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The Impact of Compulsory Competitive Tendering on Refuse Collection Services

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I. INTRODUCTION

Compulsory competitive tendering (CCT) of blue-collar services such as refuse collection and street cleaning was introduced in the UK by the Local Government Act 1988. This law, imposed by central government, obliged elected local authorities to expose specific services to competitive tendering at fixed intervals and subject to national guidelines. Whilst the issue of competitive tendering of public services has generated a substantial literature over recent years (see Domberger and Rimmer (1994) for a review), there have been relatively few studies of *compulsory* competitive tendering.²

This paper uses a dataset on refuse collection costs and services for the 365 English local authorities over the period 1984–94. It follows on from Szymanski and Wilkins (1993) who analysed the same database using data up until 1988

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² Walsh (1991) reviewed the initial impact of CCT for the Department of the Environment on the management of local authority services for a sample of 40 local authorities. More recently, a study by Escott and Whitfield (1995a) has provided an important insight into employment policies following CCT but is again based on a relatively small number of case studies. There are a small number of academic studies including Painter (1991), Shaw, Fenwick and Foreman (1994) and Patterson and Pinch (1995), but they had limited data sources on which to draw. Milne and McGee (1992) followed up the earlier work of Domberger, Meadowcroft and Thompson (1987) on CCT in the NHS.

when CCT was introduced. The main issues considered in this paper are the size and distribution of cost savings that can be attributed to CCT, and the extent to which the effects of competition interact with ownership (whether the contract is won by the in-house public sector organisation or is won by a private contractor). The paper also discusses changes in service specifications associated with CCT.

The most powerful evidence in the paper relates to the size and distribution of cost reductions. Comparing the last full year before the first competitive tender was held under the 1988 Act with the first full year after, 81 per cent of authorities for which data were available showed a fall in net expenditure on refuse collection services.³ The total cost reduction in the sample was 19.5 per cent (around £6 per household in 1995 prices). Evidence on the effect of competitive tendering on quality is more limited. Using a questionnaire survey of client-side managers to establish service characteristics following the introduction of CCT and comparing this with Chartered Institute of Public Finance and Accountancy (CIPFA) data for service characteristics before CCT, there is little evidence to support the hypothesis that lower costs are a consequence of lower standards in terms of service specifications.

The paper is set out as follows: in the next section, refuse collection services are briefly described and the background to CCT is discussed; Section III describes the dataset; Section IV reports the profile of cost changes resulting from CCT; Section V presents an analysis of the impact of CCT on service specifications; Section VI draws some general conclusions.

II. REFUSE COLLECTION SERVICES AND COMPULSORY COMPETITIVE TENDERING

1. Refuse Collection Services

Refuse collection services have been extensively researched by economists interested in the effects of competitive tendering. Work in the US and Canada includes Savas (1977), Stevens (1978) and McDavid (1985). Work in the UK includes the Audit Commission (1984), Domberger, Meadowcroft and Thompson (1986), Cubbin, Domberger and Meadowcroft (1987) and Szymanski and Wilkins (1993).

Refuse (solid waste) collection is a very simple economic activity. Householders leave their refuse at some agreed location and the service operators place the waste in a collection truck and then drive it to a disposal site where it is deposited. To provide the service, the operator requires loaders and drivers, collection vehicles, a depot for the vehicles and a disposal site. In the

³ That is, 266 out of 328 authorities. For the second year after the tender was held, 259 out of 315 (82 per cent) registered a fall in net expenditure.

UK, disposal sites are typically owned by local authorities and offer fixed scales of charges. Most of the cost of the collection service is the cost of labour (usually over 50 per cent).

Cost variations can arise from four sources.⁴

- *Authority-specific endowments*: the number of collection units, the breakdown between households and commercial premises, the density of collection units and the proportion that are urban or rural, as well as idiosyncratic local features.
- *Service specification*: collection point (back door, kerbside etc.), frequency of collection (once a week, more than once a week etc.), type of container (plastic sacks, wheelie bins etc.) and whether it is provided by the operator (free or at a charge), occasional special collections for bulky items (free or at a charge) and the provision of recycling facilities.
- *Productivity of labour and equipment*: these basically depend on organisational efficiency, which consists of an efficient operational plan and effective monitoring of the work-force. There is very little variation nationally in the technology of refuse collection and the capital used. The market for vehicles and other equipment is essentially national.
- *Input prices*: the main source of variation between authorities relates to the wage bill and variations may exist because of local market factors (for example, London wage rates tend to be higher) and authority-specific policies which can mean that pay levels may exceed the market rate.

