the number of non-incumbent DSOs is just 34, which does not allow the estimation of their effect with much precision.

Column 3 also shows that the effect of Tenders on Compliance was not due just to more contracts being awarded to DSOs at lower values of Tenders. The coefficient on

Tenders remains negative and statistically significant at the 5% level with a value of -0.026.

Column 4 then estimates a quadratic relationship between Compliance and Tenders, to account for the change in trend seen in table 4. As expected, the signs of the coefficients indicate an inverted-U shape but the coefficient on the quadratic term is not statistically significant even at the 10 % level. The very few observations with more than 10 tenders do not allow us to definitely conclude about the shape of the relationship at these values.

One may also consider that the relatively few observations with more than 10 tenders are having an exaggerated effect on the relationship we are trying to estimate. Column 5 re-estimates a linear relationship limiting the sample to contracts with up to 10 tenders. The coefficient on tenders is considerably larger than in our previous regressions with all controls (-0.041 as opposed to -0.026) and statistically significant at the 5% level. Since the range of 1 to 10 tenders appears to be the most relevant for policy analysis, we may regard this larger effect as a more appropriate estimate of the effect of competition on compliance<sup>5</sup>.

To conclude the discussion of our baseline results we turn to those variables whose estimated coefficients have not been reported for conciseness. Time dummies are not statistically significant in any regression, and an F-test cannot reject the null hypothesis that all their coefficients are equal. The region dummies report that Northern England and the East Midlands have a consistently worse record in terms of compliance, while the effect is not statistically significant for all other regions.

Our central hypothesis is so far validated since the coefficient of tenders is always negative and statistically significant<sup>6</sup>.

### *Ordered probit regressions*

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<sup>5</sup> Table 4 may also suggest the existence of a quadratic relationship in the sample with 10 or less tenders. We tested for this possibility and found it to be statistically non-significant.

<sup>6</sup> We can also report that estimating equation [1] separately for the two largest activities yields a similar coefficient for Tenders as we have obtained in the full sample (-0.024 for Ground maintenance and -0.030 for Building cleaning, to compare with -0.026 in the full sample). However, these coefficients do not reach standard levels of statistical significance due to the reduced number of observations.

Because our measure of compliance is capturing four different instances that are not necessarily comparable with each other in numerical terms it makes sense to treat this variable as purely ordinal. An ordered probit methodology allows us to estimate the probability of observing each of the four possible values as a function of Tenders and our set of controls.

Our empirical specification is thus:

$$\text{Prob}(\text{Compliance} = 4|X) = \Phi(\alpha_1 - \Gamma X) \quad [2a]$$

$$\text{Prob}(\text{Compliance} = 3|X) = \Phi(\alpha_2 - \Gamma X) - \Phi(\alpha_1 - \Gamma X) \quad [2b]$$

$$\text{Prob}(\text{Compliance} = 2|X) = \Phi(\alpha_3 - \Gamma X) - \Phi(\alpha_2 - \Gamma X) \quad [2c]$$

$$\text{Prob}(\text{Compliance} = 1|X) = 1 - \Phi(\alpha_3 - \Gamma X) \quad [2d]$$

where  $\Phi$  is the cumulative standard normal distribution function,  $X$  is a vector of controls including Tenders, and the  $\alpha$  and  $\Gamma$  are parameters to be estimated. We expect a negative value for the coefficient on Tenders, as this would signal a negative relationship between competition and contract compliance (though the model only allows us to conclude unambiguously on the effect of Tenders on the probabilities of the first and last value of compliance).

Table 7 presents our results with ordered probit following the same pattern of included control variables as in table 6. The results are very similar: contract value is associated with lower compliance while contract duration is associated with more. Contracts given to an incumbent DSO have a better record of compliance, and the effect seems to derive from their informational advantage since non-incumbent DSOs are not more compliant than contractors. Most important, Tenders has a negative effect on contract compliance in all regressions and the effect is statistically significant in all cases at least at the 10% level. The results thus continue to be supportive of our thesis. We also note that the assumption of cardinality in the endogenous variable made previously does not appear to change the qualitative conclusions of the empirical exercise, an outcome that has also been reported in other

areas of economics using ordered dependent variables (see Ferrer-i-Carbonell and Frijters 2004).

