

Competitive Tendering as a Contracting Mechanism for Subsidising Transport

The Bus Experience

David A. Hensher and Ian P. Wallis

Address for correspondence: Professor David A. Hensher, Institute of Transport and Logistics Studies, School of Business, Faculty of Economics and Business, The University of Sydney; Davidh@itls.usyd.edu.au. Ian Wallis is with Booz Allan Hamilton in Wellington, New Zealand.

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Abstract

Competitive tendering (CT) is a popular mechanism for the provision of transport services where a major objective is the containment of the cost to government of service provision. Although the primary focus is recognised as cost efficiency, whereby the cost outcome should be conditional on a given level of service, difficulties in establishing appropriate tests for service level compliance has become a cause of concern regarding the effectiveness of the CT paradigm as a value for money initiative. This paper reviews the international successes and failures of CT as a subsidy reduction strategy within the bus sector, and promotes the idea of Performance Based Contracts as a way of recognising the real role of subsidy under the umbrella of a value for money objective.

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1.0 Introduction

There are very few laws in economics, but there are a number of evidential statements that take on the appearance of laws. One of these is the announced savings in subsidy when introducing competitive tendering. Net of administrative costs, these savings are frequently quoted to lie between 20 and 30 per cent. On closer inspection the savings are associated, in the main, with services previously provided by the public sector under a public monopoly and are typically the outcome of a first-time tendering process. Subsequent re-tendering delivers minimal gains in subsidy reduction and often leads to an increase (above the consumer price index) in subsidy cost, in part response to the initial winner's curse. In some situations where there are a large number of small operators in the informal transport sector, as in Brazil (de Aragao and Brasileiro, 1999), that are being replaced by a few larger operators ('relocating' into the formal transport sector), the costs of service delivery under competitive tendering can increase.¹ Indeed in many developing economies, a previously unsubsidised high frequency and flexible service becomes subsidised as part of the price of the regulator controlling the sector. The tendency for the number of bidders in a re-tender to decrease in some countries, especially as the contract size increases,² suggests that the sustainability of initial cost savings may become problematic and widespread.

Nevertheless, competitive tendering (CT) remains an attractive reform strategy with a growing interest in finding ways of making CT incentive compatible and delivering value for money in subsidy outlay by government.³ However, despite this commitment, as time passes, a number of deficiencies in the existing CT process have emerged, raising questions about where this approach is most suitable and ways in which it is best applied. Some of these deficiencies are attributable in part to the inadequacy of the regulatory framework within which CT is delivered and monitored and in part due to the nature of competitive tendering.

Such issues suggest a reconsideration of competitive tendering as the preferred way *under all circumstances* of contracting in the future and a need to consider other regimes, especially negotiated performance based

¹After adjusting for new regulatory requirements, such as minimum vehicle and labour standards and operator accreditation.

²The move away from route-based to area-based contracts to promote network interdependency is a contributing influence. In the London context where route-based contracts still flourish, the network benefits are preserved through appropriate regulatory procedures and contract obligations.

³For example, competitive tendering is proposed as an instrument to make radical change in service delivery in Santiago, Chile, to replace 4,000 bus operators (with 8,000 buses) with 15 operators.

contracts, as a means of deciding rights to deliver public transport services, as an alternative (and/or sequenced complement)⁴ to CT. Negotiated contracts⁵ are common in public-private partnerships in the provision of infrastructure but are less visible in public transport operation. Berechman (1994, 298–99) suggests that ‘If costs of having a private firm supply the services could be reduced by means of a negotiated contract, the considerable costs of organising a competitive bidding would be averted. Indeed . . . a competitive tendering scheme might in some cases be inferior to methods of contract renewal or negotiation.’

In this paper we assess the influence of the range of contracts that are competitively tendered in the bus sector (primarily the provision of urban services), highlighting not just the cost savings but other relevant considerations of service provision. Drawing on a number of earlier papers by the author and other participants in the international conference series on competition and ownership of land passenger transport,⁶ we document the subsidy savings from a large number of CT contracts. To assess the virtues of such savings, we place the evidence within a broader framework that recognises the importance of delivering value for money in the provision of subsidised bus services. Through this broader perspective we start to see the narrowness of the strictly cost recovery objective and the warning signals of a failure to provide appropriate incentives to operators to grow the patronage market.

2.0 Definitional Issues

Competitive tendering is a service delivery strategy and member of the broad class of contractual regimes. An effective contractual regime is one within which the government, the regulator, the operator, and society at large can participate as trusting partners in securing value for money in (i) the allocation of a total subsidy budget to the provision of services or

⁴In South Africa CTs are a way to attract new entrants into the market, then based on performance, an extension is negotiated. To attract new entrants, they stipulate a minimum percentage of subcontracting, so that after one year of subcontracting, the subcontractor can become a ‘set aside’ and can operate in their own right as a fully fledged operator.

⁵When we refer to negotiated contracts we imply performance-based contracts as defined in Section 2.

⁶Known as the Thredbo series, the International Conference Series on Competition and Ownership in Land Passenger Transport has been held biennially since the first conference in Thredbo, Australia, 1989. Thredbo 2 through to 8 have been held in Tampere, Finland, 1991; Toronto, Canada, 1993; Rotorua, New Zealand, 1995; Leeds, UK, 1997; Cape Town, South Africa, 1999; Molde, Norway, 2001; and Rio de Janeiro, Brazil in 2003. Further details and papers are provided under the Thredbo icon at <http://www.itls.usyd.edu.au>.

(ii) in the delivery of non-subsidised services (Hensher and Houghton, 2005).⁷ The government's role is strategic (S), the regulator's role is tactical (T) and the operator's role is operational (O).⁸ Within such a contractual regime an operator provides services at *best practice cost levels* for a given level of service delivery, either in return for direct financial support from government, awarded by either competitive tendering or negotiation, or in return for permission to operate a negotiated/agreed level of service without subsidy but, for example, subject to a cost-plus fare determination.

Within such a contractual regime, the payment structure may be based on a fixed payment and/or a set of incentive payments above the fixed payment linked to patronage and/or service levels. An example of a fixed payment system is a community service obligation payment linked to a minimum service level programme determined by negotiation or competitive tendering, and/or a partnered service design and level. The incentive payments linked to patronage and/or service growth can reflect benefits derived from all sources (that is, consumer or user surplus) and benefits linked to a specific objective such as reducing negative environmental impacts. Those linked to service levels may also incorporate a mechanism for supporting new entrants into developing markets. Patronage incentive payments may be based on various criteria such as passenger boardings and passenger kilometres, the latter to account for the trip length distribution.

It is useful to distinguish between the basis for procuring the operator and the basis for paying/rewarding the selected operator (Wallis, 2005).

