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RAIL PRIVATISATION: THE ECONOMIC THEORY

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CONTENTS

ABSTRACT

The purpose of this paper is to examine the relevance of economic theory to the rail privatisation proposals contained in the Railways Act 1993. After a review of the latest rail privatisation literature four major themes emerged:

(1) Contestability and Barriers to Entry.

(2) Franchising.

(3) Vertical Integration.

(4) Horizontal Integration.

Following a short review of the rail privatisation proposals the paper presents each theme in the context of the proposals. In conclusion, we highlight a number of future issues which will require monitoring and research in the future. In particular, we identify a number of hypotheses, put forward by both those in favour and against the Government's proposals, that should be tested.

1. INTRODUCTION

In July 1992, the British Government published a White Paper, 'New Opportunities for the Railways'. This outlined the government's proposals for the privatisation of and introduction of competition into British Rail (BR). Over a year later and after considerable discussion the Railways Act (1993) has been enacted and took effect from the 1st April, 1994.

The Railways Act (1993) can be viewed as the culmination of government policy, which during the past 10-15 years has sought to reduce its subsidy payments to BR through improvements in productive efficiency and placing emphasis on commercialisation within the BR organisation.

This policy resulted in a total reorganisation of BR from a regional basis to a sector basis. From 1962 to 1982 BR was organised on a regional basis, with each region responsible for a variety of services. Some services that exhibited economies of scale, such as procurement and finance, were centralised. This organisational structure made allocating responsibility for revenue, subsidy and costs a very imprecise process. There was also a separation of the commercial and the operating roles of management, right up to the Chief Executive level.

In an aim to improve the accountability of services, and managers, BR was reorganised into five sectors, Intercity, Regional Railways, Network Southeast, Freight and Parcels (see Castles, 1993). Staff and assets were made sector specific, although operations were still carried out by the operating department. The two main advantages of this organisation (see Preston and Nash, 1993) were (i) it made possible the definition of much clearer lines of managerial control and (ii) every manager had much tighter control over assets and so increased accountability for both his own and his sector's performance.

This policy, coupled with government cuts in subsidy throughout the eighties, has resulted in an impressive improvement in both BR's productive and commercial performance, as illustrated by Table 1.1.

Table 1.1: BR Performance 1979-1991/92 (1991/92 prices)

	1979	1983	1989/90	1991/92
Total Grant (£m)	1,237	1,430	705	1,035
Pass. Route Miles	8,955	8,932	8,897	8,880
Pass. Miles (millions)	19,000	18,350	20,908	19,920
Fare per passenger mile	9.14	9.69	10.81	10.51
Passenger Stations	2,365	2,363	2,483	2,473
Passenger Train Miles (millions)	196	203	225	231.3
Train Miles per Member of Staff	1,521	1,686	2,043	1,996

Source: British Railways Board, Annual Reports and Accounts

Without wishing to dwell on Table 1.1, it can be seen that BR has succeeded in significantly reducing its total grant/subsidy throughout the eighties with only a slight reduction in the passenger network. The main reason for BR's improvement in performance is rooted in staff productivity, which grew by 34% between 1979 and 1989/90. The start of the recession in 1990/1 and the increased concern over safety reduced the gains achieved, but the overall performance was still impressive. Proponents of privatisation felt such an improvement gave an indication of potentially larger productivity gains from the full scale privatisation of BR.

This opinion was reflected by the government, who felt that BR could improve both productivity and financial performance. It ultimately envisaged BR, or a large part of BR, surviving on no subsidy and making a commercial rate of return on its assets, see Foster (1994). This, together with two new European Commission directive 91/440 and Council Regulation No 1893/91,

(1) Member states must establish separate accounts for infrastructure and for train operations.

(2) Operating companies providing international rail passenger transport are to have transit rights over Member States railway networks by the 1st January, 1993.

has been the stimulus for the Railways Act 1993.

2. THE PROPOSALS CONTAINED IN THE RAILWAYS ACT 1993

This section presents firstly, a general overview of the proposals and then concentrate on the roles to be played by Railtrack, the Franchisees, the Franchise Authority and the Regulator.

2.1 A GENERAL OVERVIEW

Rather than privatise BR as a vertically integrated company, the government has split BR into two parts, infrastructure and operations. The provision and operation of rail infrastructure (track, signalling etc...) becoming the responsibility of Railtrack. Initially, Railtrack will remain in the public sector, but is still expected to act as a commercial organisation, recovering its full costs and earning a rate of return (5.6% initially, but eventually 8%) from charges it levies on operators. It is envisaged that Railtrack will eventually be privatised. Railtrack's other responsibilities will include arranging the maintenance of the infrastructure, monitoring of on track safety and the timetabling of all services across the network.

By creating Railtrack the government has retained the infrastructure as a natural monopoly and eradicated the 'sunk cost' element it would otherwise represent for new entrants into the rail market. The government sees this reduction in an entrant's 'sunk costs' as a vital ingredient for allowing competition on the railways. Entrants' 'sunk costs' will be reduced even further with the creation of Rolling Stock companies (ROSCOs), that will offer a range of rolling stock for operators to lease.

On the operating side, both the Freight and Parcels divisions will be sold outright. Trainload Freight and Railfreight Distribution's Contract Services division will be formed into three new competing companies organised along geographical lines based around a North East, South East and West/Scotland division. Each division will have access to its own maintenance depots and rolling stock, and will not be local monopolies. The divisions will have to negotiate with Railtrack for 'paths' and will immediately face 'open access' from other freight hauliers.

Railfreight Distribution's European business will be managed through the start-up phase by BR and privatised as soon as possible, once the key Channel Tunnel freight services are established. The government is also inviting proposals from the private sector to participate in the Freightliner network (existing losses prohibit outright privatisation). The Parcels sector will be privatised as two separate parts, Red Star and Rail Express Systems (an attempt to sell Red Star has already failed).