[Insert table 7]

### *Instrumental variables regressions*

Up to this point we have assumed that the regressor of interest, Tenders, is exogenous and thus that we can interpret our results as a causal relationship. Because the tendering process takes place before any compliance problems could arise, it is natural to start from an assumption where causality runs only from the number of tenders (i.e. the degree of competition) to compliance. But reverse causality is possible if we consider that the agents involved – contractors and client authorities - have an idea of the likelihood of future compliance problems and let this information influence their behaviour during the tendering process. The resulting endogeneity bias may run in either direction: our OLS estimates could be larger or smaller than the true causal effect.

A first possibility is that potential bidders may get discouraged by contracts they believe are likely to be “problematic”, and would thus decide not to bid. In this case the likelihood of future compliance problems would have a negative effect on the number of tenders – resulting in an OLS estimate smaller in magnitude than the causal effect of competition on compliance.

On the other hand, it is also plausible that the client authority desires to receive more bids for those contracts that it perceives as potentially problematic. The client authority may encourage bidding through its handling of the bidding process. In this case the likelihood of future compliance problems would have a positive effect on the number of tenders – resulting in an OLS estimate of larger magnitude than the causal effect of competition on compliance.

We address these concerns by estimating equation [1] using an instrumental variables approach, with Tenders considered endogenous. We instrument Tenders with the number of invitations to bid issued by the client authority<sup>7</sup>.

Results are provided in table 8. While the coefficients of all control variables are very similar to those obtained under OLS, the coefficient of Tenders increases considerably in magnitude and is statistically significant at the 1% level in all but one of the regressions. In the linear regression with region and DSO dummies, for instance, the coefficient passes from -0.026 under OLS to -0.044 with IV (column 3).

[Insert table 8]

The last three rows of table 8 show for each regression the results of a series of diagnostic tests. Tests for underidentification and weak instruments are strongly rejected in every instance, supporting the hypothesis that invitations is a relevant instrument for the number of tenders. We also run a Durbin-Wu-Hausman test for the endogeneity of Tenders, which takes as null hypothesis that Tenders is an exogenous variable. As it turns out, the test cannot reject the null hypothesis in all but the first of our regressions. Despite the important differences in point estimates mentioned above, the large standard errors for Tenders make it difficult to distinguish between the results of an OLS regression and those of an IV regression from a statistical point of view. This may be due to an absence of endogeneity or, alternatively, because the two sources of endogeneity discussed above are present and cancel each other given their effects in opposite direction.

Our conclusion is thus that taking into account the potential endogeneity of Tenders does not change our conclusions: we continue to find a negative and statistically significant coefficient and, moreover, a standard statistical test fails to reject the hypothesis of this variable being exogenous.

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<sup>7</sup> As described in section 3 above, the process of tendering had several steps and we have information on the number of applications, completed questionnaires, and invitations to tender. We chose invitations as our instruments since its correlation with tenders is 0.78, much higher than 0.48 and 0.39 for completed questionnaires and applications. Our results also hold if we use any of these two alternative variables as an instrument for tenders.

Overall, the different results presented in this section point towards an adverse effect of competition on contract compliance which accords with our reading of the theoretical literature.

## **7 Discussion and conclusions**

The analysis comes up with two important results: competition reduced compliance, and the better recorded compliance of DSOs is likely due to the advantage of prior incumbency. How robust are these conclusions and how do they relate to other studies? The two results are taken in turn.

### *The importance of competition and tenders submitted*

We use auction theory to predict a negative effect of competition on contract compliance. Observations made elsewhere in the literature for similar contracts finds that the larger the number of tenders submitted the lower the price of the contract awarded/cost of the service provided. Given a lower budget, the successful bidder – DSO or contractor – has tighter margins to operate under and is more likely to cut corners and subsequently to be found non-compliant by the client authority. Applying this logic, this study provides further evidence from public sector procurement that increasing competition reduced the winning bid.