2. Competitive Tendering, CCT and Changing Costs

A brief history of the organisation of refuse collection services prior to 1988 is to be found in Szymanski and Wilkins (1993). The main point in relation to this paper is that, prior to the 1988 Act, most local authorities operated refuse collection services through what is now known as the Direct Service Organisation (DSO), basically a department of the local authority operating under monopoly conditions. Despite the introduction of competitive tendering by a small number of local authorities (a purely voluntary act by those authorities) and the well-documented cost reductions associated with such policies (whether contracts were won in-house or were contracted out to private operators — see Domberger, Meadowcroft and Thompson (1986) and Cubbin, Domberger and Meadowcroft (1987)), the policy was not widely adopted.

In February 1985, the Conservative government announced plans to extend competition to local authority services;⁵ a Bill was introduced in June 1987 and passed in April 1988. The Act required that defined activities, including refuse

⁴ A more detailed analysis of these variations is provided in Szymanski (1995).

⁵ The 1980 Local Government Planning and Land Act had already obliged authorities to hold competitive tenders for most construction and maintenance work relating to highways.

collection, street cleaning, building cleaning, schools and welfare catering, grounds maintenance and vehicle maintenance, should be supplied under competitive conditions, and it laid down a timetable with dates by which specific services had to be subjected to competition.⁶ Where the authority intended to allow the existing in-house team (the DSO) to compete, the Act laid down guidelines to ensure fair competition, including ring-fencing the DSO and a minimum rate of return on assets (5 per cent). The Act has frequently been supplemented by guidance from the Department of the Environment as to the conduct of competitive tendering.

The rationale behind CCT might be thought to accord with standard economic theory.⁷ Refuse collection constitutes a natural local monopoly because of 'economies of contiguity': it is cheaper for a single vehicle and operating team to collect waste from a given street than for several competing operators to do so (Stevens, 1978). However, under monopoly conditions, an operator may be able to extract rents from a local authority because of asymmetric information problems such as the limited observability of effort or the inability of the authority to identify the operator's underlying efficiency. Demsetz (1968) pointed out that a competitive auction for the natural monopoly can compete away some or all of the rent that the operator extracts (for example, a formal model of this mechanism is analysed in the work of Laffont and Tirole (1987) on auctioning incentive contracts).⁸ One important issue that has frequently arisen in the discussion of competitive tendering is whether ownership matters. If competitive tendering competes away rents, then in principle any public sector organisation that wins a contract should be capable of delivering the same service at the same cost as a private sector organisation. However, empirical evidence on refuse has often contradicted this view. Stevens (1978) found that private firms were significantly cheaper in US cities of over 50,000 inhabitants and McDavid (1985) found an even larger difference for Canada. The data used by Domberger, Meadowcroft and Thompson (1986) and Szymanski and Wilkins (1993) found no significant difference between public and private contracting, although in both cases the estimated cost reductions were usually greater for private sector contractors.

Opposition to CCT has been motivated by both political and economic considerations. The political critique of CCT has centred around the notion that

⁶ Services with a gross cost of less than £100,000 in the previous year were exempt.

⁷ Although some critics have argued that this in itself demonstrates the inherent political bias of mainstream economics — for example, Wilson and Game (1994) and Stewart (1993).

⁸ The work of Williamson (for example, Williamson (1976)) pointed out that in situations where productive efficiency requires long-term investments in activity-specific assets, the auctioning of time-limited contracts may be inefficient since contractors will have no long-term incentive to invest. However, such problems are only likely to arise in situations where complex or advanced technologies are used, or where human capital investments yield benefits over the very long term. Neither of these conditions is likely to apply to a low-technology, low-skilled activity such as refuse collection.

public service and local government should not be organised on the basis of market mechanisms. For example, Stewart (1991) argues that substituting contractual relationships for traditional local government organisations will reduce political accountability and impair the public service ethic. The economic critique of CCT can be summarised under the following headings:

- CCT is not cost-effective (for example, Kerr and Radford (1995));
- CCT reduces service standards (for example, PSPRU (1992));
- CCT has only achieved cost reductions through wage cuts and deteriorating working conditions (for example, Escott and Whitfield (1995a)).

