

**Report for Workshop 2:
UNDERSTANDING COMPETITION AND ANTI-TRUST BEHAVIOR**

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1. INTRODUCTION

The starting point of this workshop was the presumption that competition was desirable. The next question that was raised was whether competition was always workable and/or effective (to use the terminology of Clarke, 1961). The workshop decided the answer to this was no. In other words, it was believed that passenger transportation can exhibit market imperfections (a better term it was felt than market failure). The evidence that was presented in order to reach this conclusion is discussed in section two, with five main concerns being identified. These were: predatory behavior, competitive access, monopolistic competition (and the related issue of oligopolistic competition), network economies and mergers/collusion.

The next question is then should competed markets come under the jurisdiction of anti-trust. The workshop decided the answer to this was yes, although recognized that this finding was somewhat paradoxical. At first sight a competitive, deregulated, free market might seem incompatible with pro-competitive regulation (ie competition policy). However, in reality, as Alfred Kahn (1987) has pointed out, such 'deregulatory schizophrenia' is commonplace. Indeed, the workshop found that such schizophrenia can extend to the individual operator who, in one instance, as the incumbent may complain of regulatory interference and, in the next, as the entrant, may complain of lack of regulatory protection. Up to this point the findings of the workshop were largely unanimous. However, when considering how cases that require a competition policy should be identified and what form that policy should take, there was lively discussion. This is summarized in section three. Nonetheless, the workshop was able to achieve a level of broad agreement and this is outlined in a concluding section.

2. EVIDENCE OF MARKET IMPERFECTIONS

Seven papers were presented to the workshop and are listed at the end of this report. They all presented some evidence of market imperfections. These imperfections might be considered under five, not necessarily mutually exclusive, headings. These will be discussed in turn.

2.1 Predatory Behavior

The main paper to examine this issue was that of John Dodgson. An immediate problem is that of definition. Dodgson (and Yannis Katsoulacos) viewed predation as occurring when an existing firm deliberately gave up some of their maximum current profits after entry had occurred in order to eliminate the new entrant or deter future entry. The problem is that of identification. Some other members of the workshop felt that defining predatory behavior presents the same problems as that of pornography where a US judge is attributed as saying, "I can't define it, but I know it when I see it". It might be added that predation has another common feature with pornography in that you can always find it if you want to. The issue of identification will be examined in more detail in section 3.1.

Three main forms of predation were identified; excessive fare cuts, excessive expansion of output and schedule matching (referred to as 'headrunning' in bus transport and 'fighting ships' in maritime transport). Dodgson examined the four cases of alleged predatory behavior in the British bus industry formally investigated by the Office of Fair Trading (OFT), out of a total of a 105 complaints about predation made to the OFT between 1986 and 1990. Only two of the cases (affecting Highland Scottish Omnibus Limited and South Yorkshire Transport Limited) were found to be anti-competitive. Dodgson also presented information on apparent predation in the aviation industry in both the US and Europe, including so-called 'discipline pricing', whereby incumbents can take predatory action against entrants in markets other than the one where new entry had occurred. However, overall it was felt that predation in the airline industry, if not less prevalent than that in the bus industry, is certainly more difficult to detect because of the greater role of price discrimination.

Dodgson's paper assumes that predation can be both feasible and rational. A related paper by Yannis Katsoulacos developed a framework for identifying cases where predation might be possible, drawing on earlier work by Joskow and Klevorick, 1979. It is concluded that predation is most likely to occur in industries that have medium barriers to entry, are multi-product in nature, with either competition localized or a highly concentrated market and a multi-market operator facing entry in a single market. Alternatively, if the incumbent is facing entry in most of its markets simultaneously, predation may still be feasible if there is imperfect information about market conditions and/or asymmetry in bankruptcy constraints favoring the incumbent (ie it has got a longer purse/deeper pockets).

2.2 Competitive Access

Two papers concentrated on competitive access to markets. Harry Blundred looked at the extent of barriers to entry in the British bus market. These were believed to be most severe in still regulated London where the incumbent had prevented an entrant from joining the network-wide travelcard scheme and the concessionary fare scheme, thus forcing the entrant to withdraw. Barriers to entry were also believed to exist in the British bus market outside London. General barriers include the difficulty and high cost of new operators finding finance, suitable depots and skilled staff. Industry specific barriers include obtaining an operator's license, vehicle licenses and staff licenses. There was also concern about the possibility of the market being dominated by large cross-subsidizing national groups. This concern is related to predation in that companies with a tough reputation and a long purse may successfully deter entry. This is an issue which repeatedly emerged in our discussions.