We may evaluate the size of the estimated effect of competition on compliance by referring to the change from the statutory minimum of three tenders from contractors to guidance that there be between four and six whenever possible. Using our result from column 5 in table 6 (our baseline results), this would result in compliance falling by between 0.041 and 0.123 units, on a measure of compliance with a range of 3 units and a standard deviation of 1.06. The expected benefits from a larger number of bids may make this cost worth taking, but our point is that a cost in terms of reduced compliance was indeed in place.

We are not aware of similar studies of local government. However, recently Proper *et al.* (2008) found, as they had expected, rather similar results for hospital services, though in their study the failure was quite specific: namely, competition raised

mortality rates for emergency admissions for acute myocardial infarction. The basis of their hypothesis is, however, different. In common with auction theory, they recognised hospitals facing competition had to work to tighter budgets. Their additional point is that, where performance of some particular activity is not observed, tight budgets are likely to penalise that activity; and this is what happened for acute myocardial infarction. In contrast, waiting time for all elective conditions, which had been a public concern over the same period, fell at hospitals faced by competitive pressure. On balance the authors felt the gain in reduced waiting time was insufficient to offset the higher mortality rate and to that extent, and as in this study, competition was at the cost of quality.

### *The importance of asymmetric information and DSO compliance*

Auction theory predicts that incumbents – whether DSOs or contractors - have an information advantage over other potential competitors. We use this insight to understand whether the recorded better performance of DSOs has this explanation. We noted above in section 2 that both Walsh and Davis (1993) and Austin Mayfield (1997) found similar results in their respective studies of the first and second rounds of tendering. Walsh and Davis tentatively suggested that this might be due to the mix of activities. One result of this study, of which we can be confident, is that this outcome persisted even when we control for that mix.

We were able to differentiate those DSOs who were incumbents (and therefore enjoyed an informational advantage) from those who were not. Unfortunately the same could not be done for contractors, so our analysis was based on the experience of DSOs only. We find that incumbent DSOs had a better record of compliance than contractors, and the effect is statistically significant at standard levels, while for non-incumbent DSOs the effect is negative and non significant. To support the role of information asymmetries, however, we would need to show a difference between incumbent and non-incumbent DSOs. Here we find suggestive evidence but the small number of non-incumbent DSOs makes a conclusive answer difficult. The difference between the coefficients of incumbent and non-incumbent DSOs is sizeable, but a standard test cannot reject the null hypothesis of them being equal. We are inclined to

argue that the difference between the two estimates is due to the information advantage of incumbents, but leave it to the reader to form his or her own opinion.

We noted in section 4 that the 1988 legislation was silent on the monitoring of contracts. It was only in 1991, with the experience of the first round of tendering, that the Department of the Environment guidance indicated that DSOs and contractors be treated equally (and that the penalties imposed be proportionate to the harm caused or to the cost of rectification). The guidance may have been a response to the recorded greater compliance of DSOs in the first round.

Austin Mayhead (1997), compares the performance of the first and second rounds at 32 local authorities and notes some improvement for contractors (*ibid*, para 4.8.1). However, applying a chi-square test to the data (*ibid*, table 4.8) does not support this conclusion. Furthermore, what is also clear from this source is that poorer recorded performance of contractors persisted into the second round. Of course, the local authorities could have disregarded the Department guidance, and felt better disposed to their former colleagues (in the DSOs); but, as was noted above, it was common for there to be a ‘hard split’ between DSOs and their client authority with a weakening of their collegiality. Equally, the better performance of DSOs might reflect the advantage of asymmetric advantage from being an incumbent. Further work to test the advantage of incumbency clearly needs to be done.

### *Conclusions*

The experience of CCT of local government in Britain was one where competition on price was a central feature of the contracting experience. We find that the greater the competition for contracts, the less compliant were contractors and DSOs likely to be. However the impact on compliance would have been modest.

During the period under study contract compliance was better by DSOs than by contractors. The evidence suggests the better DSO performance was likely due to the information advantage of incumbents, which were typically DSOs, rather than a bias of authorities in favour of their DSOs.

