

The Franchising of Passenger Rail Services in Britain

John Preston and Gerard Whelan
Institute for Transport Studies, University of Leeds, UK

1. INTRODUCTION

- 1.1 The 1993 Railways Act proposes to privatise passenger railways by splitting British Rail's passenger business into some 25 operating units and holding a competition for the franchises to operate these businesses. This competition will be administered by a government body, the Office of Passenger Rail Franchising (OPRAF). Eight franchises have been identified for the first tranche - the so called "fast-track franchises" - three of which are expected to be let by the end of 1995.
- 1.2 A number of issues have emerged when considering the appropriateness of franchising for the rail industry. Some of these issues are outlined in section 2. A key issue that emerges is the determination of appropriate specification of contracts. In section 3, we describe a hypothetical bidding game we have developed which may assist in determining contract specification and we present some exploratory results based on in-depth interviews of 11 potential bidders. In section 4, we go on to consider the preliminary findings from our bidding game on the likely size of winning bids. Lastly, we draw some conclusions about the likely success of rail franchising.

2. RAIL FRANCHISING - THE ISSUES

- 2.1 The concept of franchising originates with Chadwick (1859), who stated that: "where competition on the ground is impossible, an auction allows competition for the ground". This work was re-discovered and extended to a modern day context by Demsetz (1968). The rationale for extending franchising to the passenger railway industry, as postulated by Foster (1994), is that, even when operations are separated from infrastructure, the passenger railway business exhibits monopoly characteristics due to concentrations in space and time. In many cases, competition on-the-track will not be feasible. Off-the-track competition for the rights to operate services is the only feasible option. Moreover, current passenger railway services are largely unprofitable. Franchising is therefore the only feasible way of privatising the industry. Franchising is believed to lead to gains in allocative efficiency and, in particular, to gains in productive efficiency with cost savings of 30% achieved in the contracting out of refuse services (Domberger et al., 1986) and the tendering of bus services (Heseltine and Silcock, 1990).

- 2.2 However, the experience of franchising rail services is rather limited and very mixed. Table 1, based on the work of consultants NERA (1992), identifies nine examples of rail franchising concentrated in four countries (Argentina, Sweden, the United Kingdom and the United States). It can be seen that there is much variation in practice, particularly with respect to contract length (ranging from 1 to 55 years), the availability of contract extensions (ranging from 0 to 60 years), the degree of contract specification and whether the contract is awarded on a minimum cost or net subsidy (i.e. including revenue) basis. Evidence from Sweden indicates that cost savings in excess of 20% can be achieved but the incumbent operator remains dominant.
- 2.3 Apart from Sweden, empirical evidence is not widely available, at least from within the rail industry, to enable us to judge the likely success of passenger rail franchising. (By contrast, there is considerable empirical evidence in the urban bus industry - out of 21 countries reviewed by Berechman (1993), 13 use some form of tendering or franchising). However, there is a considerable theoretical literature - including Williamson (1976), Schmalensee (1979), Kay and Thompson (1986) and Waterson (1988) - which has highlighted a number of potential problems with franchising. We have summarised some of these arguments with respect to rail in a recent article (Preston, 1995) and will expand these arguments below.
- 2.4 The first area of concern relates to **the competitiveness of the bidding process** for rail franchises. It was always likely that there would be bids from existing management teams but the scope for bids from outside parties appeared to be limited. Bus companies lack the specific management expertise needed to run a rail system, whilst the anti-trust authorities (the Office of Fair Trading and the Monopolies and Mergers Commission) have signalled that they would not approve of integrated bus and rail network as these would represent local public transport monopolies. Moreover, the one bus company that has had experience of rail services (Stagecoach - who briefly ran a Scotland to London sleeper service in conjunction with British Rail) did not gain a favourable impression. Overseas railways, particularly those from North America, appear to be more interested in the opportunities offered by the privatisation (by outright sale) of the rail freight businesses than the franchising of the passenger businesses. British based entrepreneurs, such as Richard Branson of Virgin and James Sherwood of Sea Containers, have made it clear that they would be more interested in the passenger businesses if they included the land-holdings, infrastructure and rolling stock (i.e. vertically integrated businesses) - a view also held by many of the potential bidders we have interviewed so far. One of the *earliest prospectuses* for rail privatisation stressed the likely benefits to the private sector of developing the railway's property assets (Beesley and Littlechild, 1983). Furthermore, bids from the publicly owned British Rail will be discouraged even though evidence from Sweden suggests that, provided cross subsidy is prohibited, competition between the private and public sectors can be particularly effective (Jansson, 1993).
- 2.5 As a result of the above, a reputable survey by the Financial Times in July 1993 was only able to identify 16 potential outside bidders. However, OPRAF has

