

AN OVERVIEW OF PUBLIC TRANSPORT IN THE UNITED KINGDOM AND FORECASTS FOR THE NEW MILLENIUM

Dr John Preston,
Transport Studies Unit, University of Oxford

To be presented to the Sixth International Conference on Competition and Ownership in Land Passenger Transport, Cape Town, South Africa. Plenary Session. 20 September 1999.

1. INTRODUCTION

This conference series has been somewhat dominated by papers on experience from the UK. The first conference in Thredbo in May 1989 featured a large number of papers on the early experience of bus deregulation in Britain which occurred in October 1986. Papers that come to mind include general reviews by Beesley and by White and Turner and case studies by Hills (on Scotland) and by Donald and Pickup (on Merseyside). More theoretical papers were provided by Dodgson and Katsoulacos, by Evans and by Preston (all dated 1989). The debate continued in Tampere (see for example White, 1991, Blundred, 1991) but had petered out by the Toronto conference (other than papers on bus tendering by Newton, 1993, and White and Tough, 1993). However, you can't keep a good man down. 1992 saw the publication of the railway privatisation White Paper *New Opportunities for Railways* and the inevitable paper at Toronto (Nash and Preston, 1993). As rail privatisation proceeded, the papers followed at both the Rotorua (Nash, 1995) and Leeds (Nash, 1997) conferences.

In this paper I will try and draw some lessons for other countries from the experiences in the United Kingdom. In so doing, I will try and update the story in *The Local Bus Market* (Mackie and Preston, 1996) and *Changing Trains* (Van de Velde, 1999, with a chapter on Great Britain by Root and Preston). I should start off with two obvious but important caveats. First, countries are different. In the project that led to the book *Changing Trains*, we tried to look at countries (or parts of countries) which were similar to The Netherlands. We concluded that there were no countries in the world similar to The Netherlands. We could equally have concluded that there are no countries similar to Great Britain. We could draw the same conclusion for South Africa, perhaps more so given both its Dutch and British influences. Secondly, what I am going to present is a personal, subjective view - some of which is backed up by empirical evidence (but some isn't).

What I want to do then is draw, somewhat randomly, 20 lessons from the experiences of reforming bus services in the 1980s and 20 lessons from the reform of passenger railways in Great Britain in the 1990s. These will be outlined in sections 2 and 3 respectively. Section 4 will speculate on the future of public transport, whilst section 5 will draw some broad conclusions.

2. EXPERIENCE FROM THE BUS REFORMS

1. *There are regulatory (and ownership) cycles.* This concept was propounded by Needham (1983) and is illustrated for the bus industry by Figure 1 (the Swiss Roll diagram). Following rapid growth in the 1920s the bus industry was regulated by the

1930 Road Traffic Act. Price regulation was lifted by the 1980 Transport Act and quantity regulation by the 1985 Transport Act. Concerns that this has re-introduced some aspects of market failure may lead to a 2000 Transport Act (although this is by no means guaranteed) in which some regulatory powers are increased. The bus industry's initial growth phase was dominated by private sector operators. A watershed was the 1933 London Passenger Transport Act which created a publicly owned board to own all Underground railways and buses operating in London. Public ownership was extended by the 1947 and 1968 Transport Acts. By 1985/6, 91% of local bus kms were operated by public sector companies. The 1985 Transport Act changed all that. By 1996/7 this figure was down to 4% (DETR, 1997). It is to be hoped that this process is a virtuous circle that will lead ultimately to an economically efficient and equitable industry. In reality, this outcome is likely to be more of a moving target which at different times may be best achieved by publicly owned and regulated and or by privately owned and deregulated systems, reflecting the varying importance over time of regulatory and market failures.

1. *Deregulation does not seem to have halted the decline in demand.* The aggregate statistics suggest that the local bus industry is in terminal decline. Table 1 shows that, between 1950 and 1996/7, the number of passenger journeys by local bus declined by 65% (or 2.2% compound per annum). The greatest rate of decline was in the 1960s and 1970s (over 3% per annum) but the rate of decline has been over 2% per annum in the 1970s and 1980s. Since 1985/6, patronage outside London has declined by 32% (or 3.2% per annum compound) (see Table 2), although there is some evidence to suggest that this decline is now slowing down. In London, where comprehensive tendering was gradually introduced between 1985 and 1994, patronage has increased since 1985/6 by 12%. However, this increase also coincided with the take-off of the Travelcard concept, which was introduced in London relatively late (1983). London Transport (1993) estimated that the Travelcard boosted bus passenger km by 20% and bus revenue by 4%. The strong demand performance in London is thus unlikely to be due to competitive tendering alone. It should also be noted that the London economy has been relatively buoyant in the period under study. NERA (1997) note that, in London, population increased by 3.5% between 1985 and 1995 and that car ownership per capita was falling in the 1990s. In Northern Ireland public transport has remained publicly owned and regulated, although latterly the two main bus companies and the rail system have been integrated under the Translink banner (established in 1995). White (1995) reports that between 1985/6 and 1993/4, bus passenger trips in Northern Ireland declined by only 7%, compared to a 27% decline in Great Britain outside London. It is not, though, sensible to draw lessons from Northern Ireland because of its unique political and economic environment. In the rest of this paper, we will focus solely on Great Britain.
2. *Deregulation seems to have halted the decline in supply.* Local bus vehicle kms have declined by 21% (or 0.5% per annum) between 1950 and 1996/7 (Table 1). By contrast, since 1985/6 vehicle kms outside London have increased by 36%. In London, bus kms have increased by 33% (Table 2).
3. *Deregulation does not seem to have led to lower fares.* Real fares outside London have increased by 27% since 1985/6. Some of this increase was due to initial large fare rises in metropolitan areas such as Liverpool and Sheffield previously well

known for low fares policies. In London, fares have increased by 38% in the twelve years since 1985/6.