Gordon Mills in his paper on airline competition in New Zealand between Air New Zealand (the incumbent) and Ansett (the entrant) and in subsequent discussion concerning the entry of Compass in the Australian airline market stressed the important role of barriers to entry. The role of service frequency as both a barrier to entry and a measure of the optimal scale of entry was examined. In particular, access to terminals, travel agencies and computer reservation systems, as well as the constraint on passengers (and their baggage) to inter-line (ie transfer between different firms' flights), provided examples of market imperfection. It was noted that these issues had also been a feature of US airline deregulation. Overall, it was felt that problems of competitive access were more important in the airline industry than the bus industry. Within the bus industry, the problems seem more acute in the inter-city (express) rather than the intra-city (local) bus markets, with difficulties of access to terminals being a key feature of coach deregulation in Britain.

2.3 Monopolistic Competition

The paper that was considered under this heading was that of Enrique Fernandez and Joachin de Cea who developed a micro-economic model to explain the working of the deregulated bus market in Santiago, Chile, which is served by over 5,000 bus firms, the vast majority owning just one vehicle. They show that, given bus's concentration in time and space, there will be a tendency for fares to be greater than the perfectly competitive level by an amount up to half the cycle time multiplied by passenger's value of time. As a result there will be excess capacity, although there will also be pressures towards cartelization to prevent entry. Some empirical evidence on fare levels in Santiago was presented to support the hypothesis that they were above competitive levels, although whether this was due to ineffective competition or cartelization or both was not clear.

This model might be seen as an extension of that developed for the cruising taxicab market by Shreiber (1975). A related modelling approach was that of Evans (1987) who showed that in cases of oligopolistic competition in the bus industry there would be a similar tendency for both fares and service levels to be higher than the welfare optimal level, with the concentration of services in terms of space and, particularly, time again being crucial. One of the features of these models is that they incorporate the effects of user costs and as such may be loosely related to the earlier work of Mohring (1972).

It might also be added that models of this type illustrate the Taussig-Pigou (1913) paradox that regulators are still grappling with today (Tye, 1990). Pigou argued that railroads charging different rates for different freight shippers was evidence of monopoly exploitation. Taussig argued that if the services were distinct, whilst requiring some joint inputs, then charging different prices may be necessary for revenue adequacy and not evidence of monopoly power. Fernandez and de Cea's work may be viewed as an affirmation of Pigou in that bus operators appeared to be pricing in excess of marginal operating costs in equilibrium as a result of spatial and temporal concentration. This may not necessarily, though, imply economic inefficiency since, given that we believe travellers value waiting time, travellers may be prepared to pay such a price in order to secure greater frequency.

2.4 Network Economies

The paper that considered this issue was that of Joseph Berechman who again emphasized the multi-output nature of passenger transport industries and the role of product differentiation, which exists when consumers do not regard products to be perfect substitutes. Rather than consider a single route, Berechman concentrates on groups of routes and hence network economies. Three sources of such economies are identified:

- (1) economies of traffic density, whereby transportation firms attempt to concentrate passengers on certain routes in order to reduce operational costs per unit output;
- (2) economies of scope, which were seen to mainly stem from a common input factor (such as a depot or terminal) whose fixed costs are shared by all outputs;
- (3) economies of network, which stem from cost savings that stem from providing a network of service (eg through the better utilization of staff and vehicles).

Given these economies, Berechman examines the finding of Judd (1985) that an incumbent multi-product firm, which faces entry by a single-product rival in a certain market, is more inclined to exit this market than the entrant, provided that a decline in the price in the market where competition takes place, negatively affects its profitability in other markets. However, it is shown that if even weak cost complementarity and/or demand complementarity exists then monopoly pricing may be sustainable (after Sharkey, 1982). As a result, the network can be organized as a device to impede entry. For example, the development of hub and spoke networks might be seen as defensive attempts by incumbents to blockade entry by exploiting demand and cost complementarities.