Looking at the passenger side 25 Train Operating Companies (TOCs) have been created, reflecting the number of profit centres that existed under BR (see appendix one for a list of TOCs and their main characteristics). These TOCs will eventually be franchised out to private companies. At the moment the TOCs are trading, within the remnants of BR, as Train Operating Units (TOUs), however I will only use the term TOCs through the rest of this working paper. The Office of Passenger Rail Franchising (OPRAF) will set minimum standards in terms of frequency, reliability and overcrowding and stipulate maximum fares. It will also want to be satisfied that potential franchisees meet all the safety criteria that presently exist. For some

Intercity routes, franchisees will be expected to pay for their franchises, whilst on loss-making routes the 'lowest subsidy offered' will be the criterion. However, the latest set of infrastructure charges published by Railtrack make all routes loss-making (with the possible exception of Gatwick). Any franchise not let will continue to be operated by the British Railways Board (BRB).

OPRAF will then have to negotiate a contract with Railtrack, for paths and the appropriate charges for the new franchisees. From April (1994) the TOCs will operate as independent subsidiaries of BR. By the end of 1995 the first franchises will come into existence. Rather than franchise the whole network together, the government has earmarked six 'shadow franchises' to form the first wave of franchises. These comprise: 'Gatwick Express', 'London, Tilbury and Southend', 'South Western', 'Scotrail', 'East Coast Mainline' and the 'Great Western'. The new railway system will also incorporate an 'open access' policy. This will allow other operators (possibly other franchisees) to operate services on any section of the network, providing they satisfy all the regulations set down by the Regulator (including safety) and have negotiated 'access contracts' with Railtrack. However, it is envisaged that 'open access' will be delayed for two years to allow rail franchisees to overcome initial stumbling blocks, a so-called 'honeymoon period'.

The final player in the government's Railways Act 1993 is the Regulator, whose role we will cover in more depth later in section 2.5.

2.2 RAILTRACK

From April 1994 Railtrack assumed responsibility for Britain's rail infrastructure. Railtrack itself sees its role as,

* supplying track access to train operators, managing time-tabling and signalling, and ensuring that the infrastructure is maintained and improved to meet the needs of train companies.
* maintaining and improving the industry's safety performance.
* charging for track access to meet the costs of infrastructure maintenance and improvements, and seeking new sources of investment for infrastructure improvements.
* leasing stations and depots to operators or, in some cases, to independent station managers.
* acting commercially, ensuring the needs of customers are met and that charges are structured to encourage use of track.
* establishing clear contracts that set out Railtrack's duties to its customers and the standards to be met by operators and contractors.
* 'buying in' maintenance from infrastructure companies formed from within BR.

(Source: Railtrack, "A Guide To The Organisation", 1993)

Railtrack is organised around ten geographical zones, who work closely with the head office team in planning and implementing Railtrack's policies and strategies. As

previously stated the main responsibility of Railtrack is to operate and maintain the infrastructure and operations control of the former BR network.

All maintenance work has initially been contracted out to the newly formed Infrastructure Companies (ISCOs). There are be fourteen ISCOs, constituted out of the engineers and management who currently maintain BR's track and signals. Their geographical spread ensure that each Railtrack zone has a choice of several contractors. Eventually the ISCOs will be privatised (target date of April 1996) and all maintenance work competed for. The government hopes the resultant competition will provide both efficiency gains and quality improvements. The maintenance contracts are worth £1 billion per year so the incentives to enter the market are quite substantial for private firms. The government sees this area as ripe for substantial cost-savings. However, Railtrack has made it quite clear that safety will not be sacrificed in this area, with contracts being clearly specified and monitoring of work in effect.

Railtrack will supply track access to franchisees via contracts negotiated with the Franchise Authority. The contracts will define in detail Railtrack's responsibilities to its customers and the customers responsibilities to Railtrack. Contracts will include details of 'paths' and the charges for them.

Railtrack is a government owned plc and as such is a commercial organisation. The government has made it clear that it expects Railtrack to cover its costs and earn a rate of return.

> "Railtrack will be required to cover its costs. It will wish to invest to replace assets and improve the quality of service to customers. Investment expenditure including a rate of return and other costs will therefore need to be reflected in charges for the use of infrastructure..."
>
> (Department of Transport, "Gaining Access", para.2.3, 1993)

On track charges the 'Gaining Access' document said,

> "Access charges for the first franchises across the network will be set by Railtrack taking into account all the costs associated with providing the facilities and services to support the franchise. The level will be determined after taking into account the contributions to common costs which Railtrack expects to receive from freight and non-franchised passenger operators. Charges will comprise of a fixed charge and a variable, usage-related component. The fixed component will cover those fixed costs which are directly attributable to the operator and an allocation of common costs. The variable component will relate to avoidable costs directly associated with the frequency and timing of service." (paragraph 6.9)

The exact workings of the charges can be found in 'Railtrack Access Charging Principles and Procedures' (February 1994). They can be broken down into a *variable* component, a *fixed cost* component and a *stations* component.

The *variable* component will comprise of,

(i) **Traction Current:** This is directly variable with the type of electric stock run, the nature of the route it runs over and the mileage performed.

(ii) **Track Usage:** This encompasses those elements of track maintenance which vary with volume and speed - and by no means all do - together with a measure of the extent to which track life is reduced as traffic levels increase - sometimes referred to as the effect on renewals periodicity. This is based on the BR model MARPAS (see Dodgson, 1994).

The *fixed cost* component are allocated to specific operators using 'long-run avoidable costs'. In cases where such costs are common or joint, Railtrack sets out the following charging principles,

> "Having accounted for any contributions to common costs which the market position of certain Non-Franchised traffics might permit, the rule has been that the balance of common costs must be exhausted by **allocative means** between relevant Franchising Passenger TOUs."
>
> (Railtrack, 1994)

The *stations* component refers to Railtrack's costs of ownership of the station structures, whether franchised or not.

Beside track charges, Railtrack will levy four other charges.

(a) **Independent Station's (ISO) Station Operator Access**

(b) **Station Leases**

(c) **Depot Leases**

(d) **Other Charges/Adjustments:** for example Performance Payments that reflect Railtrack's contribution to levels of reliability and punctuality achieved (similar to AMTRAK's payments to freight operators in the USA).