The political critique is beyond the scope of the current paper,⁹ which focuses on purely economic issues related to CCT. The data in this paper shed light on the first of the economic issues in the narrow sense of direct cost to the taxpayer. Section V considers service standards in relation to contract specifications.

III. DATA

The existing published analysis of CCT is almost entirely based on case studies. The largest such exercise was reported in Walsh (1991) and Walsh and Davis (1993), who reported the experience of a panel of 40 local authorities over the period 1989-92. For most of their research on individual services, sample sizes were no larger than 30. Other case-study work on specific issues includes Escott and Whitfield (1995a), who looked at equal opportunities issues in a sample of 39 authorities, Shaw, Fenwick and Foreman (1994), who sampled 23 councils in the north of England and their experience of CCT, and Painter (1991), who obtained evidence from various sources on the first round of CCT on different variables ranging from several hundred observations to as few as 34.

Whilst case-study evidence is important in understanding the way in which CCT has been implemented, it is problematic when addressing the broader economic issues such as the absolute size of cost reductions and changes in average employment, wage and service levels. Local authority characteristics vary widely along several dimensions (for example, size, density of population, political control) and so inference based on small samples is hazardous. The dataset assembled for this paper is based on a large sample of the 365 local authorities in England responsible for refuse collection over the period 1984-94. Five data sources were used.

- Local authority expenditure on and income from refuse collection services were taken from accounting returns supplied by the Department of the

⁹ See Walsh (1995) for a recent survey of the political debate.

Environment¹⁰ for which there are 3,804 observations out of a population of 4,015 (that is, 95 per cent coverage).

- Authority-specific characteristics (number of household and commercial collection units, density of units, type of authority) were drawn from published government sources and these are included for all authorities in the dataset. Local wage rates were proxied by weekly full-time male manual earnings¹¹ reported in the New Earnings Survey. This provides details for all 33 Boroughs in Greater London but the remaining authorities are grouped under county boundaries. Thus the remaining 332 authorities are allocated between 38 county groups.
- The pre-CCT service specification data were based on the CIPFA survey data used by Domberger, Meadowcroft and Thompson (1986), Cubbin, Domberger and Meadowcroft (1987) and Szymanski and Wilkins (1993). These data run from 1984 to 1988 and provide information on the method of collection (back-door, kerbside, other), the frequency of collection and the provision of containers, all in terms of percentage of households receiving a particular service standard. Each pre-CCT variable has around 300 observations for each year (around 80 per cent coverage), apart from 1988, when the coverage declined to around 200.¹²
- The post-CCT data were based on a specially commissioned survey of local authority client managers. The survey was carried out in 1994 and asked the same questions on service standards as the CIPFA survey but only asked the manager to state the service delivered to the majority of households. Two hundred and thirty-nine usable responses were received (a response rate of 65 per cent; see Bello (1994) for more details).¹³
- The date at which the first competitive tender was held was taken from the *Contracts Handbook* (CDC Research, 1994) which provides statutory information on contracts covered by the 1988 Local Government Act, and for this service 95 per cent of all start dates were known.

¹⁰ These figures are submitted annually on form RO6A to the Department of the Environment, from which the data were obtained.

¹¹ According to Escott and Whitfield (1995a), whose report was commissioned by the Equal Opportunities Commission, there are hardly any women employed in refuse collection.

¹² Once it was clear the legislation on CCT would be passed, authorities were reluctant to reveal any information that was considered commercially sensitive.

¹³ Both pre- and post-CCT surveys asked for information on recycling but the effects of the Environmental Protection Act mean that direct comparisons are not feasible. Data on wage and employment levels, even if available, would not now be released on grounds of commercial sensitivity. Because CCT has meant that service standards are now fixed contractually, the answers to the 1994 questionnaire were taken to apply to the service in each year of the current contract (in virtually all cases, this was the first contract signed under 1988 Local Government Act rules).