Table 1: SURVEY OF RAIL FRANCHISING

Franchise Characteristics	Sweden	MBTA (Boston)	SCRRRA	Argentina Metropolitan	Sweden	MML	Argentina Freight	Argentina Intercity	Channel Tunnel
Length	1-10	3	3-5	10	15	15-30	30	30	30
Extension, yrs	none	1+1+1	3	10+10+10	none	?	30+30	10	none
Long-lived specific assets provided by?	Franchiser	Franchiser	Franchiser	Franchiser	Franchiser	n.a.	Franchiser	Franchiser	n.a.
Major investment?	No	No	No	Yes	No	Yes	Yes	Yes	Yes
Maintenance of: Infrastructure Rolling Stock	Track Owner Franchisee	Franchisee Franchisee	Track Owner Franchisee	Franchisee Franchisee	Track Owner Franchisee	Franchisee Franchisee	Franchisee Franchisee	Freight Franchisee Franchisee	Franchisee Franchisee
Labour provided by	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee
Contract spec.	Fares Timetable Resource usage	Fares Service levels Train schedules	Fares Peak frequency No. round trips Travel time between stations	Fares Min. service Maintenance standards	Fares Timetable Resource usage	Min. service Minimum maintenance	Minimal fares	Min. services	Minimal Use Capacity
Cost or revenue contract	Cost	Cost	Cost	Revenue	Revenue	Revenue	Revenue	Revenue	Revenue

MBTA = Massachusetts Bay Transport Authority
 SCRRRA = Southern California Regional Railway Authority
 MML = Manchester Metrolink

Source: NERA (1992)

been pro-active in promoting competition and some 37 organisations have registered an interest for the first eight fast track franchises, with several indicating they will bid for more than one franchise so that there are 160 applications (OPRAF, 1995). There seems little doubt that the first set of franchises will see some competitive bidding - but can this competition be maintained for subsequent (generally less attractive franchises) and for when the franchises are renewed? If incumbent firms are unable to detect the number of competing bidders this will not matter. The contestable nature of the franchised rail market would constrain them to bid competitively. However, we believe that this is unlikely to happen - incumbent firms are likely to be able to detect rivals preparing competing bids - a view shared by many of the potential bidders we have interviewed so far.

- 2.6 The second area of concern is that of **the efficiency of the winning bid**. Given the fixed nature of much of the charge for infrastructure and rolling stock, which will be supplied by Railtrack and the rolling stock leasing companies (ROSCOs) respectively, rail operations might be characterised by decreasing average costs and constant marginal costs (see Figure 1). Although these arrangements reduce the two problems of sub-optimal capital investment and the cost of asset transfers, they do lead to other problems. In such a case, the welfare optimal bid would be to price at marginal cost, carry Q_1 passenger kilometres, and require a subsidy of $(C_1 - P_1) Q_1$. However, this bid could be beaten by a minimum subsidy bid which would set price at P_2 (i.e. as close to average cost as possible), carry Q_2 passenger kilometres and only require subsidy of $(C_2 - P_2) Q_2$. The welfare loss of such quasi-average cost pricing is given by the shaded triangle in Figure 1. This is believed to be a likely scenario in that it is thought that 24 out of the 25 franchises are likely to require subsidy, (i.e. have negative bids) with the exception being Gatwick Express (Dodgson, 1995). In those limited cases where positive bids are possible, it is likely that the winning bid would be based on monopolistic excess profits. Such problems can be reduced if OPRAF tightly specifies maximum price levels and minimum service levels (e.g. P_1 and Q_1 in Figure 1) but in order to do this OPRAF is unlikely to have the relevant information on demand and costs. Moreover, OPRAF's budget is likely to be tightly constrained so that the lump-sum financing of deficits will not be possible.
- 2.7 The analysis in Figure 1 is deterministic but in reality bidding will be stochastic. The winning bidder is likely to be the one who believes that demand is greater than it is (i.e. the demand curve in Figure 1 is believed to be further out from the origin than it is) and/or that costs are lower than they are (i.e. the cost curve in Figure 1 is believed to be further in towards the origin than it is). In such circumstances, it is easy to imagine a zero bid or even a positive bid. This is what is referred to as the 'winner's curse' (Kagel and Levin, 1986). In reality, the winner would make a loss and this would require the franchise to be re-let (the winner goes bankrupt) or re-negotiated (the winner is bailed out). Both scenarios would involve costs to society. The winner's curse is related to information asymmetries, therefore an important question is to what extent can those asymmetries be reduced by OPRAF in the first instance and by the learning process subsequently?