4. *Deregulation is associated with lower subsidies.* Subsidies (revenue support and concessionary fares) have decreased by 41% outside London since 1985/6. Glaister (1993) argued that this was the main aim of the deregulation package. In London subsidy has decreased by 68%.
5. *Deregulation has led to large reductions in costs.* The cost per bus km, including depreciation, has decreased by 47%, whilst the cost per passenger journey has decreased by only 3% outside London since 1985/6. In London, bus operating costs have decreased by 46% since 1985/6 if measured per bus km and by 33% if measured per passenger journey. The reductions in unit costs per km seem to 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 1984, employment in the bus and coach industries has declined by 20%. An unanswered question is what happened to the 36,000 workers who were shed by the industry? Another important trend has been that of plant rationalisation. Take as an example the city of Leeds. In the early 1980s the city (with a population of around 500,000) was served by three bus stations, six depots and one workshop. Today, the city is served by three depots (one of which also doubles up as the workshop) and one bus station.
6. *Bus deregulation has led to some problems concerning service quality.* Problems have been identified with service reliability and stability, information availability, age of vehicles, timetable co-ordination and fares integration (Mackie, Preston and Nash, 1995, White, 1997). Concerns about safety, congestion and adverse environmental effects have largely been unfounded.
7. *Deregulation has led to a patronage puzzle.* Assuming that bus fare elasticities are on average -0.4 and service elasticities are 0.4, we would forecast a 3% increase in bus patronage outside London between 1985/6 and 1997/8. The out-turn was a 32% decrease leaving a patronage gap of minus 35% or a secular decline of 3.5% per annum. Making the same assumptions for London we would forecast a decline in bus patronage of 1% when in fact demand increased by 12%, resulting in a patronage gap of plus 13% (or a secular increase of 1.0% per annum). Much of the gap in London might be accounted for by the take-off of the travelcard concept. Outside London the explanation might be related to the perceived deterioration in service quality.
8. *Deregulation led to a mixed pattern of gains and losses.* Table 3 shows that outside London, the main gainers from deregulation have been producers who have been able to reduce costs substantially, although much of these savings have been spent on unproductive service or taken away in terms of reduced subsidy. As a result, the other main gainer has been Government and it should be noted here that we have not included the shadow price of public funds. It may be argued that the gains to Government (and ultimately society) should be increased by around 20% as a result of the removal of this excess burden (see Dodgson and Topham, 1987). The main losers from deregulation have been consumers who have disbenefited from higher fares and lower quality of service. This can be measured by an inward shift of the

demand curve although this could be due to other factors e.g. increased competition from car due to lowering motoring costs and changes in land use to favour car borne journeys. The other main losers of deregulation have been other sectors of the economy, most notably bus workers who have had a modest decline in their real wages but a large erosion of their differential with respect to other manual workers. In addition, oil producers lost revenue due to falling prices. This may have been offset by falls in production costs and anyway was reversed in the period 1995 to 1997 when fuel prices increased by around 60%, although this was largely due to reductions in fuel tax rebate.

9. *Deregulation and subsidy reductions led to welfare losses.* It is estimated from Table 3 that outside London, the full deregulation package led to a £100m loss of welfare between the years 1985/6 and 1993/4. This represented an improvement on the estimated loss of £166m in 1987/8 suggesting that some of the welfare loss may have been due to transitional disequilibrium. However, it might be argued that subsidy reductions should be considered separately from the deregulation package. If this is done, the economic model used suggests that deregulation on its own has had a positive welfare effect, increasing welfare by £144m between 1985/6 and 1993/4. Welfare increased by only £7m between 1985/6 and 1987/8 which again is evidence of some transitional costs.
10. *Comprehensive tendering led to a different pattern of gains and losses.* In London, the producer surplus change has been slightly negative. Other sectors of the economy have also seen small negative changes. Offset against this have been large positive changes to Government, as a result of reduced subsidy, and to consumers, as a result of increased service levels and service quality and despite large increases in fares. There are, however, concerns that aggregate statistics have exaggerated the true level of fare increases due to a failure to take into account the greater use of discounted tickets.
11. *Comprehensive tendering led to welfare gains.* In London, welfare has increased by £205m between the years 1985/6 and 1993/4, with this increase particularly marked since 1987/8 due to the acceleration of the tendering procedure and the (then) imminent privatisation of London Buses. What is also noticeable is that although the changes in total surplus are relatively modest outside London (at most 5 or 6%), in London they are much more significant (up to 27%). It should be noted that this analysis may underestimate administrations costs. Glaister (1997) estimates that on a like for like basis tendering in London in 1992 (when only about 40% of the network was tendered) led to a 20% cost saving (around £180m) but this reduced to 16% when administration costs were taken into account. The administrative costs of tendering were running at £36m per annum and this does not include one-off payments related to redundancies etc. A key issue is can these costs be reduced?
12. *There are more than three policy options.* The above analysis might suggest that, in welfare terms and on a like for like basis, comprehensive tendering (limited competition) is more efficient than deregulation (full competition) which in turn is more efficient than regulation (no competition). This is the policy menu offered by the European Commission's Green Paper "The Citizens' Network" (COM(95) 601, 1995). In fact, the number of dishes on the regulatory menu is far more numerous than three. In another paper (Preston, 1997), we show that there can be several

thousand regulatory options, including 'light touch' regulation, quality partnerships, various forms of residual regulation and a huge range of tendering/franchising options. In practice, the last set of options can be reduced to three main types: net subsidy contracts at a route level (the Scandinavian model), management contracts or franchises at an area level (the French model) and hybrid contracts, personified by cities such as Adelaide (Australia) and Helsingborg (Sweden) (ISOTOPE, 1996).

13. *Deregulation has had some successes at the route level.* Improved marketing has led to growth in demand on some routes. Trent's Rainbow services have grown the market by 5% in the Derby-Nottingham area, with Transport 2000 reporting demand on 'the Spondon Flyer' up 70% (Transport 2000, 1997). Similarly, improved marketing of Stagecoach's Burnley to Manchester service led to a 9% increase in market volume (Colson, 1997). New inter-urban services have been developed, for example, by Stagecoach, particularly in Scotland and Yorkshire and Humberside. Express links to airports have proliferated and 24 hour services have been reinstated in some urban areas. Other important examples are the guided bus experiments in Ipswich and Leeds. Tebb (1997) reports 42% traffic growth on the former after 16 months and 30% on the latter after 12 months. There is some interesting evidence on the performance of the all day Leith and peak hour Corstophine Greenways (bus priority routes) in Edinburgh. These schemes have led to 25% and 10% reductions in bus journey times respectively, with an additional 250,000 passengers travelling on Lothian Region Transport buses on these routes (DETRa, 1998, p42).
14. *Deregulation has had successes at the network level.* There has also been patronage growth at the network level. An example is Preston, Lancashire, where intense competition led to a doubling of bus miles and a short-term 10% increase in demand (Mackie and Preston, 1988). The dominant operator reports that much of this additional demand has been maintained despite subsequent reductions in mileage by the entrant. Similar trends might be expected in other towns with similar competitive histories such as Stockton and Lancaster (see Evans, 1990). The re-launch of Stagecoach's subsidiary in Carlisle resulted in 4% passenger growth (Colson, op cit.). In Brighton, a package of measures, including increased frequencies on the core routes, simplified fares, better vehicles and a whole series of marketing initiatives has led to a 5% per annum patronage increase over four years (Enoch, 1998). The introduction of minibuses and other measures have led to a revival of some urban bus markets. Commonly quoted successes include Bristol (demand up 20% plus) and Exeter (demand up 300% - Glaister, 1997). Park and ride has been credited as having a similar effect in Oxford, where demand is reported to have increased by between 35 and 70% (Enoch, op cit.).
15. *Deregulation has also had its failures.* The corollary of the above is that if there have been many instances of demand being significantly above the mean downward trend, there must be instances where demand is significantly lower than the mean decline. The latest available statistics suggests that the biggest decreases in demand have been in the Metropolitan areas (i.e. the big cities outside of London), with the exception of the West Midlands, and hence in Northern Britain (Scotland and the three northernmost regions in England). Further explanations should be sought to explain, using Enoch's (1997) phrase, "the mess and the success of deregulation." Enoch cites Darlington as a classic example of a deregulation failure.