TABLE 1
Average Changes in Refuse Collection Costs, before and after CCT

	Type of authority			
	<i>Rural</i>	<i>Metropolitan</i>	<i>London</i>	<i>All England</i>
Average number of units, domestic and other (thous.)	43,254	127,790	92,522	54,723
Average density (units per km ²)	378	836	2,648	612
Net expenditure in last year before CCT (£ thous., 1995 prices)	1,234	3,929	3,152	1,629
Net expenditure in first year after CCT (£ thous., 1995 prices)	1,022	3,038	2,384	1,311
Percentage change in net expenditure	-17.2	-22.7	-24.4	-19.5
Percentage of DSOs winning	71	85	54	71
Number of observations	261	27	27	315

IV. CCT AND THE PROFILE OF LOCAL AUTHORITY REFUSE COLLECTION COSTS

1. Summary Statistics

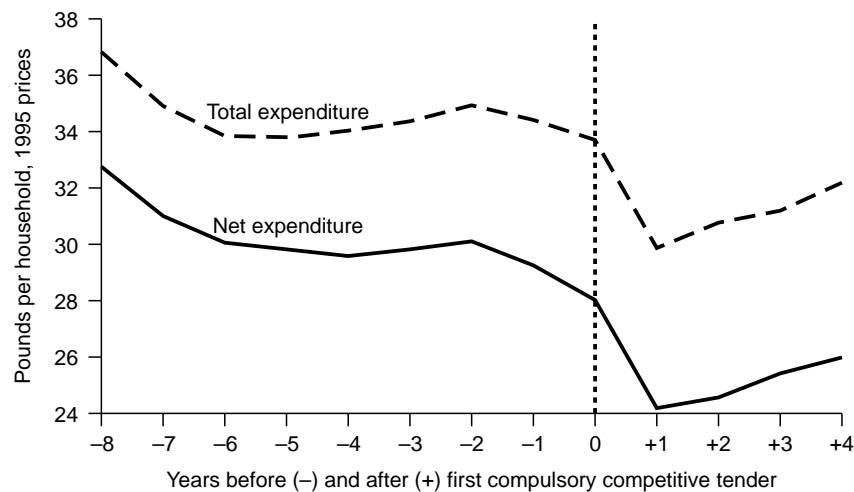
As suggested in Section I, there appears to have been a reduction in costs associated with the introduction of CCT. The measure of cost used here is net annual expenditure by the local authority deflated by the retail price index (RPI). Net expenditure is the total expenditure on providing the service less any income generated from selling services (such as commercial waste collection).¹⁴ The data include not only amounts paid to the contractor, but also any administrative costs borne by the client, including any costs associated with retendering in the case of defaults, and so can be considered to be the total cost associated with provision of the service (at least as far as the client is concerned). Table 1 is a

¹⁴ More restrictive specifications, such as cost per household, did not produce significantly different results. Gross expenditure is a misleading indicator since the expenditure of the local authority may be incurred specifically to generate income. Net expenditure is therefore the major concern in assessing the cost-effectiveness of the authority.

comparison of the last full year before the first competitive tender was held under the 1988 Act with the first full year after (under the Act, each authority was given a date by which a tender had to be held, so that nation-wide the introduction of CCT was staggered).

The table shows that the average reduction across all authorities was 19.5 per cent but that larger percentage reductions were achieved on average in the larger Metropolitan authorities and London Boroughs. The table also suggests that costs fell by roughly the same percentage in London, where private contractors won nearly half of the contracts, as in the Metropolitan Districts, where private contractors won less than one in six contracts.

FIGURE 1
Refuse Collection Costs, 1984-94



Note: The year in which the first compulsory competitive tender was held differs between authorities

The long-term trend is illustrated in Figure 1. It is based on the full, unbalanced sample in the dataset and represents the sum of expenditure of all authorities divided by the total number of collection units for those authorities. While the overall trend of both total and net expenditure is downward, it is clear that there is a step fall in costs associated with competitive tendering. The fall is slightly greater for net expenditure than for total expenditure, indicating that part of the reduction in net expenditure has arisen from increased income (user charges), which on average rose by 17 per cent. However, because user charges are only a small fraction of total expenditure, these can account for only a small proportion of the reduction in net expenditure. The figure also suggests that there has been an increase in expenditure following the initial post-CCT reduction, but

there are only 150 observations of expenditure four years after the introduction of CCT, compared with over 300 for the dates -6 to +2.