Berechman makes a useful distinction between different transport markets namely intra-urban, metropolitan (=suburban) and inter urban and concludes that market imperfections are most likely in the intra-urban market. The workshop also identified the long distance inter-urban market as a case for regulatory concern.

2.5 Mergers

The paper that considered this issue was that of Jonathan Preston, who examined the role of mergers in the deregulated British bus industry. Six cases have been examined by the relevant competition authority; in this case the Monopolies and Mergers Commission (MMC). A case by case approach has been adopted but a consistent policy has yet to emerge, partly as a result of ministerial and judicial interference. The MMC is empowered to investigate mergers which involve a 'substantial' part of the UK, but policy has been thrown into confusion by a recent High Court ruling that the types of areas that the MMC have been investigating (typically with populations of around one million) are not 'substantial'. With hindsight, the MMC might have been better off examining the local bus industry under its powers to investigate local monopolies, where the investigation may be based on a 'specified' part of the UK. In this context, the term 'local' needs to be carefully defined and should be based on the market of the monopolist firm.

Preston argues that the commercial bus market is imperfectly contestable and may be characterized as a weak natural monopoly (or alternatively a strong oligopoly) and there may be some scope for earning monopoly rents. By contrast, the tendered (or contract) bus market is almost perfectly contestable (and is anyway contested). Using a framework of regulatory policies developed by Berg and Tschirhart (1988) based on consideration of multi-product natural monopolies, it is argued that regulatory activity should concentrate on the commercial bus market. However, the welfare trade-off between the economic costs of market power and the benefits of increased network economies needs to be taken into account.

3. IDENTIFYING AND SOLVING MARKET IMPERFECTIONS

The discussions of the workshop centered on jointly identifying and solving the five forms of market imperfection identified in the previous section. There was some debate about whether these imperfections should be dealt with by an all embracing, top-down policy or by a more disaggregate, bottom-up approach. By default, the workshop adopted the latter approach and hence the five separate imperfections will again be discussed in turn.

3.1 Predatory Behavior

Competitive policy for predatory behavior presents numerous difficult problems. On the one hand, recent developments in the theoretical literature have established that predatory behavior can be rational and profitable and, despite the forecasts of some laissez-faire economists, recent experience in the regulated industries does exhibit behavior that can only be described as predatory. On the other hand, the replacement of regulation with competition is designed precisely to confer the benefits of lower prices and better services to the transportation consumer. After entry, such markets are usually structured as oligopolies, and the models of such markets invariably tell us that the structured as oligopolies, and the models of such markets invariably tell us that the presence of more competitors should produce lower prices. However, such models are not considered reliable indicators of market behavior as they are highly sensitive to relatively small changes in their assumptions. Furthermore, errors in punishing or deterring truly pro-competitive behavior could undermine the deregulation process.

All of these factors make deterrence of predatory behavior the preferred but illusive solution. If predation is so hard for PhD economists to define and detect, what of the business managers who are supposed to make day-to-day decisions. Anti-competitive behavior can be deterred only if lay people can readily figure out what the law is and be sure of detection and punishment.

Two broad approaches to detection were identified by the workshop. The 'bright lines' approach develops rules (or guide lines) which define illegal action. The most influential of these is that of Areeda-Turner

(1975) who proposed that a price below reasonably anticipated average variable costs should be conclusively presumed unlawful. Aside from the difficulty the regulator faces in measuring costs when all information is possessed by the firm being investigated, the workshop was concerned by the possible Type I and, particularly, Type II errors stemming from this rule. A Type I error involves finding an innocent firm guilty of predation. A Type II error involves finding a guilty firm innocent of predation. There has been concern that Areeda-Turner like rules "may constitute the instruction manual on how to prey with impunity" (Easley et al., 1985).

A number of alternative 'bright lines' were considered. It was proposed that emphasis should be placed on short run marginal costs but acknowledged that this modification only had limited advantages. Alternative approaches, which might be seen as an attempt to improve the contestability of transportation industries, included:

- preventing an incumbent from responding in such a way that will lead to different price/service levels on competed and non competed routes of a similar nature.
- preventing the incumbent from responding to entry for a set period (after Williamson, 1977)
- preventing the incumbent from increasing price and/or reducing output after exit has taken place (after Baumol, 1979)

It was felt that the problem with these rules is that they introduce asymmetries of constraints, in particular they may offer too much protection to the entrant.