16. *Competition has had important effects on route and network structure.* Competition when it occurs seems to be in the service quantity dimension leading to a higher fares/higher frequency outcomes in the manner forecast by Evans (1987). There has been little competition in terms of price or service quality, despite the forecasts of Dodgson and Katsoulacos (1988), although Magicbus type services in cities such as Manchester are an important exception. In the longer term, a sustainable route structure, at least for the most heavily trafficked routes, seems to consist of a large proportion of service being provided by the dominant operator, but with a significant proportion being provided by a smaller operator. The latter may be free-riding on the former's timetable (James, 1996). There has been less work on the network implications but here are a few observations. One form of entry deterrence has been gap filling, in which the incumbent maximises the geographic coverage of the network. The result is a complex, dense route network but with relatively low frequencies – the bowl of spaghetti network. West Yorkshire provides some good examples of this but it is probably the dominant network pattern throughout the country. One exception is where there is prolonged intense competition between two, evenly matched combatants. Services concentrate on the main radials and a hub and spoke network emerges or is re-inforced. Oxford is probably the best example of this, with local services feeding into long distance services to London and its airports. Another exception occurs where entry is forestalled by market dominance. A case in point may be Brighton where the merger of the two main companies has led to a simplified network, at least in terms of representation, with the use of London Underground style maps.
17. *Privatisation has had important effects.* Bus deregulation has been accompanied by privatisation. The 70 National Bus Company subsidiaries were sold between 1986 and 1988, the 9 Scottish Bus Group subsidiaries were sold in 1990/91 and the 11 London Buses subsidiaries were sold in 1994. Unlike rail, the receipts from these sales have been relatively modest (over £650m). Ownership changes seem to have been particularly important in prolonging the period of cost reductions, particularly in London where cost reductions were given added impetus in the early 1990s as a result of impending privatisation. Ownership does seem to matter, contrary to earlier studies (for example, Millward, 1982), although we would concede that competition is probably more important.
18. *Re-agglomeration occurred relatively quickly.* Between 1988 and 1997, TAS (1997) recorded 185 principal takeovers in the bus industry. A big three has emerged in the bus industry (Arriva, First Group and Stagecoach) who controlled 11% of the industry's turnover in 1989 but by 1997 controlled 53%. The latest (as yet unpublished) analysis by TAS indicates that operating margins in the industry average 12%, with 21% of companies having margins of over 15% and 22% having margins of less than 5%. The question must be asked: has re-agglomeration led to monopoly rents (for some)? These mergers and allegations of predatory behaviour by dominant operators have attracted the attention of the pro-competition authorities (the Office of Fair Trading and the Monopolies and Mergers Commission), with over 30 investigations of the bus industry since 1989. However, the power of these residual regulatory authorities has been weak although this has changed as a result of the 1998 Competition Act with its stop and search powers and fines of up to 10% of annual turnover.

19. *The inter-relationship between markets is important.* Entry into the local bus industry was assisted by the existence of competitive private hire and excursions and tours bus industries and since 1980 a competitive express coach industry. The 1980 reforms had also highlighted the need to ensure access to essential facilities such as terminals. Reforms in the bus industry, where 70% of costs are labour related, were assisted by the deregulation of labour markets throughout the 1980s. Another important point to make is the inter-relationship between the commercial and tendered markets outside London. Although the tendered market only makes up around 15% of bus miles, up to 80% of routes may have a tendered element. Tendering has been particularly important in allowing small entrants to get a foothold in the market and in driving costs down (possibly too far). We have argued elsewhere that, with low entry costs and long reaction periods, the tendered market is more contestable than the commercial market (although this assumes exit costs are also low) (Preston, 1991). The resultant hybrid market is more contestable than a purely commercial market would be.

3. EXPERIENCE FROM THE RAIL REFORMS

1. *The railway reform process is only at the half way stage.* The bus reforms discussed above have been in existence for over 10 years and it is not clear that an equilibrium has yet been reached. The reforms of the railways in Great Britain are more recent, legislated for by the 1993 Railways Act. The state owned British Railways was restructured into one track authority (Railtrack), three rolling stock leasing companies (ROSCOs), 25 passenger train operating companies (TOCs), seven freight train operating units and some 70 ancillary businesses beginning to trade as free standing units on 1 April 1994. The first private passenger TOCs began operating in February 1996, with the franchising completed by March 1997. Railtrack was privatised through a stock market flotation in the spring of 1996. However, the TOCs have long leases with the ROSCOs which do not come up for renewal until around 2003. Similarly, Railtrack has long term contracts with the Infrastructure Supply Companies (ISCs) that will be renewed around 2003. 2003 is also the year in which the first tranche of franchises will come up for renewal.
2. *On-the-track competition has been limited, but has been important where permitted.* Up until September 1999, competition was limited to services that competed prior to the reforms and services that constitute less than 0.2% of a TOCs revenue. In September 1999, these limits will be increased to 20%, whilst it is still provisionally planned to introduce full open access competition in 2002. Nonetheless, there has been some significant competition, most notably between Virgin West Coast and Chiltern between London and Birmingham; National Express's Gatwick Express, Connex South Central and GOVIA's Thameslink services between London and Gatwick; and GNER and WAGN between London and Peterborough. These competitive battles have involved product differentiation, service frequency increases and selective fares cuts.
3. *Substantial on-the-track competition is feasible but is unlikely to be desirable.* Our simulation work suggests that frequency enhancements in the peak are likely to be the most common competitive outcome (Preston et al., 1999). This outcome is referred to as cream skimming (also known as cherry picking). Although passengers benefit, operators lose out essentially as a result of providing too much service at too high a

price - a classic outcome of oligopolistic competition, which has also been observed in the bus industry. The ability to price discriminate may also be much reduced. Overall, economic welfare reduces unless (i) competition stimulates productive efficiency gains (ii) competition stimulates dynamic efficiency through improved productivity. It is possible that some forms of competition, particularly involving product differentiation, can lead to these two types of efficiency gain.