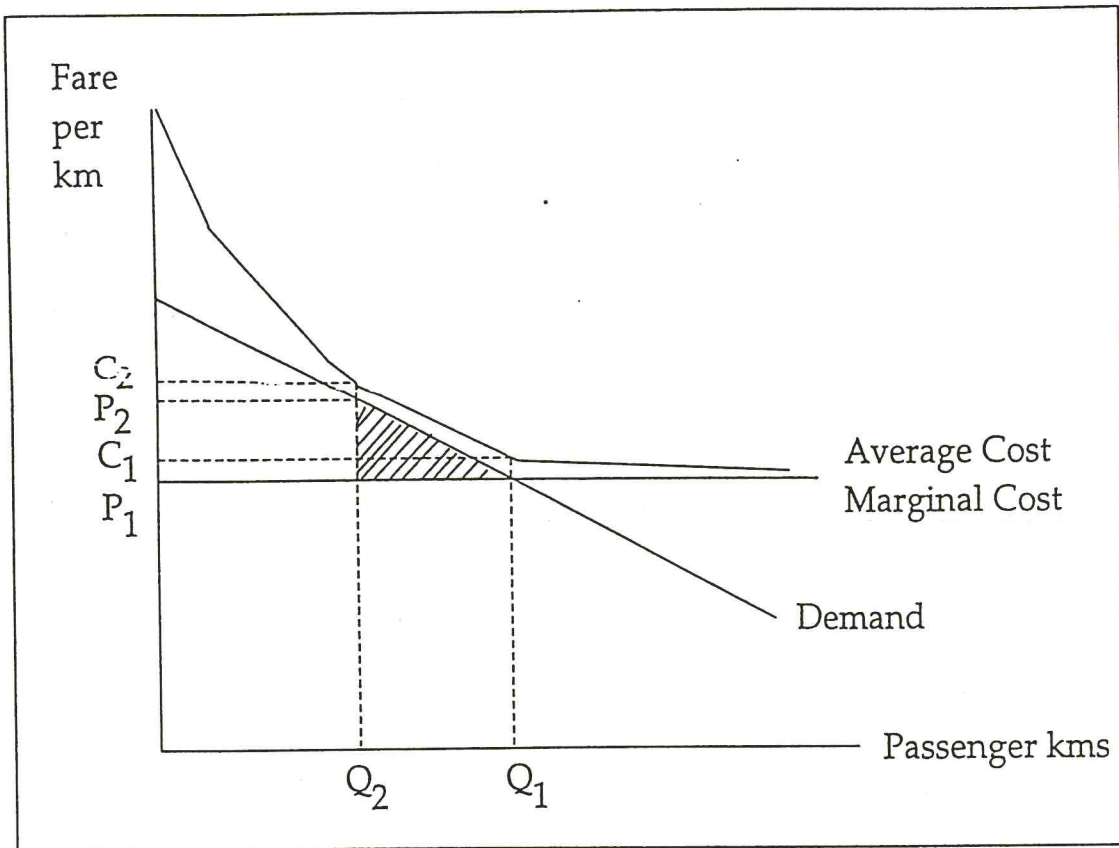


Fig. 1 - An Illustration of the Inefficiency of Minimum Subsidy Bids in Rail Franchising

- 2.8 A further concern about the efficiency of the winning bid is that of the initial proposal to introduce competition from open access services. Potential competition would increase uncertainties and is likely to lead to firms attaching substantial risk premia to their bids (- we examine this issue further in section 3). Subsequently, it has been decided that franchises will be largely exclusive for a honeymoon period but subsequently on-the-track competition will be permitted.
- 2.9 The third area of concern is that **incumbency advantages** may further limit the competitiveness of bids. We had earlier identified access to rolling stock as a possible problem (Nash and Preston, 1993) but this barrier has been removed by the establishment of the ROSCOs. Some barriers remain, notably with respect to ticket sales offices, but these can be legislated for. More important, and more difficult to legislate for, is access to experienced staff. These staff represent sunk human capital and have informal understandings with the incumbent with respect to job security, promotional expectations etc. Entrants may, of course, negotiate with these staff but this will require explicit formal agreements so adding to the cost of an entrant's bid. Particularly important will be experienced management with knowledge of the true demand and costs of a franchise. It is likely that the start-up costs of a rail franchise will be substantial, particularly given the degree of safety related regulation, and will be higher for outside bidders compared to inside bidders. Over time, incumbent firms may also develop and manipulate their links with OPRAF so that regulatory capture is achieved. Recently it has been announced that bidders for rail franchises will have to put up 15% of their expected annual turnover as a guarantee against commercial failure. This may act as an important barrier to entry.
- 2.10 The fourth area of concern relates to that of **contract specification**. Ideally the contract should be as complete as possible and specify all possible contingencies due to demand or technological change. This is not possible for the rail industry, where demand is sensitive to the performance of the national economy and also varies dramatically by product type. However, OPRAF will endeavour to keep contracts as complete as possible by specifying minimum service levels (typically 70% to 90% of the current timetable) and performance indicators (with respect to speeds, reliability, punctuality and overcrowding), whilst standard fares and season ticket prices will be controlled by an RPI-X formula. Non compliant bids will be discouraged, although this may limit innovations. With the trivial exception of the Isle of Wight railway, contracts will be relatively large (ranging from 2 million train miles per annum (Anglia) to over 20 million (South West Trains)). Again with the trivial exception of the Isle of Wight railway (and, in the future, the non-trivial exception of the Channel Tunnel Rail Link), contracts will be operating contracts in that infrastructure and, at least initially, rolling stock will be provided by separate publicly owned bodies. This in turn can lead to problems of over-capitalization, the promotion by the franchises of excessively risky projects and the reduced value of the information embedded in the actual bids (Berechman op. cit.) although some of these problems can be reduced by privatisation (which is proposed in the near future for both the ROSCOs and Railtrack) and appropriate regulatory controls.