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**Table 1****Contracts awarded and compliance question answered,  
Great Britain 1986 to 2001, five selected activities.**

Year	Contracts	Questionnaire	
		Returns	Proportion of total (%)
1986	2	0	0
1987	5	2	40
1988	23	1	4
1989	328	15	5
1990	1033	85	8
1991	724	155	21
1992	565	170	30
1993	608	248	41
1994	975	386	40
1995	736	357	49
1996	533	226	42
1997	445	132	30
1998	210	46	22
1999	111	21	19
2000	64	6	9
2001	2	0	0
All years	6364	1850	29

**Table 2****Returns to compliance question, all available questionnaires in five selected activities.**

Answers	Description	Obs.	Distribution (%)
a	No problems	459	25
b	Minor warnings/notices to complete or redo work	677	36
c	Some default notices but no damages/payments withheld	335	18
d	Payments withheld/other financial penalties	322	17
e	Major problems under discussion/arbitration	19	1
f	Some work removed from contract	17	1
g	Contract terminated	21	1
a-g	All contracts	1850	100

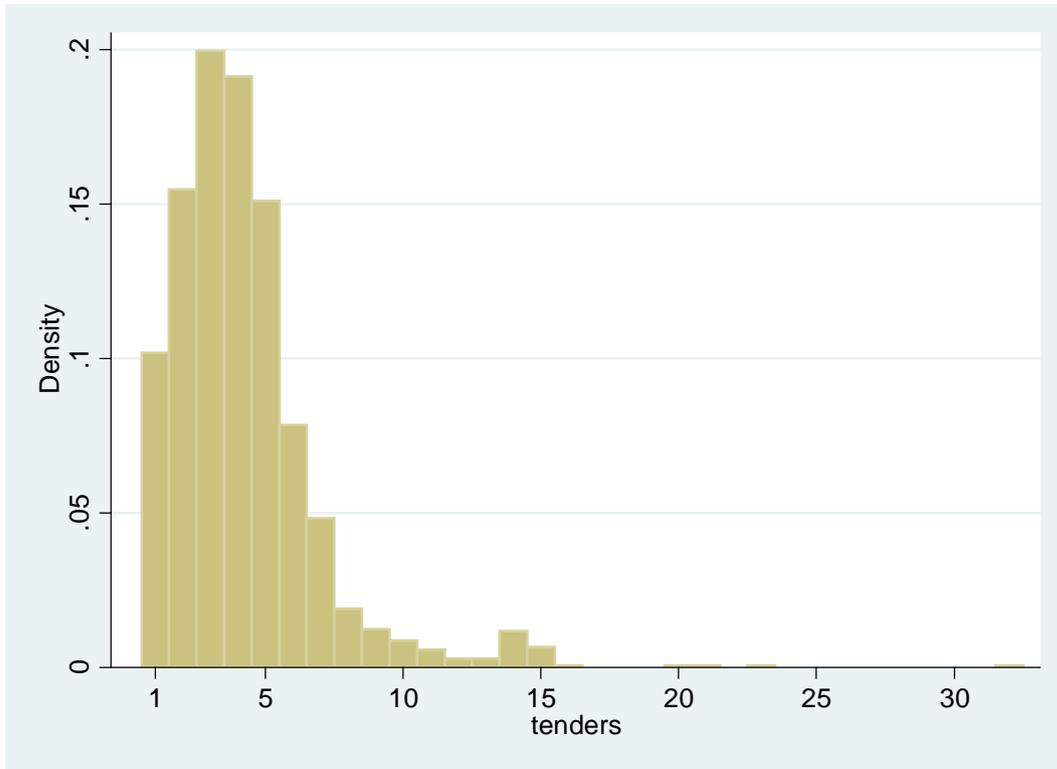
Notes: Totals don't add to 100 due to rounding.