4. *Off-the-track competition was substantial.* In the first round, there was an average of 5 serious bids for each of the 25 TOCs, even with the constraint that the publicly owned incumbent can only be a bidder of last resort. A key issue is whether this level of competitive activity may be maintained in the second round in 2003.
5. *Off-the-track competition intensified in later tranches.* The subsidy required for a franchise was £18m p.a. lower in the 10th tranche than in the first tranche. This represented a 27% subsidy reduction or put another way a 27% increase in the bid price. The converse of this is that companies that got in first (Stagecoach, GNER, First Great Western) are making substantial profits. There are parallels with the privatisation of the National Bus Company where the first subsidiaries to be sold were so at a price favourable to the purchaser. The policy of having a series of franchise tranches was vindicated in that reasonable prices were eventually achieved. A challenge for the future may be to avoid the bunching of renewals at seven year intervals and have a more regular spread of contract renewals.
6. *Off-the-track competition was dependent on the liberalised bus and coach markets.* Fifteen out of the 25 TOCs went to bus companies (who have subsequently gained 3 more). Each franchise had at least 2 bids from bus companies.
7. *Management Buy Outs (MBOs) were relatively unsuccessful.* They only won four franchises. All have subsequently been sold on suggesting that, in the British context at least, MBOs are an ephemeral organisational form. This phenomenon has also been observed in the bus industry (see, for example, Wright et al., 1992).
8. *Agglomeration occurred almost straight away.* Four groupings (National Express Group, Connex, Stagecoach/Virgin Trains and First Group) control 70% of revenue. Does this mean that British Rail was split into too many passenger train operating units? Not necessarily so. One lesson might be that if you are to horizontally separate a business it may be sensible to err on the side of too many, small units. The market can then put the units back together in the most optimal manner. The parallels with the bus industry should be obvious.
9. *Off-track competition appears to be effective in that subsidy is forecast to reduce substantially.* Total subsidy is forecast to reduce from around £1.9b in the first year of franchising to £0.5b in the final year of the first round. However, we estimate that in 1998/99 the industry was off target by around £100m. Currently, two TOCs are operating without profit. Eventually 10 TOCs are forecast to do so, most spectacularly Virgin West Coast.
10. *The financial picture is difficult to assess.* In 1993/4 (the last financial year before the reforms) the passenger TOCs received £0.55b in direct revenue subsidy (from the British Railways Board Annual Report and Accounts, 1993/4) but there were also :

- Additional subsidies related to capital grants and grants towards the operation and maintenance of level crossings which could amount to as much as £0.54b per annum.
- Change in accounting conventions from current replacement cost of renewed assets to modern equivalent asset valuation of all assets increased the railways capital costs by 25%. This too may represent around £0.54b per annum.
- If the receipts of the privatisation sales are amortised over, say, a 30 year period they represent a substantial sum (around £0.3b per annum).

These points explain most of the difference between the pre and post privatisation subsidy levels, although it should be no surprise that different authors draw different conclusions. Harris and Godward, 1997, conclude that privatisation has led to a worsening of the railway's financial situation, White (1998) concludes the opposite. An unresolved issue is the size of the transitional costs.

11. *A commercial open access network with a complementary social network may emerge.* The chief architect of the railways reforms, Sir Christopher Foster, saw a two tier railway network emerging (Foster, 1994). We seem to be on target for this occurring in 2003. The passenger rail industry will then be structured in a similar manner to the local bus and coach industry, but with much greater fare regulation.
12. *Franchises could have been better specified.* Modelling work we have undertaken suggests that 12 years loosely regulated franchises could have reduced the subsidy bill by 20%. Removing exclusivity (i.e. protection from open access) is forecast to increase the subsidy bill by 10% (Whelan et al., 1998). Some TOCs run services in areas where a Passenger Transport Authority takes the revenue risk and in areas where the train operating company itself takes the risk. In all cases, revenue growth has been substantially higher in the latter cases. There has been a renewed interest in micro-franchises, particularly for rural branch lines. It is possible that a second round of franchises may involve the subcontracting of such lines.
13. *One of the aims of the privatisation was to raise money for the Exchequer.* The reforms were successful in this, raising £4.4b in revenue. Rail privatisation was the biggest of the UK transport privatisations. With a certain amount of ingenuity, the railway business can be re-structured so as to have profitable elements.
14. *The creation of the ROSCOs removed an important barrier to entry.* Due to the creation of the three ROSCOs, access to rolling stock has not been a major problem. According to the TOCs, the main problems with ROSCOs revolve around the high charges, the reluctance to provide new rolling stock and poor performance with respect to maintenance etc. The lack of incentivisation may have been an oversight as may the lack of claw-back provisions. The ROSCOs were initially sold for £1.7b, but were subsequently sold on for around £2.7b, leading to the National Audit Office concluding that this represented poor value for the taxpayer (NAO, 1998).
15. *The performance of Railtrack has been mixed.* I should state here, straightaway, that I am a vertical separation sceptic (see Preston, 1996). My main concern, although not the only one, regards investment. Railtrack as a private monopoly has strong incentives to increase prices and reduce output, and this has been reflected by its

reluctance to invest in the network. The proposed solution is a new Railway Bill in which regulations will be tightened to specify investment levels as part of Railtrack's operating license conditions and penalties will be increased. The problem is that this may just force up Railtrack's price of capital and lead to less investment than would otherwise be the case. We have at least avoided in Britain the alternative investment problem that might result from a vertically separated but publicly owned track authority, that of the gold plated railway. Incentives appear to have worked well in encouraging Railtrack to improve its performance with respect to the operation of the network. In addition, a profit sharing agreement has been established with Virgin with respect to the Passenger Upgrade II of the West Coast Main Line, but there are concerns that this investment incentive scheme may be anti-competitive.

16. *The headline statistics seem encouraging.* One of the first casualties of a reform process is consistent statistics. This has also been true of the bus industry. Nonetheless, Table 5 shows that between 1993/4 and 1998/9, passenger kms went up by almost 16%. Real receipts per passenger km went up by 9%, although we estimate that one third of this increase is due to a shortening of mean journey lengths. Improved revenue yield techniques may be responsible for much of the latter. We estimate that train kms have increased by over 10% during this period. This demand increase is in line with what one might expect using conventional elasticities, assuming no secular time trend. There does not seem to be a patronage puzzle here.

(It should be clear that my comments on rail refer to the passenger industry. Freight tonne kms have gone up by 22% between 1993/4 and 1997/8, despite continued restructuring of the UK economy. Privatisation for the freight industry is much less problematic - not least because the freight market is more perfectly competitive. This is not due to actual on-track competition (there is some but this is limited and declining) but due to inter-modal and end product market competition. For general merchandise (e.g. through the Channel Tunnel), road is a fierce competitor. For bulk goods, competition in the end-product market is fierce (e.g. UK power station coal replaced by foreign coal or by natural gas).

17. *Customer expectations concerning quality appear to have increased.* There has been a lot of concern about punctuality (the percentage of trains x minutes late) and reliability (the percentage of trains operated). The truth is that these are little changed. Indeed, they are slightly improved, despite some recent deteriorations. The problem is that the public expected dramatic improvements. Complaints to the Central Rail Users' Consultative Committee have more than doubled and complaints to operators have exceeded 1m per annum (but there are also stronger reasons to complain because of improved compensation).
18. *There have been some important entrepreneurial initiatives.* These are detailed in Van de Velde et al. (1998). The most important concern ticketing (particularly regarding group travel and bonus schemes) and distribution (especially telesales). Some have been stimulated by the Regulator (e.g. the National Rail Enquiry Service) and by OPRAF (Franchise Commitments). The main initiatives in the future will be related to new rolling stock, and particularly tilting trains which will be introduced some 20 years after the abandonment of the APT project. With new rolling stock, there is likely to be further increases in service levels. Passenger dividends, insisted

on by OPRAF when TOCs change ownership, have emphasised new services (e.g. Oxford to Bristol) and bus-rail and bus-cycle integration.