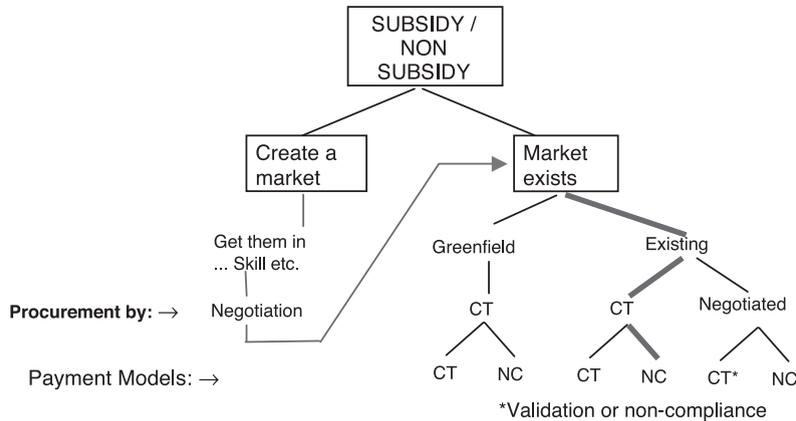
⁷Although performance based contracts (PBCs) in developed economies tend to be integrated into a system of subsidy support, this need not be the case in all situations. For example, in Brazil, PBCs are being considered in a context where the operators in the formal ('legal') sector would be required to comply with benchmark best practice on costs (without any subsidy support under community service obligation payments), with fares determined by a cost-plus formula and patronage incentive payments available for patronage growth above an agreed baseline. In Santiago (Chile) an innovative internal cross-subsidy scheme between feeder service operators via a centrally tendered fare collector (using smart cards) is designed to use (feeder) systemwide fare revenue to eliminate all public subsidy.

⁸The STO framework recognises that policy, planning and operations exist within a hierarchy of objectives functionally split into three interdependent layers. The main features of the framework are represented by three STO levels (Macario, 2001):

- The *Strategic level* where the focus is on the establishment of broad goals and objectives and guidance on ways of achieving outcomes consistent with such goals ('what do you want to achieve?').
- The *Tactical level* which highlights the supporting mechanisms (such as the regulatory process) to achieve the strategic goals. There is a strong emphasis on fare and service planning. In many countries there is no explicit public transport regulator and so tactical functions are the responsibility of authorities and/or operators.
- The *Operational level*, which focuses on delivering the desired services to the market consistent with the strategic intent and aided by tactical mechanisms.

Van de Velde and Pruijmbloom (2003) illustrate how giving tenderers tactical responsibilities will lead to service uplifts.

Figure 1
Processes for Procurement and Payment Rates Determination (Hensher and Houghton 2005a)⁹



Note: (i) A Greenfield site is different to 'creating a market'. The latter is more global in its national context and refers to a general absence of expertise that can readily participate in the market, be it an area already serviced or a new development with no services (a Greenfield site). (ii) The block under Greenfield could also be negotiated. For example, in South Africa (Durban) an expression of interest for new services is common which is not subject to CT.

A number of combinations of procurement and payment strategies can be devised from this simple dichotomy, as summarised in Figure 1 (from Hensher and Houghton, 2005a). Most commonly, the payment model would be defined in advance by government; and then the operator selected through competitive tendering or a negotiation process. However, competitively tendered and negotiated contracts can be complementary in a temporal sequence. For example, one can use a service incentive payment under a negotiated contract to assist new entrants into new markets (including a base community service obligation payment) perhaps with training/skill enhancement support.¹⁰ When a market is established (given sufficient elapsed time — such as 5–10 years) one might introduce a performance-based contract (PBC) via competitive tendering to rationalise the number

⁹We also have another possible process — competition at the service delivery stage, applied to determine patronage incentive payment rates when the budget is fixed, as promoted in Hensher and Houghton (2005). Competition for patronage incentive payments, therefore, can be an optional complement to both competitively tendered and negotiated contracts. The distinction between competitively tendered and negotiated contracts is blurred to the extent that negotiated contracts may be used to determine patronage incentive payments in a contract where a community service obligation is determined through competitive tendering, to form a mixed contract. Furthermore, competition at the service delivery stage may be used to determine patronage incentive payments when a community service obligation is determined by either a competitively tendered or a negotiated contract.

¹⁰The issue of skill enhancement in preparation for participating competitively tendered or negotiated contracts is a real concern in many developing economies (examples being South Africa, Chile, and Brazil).

of ‘competing’ operators in a corridor (as is proposed for Santiago, Chile) or select an individual operator at a route or corridor or area level; or, one might move to a PBC regime via a negotiated contract system. Alternatively, a government might use competitive tendering to shortlist a number of suppliers with whom it then negotiates to select the preferred supplier.

Incentive payments can be introduced through competitive tendering or negotiation under a PBC regime. For example, one can establish a patronage incentive payment of various possible types: (i) the Adelaide Model (see Wallis, 2003, 2005) provides an agreed non-competitive sum per additional passenger; (ii) the Hensher–Houghton Model (2004, 2005) provides a fixed or variable patronage incentive payment budget competed for amongst a predefined set of operating areas, referred to as competition at the later service delivery stage, as distinct from at the tendering stage.

Given that many factors affecting patronage are outside the influence of the operator, the appropriate level of patronage incentive payment may be fairly modest; and this will then need to be supplemented by a service incentive payment to provide the operator with sufficient incentive to expand services. The Adelaide model adopts this approach, and requires a tactical-level sign-off on service proposals. This service incentive payment may be a marginal payment rate (as in Adelaide) or an amount competed for by operators who grow service from an agreed minimum service level (MSL) linked to a base payment. The introduction of a service incentive payment, where one does not compete for subsidy budget between operators in different spatial settings, is an appealing model for developing economies such as South Africa and Brazil (the current Brazilian model is shown on right hand side of Figure 1 by the thicker line only).

We are now well placed to assess the influence of competitive tendering on cost savings as well as to highlight the range of other demand and supply side impacts. In the next section we draw on real-world evidence from a range of locations throughout the world. We have selected the specific ‘case studies’ as examples of the diversity of implementation of competition tendering and other contracting regimes (such as quality contracts that are a mixture of negotiation and tendering).

3.0 The ‘Evidence’ on Cost Savings

3.1 Overview of the evidence

Table 1 summarises the evidence from studies in 10 developed countries, covering more than 20 cities, on the cost impacts associated with the

Table 1
Summary of Cost Impacts from Competitive Tendering

Country	City	Prior operations	Initial CT timing	Proportion of services subject to CT	Key tender & contract features	Unit cost impacts of CT	Other impacts	Notes
Great Britain	London	Govt monopoly operator	1985–2000	Progressively to 100%	Route contracts, gross cost, mostly 5 years.	51% reduction (1985–2000).	Increase in bus kms (32%), patronage (12%) and farebox cost recovery (60% to 95%), 1985–2000.	
	Rest of GB	Various – most by public (municipal or national) operators	1986	c. 20% ('gap-filling' services)	Route contracts ('gap-filling'), mostly small, most net cost basis, up to 5 years.	54% reduction (1986–99).		Only c. 20% of services subject to CT (remainder deregulated) — but cost figures relate to total market. Unit cost reductions slightly greater than for London over same period.
Norway	National/ major cities	Mostly private (?)	1994 onwards	3% up to 1999, now c. 15%	Route contracts, gross cost.	Not known (CT services not separated from others)	Overall unit cost reductions in sector estimated in range 6% to 20% (1986–96), little change since.	Up to 1999, only c. 3% of national services were subject to CT; proportion has now increased to c. 15%. Figures need careful review (real vs. money terms?).
	Lillehammer	Private operators (?)	1995	100%	Route, gross cost + incentive, 6 years.	Initial 21% reduction. Subsequent increase of 33% in second tender round.	Initial increase in patronage (33%) and revenue (17%).	
Sweden	All (national)	Primarily public operators	1989 onwards	Progressively to 95% (year 2000)	Mostly route, gross cost.	Average reductions due to CT, 1987–93, originally estimated at 12–14%, more recent re-estimates 5–6%. Little further change 1993–2001.	Services have increased, quality improved and vehicle age reduced in most cases.	Some doubts on level of cost reductions attributable to CT.