An alternative approach to detection is to adopt a case by case or rule of reason approach. The paper by Yannis Katsoulacos considered this in detail and found the key factor to be that of the profitability of the entrant. Here a distinction was made between actual and equilibrium profits. Equilibrium profits might be estimated by an Economic Modelling Approach (EMA), as described by John Dodgson. If the entrant's equilibrium profits are negative then entry was mistaken. It is only where the entrant's actual profits are less than (positive) equilibrium profits and there is no evidence of post entry mistakes that predation might be said to occur. The main problem with an EMA diagnosis is that it is based on oligopoly models which are rarely robust, depending critically on the assumptions made about how rivals re-act (ie conjectural variation). In the absence of information on equilibrium profit levels and, given that the entrant's actual profits are negative, then other relevant information needs to be sought, including information from other similar markets, the post-entry moves of the incumbent, the profitability of the incumbent and exit and re-entry costs.

It was observed that the behavior of the entrant may be constrained by a minimum scale of entry. It may be necessary for the entrant to compete on a similar scale to the incumbent in order to have any chance of success. Anecdotal evidence was presented that in the US airline industry firms were looking for markets where the ideal configuration was 1.5 firms, although it was noted that such markets often attracted erroneous entry.

Overall, it was noted that although workable rules were desirable, a problem arises in that as soon as a rule is formulated, an instance where distortions may arise if the rule is applied can usually be thought-up. On the other hand it was felt that a rule of reason approach could often lead to inconsistency and result, unintentionally, in a rule of unreason. A possible compromise might be to develop broad principles rather than rigid rules. This might be termed a modified rule of reason approach.

Some felt that we need to trust the regulator to know predation when he sees it. A possible basis for this might be the three step approach adopted by the OFT in Britain which considered:

- (1) the feasibility of predation: whether the structure and characteristics of the market are conducive.
- (2) the relation between prices and costs. The OFT rejected allegations where they believed that the incumbent was covering costs on the routes where predatory behavior was alleged to have taken place.
- (3) evidence on the motives and intention of the alleged predator. The problem here is that the predator is unlikely to leave incriminating evidence (the 'smoking gun*'), although this is not unknown. One must also be careful not to determine intent from outcomes. Evidence of behavior in other markets may be most relevant.

In terms of solutions it was felt that the prime requisite was speed. The OFT/MMC investigations of Highland Scottish and South Yorkshire had been ineffective in that by the time they reported the competition had been concluded. Emphasis should be placed on 'ex ante' rather than 'ex post' policy. Injunctions and other forms of prior restraint ought to be considered to prevent anti-competitive behavior. Bright lines are difficult to formulate but certain actions should be prevented. Examples include reducing fares to zero and commercially re-registering a route that has been lost to a rival in the tendering process. 'Ex post' policy ought to include punitive as well as remedial measures. US-style triple damages might be worthy of consideration.

3.2 Competitive Access

In identifying cases where access to essential facilities may be anti-competitive, a four point approach developed by US anti-trust agencies might be useful (Tye, 1987). This considers whether:

- (1) The facility is controlled by a monopolist or a group of competitors with monopoly power.
- (2) The facility can not be economically duplicated.
- (3) Denial of access to the resource, or the imposition of restrictive terms of access, has a substantial adverse effect on competition.
- (4) There is no valid business reason for denial of access.

An important test is whether the entrant can provide parallel facilities at a lower, or the same, cost as those provided by the incumbent. If it can there is no need for regulatory concern but this is unlikely in transport where infrastructure often represents an historic sunk cost. The important concerns are therefore likely to be the effect on the entrant and the motive of the incumbent (ie points (3) and (4)).

There is a permissive line of thought, associated with the Chicago School, that this issue should not be cause for regulatory concern and that a policy of open access would create an umbrella under which inefficient firms could attract business. Instead, it would be better to rely on voluntary negotiations that would, it is believed, guarantee static efficiency. However, this ignores the transaction costs of such negotiations and the scope for abuse of monopoly power (Tye, 1991). The workshop rejected the permissive approach and, de facto, favored a rule of reason approach. It was felt that intervention was most important where consumers were directly affected. For example, having acknowledged property rights, equal access to terminals should be ensured, by statute if necessary. Access to depots was not seen as being as important. Consideration needs to be made not only of access to terminals but to location within terminals. It was noted that entrants were often located at the least accessible gate at airports or stand in a bus station, at some distance from the departure point of the incumbent's rival services. This might be seen as a spatial representation of the 'price squeeze' commonplace in cases of vertical foreclosure. A neutral third party might be required to ensure a fair allocation and, in the case of congested terminals, auctioning of slots might be considered.