19. *There have been substantial changes in staff levels and costs.* Rail staff numbers declined by 48% between 1994 and 1998 but some of this is due to the reclassification of staff from SIC 60.1. Cost savings seem likely for the industry as a whole but may be easier for Railtrack and the ROSCOs to achieve than the TOCs. We estimate that over the last year, although the TOCs have exceeded their forecasts for revenue growth, costs have increased slightly when reductions were being sought.
20. *A complex regime has been made to work.* This has been a considerable achievement in itself. However, further changes are planned. The Strategic Railway Authority will combine the rail responsibilities of the Department of Transport and OPRAF. The main advantages are that passenger and freight planning will be more integrated and the objectives of the second round of franchising better articulated. The main area of concern is the possible duplication, with the Rail Regulator, in controlling Railtrack and conflicts between value for money and promoting competition objectives.

Could the regime have been made better? This depends on the counterfactual. It does appear that in financial and economic terms the new regime in 1999 is better than the old regime in 1994. But would it be better than the old regime would have been in 1999? I have my doubts, and my doubts revolve around Railtrack. There may be a case for Railtrack being investigated by the Competition Commission. If Railtrack is found to be acting anti-competitively, one option would be to split it up into its ten or so zones (akin to the AT&T baby bells) which to some extent map onto the TOCs. A market test could then be established for vertical integration in the way that it has already been established for horizontal integration.

4. THE FUTURE

The reforms of the bus and rail industries were closely linked with the Conservative administrations of 1979 to 1997. The election of the new Labour government in 1997 may have represented a sea change in British politics but, at least initially, a much more modest change in transport policy. The integrated transport White Paper *A New Deal for Transport: Better for Everyone* published in 1998 had a clear antecedent in the previous administration's Green Paper *Transport: The Way Forward*. Both saw increased usage of public transport as part of the answer to the transport problem. The new Government's policies have been further articulated in daughter documents for rail and bus (DETR, 1998c, 1999c).

However, the aggregate statistics suggest that the future of the bus may be bleak. If the per annum decline in passenger kms observed so far in the 1990s (2.3% compound) is continued, by 2020 demand will be down by a further 40% to 24b passenger kms. For rail, the position is slightly less bleak. Demand increased by 6% during the 1990s (0.6% compound per annum). Extrapolation of this trend would lead to 37b rail passenger kms by 2020. Using the mean National Road Traffic Forecast (1997) growth rate for all traffic (1.3% compound per annum), we might forecast a 35% increase in car, van and taxi traffic to 837b passenger kms. Table 6 suggests that in such a do nothing situation, public transport's market share would decrease from 12% in 1996/7 to 8% in 2020. This

assumes that demographics are neutral. Some have argued that the bus will face a demographic time bomb in the next few years due to reduced numbers of young adults and the recently retired (Hill et al., 1989). However, the demographic trends are more favourable for rail.

The disaggregate statistics may be less bleak. The experience from London suggests a more favourable regulatory regime could result in stable, rather than declining bus demand, whilst the evidence from deregulatory successes suggests that demand increases of up to 40% may be possible as a result of internal factors. Such an increase would mean 56b passenger kms carried by bus in 2020. External factors also need to be taken into account, in particular the 6% per annum increase in fuel duty and road user and parking charges. Given a cross elasticity of bus demand with respect to car out-of-pocket expenses of 0.3 (Preston, 1999), and assuming that the only perceived out-of-pocket car expense is petrol and fuel duty is 68% of petrol price (DETR, 1998b), we estimate that bus demand in 2020 will increase by 32% to 74b passenger kms as a result of the fuel duty escalator. The impact of road user and parking charges is more difficult to estimate but suppose they lead to a doubling of out-of-pocket car expenses. This would result in a further 23% increase in bus demand to 91b passenger kms, almost identical to the levels achieved in 1950. Car, van and taxi use in 2020 might be forecast to fall by some 7% to 781b passenger kms. For rail, in this more optimistic do-something scenario, we might extrapolate the post 1994 trend, in which passenger kms have increased by 16% (2.9% compound). This would result in demand increasing to 62b passenger kms in 2020. Assuming rail has a similar cross elasticity with respect to car costs as bus, national rail demand might increase to 76b passenger kms as a result of the introduction of road user and parking charges. We have assumed that local rail (predominantly London Underground) would follow similar trends to national rail. As a result Table 6 suggests that, with radical policies enacted immediately, public transport's market share could increase to 19%. This would still fall a far way short of the Royal Commission on Environmental Pollution's 2020 target of 30% of passenger kms being carried by public transport (bus and rail) (RCEP, 1994) and public transport's market share of 60% in the early 1950s.

5. CONCLUSIONS

In order for the spiral of decline in public transport usage to be reversed in the manner outlined above, a further turn in the regulatory cycle is probably required. The 1998 White Paper is probably correct to place greatest emphasis for bus on quality partnerships, particularly if accompanied by light touch regulation in which the powers of the Traffic Commissioners are increased. This is probably most appropriate in non Metropolitan areas where the successes of deregulation seem to be concentrated and where the institutional framework for increased regulation is lacking. It may be less appropriate in the Metropolitan areas where free rider problems may be more intense, where network benefits of integrated ticketing and timetables may be greatest and where the PTAs/PTEs provide an institutional capability for increased regulation. Here quality contracts might be more beneficial, although we have argued elsewhere (e.g. Preston, 1997) that these should draw on the lessons from London with an emphasis on route based contracts based on full costs with revenue and performance incentives. We also believe that some experimentation should be carried out in contracting out the network design function. We thus believe that *proper regulation at the local level* (an aspiration of the Labour government) might involve a two tier system. In London, some Metropolitan

areas (although not necessarily all) and some larger conurbations in the former Shire counties (regions in Scotland) where new PTAs/PTEs might usefully be established, quality contracts might be the norm. In the rest of the country, the industry would remain broadly deregulated but with greater emphasis on the promotion of quality partnerships. For rail, the key issue probably relates to investment in the infrastructure. The influence that the Office of the Rail Regulator and the Strategic Rail Authority can exert on Railtrack is going to be important here.