Table 1
Continued

Country	City	Prior operations	Initial CT timing	Proportion of services subject to CT	Key tender & contract features	Unit cost impacts of CT	Other impacts	Notes
Sweden	Stockholm	Public operator dominant	1989+ (?)		Area/route, gross cost, 5 years.	Reduction 20% to 32% in first 3 years of CT.	Vehicle age/quality generally enhanced and operational performance improved.	Need for clarification of impact results.
	Helsingborg	Public operator (?)	1992	100% (initially)	Area (city-wide), gross cost, 5 years.	27% reduction.		Subsequent conversion to net cost, with operator responsible for service development etc.
Finland	Helsinki	c. 50% public (municipal/national)	1995 onwards	Progressively up to 90% + by 2000	Route, gross cost + quality incentive, 5 years.	Initial reductions 17% to 34%; 1999 costs estimated at 31% lower than if at pre-CT rates. Subsequent rounds increases 10% to 18%.	Increased service levels, reduced fares, upgraded fleet and reduced subsidies.	
Denmark	Copenhagen	Primarily municipal operator	1990–2002	Progressively to 100%	Route, gross cost + quality incentives, 4–8 years.	24% reduction up to 1997; but subsequently c. 14% increase (1997–2003).	Large proportion of cost savings used to increased service levels.	
Netherlands	Amersfoort	Private	2002	100%	Area, net cost, 6 years.	Reduction 37% (?)	60% increase in bus hours for previous budget.	Need to check implied unit cost reductions (?)
	S Holland DAV	Private	2003	100%	Area, net cost, 4 years.	Reduction 15% (?)	11% increase in bus hours for 6% budget reduction.	
	Utrecht NW	Private	2002	100%	Area, net cost 4+2 years.	Reduction 15% (?)	18% increase in bus hours for previous budget.	

<i>Italy</i>	Rome	– (new services)	2001 (?)	100% of these services	Tender: trade-off quality features v price.	Reductions 8%, 8% and 25% relative to in-house operation.	Validity of cost impacts estimates uncertain.
<i>USA</i>	8 cities					Reductions in range 30% to 46%, relative to non-CT operations in area.	
<i>Australia</i>	Adelaide	Public (state govt) operator	1996–2000	100% over 4 year period	Area (large), gross + patronage incentive, 5 + 5 years.	Reduction 38% (1994–2001).	Cost impacts allow for admin costs.
	Perth	Public (state govt) operator	1995–1998	100% over 3 year period	Area (large), gross + patronage incentive, 7 + 6 or 7 years.	Reduction 22% (1996–2001).	
<i>New Zealand</i>	Main cities (Auckland, Wellington, Christchurch)	Mostly public	1991	All services not 'deregulated' (i.e. c. 50% WGN, over 90% AKL & CHC)	Route (small, net, mostly 3 to 5 years.	Public operators: c. 40% reduction. Private operators: c. 5–10% reduction.	

competitive tendering of urban bus services. This evidence relates to the period since 1985. The emphasis is on changes in unit (gross) costs of service provision, rather than on total costs (which may be affected by changes in the amount of service provided) or on net subsidy levels (generally reductions in net subsidy levels would be proportionately greater than any reductions in unit costs). Unit costs are typically measured per bus kilometre or per bus hour.

The main focus of Table 1 is on the unit cost impacts associated with the initial competitive tendering of services previously provided through a monopoly supplier arrangement, in most cases with a publicly-owned operator. However, more evidence is now becoming available on the experience with second and subsequent rounds of competitive tendering for the same services. Some of this evidence is included in Table 1, but it is set out in more detail in Table 2, for the five countries for which good evidence has been identified.

It is recognised that major difficulties arise in deriving a consistent set of data on cost impacts, in comparing results from the different countries and cities; and in drawing wider conclusions from the evidence.

- Cities start from different points in terms of pre-CT contracting models, operator ownership, funding arrangements and so on.
- Frequently, CT is accompanied by changes in service levels, service quality standards, asset specification, and so on — which would tend to affect unit costs of supply.
- The introduction of CT to a previously monopoly situation is typically accompanied by institutional restructuring, with the separation of policy, funding, and contracting functions from operating functions. The assessment of cost impacts on attempts (where possible) to compare like-for-like functions before and after the introduction of CT. However, even assuming this is achieved, it should be recognised that these before/after comparisons generally relate to a package of regulatory and institutional policy reforms, rather than just the (*ceteris paribus*) introduction of a competitive procurement process to replace a monopoly situation.
- Typically there are significant one-off costs associated with the establishment of the CT system, and these may include transition (such as redundancy, retraining) costs for the previous operator, particularly where this is a publicly-owned operator. These costs are often not included in publicly available information.

In addition to these factors, if the impacts of CT policies are to be adequately assessed, the counter-factual case needs to be estimated (that is, what cost trends would have occurred in the absence of the CT

policy). This is at best a difficult and somewhat conjectural task, and was generally beyond the scope of our appraisal, which focused on the unit costs shortly before and shortly after the CT process. Having noted these various caveats, the following sections comment on the main groups of evidence that are summarised in Tables 1 and 2.

3.2 Great Britain

In Great Britain (outside London), the 'deregulation' of local bus services was introduced in 1986. Socially-desirable but non-commercial services were then procured by local authorities to 'fill the gaps', through a CT process: these tendered services comprise 15–20 per cent of all services. In London, a fully-tendered regime was introduced from 1985, with all services being progressively opened to CT over a 15-year phase-in period (completed in 2000). Prior to 1985/86, local bus service provision in Great Britain was dominated by publicly-owned companies; but since the reforms the great majority of services in both London and elsewhere have been provided by private sector operators.

Since 1985/86, unit costs (per bus kilometre) both in London and the rest of Great Britain have fallen by about the same amount, slightly over 50 per cent in real terms (up to year 2000). The unit cost reduction in London was, in the early years, somewhat slower than that elsewhere, reflecting that the reforms were implemented more gradually in London (although there was an element of the 'ripple' effect, with reductions in unit costs for the remaining monopoly services as well as the tendered services).