The net effect of the new rail charges is to increase costs overall. In the government's view this is because,

> "...there are now more costs classified as **marginal costs** and fewer as overheads or common costs, and also because the Government is now requiring a return of 5.6% on all assets."
>
> (Foster, 1994)

However, increasing the number of costs classified as marginal costs affects the allocation of costs not the total amount of costs. Foster's statement also fails to recognise the role played by Modern Equivalent Asset Value (MEAV) in the cost equation. The key issue as regards cost increases is the valuation of Railtrack's assets. The treasury has valued them at £6.5 billion, up to £4 billion higher than Robert Horton (Railtrack's chairman) had sought, arguing that many of the assets were so dilapidated as to represent liabilities (Local Transport Today (LTT), 17th March, 1994).

In the government view this will give the correct cost signals and be a true reflection of infrastructure costs. Table 2.1 contains Railtrack's projected track access charges for 1994/95. For Intercity services the charges represent a significant amount of projected revenue, 75% in the case of the East Coast, 66% in the case of the West Coast and 83% for Anglia.

Table 2.1: Projected Track Access Charges

	Passenger Income		Railtrack Estimated Charges
	91/92	94/95	94/95
INTERCITY			
East Coast	209.0	230.0	172.0
West Coast	239.2	263.2	173.0
Anglia	30.7	33.8	28.0
Cross Country }			105.0
}	167.3	184.1	
Midland }			43.0
Great Western	158.9	174.8	121.0
Gatwick	24.6	27.0	8.0
NETWORK SE			
North	50.6	55.7	56.0
Great Eastern	100.3	110.4	68.0
Thameslink	50.3	55.4	43.0
Thames }			37.0
}	43.5	47.8	
Chiltern }			23.0
WAGN	94.6	104.1	127.0
LT&S	56.3	61.9	40.0
South Eastern	205.0	225.6	179.0
South Central	151.1	166.3	109.0
South Western	230.3	253.4	171.0
REGIONAL			
Scotrail	81.6	89.8	178.0
North East	48.6	53.8	170.0
Central	67.9	74.7	135.0
North West }			121.0
}	65.1	71.6	
Mersey Rail }			38.0
S.Wales & West}			52.0
}	39.6	43.6	
Cardiff Valleys }			22.0

Source: Railtrack

Given that these are only track charges, one must ask whether or not potential franchisees will actual pay for these InterCity franchises (with the exception of Gatwick)?

In all cases only traffic that can cover Railtrack's charges will be given access. The exception to this will be freight traffic for which wider benefits are obtained by switching from road to rail. This is covered by the new Track Charges Grant Scheme, under which:

"Grants would be paid under a contract between the Government and the operator. Revenue grant of up to 100% of the charge negotiated with Railtrack would be available, where this is necessary to retain or attract traffic to rail and justified in terms of the wider benefits obtained."

(Gaining Access, para. 4.7, 1993)

As well as maintaining and operating the rail network, Railtrack is expected to invest in new infrastructure. Funds for investment are meant to come from track charges and from 'other sources'. These 'other sources' may be interpreted as joint projects involving TOC/Franchisees or other private sector sources, the National Loans Fund and government grants for socially desirable infrastructure schemes. At this stage the definition is very loose.

Within Railtrack a Property Directorate has been set up that is responsible for the Railtrack property portfolio including stations, operational land, arches under railway lines, and railway buildings. The property directorate will devise schemes for the management of 'independent stations' and for the access arrangements and duties of train operators leasing stations. Great emphasis is being placed, by the government, on the development of stations by the private sector (not necessarily rail operators).

The two other main roles of Railtrack are in **safety** and **timetabling**. Both roles are seen as essential to ensure passengers' well being in terms of health and network benefits. Railtrack is assisted in developing safety policy and strategy by the Health and Safety Executive. Given the recent spate of accidents, such as Clapham Junction, this role is seen as one of major importance. Similarly, timetabling, train planning and signalling are key roles for Railtrack. Not only are they necessary to ensure passenger safety; they also help preserve network benefits for passengers, for example minimising interchange time on through journeys.

The final point regarding Railtrack is its long term future. At the moment it is operating as a public sector plc, however the government hopes to privatise the organisation as a whole. It has also stated that in exceptional circumstances it will allow franchisees to be vertically integrated e.g. Isle of Wight.

2.3 FRANCHISEES

The franchisees will eventually take over the passenger operating side of BR. Franchise agreements will be specified by OPRAF in terms of services to be provided, their reliability and in some cases maximum fares. The system of franchises will initially be based upon the present timetable and departures/changes will only be allowed where the Franchising Director judges it in the passengers' interest. The final say will still rest with the Regulator who is the only person authorised to issue operating licences. It is his statutory duty to promote competition and to protect the interests of users, ensuring that train operators are treated fairly by infrastructure owners.

The Franchise Authority will negotiate with Railtrack for the paths necessary to run the Franchises (Access Agreements). However this will only apply to the first generation of franchises, after that Railtrack will be under no obligation to provide paths required for the Franchise Director. This opens up the paths for 'open access', who may bid more than the Franchising Director. The government has promised sufficient resources to continue to fund socially necessary services via the Franchise Director.

Included in the Access Agreements with Railtrack will be access to stations and depots. Franchisees will be able to lease rolling stock from one of the three ROSCOs that are to be formed. The ROSCOs will take over some workshops to repair and refit their rolling stock, whilst Franchisee's will operate smaller workshops to carry out minor running repairs on rolling stock. However, any major repairs and refits will be carried out by the three Train Engineering Service Companies (TESCOs). The creation of ROSCOs, like the creation of Railtrack, has been designed to reduce the 'sunk cost' element facing potential franchisees and open up passenger services to competition. The government also envisages efficiency gains from competing ROSCOs, which will complement higher utilisation of rolling stock by Franchisees. Besides leasing former BR stock, Franchisees will be required to take on existing BR staff. The government hopes this will allow 'new working practices' to be introduced into the railway industry and stimulate increased labour productivity. BR employees work the highest mean hours per annum of any western european rail worker and earn the third lowest hourly pay rate of any western european rail worker (see Preston et al, 1994).

The government has given a central role to Franchisees in the Railways Act (1993). It sees competition 'to supply' resulting in more dynamic and efficient provision of rail services. Whether this view can be substantiated will be looked at in section 3.3 of this working paper.