An important question is should other countries follow the UK (or more strictly British) reforms in public transport? In terms of an exact carbon copy, the answer has to be no. Appropriate regulatory and ownership structures are likely to be place and time specific. Moreover, certain aspects of the reforms (particularly with respect to the privatisations) were done in a hurry and could have been done better with hindsight. However, it seems possible that bus deregulation outside London was an improvement on the previous regulated regime and that rail privatisation has been an improvement on the former publicly owned regime. But are these the relevant comparators? In the bus industry, comprehensive tendering in London seems to have been more beneficial than deregulation outside London, although the London regime is not without its faults and should not be followed slavishly. For rail, vertically integrated concessions might have provided a better alternative, although other than the anomalous case of the Island line, we would have to seek empirical evidence on this from abroad. Alternatively, a regime in which subsidy went primarily to the infrastructure authority rather than the train operators might have some policy advantages. One advantage of the reforms has been that they have helped us get a better idea of the 'true' economics of public transport, particularly with respect to costs and innovation. However, I am not a reluctant Austrian extolling the virtues of 'creative destruction'. The transitional costs of such destruction may be high and not as temporary as many people think. But we do have a better idea of what might be the optimal regulatory and ownership structures in public transport industries than we did 20 years ago. UK based transport academics have benefited from such bold experiments occurring on their doorstep. If the appropriate lessons are learnt, the rest of the world may benefit too.

REFERENCES

Beesley, M. (1989) *Bus Deregulation: Lessons from the UK. Presented to the First International Conference on Competition and Ownership of Bus and Coach Services.* Thredbo, New South Wales.

Blundred, H. (1991) *Barriers to Market Entry: Practical Experiences of UK Bus Market. Presented to the Second International Conference on Privatization and Deregulation in Passenger Transportation.* Tampere, Finland.

Colson, B. (1996) *UK Bus Deregulation: A Qualified Success with Much Still to Offer Customers and Society at Large. Transport Reviews, 16, 4, 301-312.*

COM (95) 601 (1995) *The Citizens' Network. Fulfilling the Potential of Public Passenger Transport in Europe. Green Paper. Commission of the European Communities, Brussels.*

Department of the Environment, Transport and the Regions (1997) *Bus and Coach Statistics Great Britain 1996/7*. The Stationery Office, London.

Department of the Environment, Transport and the Regions (1998a). *A New Deal for Transport: Better for Everyone*. Cm 3950, The Stationery Office, London.

Department of the Environment Transport and the Regions (1998b) *Transport Statistics Great Britain*. 1998 Edition. The Stationery Office, London.

Department of the Environment Transport and the Regions (1998c) *Railway Policy: A Response to the Third Report of the Environment, Transport and Regional Affairs Committee on the Proposed Strategic Railway Authority and Railway Regulation*. Cm 4024, The Stationery Office, London.

Department of the Environment Transport and the Regions (1999a) *Focus on Public Transport 1999*. The Stationery Office, London.

Department of the Environment Transport and the Regions (1999b) *Bulletin of Rail Statistics: Quarter 4 1998 Data*. Transport Statistics Report. DETR, London.

Department of the Environment Transport and the Regions (1999c) *From Workhorse to Thoroughbred. A better role for bus*. DETR, London.

Dodgson, J. and Topham, N. (1987) The Shadow Price of Public Funds: A Survey. In Glaister, S. (Ed) *Transport Subsidy*. Policy Journals, Newbury.

Dodgson, J. and Katsoulacos, Y. (1988) Quality Competition in Bus Services: Some Welfare Implications of Bus Deregulation. *Journal of Transport Economics and Policy*, 22, 263-282.

Dodgson, J. and Katsoulacos, Y. (1989) Competition, Contestability and Predation: The Economics of Competition in Deregulated Bus Markets. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.

Donald, R. and Pickup, L. (1989) The Effects of Local Bus Deregulation in Great Britain on Low Income Families – The Case of Merseyside. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.

Enoch, M. (1997) Oxford and Darlington: The Mess and Success of Bus Deregulation. *Proceedings of the Chartered Institute of Transport*, 6, 1, 29-47.

Enoch, M. (1998) *Bus-Based Best Practice and Urban Transport Emissions*. PhD Thesis, Energy and Environment Research Unit, Faculty of Technology, the Open University, Milton Keynes.

Evans, A. (1987) A Theoretical Comparison of Competition with Other Economic Regimes. *Journal of Transport Economics and Policy*, 21, 7-39.

- Evans, A. (1989) Some Case Studies of Local Bus Competition in Britain. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.
- Evans, A. (1990) Competition and Structure of Local Bus Markets. *Journal of Transport Economics and Policy*, 24, 3, 255-281.
- Foster, C. (1994) *The Economics of Rail Privatisation* Centre for the Study of Regulated Industries. Discussion Paper 7. CIPFA, London.
- Glaister, S. (1993) Bus Deregulation in the United Kingdom. In Carbajo, J. (Ed) *Regulatory Reforms in Transport: Some Recent Experiences*. World Bank, Washington D.C.
- Glaister, S. (1997) Deregulation and Privatisation: British Experience. In de Rus, G. and Nash, C. (Eds) *Recent Developments in Transport Economics*. Ashgate, Aldershot.
- Harris, N.G. and Godward, E.W. (1997) *The Privatisation of British Rail* The Railway Consultancy Press, London.
- Hill, E., Rickard, J., Nash, C. and Ling, D. (1989) Beyond the Millenium: Public Transport and the Demographic Time Bomb *Proceedings of the PTRC Summer Annual Meeting*, Seminar C.
- Hills, P. (1989) Early Consequences of the Deregulation of Bus Services in Scotland. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.
- ISOTOPE (Improved Structure and Organisation for urban Transport Operators of Passengers in Europe). (1996) *Work Package 3 Final Report on Economic Research*. Deliverable to the Commission of European Communities, Brussels.
- James, T. (1996) Competition over Service Frequency and the Ease of Entry on Bus Routes. *Presented to the 28th Annual Conference Universities Transport Study Group, University of Huddersfield*.
- London Transport (1993) *London Transport Traffic Trends: 1971-1990*. Research Report R273. Planning Department. LT, London.
- Mackie, P. and Preston, J. (1988) Competition in the Urban Bus Market: A Case Study. *Proceedings of the PTRC Summer Annual Meeting*.
- Mackie, P., Preston, J. and Nash, C. (1995) Bus Deregulation: Ten Years On. *Transport Reviews*, 15, 3, 229-251.
- Mackie, P. and Preston, J. (1996) *The Local Bus Market: A Case Study of Regulatory Change* Avebury, Aldershot.
- Millward, R. (1982) The Comparative Performance of Public and Private Ownership. In Roll, E. (Ed) *The Mixed Economy*. Macmillan, London.