2. Regression Analysis

A more detailed analysis of the impact of CCT can be made using regression analysis. The standard specification used in the literature can be derived as a cost function under the assumption of cost minimisation from a Cobb-Douglas production function. Differing authority endowments and service standards are modelled as vectors pre-multiplying the production function¹⁵ (for a full derivation, see Stevens (1978)). This specification can then be estimated by ordinary least squares (OLS) (for example, Stevens (1978), Domberger, Meadowcroft and Thompson (1987) and Szymanski and Wilkins (1993)).

In the regressions from which the results reported below were drawn, the same explanatory variables, described in Section III, are used as in Domberger, Meadowcroft and Thompson (1986) and Szymanski and Wilkins (1993). Time dummies are used to control for year effects. As well as a pooled OLS regression, a model with fixed effects is also estimated. The coefficients on the explanatory variables in the pooled OLS model were broadly in line with previous research. Authority size in terms of collection units was the single most significant explanatory variable, with a coefficient of around 0.95, significantly smaller than unity, implying some economies of scale. A greater share of housing in the total number of collection units implies lower costs, while the higher the going weekly wage rate locally for manual males, the higher the cost of the service. Authorities in London and in Metropolitan areas tend to have higher costs, a finding normally attributed to the greater distance to disposal sites.

A full set of the regression outputs is available on request from the author. However, the focus here is the profile of cost reductions following CCT. In the top panel of Table 2, the estimated percentage cost reductions attributable to the impact of voluntary competitive tendering (before 1988) and to CCT are compared. Results for both the fixed-effects and pooled models are reported. The table indicates that both voluntary and compulsory competitive tendering reduced costs significantly. The pre-CCT estimates are consistent with earlier research, although in the fixed-effects model, there appears to be virtually no cost saving attributable to competitive tendering that awards the contract in-house. Following the introduction of CCT, the estimates indicate that DSOs reduced costs by around 10 per cent while private contractors tended to reduce costs by around 20 per cent.¹⁶ Given that DSOs have won around 70 per cent of

¹⁵ That is $Q = AL^\alpha K^\beta$

where Q is output proxied by the number of collection units and A is the vector of service characteristics.

¹⁶ The restriction of coefficient equality can be easily rejected.

TABLE 2
Impact and Time Profile of CCT

	Fixed-effects model		Pooled model with characteristics		Number of cases
	Cost reduction	t-statistic	Cost reduction	t-statistic	
Overall impact					
<i>All years since CCT</i>					
Private contractor	21.7%	-15.8	19.6%	-8.5	322
DSO	10.0%	-8.2	10.1%	-4.4	763
<i>All years before CCT</i>					
Private contractor	22.4%	-9.8	25.8%	-14.0	161
DSO	3.1%	-0.9	25.1%	-12.9	56
Time profile					
<i>Private contractor</i>					
Years since initial tender under CCT:					
1	20.6%	-12.4	20.3%	-7.6	101
2	20.4%	-10.7	19.2%	-5.9	96
3	16.3%	-7.0	15.6%	-4.1	70
4	10.5%	-3.5	9.7%	-2.2	42
5	17.3%	-3.7	15.9%	-2.3	13
<i>DSO</i>					
Years since initial tender under CCT:					
1	10.3%	-7.8	11.6%	-5.1	232
2	7.5%	-4.6	8.6%	-2.8	227
3	2.8%	-1.4	3.7%	-1.0	193
4	1.0%	-0.4	4.0%	-1.0	105
5	-2.8%	0.4	-2.4%	0.3	6

Note: Sample size is 3,598 observations.

all contracts, this is a striking result. There is no evidence to support the view that there was any systematic difference in costs comparing these two groups of authorities before the introduction of CCT. Prior to the introduction of CCT, authorities where private contractors subsequently won tended, on average, to

have the same level of costs as authorities where the DSO subsequently won. The only clear difference between the group of authorities that contracted out and those that did not was their political control: the former authorities had on average twice as many Conservative as Labour members. By contrast, where DSOs won, there were on average as many Labour as Conservative members.¹⁷

The lower panel of Table 2 shows the profile of cost reductions associated with CCT over time. For both private and public contractors, the size and significance of the coefficients tend to fall over time. For private contractors, the coefficients are significant for all years in both models. Ignoring the fifth year (for which there are so few cases), there does appear to be a pattern of eroding benefits from CCT. For private contractors, cost reductions are halved by the fourth full year of the contract. This may be associated with the fact that the fourth year is, in most cases, also the last full year before the service was due to be tendered again. However, overall, the pattern of cost reductions is relatively stable for the first three years.