- 2.11 A particularly contentious issue has been that of contract length. Using short-period contracts increases the scope for competitive pressures but requires the recurrent administering of the contract process and resultant high managerial and supervisory expenses. It may also discourage the development of new services, where these services have a product take-off curve that covers a number of years. A longer period contract would encourage longer term investment in new products, and possibly, rolling stock but would reduce competitive pressures and increase the likelihood of technological and demand changes which in turn could lead to costly contract renegotiations. Given these tensions OPRAF has expressed a preference for medium length contracts of around 7 years.
- 2.12 The fifth area of concern relates to **contract award**. The first issue is whether bidding should be based on full costs, net subsidy or least fare. OPRAF has expressed a preference for the net subsidy approach because it gives the franchisees incentives to maximise revenue (there is believed to be scope for further innovations in ticketing and marketing), although it does enhance incumbency advantages. Analysis of the bus market in Britain suggests full cost contracts have lower costs per bus mile and attract more bids per contract (White and Tough, 1993). Having established the bidding criterion, it may still be difficult to select a winner where there is more than one dimension to be assessed. In particular, determining between a high subsidy, high service quality and a low subsidy, low service quality bid will be particularly difficult. These problems are further exacerbated if combined (or contingent) bids are permitted i.e. £X bid for franchise A, £Y bid for franchise B and £Z bid for franchise A and B combined, where $Z \geq X + Y$ (see Glaister and Beesley, 1991). On the one hand such bids may be legitimately exploiting economies of scale and scope, on the other hand they may be attempting to develop monopoly powers - leading to a need to assess the relevant welfare trade-offs (Williamson, 1968).
- 2.13 The final area of concern relates to **contract monitoring and control**. Control of the franchisee requires a comprehensive monitoring scheme, including appropriate penalties. Such monitoring schemes entail high administrative costs, particularly if, as in the case of rail, the contract is an intricate one. If the contract is not being carried out as agreed there may be enforcement problems as the incumbent will be aware that re-negotiations are likely to be less costly to OPRAF than re-contracting. Where the ultimate sanction is invoked and the contract is withdrawn, it is not unknown for operational data, equipment etc to become damaged or go missing overnight.

3. EXPERIMENTAL ANALYSIS OF THE ISSUES

- 3.1 A number of issues have emerged from the analysis of the literature. We hope to address all of these issues in a series of 50 in-depth interviews we will be undertaking with potential bidders over the next few months. To date we have undertaken interviews with 11 managers, of which 5 are from within the former British Railways Board. We have identified four issues (or franchise attributes) that may be analyzed on a more quantitative basis through the development of a hypothetical bidding game. These are:

- (i) subsidy requirement
- (ii) contract length
- (iii) exclusivity and
- (iv) regulatory control.

- 3.2 The hypothetical bidding game is based on a stated preference experiment. For a given franchise, respondents are given relevant background information and are then presented with a number of scenarios in which they are faced with two alternatives, A and B, which differ in terms of the four attributes listed above. Respondents are asked to make three choices per scenario - whether they prefer A or B, whether they would bid for A and whether they would bid for B. The full stated preference design involves 27 scenarios and is based on a fractional factorial design provided by Kocur et al. (1982) so as to ensure zero correlation of the main effects. An example, for the West Coast Main Line, is given in Appendix 1. Respondents can also undertake the game for the East Coast Main Line, Scotrail, Chiltern and South West Trains. This means that a fifth variable, that of contract size and/or type may also be assessed. Some details of these franchises are given by Table 2.
- 3.3 The stated preference design was tested using the simulation procedure advocated by Fowkes and Preston (1991), with particular attention being paid to the derivation of a range of boundary values, and was successfully piloted in-house. The design has been computerised and mounted on a lap top PC. Of the 11 people interviewed, 7 completed the full 27 scenario experiment, 3 completed a shorter, randomised 12 scenario experiment and 1 interviewee did not feel qualified to answer the experiment. This led to a preliminary data set of 225 observations.
- 3.4 Initial exploratory analysis was based on the data on preferences, and, using the ALOGIT package (Hague Consulting Group, 1992), a binary logit model was calibrated. The results are given by Table 3. The model has achieved a good degree of fit, as the rho-squared measure is between 0.2 and 0.4, and 3 of the 4 parameter values are significant at the 5% level. Interestingly, the parameter that is not significantly different from zero is franchise length. Our analysis suggests that bidders are indifferent between long and short franchises. In fact, more disaggregate analysis suggests our sample consists of two types of bidders: those that prefer short contracts and those that prefer long contracts. The former tend to be older and from within the industry compared to the latter. As our sample size increases with further surveys, we hope to be able to undertake more detailed disaggregate analysis of this and other issues. In particular, we hope to produce results for each of the five different franchises that may be chosen in our game.
- 3.5 Our preliminary results suggest that bidders put high values on exclusivity and freedom to set prices and service levels. Our results suggest that permitting open access might decrease the value of bids (i.e. increase subsidy) by an average of £10.8 million per annum, whilst the type of regulatory controls proposed by

Table 2: **DETAILS OF FRANCHISES IN THE HYPOTHETICAL BIDDING GAME**

	Train Miles (millions)	Passenger Journeys (millions)	Passenger Miles (millions)	Operation Staff
Chiltern*	6.7	21.9	N/A	773
East Coast Main Line	10.9	10.5	1,812.0	1,476
Scotrail	19.2	49.2	926.8	2,289
South West Trains	22.6	110.4	N/A	2,612**
West Coast Main Line	13.2	13.6	2,203.0	1,623

* figures for present Thames and Chiltern division of NSE

** Train operations/maintenance

N/A Not Available

Table 3: **MODEL OF BID PREFERENCES (t-statistics in brackets)**

	Model 1
Subsidy	0.1730 (4.1)
Franchise Length	-0.03258 (0.6)
Exclusivity	1.870 (5.9)
Regulation	-0.6775 (2.1)
Number of Observations	225
Rho Squared	0.2196

OPRAF might decrease the value of bids by an average of £3.9 million per annum.