A number of studies have assessed the factors contributing to these cost reductions in more detail. Preston (MARETOPE D2) notes that the unit cost reductions have come fairly evenly from three main sources: reduced factor prices (particularly labour, but also fuel); reduced use of factors (again particularly labour, but also land); and improved production processes (partly associated with the deployment of more appropriately-sized vehicles).

Since the late 1990s, there is clear evidence (Table 2) that CT prices have been increasing faster than general inflation and, it appears, faster than the inflation of any composite cost index relevant to the urban bus sector. In London, contract prices in the 5 years up to 2000/01 increased at a rate of around 10 per cent per annum on average (money terms); while in the rest of Great Britain the rate of increase was somewhat higher: over this period the general rate of inflation was well under 5 per cent per annum.

Table 2 indicates some of the main factors contributing to the escalation of contract prices in London: many of these factors are associated with higher standards (such as low floor buses) and input price increases

Table 2
Summary of Cost Impacts Subsequent to Initial Tender Round

Country	City	References	Services assessed	Unit cost impacts	Other notes, comments										
Great Britain	London	Steer Davies Gleave (2001)	London bus contracts tendered in 1995/96 and retendered in 2000/01	Average gross cost/bus km increased by 58–63% in real terms (i.e., c. 10% pa average)	<p>Increase comprised following main components:</p> <ul style="list-style-type: none"> • Operating staff labour 35–55%: <ul style="list-style-type: none"> – tighter labour market – increased proportion of evening and weekend work – increased shift cover to improve service reliability. • Fuel 45–80%: <ul style="list-style-type: none"> – higher fuel prices – higher consumption rates, relating to higher environmental standards. • New vehicles c. 45%: <ul style="list-style-type: none"> – accelerated fleet replacement, particularly to introduce low-floor vehicles – increased use of vehicle leasing, to provide greater flexibility at end of contract. • Engineering & maintenance 60–95%: <ul style="list-style-type: none"> – higher pay rates for skilled staff – increased accident and insurance costs. • Provision for contract penalties: <ul style="list-style-type: none"> – said to have increased three-fold, particularly due to staff shortages. <p>Underlying inflation in transport price index was 2.2% to 2002 (3.9% to 2001).</p> <p>Average tenders/contract was 3.0 in 2002 (2.9 in 2000).</p>										
	Rest of GB	ATCO (2002)	Sample of public bus contracts (outside London)	<p>Average year-on-year price increases for like-for-like contract renewal (money terms):</p> <table border="1"> <tr><td>1998</td><td>11.8%</td></tr> <tr><td>1999</td><td>17.0%</td></tr> <tr><td>2000</td><td>16.7%</td></tr> <tr><td>2001</td><td>20.9%</td></tr> <tr><td>2002</td><td>19.6%</td></tr> </table>	1998	11.8%	1999	17.0%	2000	16.7%	2001	20.9%	2002	19.6%	
1998	11.8%														
1999	17.0%														
2000	16.7%														
2001	20.9%														
2002	19.6%														
		DETR (1999)	Selected case studies of tender prices (Cheshire, Kent, Staffordshire, Suffolk, Tyne & Wear)		Reasons for cost increases included: rising staff pay rates, higher vehicle costs, falling revenues, increased rates of return.										
		Atkins (2005)	Trends in tender prices in England (outside London)	Local authorities have been facing annual cost increases of between 10% and 20% simply to secure the same level of supported service	No apparent correlation between unit costs and number of bids.										

<i>Norway</i>	Lillehammer	Soberg, O (T7)	All Lillehammer bus services, originally tendered 1995, retendered 2001	Changes in gross costs/bus km (money terms) since 1996: 1996-00 +45% 2000-01 (retendered): +33%	Not clear how these increases relate to trends in RPI, transport price index or costs of other bus services.
<i>Sweden</i>	National	Alexandersson G. & Pyddoke R. (T8)	Sample of all local bus services in Sweden (by 2000, 95% had been subject to CT, at least once)	Change in gross costs/bus km (real terms) 1993-2001 close to zero (after 5% reduction in period 1987-93)	Some doubts about veracity of these results.
<i>Finland</i>	Helsinki	YTV Transport Department (2001)	Unit cost rates for all bus CT in the Helsinki region, comparing Round 2 and 3 routes with Round 1 for each group of contracts	Change in real gross costs: YTV: Round 2 (1997-98): +1% to 3%; Round 3 (2000-01): +9% to +15% Espoo: Round 2 (2001): +7%	Round 1 savings over pre-CT situation were YTV 26-34%, Espoo 32%, so unit costs are still well below pre-CT figures.
<i>Denmark</i>	Copenhagen	HUR (2003)	All Copenhagen bus services, covering cost rates from 13 tendering rounds, 1990-2003	Change in real gross costs/bus hour by tender round: 1990-1997/98 (low point): -24% 1997/98-2003: +14% Overall 1990-2003: -13%	Suggested that part of the cost increases reflects higher quality etc. standards (greater passenger comfort, easier access vehicles). Some apparent reduction in competition due to mergers/acquisitions.

reflecting a buoyant economy and a tight labour market. The evidence indicates that operators have not in general been earning 'excessive' profits, although profit margins have tended to increase from the low levels experienced in the late 1980s/early 1990s.

3.3 Scandinavia

The Scandinavian countries have invested heavily in economic reform of their bus sector over the past 15 years (Alexandersson and Pyddoke, 2003; Berge *et al.*, 2005; Jarvilouna, 2003; Johansen, 1999; Norheim, 1999).

In **Norway**, CT is permitted under legislation passed in 1994, but the majority of services are still procured through negotiated (generally net cost) contracts. Over the period 1986–96, unit costs for the industry as a whole were estimated as reducing in the range 6 to 20 per cent, while cost recovery increased from 63 to 76 per cent. It is hypothesised that these cost reductions were the outcome of several factors relating more to the threat of CT rather than CT itself: these included 'normalised cost contracts' and 'efficiency agreements'.

Since the late 1990s negotiated performance-based contracts, described as 'quality contracts' have been introduced in some centres. The Hordaland model is the best example of recognising the virtues of incumbent operators (see Calquist, 2001). From January 2001, the contracts are long-term net output-based subsidy contracts in which an operator is given revenue responsibility for a specific service and must focus on user need and demand for public transport services. Within the contract specification, an operator may change fare levels and offer more flexible fares. The service level can be changed if it is within a given average of service level defined in advance and specified in the contract. This enables an operator to rationalise services and improve resource allocation over time (Berge *et al.*, 2005). The operator bears all economic risks connected to costs and revenues. Any cost savings realised by providing existing services will be used to develop new or improve existing public transport services. The approach is designed to give the authorities a policy instrument to improve supply according to passengers' changing preferences over time within the region without regulating the services in detail. This is left to the agent that *a priori* has the best market knowledge.

As in Great Britain, some of the more recent data for CT services in Norway indicate significant cost increases (in real terms) in the second and subsequent tendering rounds (Table 2). It is unclear how these trends compare with the cost trends in the Norwegian local bus sector as a whole.