Similarly, access to network ticketing and network information was seen as important. Indeed, information provision was seen as one of the main examples of market imperfection in the deregulated British bus industry. A separate agency, such as that set up in the Tyne and Wear area of the UK to promote ticketing, might facilitate such integration. Problems of this type were thought to be particularly prevalent in the airline industry and equal access to both Computer Reservation Systems (CRS) and travel agencies may be required. Dealing with practices such as commission over-rides and frequent flyer programs may be more problematical, whilst regulatory intervention may have economic costs. For example, if airlines are required to divest themselves of CRS, there could be loss of efficiency due to the fact that these systems also support decision making by airline management.

3.3 Monopolistic Competition

Fernandez and de Cea believed their model presented a prima facie case for regulation, although some members of the workshop argued that the welfare implications were not unequivocal. Fernandez and de Cea's interpretation of their work has parallels with microeconomic models of natural monopoly and oligopoly. A possible solution to the resultant market imperfections might have been some form of price regulation such as the RPI-X formula adopted in Britain in regulating the privatized utilities. However, the workshop did not discuss this form of regulation. Similarly, it did not consider rate of return regulation (perhaps implicitly acknowledging the well known problems of this form return regulation as outlined by Averch and Johnson, 1962) or the concept of yardstick competition, a version of which is being tried out in the New South Wales bus market. A particular solution has been proposed in the Chilean situation, partly stemming from concern about congestion. A system of quantity control is to be imposed on the busiest sections of the main routes, with entry administered through a bidding system in which a basket of variables (fare, bus size, route length etc) are taken into account.

3.4 Network Economies

The debate about network economies concentrated on whether it was feasible to design networks so as to deter entry. Inefficient network design may invite entry by leaving gaps in the market. However, it was felt that network economies, aided by pricing policies, may make it easier for large firms to repel small firms. It was felt that travelcards were a downstream manifestation of network economies and that competitive access to such schemes may be necessary to achieve effective competition. The workshop did not look at policies to solve the issue of network economies. The implicit view was that the gains from network economies normally offset any costs associated with the entry deterring consequences of these economies.

3.5 Mergers

The issue of mergers is interesting in that it encapsulates the anti-trust paradox. For example, in the UK prior to deregulation it was believed that the industry was contestable and hence market power (ie company size) would not affect outcomes. However, the 1985 Transport Act continued the process by which the National Bus Company was fragmented into relatively small subsidiaries prior to privatization. Similarly, London Buses Limited is to be split into a number of smaller companies before privatization.

Identification of cases worthy of investigation requires some form of pre-qualification test, such as the asset test and the market share test applied by the MMC in Britain, in order to determine whether potential market failure can justify the regulatory cost of investigation. A distinction should be made between contiguous and non-contiguous mergers but there should not be a presumption that the latter are preferable to the former. Given the widespread belief that bus companies exhibit constant returns to scale, the motives for mergers are not readily apparent although increased size can allow exploitation of network economies and may result in weaker bankruptcy constraints (at least eventually) whilst increased size may reinforce a 'tough' reputation and have a 'chilling' effect on the competitive environment. Generally, divestment was thought to be a costly solution, although the case of Portsmouth showed that it was not impossible. It may be that appropriate undertakings, for example those recommended by the MMC in order to limit incumbent's reactions to entry and remove information asymmetries, consistently applied, might be sufficient to 'smoke out' anti-competitive mergers. Where this fails, an ex ante review of proposed mergers is desirable and should involve a balancing of the efficiency benefits of mergers against their anti-competitive effects.

A related topic is that of collusion. The workshop thought that it was right that wherever competition policy existed it made collusion illegal, but noted that in many countries passenger transportation was exempt from competition policy legislation. However, detection and punishment are more complicated issues. The UK experience with restrictive practices is relevant here. According to Beesley (1990), by late 1988 no less than 239 agreements in the British bus industry had been registered with the Director General of Fair Trading and of these 115 were found to have restrictions on price and other terms of trading which he found objectionable. The workshop questioned whether you could have joint ticketing arrangements without collusion, whether overt or tacit. There are obvious pressures towards the latter.