3.6 When analysing whether respondents will bid or not, the data set is doubled to 450 observations and the resultant model is given by Table 4. Given that there is no constant in this model, five franchise specific dummy variables (β_1 to β_5) can be estimated, although as it turns out we have not yet collected any responses for the West Coast Main Line, whilst the parameter value β_6 rescales the utilities derived from Table 3. From Table 4, it can be seen that 4 of the 5 parameter values are significant at the 5% level and the model again has acceptable goodness of fit, as measured by the rho squared statistic. These preliminary results indicate that, all other things being equal, respondents would prefer not to bid by a value equivalent to between £10.7 million per annum for the Chiltern Line and £197.4 million per annum for Scotrail (but note the small and unrepresentative size of our sample). These values might be thought of as the starting bids if there was no exclusivity and no regulation. They represent different views concerning subsidy requirements, set-up costs and risk premia. Our in-depth interviews indicated particular uncertainty about set-up costs with estimates ranging from £10 thousand to £10 million. The parameter β_6 also represents the valuation of risk, and given that the elasticity of the probability of bidding with respect to the utility derived from the bid is substantially less than 1 (around 0.3) suggests our sample is risk averse.

3.7 It should be noted that a number of respondents did not bid for A or B under any of the 27 scenarios. As a result, we have modified the design to make it adaptive. In such cases, if no bid is received after 9 scenarios the subsidy levels (but not differences) are increased by £5 million per annum. If no bids are received after 18 scenarios, the subsidy levels are increased by a further £5 million. It should also be noted that when our full data set has been developed, we propose to experiment with the joint estimation of the preference and bidding models through the use of hierarchical logit.

4. FORECASTING WINNING BIDS

4.1 Kennedy (1994), drawing on the work of others, notably Wilson (1992), has identified two main models of bidding behaviour. The first model, the independent private value model, assumes that all bidders have private information regarding the value of the franchise and assumes that these values are drawn from a known distribution. McAfee and McMillan (1987) show that if bidders are risk neutral, the optimal (i.e. winning) bid increases with the number of bidders but decreases as the value of the variance distribution increases. The second model, the common values model, assumes that firms bid for a franchise with a common but uncertain value. Assuming that bidders are risk neutral, Wilson (1977) shows that the optimal bid decreases as the number of bidders increases due to concerns about avoiding being afflicted by the winner's curse. On the other hand, as in the private value model, strategic considerations will mean that the optimal bid should rise with the number of

Table 4: MODEL OF BIDS (t-statistics in brackets)

	Model 2
β_1 (ECML)	-2.912 (4.4)
β_2 (WCML)	0.0 (0.0)
β_3 (ScotRail)	-21.75 (5.2)
β_4 (Chiltern)	-1.179 (1.4)
β_5 (South Western)	-6.799 (5.1)
β_6 (Utility of Bid)	0.6371 (4.8)
Number of Observations	450
Rho Squared	0.2411

bidders. It is therefore not clear what sign the relationship between number of bids and the optimal bid should be for the common value model.

- 4.2 It seems likely that for rail the independent private value model is likely to be the most appropriate. Different bidders will have different values for the same franchise depending on how it relates to their existing businesses, although this may be complicated by demand and cost uncertainties and differing attitudes to risk.
- 4.3 Given our bidding model and some elementary probability theory, we can make some preliminary estimate of likely bids. If there is only one firm bidding for the franchise, the probability of not bidding should be less than 0.5 if a bid is to be received. At a probability of 0.5 a firm is just indifferent between bidding and not bidding. Assuming a franchise length of 7 years, exclusivity and regulatory control of prices and service levels, as an illustrative calculation we can estimate the optimal bid for the East Coast Main Line as follows:

$$P_b = 1 / [1 + \exp(\beta_1 - \beta_6 (U))]$$

where

U	=	Utility = 0.1730 SL - 0.03258 FL + 1.870 E - 0.6775 R (from Table 3)
P_b	=	Probability of bidding (= 0.5)
SL	=	Subsidy Level (£ million per annum)
FL	=	Franchise Length (Years)
E	=	Exclusivity Dummy Variable
R	=	Regulation Dummy Variable
β_1, β_6	=	Parameter values (from Table 4)

This can then be written as:

$$0.5 = 1 / [1 + \exp(2.298 - 0.1102 SL)]$$

and solved to find that:

$$SL = \text{£}20.9 \text{ million}$$

- 4.4 Where two firms are considering bidding, the combined probability of not bidding should be 0.5 in order to determine a winning bid. This would suggest that individual firms' probability of bidding would be as low as 0.29, although this assumes that bids are independent events which is unlikely to be the case. Evidence from the TV industry in Britain suggests that collusion is possible. Assuming independent bids, we estimate the optimal bid to be £12.8 million of subsidy per annum. With three potential bidders, the optimal bid further increases to £8.6 million of subsidy per annum and so on. In this case, we estimate that if there are more than seven firms bidding a positive bid might be received.