In **Sweden**, CT for local bus services started in 1989 and by 2000 some 95 per cent of services nationally had been subject to CT at least once:

the market that was previously dominated by public operators is now dominated by private operators. Contracts have typically involved a gross cost funding model, on either a route or area basis. There are some doubts on the levels of cost savings achieved, and the contribution of CT to these savings. National data for the period 1987–93 indicated unit cost reductions due to CT of around 12–14 per cent, since re-estimated at 5–6 per cent. Figures for Stockholm indicate greater unit cost reductions, in the range 20–32 per cent in the first three years after the implementation of CT. More recent data indicate little further change in unit costs since the mid-1990s.

In **Finland**, CT for local bus services started in 1995 and now covers most local and regional services. The industry has remained a mix of public (state or municipal) and private operators. In Helsinki, unit cost reductions in the initial tender rounds were in the range 17 to 34 per cent, and by 1999 overall costs were estimated at 31 per cent lower than if the pre-CT rates had applied. The second and third rounds of tendering (1997–2001 period) have seen unit cost increases in the range 10 to 18 per cent, but cost rates are still well below those prior to the introduction of CT.

In **Denmark**, 1990 legislation imposed a CT requirement on all local bus services, and this was implemented progressively in the period up to 2002. Market dominance by public operators was replaced by predominantly private operators. In Copenhagen, unit costs reduced by some 24 per cent (real terms) over the period 1990–1997. Since then there has been an increase of around 14 per cent, leaving a net cost reduction over the whole period of 13 per cent.

3.4 Other European countries

Table 1 also shows results of competitive tendering for some services in the Netherlands (3 localities) and in Italy (Rome): in both countries, the CT services currently account for only a small proportion of all services. Unit cost reductions are indicated in the range 15 to 37 per cent (Netherlands) and 8 to 25 per cent (Italy, new services, relative to unit costs of municipal operation).

3.5 United States

The United States has a chequered history in the development of competitive tendering for local bus services. Cost data are available for CT services in eight major metropolitan/city areas, together accounting for some 3,000 buses contracted through CT (but only some 9 per cent of all urban bus services). CT has been applied to a mix of public and private monopoly

operations, usually with management contracts. Savings in unit costs per bus hour (relative to unit costs for non-competitive operations in the area) have been in the range 30 to 46 per cent (Cox).

3.6 Australasia

In **Australia**, CT has been practised since 1993 in three cities (Adelaide, Perth, Melbourne) where state governments decided to open to competition services previously supplied by the state operator on a monopoly basis. By contrast, area monopoly services provided by private operators (such as in parts of Sydney and Melbourne) have not been opened to competition, but amended contracts have been negotiated with the incumbent (private) operators.

In Adelaide and Perth, bus fleets and depots have been retained by the governments and leased to the successful private operators under 'management contracts', with area contracts funded on a 'gross cost plus patronage incentive' model. In Melbourne, the government bus fleet and depots were sold to the successful private operators, with area contracts on an 'augmented farebox' basis.

In all three cities, CT has been very successful in reducing the costs of service provision. Unit cost reductions for Adelaide are estimated at about 38 per cent in real terms (1994–2001), and for Perth at 22 per cent (1996–2001): the lower savings figure for Perth in part reflects the greater cost efficiency of the previous public operator there. The CT/contracting reforms have also been successful in all three cases in increasing patronage in absolute terms and relative to a likely counter-factual case (as far as can be assessed): contributors to the increased patronage include additional services, principally at off-peak periods (funded through the CT cost savings); adjustments of services to match market needs better; improvements of service quality, accompanied by enhanced monitoring; and the existence of the patronage incentive payments.

In **New Zealand**, CT was introduced in a 'big bang' in 1991, as a component of a package of regulatory and institutional reforms focused on a 'semi-deregulated' model, and involving corporatisation or privatisation of the public (municipal) operators that had previously provided most services. Since these reforms, private operators have dominated the market: a minority of bus services are being provided on a commercial ('market initiative') basis, the majority on a CT ('authority initiative') basis.

The reform package resulted in unit costs of the ex-public monopoly operators reducing by around 40 per cent (1989–1992). By contrast, the unit costs of the private operators, which had previously held area monopolies in some suburban areas, reduced only marginally, by in the order of 5 per cent.

3.7 Summary on cost savings

The above appraisal of the evidence from developed countries worldwide shows that the opening to competitive tendering (as part of a wider package of regulatory and institutional reforms) of services previously provided by (predominantly) publicly-owned operators under non-competitive area/regional monopoly arrangements has in most cases resulted in substantial cost savings in the shorter term. The extent of short/medium-term reductions in (real) unit costs in the main countries for which good evidence is available may be summarised as:

- Great Britain: 50–55 per cent
- Scandinavia: considerable spread of results (5–34 per cent), but most in range 20–30 per cent
- USA: 30–46 per cent
- Australia: 22 per cent (Perth), 38 per cent (Adelaide)
- New Zealand: c. 40 per cent (public operators), c. 5 per cent (private operators).

These cost reductions are very substantial, and overall on the high side of the preconceptions of the authors (a crude ‘rule of thumb’ sometimes used is for indicative cost savings of 30 per cent from competitive tendering/outsourcing).

As discussed earlier, numerous factors will influence the differences in results between the different countries and situations, and considerable care is needed in interpreting the results. One factor that is a prominent influence is that of the starting (pre-CT) situation, and in particular the cost efficiency of the operators in this situation. The New Zealand results clearly illustrate the role of ownership in this regard: the NZ private operators had substantially lower costs than the public operators in the previous monopoly situation; and hence the cost savings achieved in respect to these private operator services were very much lower than those for the public operator services.

The above savings relate to the initial round of CT, when previous non-competitive monopoly operations are opened to competition. In subsequent tendering rounds, when the system has matured, the weight of evidence suggests significant real cost increases from the initial round figures. There is no doubt from the evidence that an element of these apparent cost increases is in many cases the result of more demanding contract specifications (such as low-floor buses). However, we would hypothesise that other components are associated with:

- The greater experience of bidders, resulting in:
 - more informed bidding

- less likelihood of bid errors or mis-estimates (which sometimes result in the ‘winner’s curse’ problem).
- Less emphasis by incumbent bidders on retaining market share at all costs.
- Bidders taking a longer-term perspective and nominating higher profit margins.
- Lesser levels of competition for tenders (in some cases).

This is an aspect on which further research and evidence remains desirable.

4.0 Procuring Services through Contracting: Performance based contracts delivered through competitive tendering or negotiation with incumbents

The assessment of alternative contract regimes in delivering bus public transport recognises that efforts to recover costs and reduce subsidy outlays cannot (and should not) be at the expense of a diminution in the public transport task. The best single measure of the success of a specific contracting regime is the growth in patronage.¹¹ This can be attributed to many factors both within and outside the sphere of influence of the operator and even the regulator. What is clearly understood is that a contracting regime without economic incentives is unlikely to deliver the best set of achievable patronage benefits. In this section we attempt to synthesise what appear to be the major lessons and experiences gained to date in the ongoing development of improved ways of contracting the provision of public transport that has appeal to all stakeholders.