2.4 THE FRANCHISE AUTHORITY - OFFICE OF PASSENGER RAILWAY FRANCHISING (OPRAF)

Section five of the Railways Act (1993) sets out the general duties of the Franchising Director. The role of the Director is,

> "(a) to fulfil, in accordance with such instructions and guidance as may be given to him from time to time by the Secretary of State, any objectives given to him from time to time by the Secretary of State with respect to-
>
> (i) the provision of services for the carriage of passengers by railway in Great Britain; or
>
> (ii) the operation of additional railway assets under or by virtue of any franchise agreement or any provision of sections 30 and 37 to 49 below.

(b) to ensure that any payment to which this paragraph applies are such as he reasonably considers will achieve economically and efficiently any objectives given to him by the Secretary of State"

(Section 5 (1) of the Railways Act 1993)

The payments which paragraph (b) refers to are,

"(a) any payments which the Franchising Director may be required to make pursuant to a franchise agreement;

(b) any payments which the Franchising Director may make with a view to securing-

(i) the provision of services, or
(ii) the operation of any network, station or light maintenance depot, or any part of a network, station or light maintenance depot."

(Section 5 (2) of the Railways Act 1993)

It is clear from the Railways Act (1993) that the responsibility for the provision of passenger rail services, as set by the Secretary of State, rests with the Franchise Director. At the moment the services he has to provide are those that are presently provided by BR. As should be clear by now, the Director will provide those services through a network of 25 franchises that will be let by a process of competitive bidding. In most cases he will be accepting the lowest subsidy bid and it is this subsidy payment that is referred to in paragraph (b) of section 5 (1).

Two other points can be highlighted. Throughout subsection (1) of section 5 of the Railways Act, constant reference is made to 'objectives of the Secretary of State'. This makes clear the function of the Franchising Director as an agent of the Secretary of State and also sets up the potential for conflict between the Secretary of State and the Regulator, if the two have different objectives.

The second point that can be highlighted is the role of the PTEs. Sections 32-36 of the Railways Act (1993) also allows Passenger Transport Authorities and Executives (PTAs and PTEs) to secure provision of train services for their areas as part of a Franchise agreement, in conjunction with the Franchise Director.

2.5 OFFICE OF THE RAIL REGULATOR - ORR

The general duties of the Regulator are outlined in section four of the Railways Act 1993. His role will cover all activities of railways in Great Britain and will involve discussion with Railtrack, TOCs/Franchisees, Private Freight Operators, Private Parcel Operators, Open Access Operators and the Franchise Director. His roles are as follows,

(i) **Competition and Fair Access** - The Regulator will have to ensure that Railtrack does not abuse its monopoly position and does not discriminate between different franchise and 'open access' operators (see Nash, 1993). As such all access agreements will be subject to approval by the regulator. If he finds any agreements unacceptable he can ask for them to be modified. The regulator will also monitor the quality of Railtrack's service to operators and take appropriate action if he feels it fails to meet the criteria in the access agreement.

(ii) **Rail Operators** - Licences that allow rail operators to operate are issued by the Regulator. Before issuing such licenses he will have to be satisfied that the operators are 'safety validated' and properly insured. He will also impose 'through ticketing' on operators as a social obligation. Other 'social obligations' include concern for the environment and the interests of disabled passengers. Quite how the Regulator will interpret these is still not known (although with freight, the environment will be covered by the new Track Charges Grant Scheme).

(iii) **Closure** - Closure procedures are set out in sections 37 to 50 of the Railways Act 1993. Any closure proposal will first of all be brought to the attention of the Franchise Director who in turn will notify the Regulator. The Regulator will then decide if a closure can occur and may attach conditions to the closure. In the event of closure any aggrieved parties may appeal to the Secretary of State. The major change is that there is no longer the constraint to operate services that are 'broadly comparable' with those that existed in 1975.

(iv) **Users Interests** - paragraph (a) of subsection (1) in section 4 of the Railways Act states that part of the regulator's duties is, 'to protect the interests of users of railway services'. The main voice for users in the new rail set up are the Rail Users Consultative Committees. These will succeed the current Transport Users Consultative Committees and will report directly to the Regulator. The new committee will still have no powers of its own, but its reports will go to the Regulator who has considerable power and a remit to take notice of such reports. This is an improvement on the current situation where the committees are more of a pressure group rather than an integral part of the policy making body.

(v) **General Duties** - The act places great emphasis on the Regulator always promoting 'efficiency and economy on the part of persons providing railway services', on developing the 'rail network to the greatest extent that he considers economically practicable' and 'to enable persons providing railway services to plan the future of their businesses with a reasonable degree of assurance'. One would therefore expect the Regulator to promote 'open access' to the greatest possible extent, while maintaining a broadly homogenous degree of service provision.

(vi) **Secretary of State** - Until December 31 1996, the regulator must take into account any guidance given to him by the Secretary of State. This is designed to overcome any initial 'teething troubles', in particular as regards 'open access'.

3. THE ECONOMICS BEHIND RAIL PRIVATISATION

3.1 Introduction

This section reviews the economics behind rail privatisation, especially the material that has appeared in the last couple of years. A review of the latest literature led to the identification of four major themes, (1) Contestability and Barriers to Entry, (2) Franchising and Open Access, (3) Vertical Integration, (4) Horizontal Integration. Each of these themes are now examined in greater detail.

3.2 Contestability and Barriers to Entry

3.2.1 Literature Review

One of the central aims of the privatisation proposals, contained in the Railways Act 1993, was to open up the rail market to competition, to make it contestable. It sees competition as the mechanism through which will come efficiency gains, cost/subsidy reductions, innovation and improvements in service quality. So how contestable will the privatisation proposals make the rail market?

The theory of contestable markets was put forward by Baumol (1982) and Baumol et al (1986). Since its appearance the theory has been used as a yardstick to judge the contestability of various industries and was a central tenet in David Starkie's proposals (1984) that the Railways Act 1993 has embraced. The theory promulgates that the 'threat of entry' into a market results in incumbent firms behaving in an efficient manner. It is this concept that the rest of this section concentrates upon.