4. CONCLUSIONS

The workshop recognizes that the five forms of market imperfection that have been identified do raise public policy issues, although in the case of recently deregulated markets it is not clear whether we are observing a transitional 'shake-down' effect or a new long term equilibrium (or, possibly, disequilibrium). In framing a policy approach the following stages seemed to emerge:

- (1) Identify instances of market imperfection. Although the technical nature of the subject sometimes makes it difficult to see the wood for the trees, it was found that the micro-economic literature was useful in determining such instances. In particular, we have identified useful approaches to the identification of predation and access to essential facilities.
- (2) Determine the extent of these imperfections and hence the need for corrective measures. Some observers (for example Utton, 1991) have noted the very low profitability of the British bus industry and believe that this means there is very little evidence of monopoly exploitation. They conclude that trying to mend something that isn't broken can have disastrous consequences. However, this workshop concludes that when the market is studied at a disaggregate level there may be evidence of monopoly exploitation and other forms of market imperfection (which may, in fact, be consistent with low profitability). Alternatively, it might be argued by some that residual regulation may be required during transitional periods to ensure that profit levels are sufficient for industry sustainability (Meyer and Tye, 1988), although residual regulation of this type may be only justifiable in special circumstances and, even then, needs to be limited in both scope and duration. Particularly useful in determining the seriousness of these imperfections might be the 'pre-qualification' tests that were discussed with respect to mergers. These are equally appropriate to monopolies.
- (3) Determine the appropriate regulatory response. The workshop believes that competition policy/anti-trust has an important role to play in ensuring that competition is effective in deregulated passenger transport markets but we must be careful not to throw the baby out with the bathwater. Although the workshop had a moderate predilection for a simple all embracing policy, when the issue was examined in more detail it became apparent that it would be fiendishly difficult to devise such a policy. Nonetheless, it was believed that appropriate measures can be devised to rectify the

worst instances of market imperfection. Policy makers should concentrate on removing barriers to entry, in particular ensuring access to essential facilities, and in lengthening reaction periods, so as to reduce the scope for developing a reputation for seeing off the opposition. Attention might also be paid to ways of reducing information asymmetries. In short, ways of making the market more contestable should be sought.

- (4) Determine the cost of the regulatory response. It needs to be remembered that regulation is neither cost-less nor invulnerable to failure. For example, some members of the workshop favored the creation of OFBUS in Britain to parallel similar bodies concerned with the trading of the gas, electricity, water and telecommunications industries. This would assume the residual powers of the Traffic Commissioner as well as co-ordinate competition policy. There is, however, an obvious danger of regulatory capture. Another question that needs addressing is government's incentives in framing and enforcing competition policy. The scope for private sector involvement in administering the regulation process might be worth considering.
- (5) Ensure that the competition policy affecting the passenger transportation industry is broadly consistent both between modes (air, bus, coach, taxi and rail) and with that of other industries. The workshop did not consider in any detail issues of railroad regulation in the light of proposed competition and organization reforms, particularly in the European Community (EC). However, it seems likely that the 'trading rules' that will need to be devised will have parallels with aspects of competition policy discussed in this workshop. The workshop did not that the bus industry in the UK has attracted an inordinate amount of attention from the competition authorities. This may be because the industry often exhibits examples of the 'uneconomic by-pass', in that entry decisions may not be socially optimal. The increasing role of EC legislation (for example article 85 of the Treaty of Rome) in the UK might provide a suitable occasion for improved codification and harmonization of competition law.

Papers Presented to the Workshop

Berechman, J. "Transit Deregulation and Market Structure".

Blundred, H.D. "Barriers to Market Entry. Practical Experience of UK Bus Market".

Dodgson, J.S. "Predatory Behavior in the Passenger Transport Industry".

Katsoulacos, Y. "Anti-trust Regulation and the Identification of Predation in Transportation Services".

Fernandez, J.E. and De Cea, J. "A Microeconomic Model of a Public Transport System Under Competitive Conditions".

Mills, G. "Airline Entry and Competition in New Zealand".

Preston, J.M. "Competition and the British Bus Industry: The Case of Mergers".

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