The key question is: To what extent has competitive tendering served its role well and is there a growing role for negotiated performance based contracts in circumstances where:

1. the financial gains from re-tendering are small;
2. the incumbents are efficient suppliers; and
3. a greater focus should be placed on innovation in service supply, growing patronage and providing some longer term incentives for operators to invest in quality assets?

Competitive tendering and negotiated contracts can have complementary roles under a performance-based regime. It is quite compatible for a

¹¹ Alternative measures are patronage per dollar of subsidy outlay and net benefit per dollar of subsidy.

given contract to determine the community service obligation linked to a minimum service level through competitive tendering while determining a patronage growth incentive payment rate through a negotiation process.¹² The key requirement is that contracts have transparency and simplicity. This may be helpful in some cases where a legal requirement for competitive tendering may be satisfied by a community service obligation determination, leaving a level of negotiated contract or competition at the service delivery stage to determine payments for service/patronage improvements.

Negotiated contracts should be subject to benchmarked best-practice context-specific costs (that arguably approximate the competitive tendering outcome), with incentive payments for achieving specified growth in patronage and/or service levels.¹³ The following assessment, based on Hensher and Houghton (2005, 2005a), Preston (2001, 2005), Wallis (2005), Wallis and Bray (2003), Wallis and Gale (2001), summarises the main features and merits of the competitive tendered (CT) and negotiated contract (NC) procurement approaches against a set of key contracting attributes. It embellishes the empirical evidence in the previous section and more, in recognition of the broader set of experiences that have evolved out of the range of contract regimes. The commentary is also influenced by a broader set of observed circumstances, often not reported in publicly available reports.

4.1 Cost and subsidy impacts

1. CT has been successful in delivering cost reductions but generally this relates to the first round of tendering of a public monopoly service.¹⁴
2. Evidence is accumulating of cases where some of the initial cost savings through CT are eroded through cost escalation in subsequent tendering rounds. Such cost escalation may reflect a variety of factors such as labour market trends, enhanced vehicle and service

¹²The Adelaide model enables the winning bidder to negotiate service design after winning the right to provide the services.

¹³Some operators prefer to have a government determined sum of money available that is not dependent on the success or otherwise of all operators in growing patronage. This is the preferred model promoted by the private operators in Sydney. This model essentially recognises that the competition is between public transport and other modes, especially the car. The challenge is for government to establish a suitable budget to ensure delivery of patronage payments. The Adelaide experience has shown what can happen if the operator is too successful — the money runs out but the government has a contractual obligation and hence is looking for ways of reducing total payments to operators. Future contracts should learn from this open-ended approach.

¹⁴There is evidence that corporatisation together with budget constraints and the threat of competition may also deliver substantial savings — although these would tend to happen more slowly and perhaps to a lesser degree than with contracting.

- specifications, reduced competition, and reaction to excessively low initial bids — the ‘winners curse’.
3. It is too early to establish whether negotiated performance based contracts are likely to result in lower (or higher) subsidies than CT contracts. Any assessment must account for expected changes in service levels.

4.2 Administration and regulatory costs

1. CT involves significant administration costs to both operators and government/regulators, typically 5 percentage points of the initial cost savings. In addition, the transition costs to operators and to users (through service changes, uncertainties and so on) may be considerable. Repeated tendering reduces administration costs but these increase as a percentage of any gains in cost reduction.
2. However, NC may also involve significant transactional and coordination costs, particularly in establishing appropriate benchmarks and monitoring performance against these. Ongoing administration costs appear to be similar to CT provided monitoring is included in both regimes.
3. CT may degenerate into an auction in the labour market, possibly leading to excessive wage reductions and the need for minimum wage level regulation, especially in developing economies. This appears to be the case in South Africa and many locations in South America.

4.3 Establishment of appropriate benchmarks

1. CT establishes benchmark subsidy rates through the competitive process as long as there are enough bidders.
2. Under NC, ‘benchmarking’ and ‘yardstick competition’ approaches are used to approximate the results of the CT process. However such approaches are imperfect (particularly in ‘greenfield’ situations) and may involve complex calibrations and extensive negotiation processes. As each bus network and area is different, fair treatment across all operators may be difficult to achieve.
3. If comparisons among firms (that is, yardstick competition), becomes systematic and operators under NC do not change, collusion around performance benchmarks may arise. However there is also a risk (with empirical evidence available) under CT in operators colluding in deciding who bids for which contracts.
4. CT is an appealing (albeit necessary) ‘fall-back’ option for government in the event that the negotiation process cannot be concluded satisfactorily.

4.4 Accountability and transparency

1. NC involves a less transparent process with a greater danger of regulatory capture.
2. However, CT is not free from such dangers, as illustrated by the experiences with the Melbourne train and tram franchises (Stanley and Hensher, 2005).
3. Under CT, the incumbent operator accumulates extensive market knowledge, much of which is not made available to the regulator. This may give the incumbent operator a substantial advantage in re-tendering. This knowledge bank can be provided to the regulator under CT and NC through reporting requirements and auditing.

4.5 Optimising networks and funding allocation

1. Networks subject to CT may be designed to maximise social surplus subject to a budget constraint, provided the entire network is tendered at the same time; otherwise social surplus maximisation is problematic.
2. Within a NC process (and possibly CT), it is possible to arrange competition between operators for a fixed incentive payments budget (for patronage and/or service incentives), over all levels of demand and service or above a pre-determined minimum level (as per the Hensher–Houghton (2004) framework). This should ensure that competitive forces are at work *throughout* the life of a PBC, provided that the incentive scheme is an effective mechanism to deliver service improvements and active monitoring takes place.
3. Experience under either CT or NC suggests that regulators typically err on the side of caution and tend to let contracts based on previous services. However, with appropriate service review procedures during the contract term, subsequent changes may be initiated between the two parties — although arguably this is more difficult under the CT than the NC model.

4.6 Some development, performance incentives and monitoring

1. Key performance indicators and appropriate benchmarks are an important feature of negotiated contracts, since they form the basis for negotiation of contract renewal. The regulator must have a good knowledge of best practices, and cannot be dependent on advice from operators (note the situation in Brazil where fare adjustments have been based on cost escalation advice from the operators — Hensher and Houghton, 2005a).
2. Under both NC and CT, incentives may need to be large to influence operator behaviour. This may be a particular problem when available

- funds are constrained and have to be shared between multiple operators.
3. Inadequate contract design (under either CT or NC) can result in perverse incentives, depending on the basis of reward, for example through encouraging empty buses, split routes, longer trips.
 4. There is a danger of setting targets too low, especially in cases where external factors prove favourable, and hence operators becoming complacent.
 5. Under NC, there is a danger that management effort will unduly focus on justifying their performance in order to secure contract renewal, rather than on genuine performance improvement. Government can minimise this risk by setting minimum targets for growth.