- Nash, C. and Preston, J. (1993) Competition in Transport: A New Opportunity for Railways. *Presented to the Third International Conference in Surface Passenger Transportation*. Toronto, Canada.
- Nash, C (1995) Rail Privatisation – The Experience so Far. *Presented to the Fourth International Conference on Competition and Ownership in Land Transport*. Rotorua, New Zealand.
- Nash, C. (1997) Rail Privatisation in Great Britain. *Presented to the Fifth International Conference on Competition and Ownership in Land Transport*. Leeds, England.
- National Audit Office (1998) Privatisation of the Rolling Stock Leasing Companies *HC 576 Session 1997-8*. The Stationery Office, London.
- Needham, R. (1983) *The Economics and Politics of Regulation: A Behavioural Approach*. Little, Brown and Company, Boston.
- NERA (1997) *Evaluating Alternative Structures for the Bus Industry: A Report for the Confederation of Passenger Transport*. NERA, London
- Newton, N. (1993) Competitive Tendering – The London Experience *Presented to the Third International Conference in Surface Passenger Transportation*. Toronto, Canada.
- Preston, J., Whelan, G . and Wardman, M. (1999) An Analysis of the Potential for On-track Competition in the British Passenger Rail Industry *Journal of Transport Economics and Policy*, 33, 1, 77-94.
- Preston, J. (1989) Explaining Competitive Practices in the Bus Industry: The British Experience. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.
- Preston, J. (1996) The Economics of British Rail Privatisation: An Assessment *Transport Reviews*, 16, 1, 1-21.
- Preston, J. (1997) The Restaurant at the End of the Regulatory Cycle. A Review of the Options for the Regulatory Reform of the British Local Bus Market. *Transport Studies Unit Reference 852*, University of Oxford.
- Preston, J. (1999) The Future of the Local Bus Market. *Presented to the Royal Geographical Society-Institute of British Geographers Annual Conference*, University of Leicester.
- Royal Commission on Environmental Pollution (1994) “Transport and the Environment”. Eighteenth Report. Cm 2674. HMSO, London.
- Transport Advisory Service (1997) *Bus Industry Monitor*. TAS, Preston.

Tebb, R. (1997) Privatisation and Innovation: Exploiting Guided Bus. *Presented to the Fifth International Conference on Competition and Ownership of Land Passenger Transport*. Leeds, England.

Transport 2000 (1997) *Blueprint for Quality Public Transport*. Transport 2000, London.

Van de Velde, D. (Ed) (1999) *Changing Trains. Railway Reform and the Role of Competition: The Experience of Six Countries* Ashgate, Aldershot.

Van de Velde, D., Mizutani, F., Preston, J. and Hulten, S. (1998) Railway Reform and Entrepreneurship. *Proceedings of the European Transport Conference, Seminar G*. PTRC, London.

Whelan, G., Preston, J., Wardman, M. and Nash, C. (1998) The Privatisation of Passenger Rail Services in Great Britain: An Evaluation of Competition for the Market and Competition in the Market. *Proceedings of the 8th World Conference on Transport Research*.

White, P. and Turner, R. (1989) Overall Impacts of Local Bus Deregulation in Britain. *Presented to the First International Conference on Competition and Ownership of Bus and Coach Services*. Thredbo, New South Wales.

White, P. and Tough, S. (1993) Alternative Tendering Systems and Deregulation in Britain. *Presented to the Third International Conference in Surface Passenger Transportation*. Toronto, Canada.

White, P. (1991) Three Years' Experience of Bus Service Deregulation in Britain. *Presented to the Second International Conference on Privatization and Deregulation in Passenger Transportation*. Tampere, Finland.

White, P. (1995) Deregulation of Local Bus Services in Great Britain: An Introductory Review. *Transport Reviews*, 15, 2, 185-209.

White, P.R. (1997), What Conclusions can be Drawn about Bus Deregulation in Britain? *Transport Reviews*, 17, 1, 1-16.

White, P. (1998) Financial Outcomes of Rail Privatisation in Britain. *Proceedings of the European Transport Conference, Seminar G, Rail*. PTRC, London.

Wright, M., Dobson, P., Thompson, S. and Robbie, K. (1992) How Well Does Privatisation Achieve Government Objectives? The Case of Bus Buy-Outs *International Journal of Transport Economics*, 19, 3, 259-285.

Table 1: Trends in the Local Bus Market 1950 to 1996/7 (1997/8 in brackets)

	1950	1960	1970	1980	1989/90	1996/7
Local Bus Passenger Journeys (m)	12,734	12,166	8,643	6,216	5,068	4,350 (4,332)
Local Bus Vehicle Kilometres (m) (1)	3,390	3,163	2,623	2,268	2,442	2,693
All PT Passenger Journeys (m) (1)	16,445	13,313	8,687	6,224	5,074	4,355 (4,337)
All PT Passenger Kilometres (b) (2)	92 (3)	79	60	52	47	40
Market Share (%)	42 (3)	28	15	11	7	6
All PT Vehicle Kilometres (m) (2)	3,967	3,795	3,463	3,280	3,835	4,199

PT = Public Transport

(1) Includes trams and trolley buses

(2) Includes trams, trolleys buses and non local buses

(3) 1952 data

Sources: DETR 1997, 1998b, 1999a.

Table 2. Market Performance - % change 1985/6 to 1997/8 (1993/4 in brackets)

	Real cost per bus km *	Real subsidies	Bus km	Real fares	Pass. Journeys	Cost/pass. Journey *
Great Britain Excl. London	-47 (-41)	-41 (-35)	+36 (+24)	+27 (+17)	-32 (-27)	-3 (+2)
London	-46 (-36)	-68 (-47)	+33 (+26)	+38 (+29)	+12 (-3)	-33 (-23)

Sources: DETR, 1997, 1999a.

* Includes depreciation.

Table 3. Welfare Effects (£m, 1987/8 prices) compared to 1985/6

	Great Britain Outside London				London	
	Including subsidy reductions		Excluding subsidy reductions		1987/8	1993/4
	1987/8	1993/4	1987/8	1993/4		
Producers	+37	+128	+152	+334	-19	-1
Other sectors of the economy	-114	-144	-114	-144	-31	-33
Government	+115	+256	0	0	+80	+104
Consumers	-204	-294	-31	-46	+54	+135
TOTAL	-166	-104	+7	+144	+84	+205
% charge in total surplus	-6.1	-3.8	+0.2	+5.3	+11.2	+27.0

Source: Mackie and Preston, 1996.

Table 4: Changes in Market Share by Turnover in the British Bus Industry Since 1989 (%)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
First Group	3.7	5.5	6.3	6.2	6.8	12.8	12.8	19.8	21.6
Stagecoach	3.9	3.7	4.9	4.9	6.9	13.4	13.4	16.1	16.0
Arriva	3.4	4.1	4.0	4.0	4.5	11.4	13.2	14.9	14.8
Big Three	11.0	13.3	15.2	15.1	18.2	37.6	39.4	50.8	52.5
Go-Ahead	1.7	1.7	1.7	1.7	1.7	4.3	4.3	6.2	6.4
Nat. Express	0.0	0.0	6.0	5.9	5.9	7.7	7.7	5.2	5.9
Big Five	12.7	15.0	22.9	22.7	25.8	49.6	51.4	62.2	65.8
Small Groups	8.1	8.9	9.1	9.2	7.1	5.5	4.3	2.6	2.7
ESOPs/MBOs	15.5	18.3	21.0	21.0	28.7	23.0	22.1	13.8	11.1
Independents	12.0	12.2	12.9	13.9	14.1	14.6	14.6	14.2	14.6
Public	51.6	45.8	34.2	33.3	24.4	7.5	7.5	7.2	6.8

Source: Transport Advisory Service, 1997.