**Table 3**  
**Distribution of compliance by activity (in %).**

	<i>Ground maintenance (n = 647)</i>	<i>Building cleaning (n = 312)</i>	<i>Vehicle maintenance (n = 60)</i>	<i>Street cleaning (n = 154)</i>	<i>Refuse collection (n = 190)</i>	<i>All 5 activities (n = 1363)</i>
Compliance						
4	27.8	12.8	56.7	27.3	23.2	24.9
3	35.9	42.3	21.7	37.7	34.2	36.7
2	19.3	17.0	8.3	16.9	23.7	18.6
1	17.0	27.9	13.3	18.2	18.9	19.7

Note: This table covers the 1363 observations used in our econometric analysis (contracts with data on compliance and number of tenders). This is a subset of the 1850 contracts with answered questionnaires that we referred to in table 2.

**Figure 1**  
**Histogram of tenders**



**Table 4**  
**Average compliance by number of tenders**

<i>Number of tenders</i>	<i>Average value of compliance</i>	<i>Observations</i>
1	2.75	139
2	2.61	211
3	2.72	272
4	2.76	261
5	2.75	206
6	2.43	107
7	2.59	66
8	2.35	26
9	2.12	17
10	2.33	12
11-13	2.56	16
14	2.44	16
15-32	2.93	14
All obs.	2.67	1363

**Table 5**  
**Summary statistics**

<i>Variables</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Min</i>	<i>Max</i>
Compliance	1363	2.67	1.06	1	4
Tenders	1363	4.18	2.75	1	32
Log of Contract Value	1363	12.48	1.47	7.21	16.32
Contract Duration	1363	5.03	1.47	1	13
Incumbent DSO dummy	1323	0.54	0.50	0	1
Non-incumbent DSO dummy	1323	0.026	0.16	0	1
Invitations to tender	1352	6.5	3.35	1	30

Note: A small number of contracts do not have information on whether the bid was won by a DSO or on the number of invitations, explaining the slightly smaller number of observations for these variables. Thus there are eleven [=1363-1352] contracts for which we have information on the number of tenders but not the numbers invited to tender, and one of them 32 tenders.

**Table 6**  
**OLS results**

	<i>Dependent variable: Compliance</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Tenders</i>	-0.038 (0.013)**	-0.030 (0.012)*	-0.026 (0.013)*	-0.055 (0.024)*	-0.041 (0.018)*
<i>Contract Value</i>	-0.194 (0.021)**	-0.219 (0.024)**	-0.229 (0.023)**	-0.232 (0.023)**	-0.219 (0.024)**
<i>Contract Duration</i>	0.11 (0.022)**	0.075 (0.022)**	0.069 (0.022)**	0.068 (0.022)**	0.085 (0.022)**
<i>Building cleaning</i>		-0.316 (0.072)**	-0.494 (0.071)**	-0.497 (0.071)**	-0.488 (0.072)**
<i>Vehicle maintenance</i>		0.486 (0.142)**	0.461 (0.140)**	0.446 (0.141)**	0.423 (0.142)**
<i>Street cleaning</i>		0.087 -0.095	0.094 -0.093	0.091 -0.093	0.07 -0.095
<i>Refuse collection</i>		0.164 (0.098)+	0.171 (0.097)+	0.177 (0.098)+	0.125 -0.098
<i>Incumbent DSO</i>			0.172 (0.064)**	0.155 (0.065)*	0.152 (0.066)*
<i>Non-incumbent DSO</i>			-0.106 -0.209	-0.143 -0.207	-0.168 -0.21
<i>Tenders squared</i>				0.002 -0.001	
<i>Time dummies</i>	yes	yes	yes	yes	yes
<i>Region dummies</i>	yes	yes	yes	yes	yes
<i>Observations</i>	1363	1363	1323	1323	1283
<i>R<sup>2</sup></i>	0.09	0.12	0.15	0.15	0.15

Note: Robust standard errors in parentheses. Statistical significance at the 1%, 5%, and 10% level are indicated by the signs \*\*, \*, and +.