For contracts awarded to the DSO, the cost reductions only appear to be significant in the first and second full years after the initial tender, while in the third, fourth and fifth years, costs are not significantly different from those in the last full year before CCT. The cost savings are much lower than where contracts are awarded to private contractors. These results seem to suggest that ownership does indeed matter. This is an issue that clearly requires some explanation, but sadly no systematic evidence is currently available. Contractors blame authorities for deliberately discouraging competition and favouring the DSO (for example, BRMB (1995)). Authorities claim that the private sector is not interested in making the required effort (Audit Commission, 1993, p. 17).¹⁸

One issue that it is possible to investigate is the size of cost savings by yearly cohort. This is reported in Table 3. The data indicate that where the number of cases is small (25 or less), there is no cost reduction identifiable with CCT. There is considerable variation depending on when the contract was let. Where private contractors won, cost savings were around 25 per cent in 1989, 1991 and 1992. In 1990, however, cost savings were closer to 15 per cent. For contracts won by the DSO, there was no measurable impact in 1989, a cost saving of around 10 per cent for contracts let in 1990 and 1991, but an even larger saving of around 17 per cent in 1992. It would be difficult to identify any particular pattern emerging from this table. However, it does show that when comparison

¹⁷ Members are the elected representatives who run each authority. The average number of members in authorities awarding contracts to private contractors was 49, of whom 23 were Conservative and 11 were Labour. Where contracts were awarded in-house, the average number of members was 48, of whom 18 were Conservative and 18 were Labour. The figures for political control were based on the post-May-election data in the 12-month period before the award of the contract and were taken from the *Municipal Yearbook*.

¹⁸ One explanation, suggested by a referee, is that where DSOs won, there may have been relatively few bids, so that it is truly competition that matters, and DSO victories are proxies for lack of competition. Data on the number of bids in each authority are not available.

TABLE 3
Impact of CCT according to Year in which the First CCT was Held

Year of initial tender under CCT rules	Fixed-effects model		Pooled model with characteristics		Number of cases
	Cost reduction	<i>t</i> -statistic	Cost reduction	<i>t</i> -statistic	
<i>Private contractor</i>					
1989	24.4%	-9.3	20.1%	-6.5	65
1990	15.8%	-8.5	16.0%	-6.0	122
1991	27.1%	-13.6	24.0%	-7.3	78
1992	28.0%	-12.5	25.3%	-5.7	50
1993	1.5%	-0.3	12.4%	-1.8	7
<i>DSO</i>					
1989	-0.7%	0.2	-1.3%	0.3	26
1990	10.1%	-7.5	11.3%	-4.8	397
1991	9.8%	-6.5	8.9%	-3.0	258
1992	16.7%	-8.1	17.3%	-5.2	75
1993	11.5%	-2.0	9.8%	-1.7	7

Note: Sample size is 3,598 observations.

of private contractors with DSOs is restricted to contracts let in the same year, the estimated cost reductions are always larger where contracts are awarded to private contractors (ignoring 1993, for which there are only 14 observations).

V. CONTRACT SPECIFICATIONS

Controversy over the impact of competitive tendering in general and CCT in particular on the quality of services delivered has been fierce. It is important from the outset to distinguish quality in two senses:

- *ex-ante* quality as laid down in the contract specification;
- *ex-post* quality in terms of what is actually delivered.

Quality may fall following the introduction of competitive tendering even if the specification of the service is raised, because the contractor may fail to achieve the required standard. On the other hand, quality may rise even if the contractor defaults on the contract specification, because the achieved standard is still better than what went before.

Evidence on CCT has pointed to some problems both in terms of contract specification and in terms of *ex-post* performance. The Audit Commission (1993) has criticised authorities in specific areas (such as schools cleaning) for poor contract specifications. Walsh and Davis (1993) found in their survey that although specifications tended to be of the same standard as before CCT, service delivery often fell well below the contract specification. Critics have argued that private contractors have been particularly poor at delivering contract standards (based on large surveys by both the PSPRU (1992) and LGMB (1993)).¹⁹

However, refuse collection services appear to have suffered fewer problems than other services subject to CCT. This is in part because the service is relatively simple and so service specification is relatively easy. Above all, since contract performance means collecting household waste on time without leaving any mess behind, households take on the role of unpaid monitors with some enthusiasm, which means that contract defaults (which trigger penalty clauses) seldom go unnoticed. Usually, it is simply too costly for a contractor to try to undercut the specifications laid down in the contract. The Consumers' Association (1995) carried out a postal survey of members in 1994 and obtained 22,209 responses; 86 per cent of respondents were either 'satisfied' or 'very satisfied' with their service. It also found no significant difference between authorities where the contract had gone to private companies and authorities where the DSO had won.