- 4.5 Our results here are very tentative and could be considered estimates of the maximum bid under conditions of no uncertainty. We need to consider further the implications for our bidding model of both uncertainty and bid dependency. We need to consider whether, in reality, firms would bid when their probability of bidding is only marginally above 0.5 or whether they would require this probability to be substantially above 0.5 in order to reflect uncertainty. Although it may be possible that the bid price will increase with the number of potential bidders, it is likely that our bidding model is currently overstating this effect. Moreover, this leads to a further question - how do we forecast the number of potential bidders?
- 4.6 Further consideration is required of how our bidding model might be classified with respect to the two bidding models described in 4.1. To some extent, we might argue that we are modelling private values that have a Weibull distribution but this argument would be further enforced if we were to incorporate taste variation into our model, by using segmentation techniques or considering other models (e.g. probit). This is another argument for further, disaggregate analysis.

5. CONCLUSIONS

- 5.1 We have identified a number of likely problems with rail franchising and have begun to make an analysis of some of the key issues. Our initial findings suggest that, at least at an aggregate level, contract length is not a major issue, but the degree of exclusivity and regulation and contract size and type seem to be important factors.
- 5.2 We have made some exploratory attempts to forecast the magnitude of likely winning bids or at least establish an upper limit. This area of our work has proved particularly problematic and is likely to depend crucially on the degree of uncertainty - of which our in-depth interviews have so far identified a great deal. Our work in this area would benefit from the insights provided by real life data. There may be a need to re-scale our stated preference forecasts with revealed preference data.
- 5.3 We believe that franchising passenger rail services can be made to work provided that the current level of interest in bidding can be sustained. Although it is very early days to draw conclusions, our feeling at this stage is that franchising in the rail industry may not work as well as in the bus industry but may work better than in the commercial TV industry. This is largely because a complete contract is easier to draw up for the bus industry than the rail industry but is less easy to draw up for the TV industry. This in turn relates to the technological complexities of the respective industries.
- 5.4 We should once again stress that the findings of this paper are very preliminary but we hope it will stimulate debate on how these issues can be addressed in the future.

ACKNOWLEDGEMENTS

This work was financed by the Economic and Social Research Council. We would like to thank our colleagues Tony Fowkes, Chris Nash, Jeremy Shires, Jeremy Toner and Mark Wardman who assisted in various ways in developing the hypothetical bidding game. We would also like to thank all those who participated in the survey - who for reasons of commercial confidentiality must remain anonymous.

REFERENCES

- BEESLEY, M. and LITTLECHILD, S. (1983). Privatization: Principles, Problems and Priorities." *Lloyds Bank Review*, 149, 1-20.
- BERECHMAN, J. (1993). "Public Transport Economics and Deregulation." North Holland, Amsterdam.
- CHADWICK, E. (1859). "On Different Principles of Legislation and Administration." *Journal of the Royal Statistical Society*, 22, 381-420.
- DEMSETZ, H. (1968). "Why Regulate Utilities?" *Journal of Law and Economics*, 11, 55-66.
- DODGSON, J.S. (1995). "Separating Railway Infrastructure and Operations: The British Experience." Paper presented at the Fourth International Conference on Competition and Ownership in Land Transport, Rotorua, New Zealand, July 9-12.
- DOMBERGER, S., MEADOWCROFT, S.A. and THOMPSON, P.J. (1986). "Competition, Tendering and Efficiency: The Case of Refuse Collection." *Fiscal Studies*, 7, 69-84.
- FOSTER, C. (1994). "The Economics of Rail Privatisation." Centre for the Study of Regulated Industries. Discussion Paper 7. CIPFA, London.
- FOWKES, T. and PRESTON, J. (1991). "Novel Approaches to Forecasting the Demand for New Local Rail Services". *Transportation Research* 25A, 4, 209-218.
- GLAISTER, S. and BEESLEY, M.E. (1991). "Bidding for Tendered Bus Routes in London". *Transportation Planning and Technology*, 15, 2/4, 349-366.
- HAGUE CONSULTING GROUP (1992). "ALOGIT Users' Guide. Version 3.2". HCG, The Hague, Netherlands.
- HESELTINE, P.M. and SILCOCK, P.T. (1990). "The Effects of Bus Deregulation on Costs." *Journal of Transport Economics and Policy*. 24, 3, 239-254.
- JANSSON, K. (1993). "Swedish Competitive Tendering in local and Regional Public Transport: Overview and Comparative Case Studies". Proceedings of the Third International Conference on Competition and Ownership in Surface Passenger Transport. Ontario Motor Coach Association, Toronto. 243-262.
- KAGEI, J.H. and LEVIN, D. (1986). "The Winner's Curse and Public Information in Common Value Auctions." *American Economic Review*, 76, 5.
- KAY, J.A. and THOMPSON, D.J. (1986). "Privatisation: A Policy in Search of a Rationale." *The Economic Journal*, 96, 18-32.