The theory of contestable markets maintains that it is possible to obtain the benefits of competition without large numbers of competing firms. As Dodgson (1993a) acknowledges,

"If an industry can be made perfectly contestable then the mere threat of competition will encourage existing firms to 'behave' e.g. price at average cost, ensuring costs are minimised for the output produced and (as long as the industry is not a natural monopoly) setting prices equal to marginal cost too."

Even in the case of a natural monopoly the adoption of a break even constraint in a contestable market, through the adoption of Ramsey optimal prices and output, will lead to a pricing regime of less than average cost for some elastic goods and higher than average cost for other, elastic goods. For this to be sustainable requires sub-additivity of costs. The crux of the theory is that potential competition will lead to the same, if not better, results than those procured through actual competition.

For a market to be perfectly contestable three key assumptions have to be fulfilled,

(1) The entrants and the incumbent must be symmetrically placed, in that they are subject to the same regulations, possess similar market knowledge, have access to the same technology and produce output at the same cost and that is perceived of being the same quality.

(2) There must be an absence of 'sunk costs', so entry and exit into a market is costless e.g. any assets accumulated can either be used for the production of other goods or their value recouped in second-hand markets.

(3) 'Hit and run' entry must be possible. That is to say either consumers reaction times to price differences must be quicker than the incumbents, or it is possible for entrants to enter into secret supply contract negotiations with consumers to secure a period of profitable entry.

If all three conditions are fulfilled then any transient profit opportunities needn't be neglected by possible entrants. They can enter the market, exploit the profit opportunity and leave the market before the incumbent has had time to react. The result is that the incumbent is constrained to set price equal to average cost if he/she prices above average cost then he/she faces entry from potential entrants (although, as noted above a multi-product monopolist facing economies of scope will be the one exception to this). Thus, according to Brewer (1994), producing allocative efficiency, X-efficiency and normal profits. The assumption also holds for a multi-product producer experiencing economies of scope.

The central theme of the Railways Act 1993, has been to make railway operations contestable via 'franchises' and 'open access'. How closely does the privatisation developments, contained in the Railways Act 1993, mirror the assumptions of contestable market theory? To aid this analysis each assumption is looked at in turn.

The first assumption specifies that both the entrants and the incumbent must face similar costs, similar regulation and have access to the same technology and produce an output of similar perceivable quality. The creation of Railtrack, ROSCOs and TESCOs, and the promise of equality in charges and access/service would suggest that potential franchise bidders and 'open access' operators will face similar costs (in a given franchise area). Discrepancies in costs could possibly occur for the leasing and maintenance of rolling stock if the larger franchises were able to obtain discounts from the ROSCOs and TESCOs. This might effect the relative competitiveness of 'open access' operators or the equality of bids for franchise renewal.

The creation of ROSCOs and TESCOs has meant that, initially, potential rail operators have access to the same technology. Again this may change over time depending upon whether franchisees and 'open access' operators decide to invest in rolling stock that is technologically superior to that offered by ROSCOs or in their own depots, as was the case with BK-Tag in Sweden (section 3.7, ITS Working Paper 420). However, in the short term this is unlikely to be the case but the potential is still there.

A further imbalance between incumbent and entrants is likely to originate from the knowledge of the market each possesses. The incumbent will possess information on passenger demand and flows, price elasticities and the effect of service changes. Such information will not be available to potential 'open access' entrants and will reduce their ability to set fares and services at optimum levels for their entry into the market.

The second assumption specifies that there must be an absence of 'sunk costs' to facilitate costless entry. The privatisation proposals for BR separates infrastructure from operations, thus eradicating the major element of sunk costs inherent in railway operations. The creation of ROSCOs and TESCOs has also considerably reduced the 'sunk costs' facing a potential entrant, and so the cost of entry and exit into rail operations. Potential entrants are able to lease rolling stock from ROSCOs and can contract out any major maintenance work to TESCOs depots, all without any capital investment that might constitute 'sunk costs'. A further 'sunk cost', that of terminals, has also been removed with ownership passing to either Railtrack or Independent Station operators. At first glance then it would appear the privatisation proposals have reduced, by a considerable degree, the element of 'sunk costs' that a potential rail operator might incur. However, there may still be some 'sunk costs' in the form of recruitment and training of staff. Further 'sunk costs' may also be incurred due to marketing activities, which with an established brand name may be very substantial.

Regulation of the rail industry will be carried out by the Office of the Rail Regulator (headed by John Swift QC). Again the government have gone to great lengths to stress the impartiality of the regulator and his role in ensuring fair and equal treatment for all franchises and 'open access' operators as regards track charges and track access. Whether some kind of regulatory capture occurs only time will tell, but initially it would be fair to presume that all potential rail operators would face similar regulation.

The privatisation proposals once again appear to satisfy another condition for contestable markets. The third condition specifies that 'hit and run' entry must be possible, and it is here that the privatisation proposals look prone to failure. Take the example of an 'open access' operator who wishes to compete with an incumbent franchisee. 'Hit and run entry' relies upon the incumbent being unable to respond quickly to entry by either reducing price and/or output. However, the privatisation proposals are such as to give advance warning of any potential 'open access' entry into the rail market. An 'open access' operator must recruit rail staff, negotiate with the ROSCOs and TESCOs and satisfy the Regulator that they comply to all the safety requirements governing rail operations, all before he/she begins rail operations. Such activity is very likely to alert any incumbent franchisee or 'open access' operator to the possibility of another entrant, allowing them to respond even before entry occurs. Even if this pre-entry activity fails to alert incumbents to the potential entry the entrant's negotiations with Railtrack surely will. One of Railtrack's responsibilities is to produce a national timetable and ensure the survival of network benefits for passengers. The timetable will be changed twice per year and any new services will have to be discussed with the incumbent operators to ensure the national timetable and network benefits are maintained. Not only will this forewarn incumbents of entry, but it will also limit the opportunities for entry/new services. This interpretation must be viewed with care, since the lack of opportunity to change service may negate the incumbents' ability to respond to entry by changing their own service levels, **but not their price and service quality**. This suggests that where competition occurs it will, at least initially, do so in the price and service quality dimensions only. An exception to this rule has been identified by Nash and Preston (1992). They suggest that the trainload freight market which is dominated by a few very large customers may be susceptible to 'hit and run' entry through the negotiation

of secret contracts with these customers. However, even this may be pre-empted by the adoption of a 'never knowingly undersold' policy by the incumbent.