Table 5: Trends in the National Passenger Rail Industry Since Privatisation

	1993/4	1998/9	% change
Passenger km (b)	30.4	35.1	+15.5
Passengers (m)	740	890	+20.3
Revenue (£m, 1997/8 prices)	2414	3028	+25.4
Receipts per passenger km (p)	7.9	8.6	+8.9
Punctuality (% on time)	89.6	91.6	+2.2
Reliability (% operated)	98.7	98.8	+1.0
Mean trip length (km)	41.1	39.4	-4.1

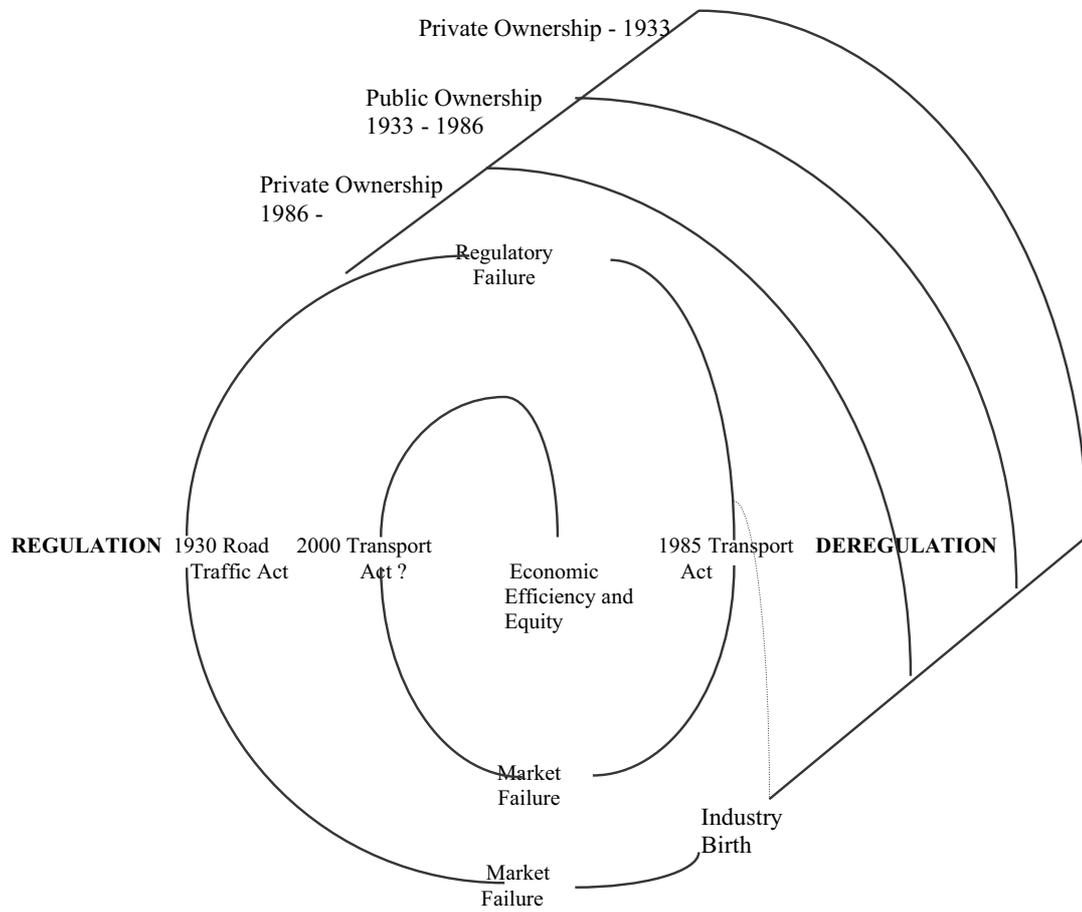
Source: DETR, 1999b.

Table 6: Forecasts of Passenger Transport Volumes in Great Britain
Billion Passenger Kms (Market Share in Percent in Brackets)

	Base 1996/7	Do nothing 2020	Do something 2020
Bus	40 (6)	24 (3)	91 (9)
National Rail	32 (5)	37 (4)	76 (8)
Local Rail	6 (1)	7 (1)	15 (2)
Cars, vans and taxis	619 (89)	837 (92)	781 (81)
TOTAL	697	905	963

Based on data from: DETR, 1997, 1998b, 1999b.

Figure 1: The Regulatory and Ownership Cycles in the British Local Bus Industry



Source: Preston, 1999.

CURRICULUM VITAE

NAME: Jonathan Mark Preston

PLACE AND DATE OF BIRTH: Leeds, England, 19 April 1960.

MARITAL STATUS: Married, Two Children

QUALIFICATIONS: **1981.** BA (Hons). Geography. Nottingham University.
1987. PhD. Economics. Leeds University.

PRESENT POST: **1997- University of Oxford.** Director, Transport Studies Unit, Reader in Transport Studies and Tutorial Fellow in Geography, St Anne's College

PREVIOUS POSTS: **1985 - 1997. Institute for Transport Studies, University of Leeds.**
1995-97. Senior Lecturer in Transport Economics and Course Director, MBA in Transport Management
1990-95. British Rail Lecturer in Rail Transport (Joint post with the School of Business and Economic Studies).

TEACHING EXPERIENCE

At the University of Oxford, undergraduate tutor in Human Geography and lecturer on Economic Geography and Urban Geography options. At the University of Leeds, module leader of the following modules: Principles of Transport Economics (MA Transport Economics), Public Transport Planning and Management (MSc Transport Planning and Engineering), Marketing Transport Services and Transport Market Analysis (MBA Transport Management). Have also lectured on courses at the Manchester Business School and the Universities of Bradford and Lancaster, on three courses for the Universidad Don Carlos III, Madrid and on one courses for the University of Indonesia, Jakarta.

RESEARCH EXPERIENCE

Have held over 40 grants and contracts with a total value in excess of £1 million, including two major grants from ESRC, two major grants from SERC/EPSRC and three major grants from the CEC, DGVII (Transport) including the SORT-IT project. Have published over 60 articles, book chapters, conference and working papers in the areas of transport demand forecasting, evaluation, regulatory studies and information systems. Particular expertise in the rail and bus industries, with recent work for City of York Council, DETR, North Yorkshire County Council, Oxfordshire County Council, OPRAF and Stagecoach plc.

RECENT PUBLICATIONS

"Twenty-one Sources of Error and Bias in Transport Project Appraisal" (with P. Mackie). *Transport Policy*, 5, 1, 1-7, 1998.

"Investment Planning and Appraisal Issues in the Privatized Railway - the British Experience" (with A. Bristow and C. Nash). *Transport Reviews*, 18, 4, 353-362.

"An Analysis of the Potential for On-track Competition in the British Passenger Rail Industry" (with G. Whelan and M. Wardman). *Journal of Transport Economics and Policy*, 33, 1, 77-94.