KENNEDY, D. (1994). "Bus Tendering in London, Discussion Paper C: The Impact on Supply and Demand". Greater London Group, London School of Economics.

KOCUR, G.T., ADLER, T., HYMAN, W. and AUNET, B. (1982). "Guide to Forecasting Travel Demand with Direct Utility Assessment". Report No. UMTA-NH-11-0001-82. Urban Mass Transport Administration. US Department of Transportation, Washington D.C.

MCAFEE, R.P. and MCMILLAN, J. (1987). "Auctions and Bidding". *Journal of Economic Literature*. 25, 699-738.

NASH, C.A. and PRESTON, J.M. (1993). "The Policy Debate in Great Britain." ECMT Round Table 90. "Privatisation of Railways." OECD, Paris.

NERA (1992). "Franchising Rail Services: A Report on the External Case Studies." NERA Consultancy, London.

OPRAF (1995) "Office of Passenger Rail Franchising Bulletin". Issue 2, May. OPRAF, London.

PRESTON, J.M. (1995). "The Economics of Rail Privatisation: An Assessment." *Transport Reviews*. Forthcoming.

SCHMALENSEE, R. (1979). "The Control of Natural Monopoly." Lexington Books, Lexington, Mass.

WATERSON, M. (1988). "Regulation of the Firm and Natural Monopoly." Basil Blackwell, Oxford.

WHITE, P.R. and TOUGH, S. (1993). "Alternative Tendering Systems and Deregulation in Britain." Proceedings of the Third International Conference on Competition and Ownership in Surface Passenger. Ontario Motor Coach Association, Toronto. 283-300.

WILLIAMSON, O.E. (1968). "Economics as an Anti-Trust Defense. The Welfare Trade-Offs". *American Economic Review*, 58, 18-36.

WILLIAMSON, O.E. (1976). "Franchise Bidding for Natural Monopolies - in General and with Respect to CATV." *Bell Journal*, 7, 73-104.

WILSON, R. (1977). "A Bidding Model of Perfect Competition". *Review of Economic Studies*. 44, 511-518.

WILSON, R. (1992). "Strategic Analysis of Auctions". In Auman and Hart (Eds) "Handbook of Game Theory with Economic Applications". North Holland, Amsterdam.

APPENDIX ONE: EXAMPLE OF THE HYPOTHETICAL BIDDING GAME

Section 1 - Background Information

In this section you are given background information on the West Coast Main Line passenger rail franchise. This information will help you to answer the questions in section 2 and can be used for reference at any time.

BACKGROUND INFORMATION ON THE WEST COAST MAIN LINE FRANCHISE

1. Rolling Stock

West Coast rolling stock comprise:

Electric Locomotives	74
Diesel Locomotives	9
InterCity 125 HST power cars	6
Coaching vehicles	707
HST coaches	25

2. Services

2.1 West Coast Passenger Service

The total number of weekday services operated on each of the service groups, within the profit centre are as follows:

Euston - West Midlands	70
Euston - Manchester	31
Euston - Liverpool	28
Euston - North Wales	6
Euston - North West/Anglo Scottish	29
Overnight Services	10
Total	174

2.2 Other Passenger Services

Whilst the route infrastructure is shared with a wide range of other railway activity there is little internal competition for flows, with the exception of flows to and from Glasgow and, to a lesser extent, flows to and from Birmingham.

2.3 Freight and Parcel Services

Trainload Freight, Railfreight Distribution and Rail Express Systems all operate a network of long and short haul flows over the route. Activity is greatest on the south of the route and in the North Cheshire/South Lancashire areas.

3. Summary Statistics

FINANCIAL FORECASTS (in millions, 1994/95)							
	Track Access Charges	ROSCO Charges	Train Operating Costs Per Mile (£)	Total Train Operating Cost (£m)	Total Cost	Total Revenue	Profit
Total	173	57	5.75	76	306	263.2	(-42.8)

OPERATING PERFORMANCE (in millions, 1991/92)*				
	Train Miles	Passenger Journeys	Passenger Miles	Operation Staff
Total	13.2	13.6	2,203	1,623

* except for operations staff

In the next section we would like you to consider different franchise specifications and different bids for each specification.

Each franchise specification is described in terms of the following factors:

- (1) Length of franchise - this figure is in years.
- (2) Is the franchise exclusive? - Here Y and N have been used to signify yes and no respectively. If the franchise is exclusive then the franchise will face no competition to their train services. If the franchise is not exclusive then the franchise can expect competition from overlapping franchisees and 'open access' operators.
- (3) Are prices and service levels controlled? - Again Y and N have been used to signify yes and no. If price and service levels are controlled then maximum and minimum fares and service levels are set by the Office of Passenger Rail Franchising (OPRAF) based on May 1994 fares and service levels, adjusted for inflation and other factors where appropriate.

If prices and service levels are not controlled, prices can be set at any level subject to normal Competition Policy (i.e. excessively high prices could lead to investigation by the Monopoly and Mergers Commission (MMC). Similarly, services can be set at any level but complete withdrawal from any section of track would not be permitted by the Office of the Rail Regulator (ORR).