A further weakness in the privatisation proposals is that both freight and passenger services exhibit economies of scale and density. Preston (1994), found that in terms of economies of scale with respect to operating costs, the smallest western european rail operators exhibit increasing returns, the medium western european rail operators exhibit constant returns and the largest western european rail operators decreasing returns. In terms of returns to density, all railways exhibit increasing returns, with the exception of the most heavily used systems. He concludes that to minimise costs calls for a network of 4,000 km operating around 120,000 million train kms per annum. It seems highly unlikely that any 'open access' operator would be capable of, or desire, entry at such a level, unless such an operator was an existing franchisee. In any event the proposed rail franchises would be unable to support two operators of that size. Despite this evidence there is still the prospect of entry by 'open access' operators into niche markets such as 1st class travel, where minimum costs are not as important as the quality of service. Furthermore, studies carried out by Caves et al (1980) and McGeehan (1993) have listed the only economies existing as being those of density associated with infrastructure, not rail operations.

Finally the existence of 'sunk costs' in the form of recruitment and training, and possibly rolling stock also add to the cost of 'hit and run' entry.

Already it can be seen that the privatisation proposals do not result in the creation of a perfectly contestable market for rail. This is before possible strategic and innocent barriers to entry have been considered. Dodgson (1993a), Nash and Preston (1992) and Brewer (1994) look at a variety of innocent, strategic and predatory barriers to entry. The existence of innocent barriers to entry make any market less contestable and give rise to strategic and predatory barriers.

Innocent barriers take several forms in the rail industry, the largest being economies of experience e.g. management and staff knowledge and training. The first wave of franchises will take on a large of number of BR staff and in the process will obtain such economies. These will be reinforced, during their 'honeymoon period', for when 'open access' operators enter the fray. Such economies will also give a distinct advantage to the incumbent franchisee and to Management Employee Buy Outs (MEBO) during the 'renewal stage'. The franchisee is likely to be larger than any 'open access' operator and have easier access to capital and face a weaker bankrupt constraint. Brand image and loyalty can also act as innocent barriers to entry.

The existence of these innocent barriers gives rise to strategic and predatory barriers to entry. The former are carried out before entry takes place and are normally in the form of price/service matching promises. This could result in franchises matching 'open access' operators prices or each others in areas where they compete directly e.g. Edinburgh to Glasgow. Some of the strategic barriers that occurred in the deregulated air, coach and bus market, such as 'denying access to terminals and depots', will be unlikely to occur given the independence of termini and depots. Other barriers derived from the ownership of travel agents, computerised reservation

systems and ticket counters may exist and should be monitored for. Service matching might be harder to accomplish for timetabling reasons as outlined earlier.

Predatory barriers can take the form of unsustainable fare cuts just before entry and during the entry of a new operator. The success of such barriers will depend upon the financial muscle of both operators and the characteristics of the operators service and the market segment that they are competing for. If the new entrant is aiming at the 1st class or commuter market, customers may be relatively price inelastic and have greater interest in service quality variables e.g. comfort, reliability and journey time.

The existence and success of strategic and predatory barriers to entry, and indeed the 'contestability of the rail market' depend to a great extent on the effectiveness of the Regulator. The problems facing the regulator take several forms. The first issue confronting the Regulator is that of distinguishing predation from genuine competitive responses, (Dodgson and Katsoulacos, 1991). To be able to do this he needs reliable and realistic information on costs and revenues. Nash (1994) and Gylee (1993), feel the institutional complexities of the privatisation proposals and the presence of substantial joint costs will prevent him from achieving this. Nash (1994) also feels the Regulator will have a clash of interests with the Franchise Director on the subject of 'contestability'. The Regulator is meant to encourage competition from 'open access' operators, but if such operators succeed in 'cream skimming' from a franchisee's operations, then a franchisee's subsidy requirement from the franchise director will rise significantly if it is to continue to provide a network of services as defined in the franchise. It is not in the Franchise Director's, and possibly the Treasury's, interest to allow competition with franchisees, especially if it was felt such competition was not being charged fully for 'rail access'. The latter point could occur in the short run if Railtrack has spare capacity on its lines and is willing to recover only part of its fixed costs along with its variable costs. Baumol's Efficient Component Pricing Rule could be applied in this case (Baumol, 1983), that is the difference between the revenue earned by the existing operator and their out of pocket costs of running a train in a comparable slot. However, the information requirements for such a rule will not be precisely known to either Railtrack or the regulator. The rule also assumes that the prices in the before situation are set efficiently, creating further information problems.

3.2.2 Summary:

Despite some success in achieving the first two conditions for a contestable rail market the privatisation proposals appear to fall short of achieving the third condition, that of 'hit and run' entry. Moreover, the safeguard for ensuring 'hit and run' entry, namely the regulator would appear to be facing a difficult task in achieving this and maintaining the other two conditions.

It is fair comment to conclude that the rail market under the privatisation proposals is not perfectly contestable in the Baumol sense. However, there would appear to be scope for competition in niche markets such as 1st class, where quality and reliability of service take priority over fare levels.

3.3 Franchising

3.3.1 Literature Review

The second central tenet of the privatisation proposals contained in the Railways Act 1993 is that of 'franchising'. Franchising was first suggested by Chadwick (1859) and resurrected by Demsetz (1968). It is designed to overcome the situation where, due to economies of scale, scope and density, the least cost producer is one of natural monopoly. Two problems immediately arise with this situation, (1) a natural monopoly maybe 'productively efficient' but that doesn't guarantee it achieving 'allocative efficiency' (Domberger, 1986), (2) there is no guarantee that the natural monopoly is 'productively efficient' as it may still suffer from X-inefficiency and lack dynamic efficiency (Toner, 1993). In both these cases some form of regulation would appear to be the solution e.g. rate of return or RPI-x. However Demsetz would argue for an alternative, franchising.