The measure of quality contained in the current dataset relates to service specification. Therefore these data are unable to shed any light on the issue of *ex-post* service quality. However, it has been argued that the cost reductions described in the previous section have resulted from a reduction in the specification of standards (a suggestion made, for example, by Escott and Whitfield (1995a)). Prior to CCT, few authorities specified standards explicitly. However, surveys carried out by CIPFA provided data on the nature of the service provided which were used in previous analysis such as Domberger, Meadowcroft and Thompson (1986) and Szymanski and Wilkins (1993). These have been matched with the survey carried out by Bello (1994) described above.

The CIPFA data measured specifications along five dimensions: point from which waste is collected (back door, kerbside or some variant on these two), provision of containers by the authority (and whether or not they are provided free), provision of special collections (for bulky waste), collection frequency (once, more than once or less than once a week) and recycling services. Recycling is impossible to compare properly since there is considerable variation in the details of recycling policies between councils. Following the 1990 Environmental Protection Act, councils will eventually have to expand their recycling services considerably. However, under current transitional rules,

¹⁹ See Domberger, Hall and Li (1995) for an interesting attempt to identify the relationship between competitive tendering and *ex-post* quality in the Australian building cleaning industry.

authorities have limited obligations and recycling remains a low-key affair. The CIPFA questionnaire required each authority to specify the proportion of each household receiving a particular service, while the Bello survey was based on yes / no responses for a majority of households. It turns out that all authorities have provided once-a-week collections and occasional special collections for a majority of householders both before and after CCT. Thus the two main differences in service standards in the data concern the location from which waste is collected and the extent to which containers are supplied either free or for a fee.

Tables 4 and 5 indicate the evolution of service specification standards over time. Table 4 is a transition matrix comparing a matched set of authorities for 1988 and 1994. It indicates the secular decline in back-door collection and the increase in kerbside / front-of-property collection, long advocated by the Audit Commission (for example, Audit Commission (1984)) as a way to save costs (even though this clearly implies a lower standard of service for the householder). As far as service to the consumer is concerned, the only obvious loss in service standards is a switch from back-door to kerbside or front-of-property collection which occurred in only 25 per cent of authorities in the matched sample. Along this dimension, service standards appear to have fallen in a quarter of all authorities. However, for 73 per cent of authorities, the method of collection was unchanged between 1988 and 1994.

TABLE 4
A Comparison of Methods, 1988 and 1994

		<i>Number of authorities</i>		
		<i>Kerbside</i>	<i>Front-of-property</i>	<i>Back-door</i>
<i>Method in 1988</i>	<i>Kerbside</i>	47	15	6
	<i>Front-of-property</i>	2	8	1
	<i>Back-door</i>	12	30	127

Table 5 presents the summary statistics on provision of containers. Virtually all client managers who stated in 1994 that containers were provided said they were provided free, while before 1988 a significant proportion said they were provided according to a scale of charges. There is potential for confusion here. A typical authority supplying plastic sacks will provide one sack per week, and any further sacks required have to be bought. The most reliable guide is therefore likely to be obtained by looking at the total column. Prior to 1988, around 25 per cent of respondents said that containers were provided as against 61 per cent of respondents in 1994. In a balanced sample of 144 authorities, the increase

appears less dramatic but still represents an increase of 50 per cent in the number of authorities providing containers. Along this dimension, service standards appear to have improved.