For each question you will be faced with a choice of two differently specified West Cost franchises, with each franchise option receiving a given level of subsidy per year. The first part of each question asks you to circle your preferred franchise option from the two on offer. The second and third parts assume, hypothetically, that you are submitting a bid for

the West Coast franchise. They ask to indicate whether or not you would be prepared to submit bid A and bid B respectively, for the West Coast rail franchise. This is illustrated further with the example below:

Question number	Options	Subsidy received per annum (£ millions)	Length of franchise	Is the franchise exclusive?	Are prices and service levels controlled	Which is your preferred option? (please circle)	Would you be prepared to submit bid A? (please circle)	Would you be prepared to submit bid B? (please circle)
1	A	54	9	N	N	A	Yes	Yes
	B	59	6	N	N	B	No	No

In this example the respondent prefers option A to B and would be prepared to submit bid A but not bid B. Submitting bid A means the respondent would submit a subsidy bid of £54 million per annum for the franchise as indicated in the question e.g. nine years in length, non exclusive and with no price and service level control. It should be noted at this stage that the respondent might have been prepared to have submitted either bid A or bid B, in which case they would have circled yes for both the second and third parts of the question.

Section 2 - Choices Involving Different Bids and Franchise Specification

In this section you are presented with 27 questions which you can answer in your own time. The questions refer to the West Coast passenger rail franchise for which background information is available in section 1 of this questionnaire.

Question Number	Options	Subsidy Received Per Annum (£ millions)	Length of Franchise	Is the Franchise Exclusive?	Are Prices and Service Levels Controlled?	Which is your preferred option? (please circle)	Would you be prepared to submit bid A? (Please circle)	Would you be prepared to submit bid B? (Please circle)
1	A	52	8	N	N	A	Yes	Yes
	B	57	5	N	N	B	No	No
2	A	44	9	N	N	A	Yes	Yes
	B	49	4	N	N	B	No	No
3	A	47	15	N	N	A	Yes	Yes
	B	52	7	N	Y	B	No	No
4	A	45	8	Y	N	A	Yes	Yes
	B	52	5	N	N	B	No	No
5	A	43	8	Y	N	A	Yes	Yes
	B	50	3	N	N	B	No	No
6	A	44	12	Y	N	A	Yes	Yes
	B	51	4	N	Y	B	No	No
7	A	43	11	N	N	A	Yes	Yes
	B	55	8	N	N	B	No	No
8	A	45	11	N	N	A	Yes	Yes
	B	57	6	N	Y	B	No	No
9	A	44	14	N	N	A	Yes	Yes
	B	56	6	N	N	B	No	No

Question Number	Options	Subsidy Received Per Annum (£ millions)	Length of Franchise	Is the Franchise Exclusive?	Are Prices and Service Levels Controlled?	Which is your preferred option? (please circle)	Would you be prepared to submit bid A? (please circle)	Would you be prepared to submit bid B? (please circle)
10	A	45	7	Y	N	A	Yes	Yes
	B	50	4	N	N	B	No	No
11	A	44	11	Y	N	A	Yes	Yes
	B	49	6	N	Y	B	No	No
12	A	46	13	Y	N	A	Yes	Yes
	B	51	5	N	N	B	No	No
13	A	45	12	N	N	A	Yes	Yes
	B	52	9	N	Y	B	No	No
14	A	43	12	N	N	A	Yes	Yes
	B	50	7	N	N	B	No	No
15	A	46	14	N	N	A	Yes	Yes
	B	53	6	N	N	B	No	No
16	A	44	12	N	N	A	Yes	Yes
	B	56	9	N	N	B	No	No
17	A	46	13	N	N	A	Yes	Yes
	B	58	8	N	N	B	No	No
18	A	45	13	N	N	A	Yes	Yes
	B	57	5	N	Y	B	No	No

Question Number	Options	Subsidy Received Per Annum (£ millions)	Length of Franchise	Is the Franchise Exclusive?	Are Prices and Service Levels Controlled?	Which is your preferred option? (please circle)	Would you be prepared to submit bid A? (please circle)	Would you be prepared to submit bid B? (please circle)
19	A	45	9	N	N	A	Yes	Yes
	B	50	6	N	Y	B	No	No
20	A	42	10	N	N	A	Yes	Yes
	B	47	5	N	N	B	No	No
21	A	45	11	N	N	A	Yes	Yes
	B	50	3	N	N	B	No	No
22	A	45	10	N	N	A	Yes	Yes
	B	52	7	N	N	B	No	No
23	A	46	10	N	N	A	Yes	Yes
	B	53	5	N	Y	B	No	No
24	A	43	16	N	N	A	Yes	Yes
	B	50	8	N	N	B	No	No
25	A	45	9	Y	N	A	Yes	Yes
	B	57	6	N	Y	B	No	No
26	A	46	9	Y	N	A	Yes	Yes
	B	58	4	N	N	B	No	No
27	A	44	16	Y	N	A	Yes	Yes
	B	56	8	N	N	B	No	No

THANKYOU FOR COMPLETING THIS PILOT SURVEY

If you have any comments regarding the pilot survey please feel free to write them on the back of this sheet.