The concept behind franchising suggests that competition for the market can be a substitute for competition in the market. Firms' bid for the exclusive right to supply, with the firm offering the lowest price or highest payment (assuming no quality dimensions) awarded the franchise. The bidding process based on lowest price is known as the Chadwick/Demsetz auction and is designed to bring prices down to levels close to expected unit costs of production. Bidding based on highest payment is designed to reflect contestants expectations of the discounted stream of monopoly rents accruing to the operator over the life of the contract. This ensures that a large part of the future monopoly rents are appropriated by the franchising authority and that the most efficient producer is chosen (he can afford largest payment). However, as Domberger points out, this doesn't alleviate pricing inefficiencies associated with monopoly, hence the need for some element of price regulation. A similar view is held by Dnes (1993) who feels that in the case of rail franchising:

"Auctioning to the lowest bidder of the subsidy required to run a loss-making route at best simply minimises the subsidy without paying attention to wider allocative issues....The Government's proposals may confer small gains on travellers and could be much improved by the simultaneous application of price-capping."

Franchise contracts themselves take two forms, 'owning franchises' and 'operating franchises'. Owning franchises require the franchisee to provide all the capital assets involved in the production of that good or service prescribed in the contract. Such capital investment constitute 'sunk costs' which prevent 'costless entry and exit'. With an operating contract capital is provided by either the state or a public body. Whilst overcoming the problems associated with 'owning franchises', 'operating franchises' lead to inefficiencies in the deployment of assets which are not under the control of the operating agents who have the incentives to minimise costs (Preston and Nash, 1993).

Theoretically, franchising makes a market more contestable, improving both productive and allocative efficiency. It increases market contestability by allowing firms to bid for the 'rights to supply' before they have committed any resources to the attempted entry. Put another way, franchising reduces the 'sunk cost' element to

purely the costs of constructing the bid. In a capital intensive industry such 'sunk costs' may be substantial. Franchising also reduces the incumbents scope to employ predatory behaviour/reaction, since the new efficient entrant can take on the entire market immediately rather than gradually winning market share. The franchising mechanism will provide the regulator with information on the competitiveness of potential suppliers and reduce an incumbent's ability to mislead the regulator on cost issues. The threat of franchise termination should also serve to ensure satisfactory performance during the course of the franchise.

Franchising is not without its problems but before commencing any examination of these it will be useful to look at franchising in the context of the rail privatisation proposals.

The previous section concluded that the proposals contained in the Railways Act 1993 did not result in a perfectly contestable market as regards franchisees versus open access operators, and incumbent franchises versus potential franchises. Franchising is the second element in the government's quest for increased competition in the provision of rail services. Given economies of density surrounding rail operations (see Nash and Preston, 1993) it makes greater sense to promote competition for the market rather than in the market and thus secure such economies. The franchising proposals contained within the Railways Act 1993, would appear to recognize this (for the moment 'open access' shall be ignored). However, for franchising to operate successfully several pitfalls must be negotiated.

3.3.2 Potential Problems

Williamson (1976) was one of the earliest to point out the potential problems and downfalls of the franchise bidding process and the criticisms he made have remained relevant since, as is witnessed by the NERA (1992) study. What then are the potential pitfalls?

(1) The Bidding Process

It is essential that the bidding process is competitive. The number of bidders must be sufficiently large or dispersed to discourage collusion amongst the bidders. If collusion is possible then the expected lowest price bid rises. A recent survey in the Financial Times (21 July, 1993) was only able to identify 16 potential franchise bidders, the majority of which were local bus companies interested in operating local train services (hardly encouraging competition in public transport). This number will probably rise when more specific cost and revenue data becomes available from the shadow franchises, although the nature of the rail business may itself preclude a large number of bidders. Such a survey does serve to illustrate the point that the Regulator must guard against collusion and may face the danger of high subsidy bids for uncontested lines e.g. Scottish Television bid £2,000 in the recent television franchise auction.

If the number of franchise bidders remains small and they bid against each other constantly then the danger of collusion will rise. Not only will the regulator have to guard against collusion but also possible strategic behaviour on behalf of the

incumbent franchisee. Such behaviour can result from asymmetry of information between the incumbent and the entrant. To help overcome this the contract must be specified exactly, something the franchise director has already given assurances on.

Another crucial element in the bidding process is the presence of sunk costs, the presence of which increase the penalty of entry and exit, thus creating an asymmetry at the bidding stage. Williamson in particular recognises the sunk cost nature of 'human capital'. He classifies 'human capital' as sunk if the labour skills are highly specialised and specific to that market, and whether or not employees of the incumbent deal with potential entrants in a different manner. If the first condition is true then it will be,

"...inefficient to displace, fully, the experienced labour and management group that is employed by the winner of the initial franchise."

Regarding the second condition, Williamson conjectures that workers will treat the incumbent and entrant differently, due to 'informal understandings' with respect to job security, promotional expectations etc.... This doesn't mean that employee's will not negotiate with outsiders, but that such informal agreements will require more explicit formal agreements, so adding to the cost of an entrant's bid. The result according to Williamson is:

"If the original winners of the bidding competition realise non-trivial advantages in information and informal organisational respects during the contract execution, bidding parity at the contract renewal interval can no longer be presumed."

It would not be unreasonable to suggest that such 'human capital' exists within the rail industry. However, in the case of rail privatisation franchises, Williamson's point is made largely redundant, given that staff are automatically transferred to the winning franchise. Where it will be relevant is in the case of 'open access' operators. A problem may also arise in the form of an unsuccessful MEBO bid. The successful franchisee may obtain operations staff automatically but not necessarily the management staff.

2) Contract Specification and Duration

Several issues can be identified which are applicable to both contract specification and duration. If a contract can not be specified simply and comprehensively then the problem of evaluation immediately arises. In the example given by Demsetz (1968), license plates, the product produced by the franchiser was standardised and the only criteria to judge was that of price. Other franchises, such as terrestrial television, have a variety of price/quality proposals to judge. This will be the case with the Railway franchises, where bidders are likely to offer various quality of service, various prices and to a lesser degree various service levels (services in addition to those specified by the franchise director). Despite the government indicating that franchises will be awarded mainly on a lowest subsidy/highest payment basis, these extra quality dimensions may well be taken into account.