TABLE 5
Provision of Containers

	Balanced sample				Unbalanced sample	
	<i>Number of authorities where container provided for a fee</i>	<i>Number of authorities where container provided free</i>	<i>Total number of authorities where container provided</i>	<i>Percentage of authorities where container provided</i>	<i>Total number of authorities where container provided</i>	<i>Percentage of authorities where container provided</i>
1984	37	22	59	41%	62	19%
1985	37	21	58	40%	67	20%
1986	35	23	58	40%	73	22%
1987	34	28	62	43%	65	22%
1988	—	—	—	—	58	27%
1994	3	86	89	62%	117	61%

It appears, therefore, that in a small proportion of authorities, standards have fallen measurably in one dimension; in a larger proportion, they have risen along another dimension. This still represents a limited measure of quality, and only in an *ex-ante* (service specification) sense. However, if *ex-ante* standards were being cut in order to reduce costs, we might expect to see this showing up in the cost regressions. Thus if lower service standards explained lower costs, then the CCT dummy variable would either fall in size or become insignificant once quality specifications were included. Four model specifications were examined: the pooled and fixed-effects models described in the previous section, a model in which service standards were instrumented by their lagged values (to control for possible endogeneity) and a sample selection model given that the quality variables covered only just over half the population (2,018 observations out of 4,015).²⁰ In each model, the estimated coefficients for CCT dummies, either for private contractors or for DSOs, were both larger than when the quality variables were not included²¹ and statistically significant, indicating that the reductions in

²⁰ In the probit regression of the sample selection model, the numbers of members belonging to the three main parties were used as explanatory variables. The number of Labour members had a negative and statistically significant coefficient, while the number of Conservative members had a positive and statistically significant coefficient (both at the 5 per cent level).

²¹ In any case, the restriction that the quality variables were not significantly different from zero was not accepted by the data. The estimated coefficients were broadly similar to those reported by Domberger,

cost associated with CCT could not be attributed to lower service standards or specifications.²² The data used here cannot shed any light on the issue of *ex-post* quality and competitive tendering. However, they do suggest that CCT has not led to a general decline in service specifications, and that where cost reductions have been large, they have not in general been achieved by erosion of service specifications.

VI. CONCLUSIONS

As far as refuse collection is concerned, it seems indisputable that there has been a significant reduction in cost following the introduction of compulsory competitive tendering. There is some support for the view that the reductions are not fully sustained over time. This evidence seems particularly strong for the majority of contracts that were awarded in-house. The evidence that cost reductions are not sustained where the contract is awarded to a private contractor is much weaker. When the 1995 and 1996 data become available, it will be possible to see whether cost reductions achieved in the first round of competitive tendering were sustained into the second round.

The data used in the paper strongly suggest that ownership, as well as competition, matters. Authorities that let contracts to private contractors achieved significantly higher cost reductions than authorities that let contracts to the DSOs. Contractors claim that many authorities discriminate against private contractors, while some authorities claim that contractors are only interested in cherry-picking the best contracts. For the dataset used in this paper, no characteristic of authorities awarding contracts to their DSO could be identified apart from their political control, with Labour members twice as heavily represented compared with authorities that awarded contracts to the private sector.

Cost reductions in this service can arise from productivity increases, falling service quality or worse terms and conditions for the labour force. No evidence was found to support the notion that cost reductions arose through setting lower service specifications. Many critics of CCT believe that contractors (particularly in the private sector) fail to meet specifications, but this issue could not be addressed using the current dataset. These critics also suggest that cost reductions have arisen through lower wage rates and poorer terms and conditions (see, for example, Ganley and Grahl (1988), Walsh and Davis (1993), Painter (1991), Shaw, Fenwick and Foreman (1994) and Escott and Whitfield (1995b)). The dataset used here contains only evidence on *pre-CCT* wage and employment

Meadowcroft and Thompson (1986) and Szymanski and Wilkins (1993), with kerbside collection reducing costs by between 10 and 20 per cent (relative to back-door collection) and free provision of containers adding about 7.5 per cent to costs.

²² The regression output, not reported here, is available on request from the author.

rates and therefore we are unable to examine the actual level of *post-CCT* wages and employment. However, it is the case that authorities in the dataset with above-average employment levels and wage rates *pre-CCT* tended to reduce costs by more than the average, comparing cost levels in the last year before CCT and the first year after CCT.²³ More work is required on this important issue.

Compulsory competitive tendering is a controversial policy which is advanced as a significant policy success by the present Conservative government and which the Labour Party promises to abolish if it is elected. The findings of this paper suggest that a change of national policy may not make much difference: where private contractors are already established, competitive tendering is likely to continue. Where DSOs have retained the contract, compulsory competitive tendering has had a relatively small impact.

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²³ This issue is discussed in more detail in an earlier version of this paper.

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