**Table 7**  
**Ordered Probit results**

	<i>Dependent variable: Compliance</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Tenders</i>	-0.040 (0.014)**	-0.031 (0.014)*	-0.027 (0.015)+	-0.068 (0.028)*	-0.048 (0.020)*
<i>Contract Value</i>	-0.218 (0.025)**	-0.257 (0.029)**	-0.275 (0.029)**	-0.278 (0.029)**	-0.264 (0.029)**
<i>Contract Duration</i>	0.122 (0.024)**	0.082 (0.024)**	0.077 (0.024)**	0.076 (0.025)**	0.094 (0.025)**
<i>Building cleaning</i>		-0.372 (0.078)**	-0.596 (0.076)**	-0.602 (0.077)**	-0.592 (0.078)**
<i>Vehicle maintenance</i>		0.656 (0.185)**	0.648 (0.187)**	0.628 (0.188)**	0.6 (0.189)**
<i>Street cleaning</i>		0.113 -0.104	0.125 -0.105	0.121 -0.105	0.092 -0.107
<i>Refuse collection</i>		0.211 (0.106)*	0.228 (0.108)*	0.236 (0.108)*	0.176 -0.109
<i>Incumbent DSO</i>			0.183 (0.072)*	0.161 (0.073)*	0.156 (0.074)*
<i>Non-incumbent DSO</i>			-0.175 -0.224	-0.219 -0.222	-0.245 -0.225
<i>Tenders squared</i>				0.002 (0.001)+	
<i>Time dummies</i>	yes	yes	yes	yes	yes
<i>Region dummies</i>	yes	yes	yes	yes	yes
<i>Observations</i>	1363	1363	1323	1323	1283

Note: Robust standard errors in parentheses. Statistical significance at the 1%, 5%, and 10% level are indicated by the signs \*\*, \*, and +.

**Table 8**  
**Instrumental variables results**

	<i>Dependent variable: Compliance</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Tenders</i>	-0.060 (0.015)**	-0.045 (0.015)**	-0.044 (0.016)**	-0.043 (0.051)	-0.056 (0.028)*
<i>Contract Value</i>	-0.202 (0.022)**	-0.227 (0.023)**	-0.236 (0.024)**	-0.236 (0.024)**	-0.223 (0.024)**
<i>Contract Duration</i>	0.105 (0.023)**	0.070 (0.024)**	0.064 (0.024)**	0.064 (0.024)**	0.080 (0.024)**
<i>Building cleaning</i>		-0.308 (0.072)**	-0.488 (0.073)**	-0.488 (0.074)**	-0.485 (0.075)**
<i>Vehicle maintenance</i>		0.455 (0.139)**	0.428 (0.136)**	0.429 (0.138)**	0.396 (0.137)**
<i>Street cleaning</i>		0.082 (0.092)	0.086 (0.090)	0.086 (0.091)	0.066 (0.091)
<i>Refuse collection</i>		0.196 (0.096)*	0.202 (0.095)*	0.201 (0.096)*	0.155 (0.096)
<i>Incumbent DSO</i>			0.149 (0.066)*	0.150 (0.070)*	0.138 (0.070)*
<i>Non-incumbent DSO</i>			-0.113 (0.176)	-0.111 (0.187)	-0.179 (0.178)
<i>Tenders squared</i>				0 (0.003)	
<i>Time dummies</i>	yes	yes	yes	yes	yes
<i>Region dummies</i>	yes	yes	yes	yes	yes
<i>Observations</i>	1352	1352	1312	1312	1272
<b>Diagnostic tests</b>					
<i>Underidentification (p-value)</i>	0.0	0.0	0.0	0.0	0.0
<i>Weak instruments</i>	1543	1542	1317	132	706
<i>Endogeneity (p-value)</i>	0.034	0.164	0.113	0.294	0.546

Note: Robust standard errors in parentheses. Statistical significance at the 1%, 5%, and 10% level are indicated by the signs \*\*, \*, and +. The underidentification test is the Anderson LM statistic, distributed as a Chi-squared with 1 degree of freedom. The test for weak instruments is Cragg-Donald Wald F statistic, with a critical value of 16.38 for all columns except column 4, where the critical value is 7.03. The test for the endogeneity of Tenders is the Durbin-Wu-Hausman Chi-squared test.