4.7 Government funding risks

1. All incentive-based contracts may involve significant budget uncertainty for government, associated with service-related or patronage-related incentive payments. However, the extent (if any) of this problem depends on the details of contract specifications. For example, under the Adelaide bus contracts, incremental patronage payments approximate to incremental fares income, leaving minimal patronage risk to government, while government has the veto on any proposed service changes.
2. The Hensher–Houghton (2004) payment model (which could be applied under CT or NC) can operate within a budget cap, being designed to encourage competition between operators for available subsidy so as to maximise social surplus per \$ subsidy.

4.8 Encouragement of a strong, diverse supplier market

1. CT is likely to lead to periodic new entrants to the local market, and hence encourage innovative approaches; while NC may tend to result in ossification of the supplier market.
2. With suitable contract design, CT may be used to encourage the development of smaller and new operators, as well as provide roles for larger established and entrepreneurial operators (maybe from overseas).
3. Under CT, there is some danger of excessive consolidation of the supplier market among a few large operators with risks of excessive market power and possible collusion. However, this danger can be minimised by imposing market share or equivalent limits on any one operator in an area.
4. CT may give excessive advantages to incumbents in the tendering process (for example through superior information, ownership of

valuable depot sites, and so on), thus discouraging a strong supplier market. Such advantages can be reduced through appropriate contract specification.

5. CT may be inequitable under an empowerment regime such as in South Africa. Here it is desired to attract new entrants, to develop a market of reliable operators, while limiting the number through tendering (which will almost certainly discourage the smaller less advantaged operator), and at the same time giving them a limited and uncertain future in a volatile market. The transaction costs will be too high for too many operators. NCs may be even more inequitable if they reinforce incumbency advantages; however benchmarking of costs is designed to prevent this.

5.0 Conclusion: Some Warnings

Transaction cost economics maintains that it is *impossible* to concentrate all of the relevant bargaining action at the *ex ante* contracting stage, which is what many forms of competitive tendering without ongoing built-in incentive structures essentially do (Williamson, 1987). Instead bargaining is pervasive in which case the institutions of private ordering and the study of contracting in its entirety take on critical economic significance. Performance-based contracts, negotiated or tendered, align with this view (see Hensher and Stanley, 2003) since the market operates actively throughout the contract period (under signals delivered through incentive payments). The behavioural attributes of human agents, whereby conditions of bounded rationality and opportunism are joined, and the complex attributes of transaction with special reference to the condition of asset specificity, are responsible for this condition (Williamson, 1987, p. 178). Alignment of incentives is central to efficient contracts and property rights. The latter emphasises that ownership also matters, with rights of ownership of an asset defined as the rights to use the asset, the right to appropriate returns from the asset, and the right to change the form and/or substance of an asset. Competitive tendering with incentives but high (albeit inefficient) risk of continuity is problematic, giving new appeal to negotiated performance-based contracts.

Transaction cost economics acknowledges merit in both monopoly and efficient risk-bearing approaches. It insists, however, that efficiency purposes are sometimes served by restraints on trade (Williamson 1987, p. 188). This statement by a leading author of transactional economics, X-efficiency and contracting theory, is crucial to the discussion because it

puts forth the argument that examination of the underlying attributes of transactions discloses that restraints on trade can help to safeguard the integrity of transactions when firm-specific investments are at hazard.

Although competitive tendering is market driven at the time of bidding, given the dominating focus on cost efficiency, it generally provides the wrong set of incentives to do more in line with social obligations or external benefits. The market will not identify (or guarantee) the optimal level of subsidy as derived from a social surplus maximisation model in which profit maximisation and external benefits are both taken into account. This is especially problematic at a system-wide level, where the need to establish an incentive payment scheme taking into account all services in a geographical jurisdiction (for example a metropolitan area) is crucial to the calculation.

Competitive tendering is focused on individual contracts with no mechanism to ensure that the incentive payment support sums to the optimal subsidy commitment across a broader geographic area. This is the area where broad-based performance based contracts (as set out in Larson, 2001 and Hensher and Houghton, 2004) has appeal because it takes advantage of the market, the obligation on delivering value for money spent from taxpayers in the form of optimal subsidy and external benefits. If bidders under competitive tendering are offering prices that comply with profit maximisation, then this is taken into account under performance based quality contracts but within a framework in which profit maximisation must comply with conditions of social surplus maximisation.

To these points we add the concern that competitive tendering is open to regulatory capture by powerful monopolist providers. This concern increases as the number of operators diminishes with global purchasing. Provided remuneration of operators under performance based quality contracts is based on efficient cost benchmarks, government objectives might be better delivered in this contracting environment (under a transparent partnership) than under competitive tendering.

There might be some concern that rejecting competitive tendering in favour of negotiated performance based quality contracts will entrench existing franchised service areas, when perhaps some re-arrangement of these areas would better achieve social goals from service provision. Performance based quality contracts depend on partnership relationships, both between individual operators and the regulator and between the set of operators and the regulator. One condition for the regulator agreeing to a system of performance based quality contracts across a region or area, where these performance based quality contracts are not delivered by competitive tendering, should be acceptance by the industry of operators in the region/area that, if strategic planning processes suggest a restructuring of

service franchise areas, the industry will negotiate the change amongst participating operators. Provided the industry is closely involved in the strategic planning processes, this condition of performance based quality contracts is a reasonable price for certainty.¹⁵

References

- Alexandersson, G. and R. Pyddoke (2003): 'Bus Deregulation in Sweden Revisited: Experiences from 15 years of Competitive Tendering,' paper presented at the *8th International Conference on Competition and Ownership of Land Passenger Transport*, Rio de Janeiro, Brazil, September.
- Berechman, J. (1993): *Public Transit Economics and Deregulation Policy*, North-Holland, Amsterdam.
- Berge, D. M., S. Brathen, O. Hauge, and F. Ohr (2005): 'Experiences with Quality Contracts in Public Transport in Norway,' in Hensher, D. A. (ed.), *Competition and Ownership in Land Passenger Transport*, Elsevier Science, Oxford, 195–212.
- Brasileiro, A., N. Lacerda, O. Lima Neto, and J. Aragão (2003): 'From Urban Zoning to Network Cities: a new accessibility concept for Recife (Brazil),' Department of Civil Engineering, University of Brasília.
- Carlquist, E. (2001): 'Incentive Contracts in Norwegian Local Public Transport: the Hordaland Model,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Carlquist, E. and F. Frøysadal (2001): *Kontraktformer i norsk busstransport*. TØI særtrykk 220/2001, Oslo, Institute of Transport Economics.
- Cmabini, C. and M. Filippini (2003): 'Competitive tendering and optimal size in the regional bus transportation industry. an example from Italy,' *Annals of Public and Cooperative Economics*, 74, 163–82.
- Cox, W. and B. Duthion (2001): 'Competition in Urban Public Transport: A World View,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Department of Transport and Regions (DTLR) (2002): *Transport Statistics Bulletin Survey of Concessionary Bus Fare Schemes in England 2001*, DTLR, London.

¹⁵There is growing concern in England that concessionary fare subsidies are not matched by appropriate 'deliverable and measurable outputs' (DLTR, 2002). The Director-General of the Greater Manchester Passenger Transport Executive stated in a submission to the House of Commons Select Committee's inquiry on the bus industry that 'We would like to reach a point where all the money paid to the bus industry is linked in some way to outputs'. The most interesting feature of the reform proposal is, over a 3–5 year period, to transfer some or all of the concessionary fares budget into a central pot. Operators would then be asked to come forward with proposals for delivering a network of commercial and supported services determined by the central authority and 10 metropolitan governments. These proposals have been described as 'voluntary quality contracts' that push at the limits of quality partnerships but which are necessary to improve the increasingly poor quality of service levels of bus provision (which has evolved out of economic deregulation and competitive tendering of non-commercial services).

- Gomide, A. A. (2003): 'Bidding Results for the Brazilian Urban Bus Systems: The Case of Belo Horizonte,' paper presented at the *8th International Conference on Competition and Ownership of Land Passenger Transport*, Rio de Janeiro, Brazil, September.
- Guilherme de Aragao, J. J. and A. Brasileiro (1999): 'The Brazilian Urban Bus Industry: Present Challenges and Future Perspectives,' paper presented at the *6th International Conference on Competition and Ownership of Land Passenger Transport*, Cape Town, South Africa, September.
- Hensher, D. A. (2003): 'Urban Public Transport Delivery in Australia: Issues and Challenges in Retaining and Growing Patronage,' *Roads and Transport Research*, 12, 31–41.
- Hensher, D. A. and E. Houghton (2004): 'Performance-Based Quality Contracts for the Bus Sector: Delivering Social and Commercial Value for Money,' *Transportation Research B*, 38, 123–46.
- Hensher, D. A. and E. Houghton (2005): 'Implementing Performance-Based Quality Contracts in the Bus Sector: Growing Patronage and Transitional Arrangements,' in Hensher, D. A. (ed.), *Competition and Ownership in Land Passenger Transport*, Elsevier Science, Oxford, 129–54.
- Hensher, D. A. and E. Houghton (2005a): 'Performance-Based Contracts,' workshop report, in Hensher, D. A. (ed.), *Competition and Ownership in Land Passenger Transport*, Elsevier Science, Oxford, 23–46.
- Hensher, D. A. and J. K. Stanley (2003): 'Performance-Based Contracts and/or Competitive Tendering in Urban Bus Service Provision,' *Transportation Research A*, 37, 519–38.
- Hidson, M. and M. Muller (2003): 'Better Public Transport for Europe through Competitive Tendering; A Good Practice,' retrieved from http://www.managenergy.net/download/GP_Guide_SIPTRAM.pdf, on 24/06/04.
- Houghton, E. and D. A. Hensher (2005): 'Negotiated and Competitively Tendered Performance Based Contracts,' in Button, K. and Hensher, D. A. (series and volume eds), *Transport Strategy, Policy and Institutions*, Handbooks in Transport Vol 6, Elsevier Science, Oxford, 527–46.
- Jarvilouna, N. (2003): 'Competitive Tendering of Bus Services in the Helsinki Metropolitan Area 1994–2002' retrieved from http://www.polis_online.org/docs/bru2002/Public_tendering.pdf, on 24/06/04.
- Johansen, K. W. (1999): 'Contractual Form and Performance in the Norwegian Bus Industry 1986–96,' paper presented at the *6th International Conference on Competition and Ownership of Land Passenger Transport*, Cape Town, South Africa, September.
- Johansen, K. W., O. Larsen, and B. Norheim (2001): 'Towards Economic Efficiency in Public Transport,' *Journal of Transport Economics and Policy*, 35, 491–511.
- Klarmann, J. (2003): 'Tendering problems of suburban rail systems,' paper presented at the *8th International Conference on Competition and Ownership of Land Passenger Transport*, Rio de Janeiro, Brazil, September.
- Larsen, O. I. (2001): 'Designing Incentive Schemes for Public Transport Operators in Hordaland County, Norway,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Macário, R. (2001): 'Managing and Assessing Regulatory Evaluation in Local Public Transport Operations in Europe,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Norheim, B. (1999): 'Competitive Pressure as an Alternative to Competitive Tendering? The Development of a Performance Contract to Oslo,' paper presented at the *6th International Conference on Competition and Ownership of Land Passenger Transport*, Cape Town, South Africa, September.

- Prefeitura da Cidade do Recife & Companhia de Trânsito e Transporte Urbano (2001): *Transporte Informal – Diagnóstico da Cidade do Recife*. Recife: Prefeitura da Cidade do Recife & Companhia de Trânsito e Transporte Urbano.
- Preston, J. (2001): 'An Overview of Public Transport Reforms in Great Britain and Forecasts for the Future,' *International Journal of Transport Economics*, 28, 23–48.
- Preston, J. (2005): 'The Road to Rio: a Brief History of the International Conference on Competition and Ownership in Land Passenger Transport,' in Hensher, D. A. (ed.), *Competition and Ownership in Land Passenger Transport*, Elsevier Science, Oxford, 7–20.
- Preston, J., B. Huang, and G. Whelan (2005): 'Determining Optimal Bus Service Provision: Recent Evidence From Great Britain,' in Hensher, D. A. (ed.), *Competition and Ownership of Land Passenger Transport*, Elsevier, Oxford.
- Seal, J. (2002): 'Transit Competition in New Zealand: History and Impacts.' Report on the FTA Fact-Finding Mission to New Zealand, 29–31 May 2002. December 2002.
- Stanley, J. K. and D. A. Hensher (2005): 'Performance Based Contracts in Public Transportation: the Melbourne Experience,' in Hensher, D. A. (ed.), *Competition and Ownership of Land Passenger Transport*, Elsevier, Oxford.
- Van de Velde, D. (2001): 'The Evolution of Organisational Forms in European Public Transport during the Last 15 Years,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Van de Velde, D. and E. Pruijboom (2005): 'First Experience with Tendering at the Tactical Level (Service Design) in Dutch Public Transport,' in Hensher, D. A. (ed.), *Competition and Ownership of Land Passenger Transport*, Elsevier, Oxford.
- Wallis, I. P. (2003): 'Patronage Incentives in Urban Public Transport Contracts – Appraisal of Practice and Experience to Date,' paper presented at the *8th International Conference on Competition and Ownership of Land Passenger Transport*, Rio de Janeiro, Brazil, September.
- Wallis, I. (2005): 'Contract Incentives in Urban Public Transport – Appraisal of Practice and Experience to Date,' in Hensher, D. A. (ed.), *Competition and Ownership of Land Passenger Transport*, Elsevier, Oxford.
- Wallis, I. P. and D. Bray (2001): 'Competitive Tendering for Bus Services: The Improved Adelaide Model,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Wallis, I. and J. Gale (2001): 'Economic Incentives to Increase Public Transport Patronage – The Theory and the Practice,' paper presented at the *7th International Conference on Competition and Ownership of Land Passenger Transport*, Molde, Norway, June.
- Williamson, O. E. (1987): *Antitrust Economics*, Basil Blackwell, Oxford.