Tight specification can lead to execution problems during the franchise contract, see Williamson (1976). In an uncertain environment, where demand, costs. technology and supply conditions are likely to fluctuate then the chances of contract renegotiation will increase, especially if the franchise suffers from the 'winners curse' (the likelihood of which increases the greater the number of bids) and the contract period is long. Renegotiation will become a problem if the franchisee has information advantages over the franchise director. The franchisee can use his advantage to artificially inflate his costs. In most cases the franchiser is likely to succumb to renegotiation because (1) franchise agencies are loathe to concede error (2) the expense of another bidding round (3) problems of maintaining supply if the franchisee fails (although the existence of BRB forestalls this threat in the short term).

Given the uncertain nature of the Railway business (demand fluctuates greatly with the economic cycle) renegotiation is highly probable, although this is likely to be off-set to an extent if contract length is long. 'Open access' might also add pressure for renegotiation. The government has already indicated that it will allow renegotiation of franchise contracts where the case merits it. If the government is at a disadvantage information wise, then there might be a real danger of franchise subsidy increasing rather than decreasing in the future.

Conversely, lack of specification, in relation to quality variables and accounting procedures, can lead to execution problems. If punctuality, appearance and other such service variables are not well defined then the franchise authority may find itself with a service far removed from the one it envisaged. Similarly, if accounting procedure is not monitored and controlled then it may be used by the franchisee in a 'strategic sense' when they renegotiate contracts. Although no rail franchise contracts have been produced, indications at this stage are that specification of quality and accounting procedure will be very detailed, with financial penalties for failure to comply.

Preston and Nash (1993) identify the problem of contract specification and minimum efficient size. With 25 rail franchise contracts, it seems highly likely that some of them will fall below minimum efficient scale. The evidence for this is mixed, see section 3.5.

The importance of specification within a franchise contract is matched by the duration of the contract. A trade-off can be identified between short and long term contracts. Long term contracts give the franchisees an incentive to invest in capital and offers greater opportunity for realising positive profit streams throughout the franchise life. Domberger (1986) illustrates the point with a simple example and concludes that shorter contracts reduce the profit opportunities open to franchises and so reduce the number of bidders and the competitive output. Such a conclusion is a generalisation given other factors effecting the franchisee e.g. the asset specificity of the contract and variability of the demand. However, long term contracts have their share of problems. Longer contracts increase the likelihood of incumbents benefiting from important information advantages and possibly 'sunk cost' advantages that reduce competition at the 'renewal stage'. Long term contracts lack the threat of non-renewal that is characteristic of short term contracts and will be subject to constant renegotiation through out the contract period.

Short term contracts, according to Williamson (1986),

"...facilitate adaptive, sequential decision making."

They overcome the inflexibility of long term contracts. The constant 'renewal stage' acts as a discipline on the franchisee, leading to better performance and greater cooperation with the franchise authority. However, if the franchise is an 'owning franchise' a short term contract will give the franchise no overwhelming incentive to maintain its assets.

What then would be the ideal length for a rail franchise contract? A short term contract would no doubt put pressure on rail franchisees to meet service and quality specifications and should encourage them to reduce costs. It may also reduce the scope for strategic behaviour by the incumbent. However, a short term contract would not encourage investment by the rail franchisees themselves which may present problems for Railtrack who may look to rail franchises as a source of funds. The specialised nature of rail staff and operations may also make redundant the argument that short term contracts reduce the likliehood of incumbents benefiting from information and 'sunk cost' at the renewal stage.

Table 3.1 taken from Nera (1992), illustrates the characteristics of recent world wide rail franchises, more specific details of which are examined in the summary. The length of rail franchises varies from one year, for the Swedish case, to 55 years for the Channel Tunnel. In the majority of cases the franchiser provides the long lived specific assets, but only carries out major investment for short term contracts (Exception of the Swedish 15 yr case). In all the cases maintenance of rolling stock is carried out by the franchisee. The maintenance of the infrastructure is carried out by the franchisee, in the case of long contracts, and by the track owner, in the case of short term contracts (the exceptions to this pattern being Sweden and the Massachusetts Bay Transit Authority, MBTA). Another pattern to emerge from the Nera study is that of a reduction in contract specification the longer the contract and a tendency for contracts to take on a revenue, as opposed to a cost, format the longer the contract length.

Table 3.1: Rail Franchises

Franchise Characteristics	Sweden	MBTA(Boston)	SCRRA	Argentina Metropolitan	Sweden	MML	Argentina Freight	Argentina Intercity	Channel Tunnel
Length	1-10	3	3.5	10	15	15-30	30	30	55
Extension, yrs	None	1+1+1	3	10+10+10	none	?	30+30	10	none
Long-lived specific assets provided by?	Franchiser	Franchiser	Franchiser	Franchiser	Franchiser	n.a.	Franchiser	Franchiser	n.a.
Major Investment?	No	No	No	Yes	No	Yes	Yes	Yes	Yes
Maintenance of: Infrastructure Rolling Stock	Track Owner Franchisee	Franchisee Franchisee	Track Owner Franchisee	Franchisee Franchisee	Track Owner Franchisee	Franchisee Franchisee	Franchisee Franchisee	Freight Franchisee Franchisee	Franchisee Franchisee
Labour provided by	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee	Franchisee
Contract spec.	Fares Timetable Resource usage	Fares Service levels Train schedules	Fares Peak frequency No. round trips Travel time between stations	Fares Min. service Maintenance standards	Fares Timetable Resource usage	Min. service Minimum maintenance	Minimal fares	Min. service	Minimal Use Capacity
Cost or revenue contract	Cost	Cost	Cost	Revenue	Revenue	Revenue	Revenue	Revenue	Revenue

LRT = London Regional Transport
MBTA = Massachusetts Bay Transport Authority
SCRRA = Southern California Regional Rail Authority
MML = Manchester Metrolink

Source: NERA (1992)

3.3.3 Summary:

Since its re-emergence in the late sixties, franchising has been tried in various industries classed as natural monopoly and their limitations and potentials have been widely observed. Without wishing to pre-empt this conclusion Fisher (1907) sums up the main difficulties associated with franchise contracts,

"Regulation does not end with the formulation and adoption of a satisfactory contract, in itself a considerable task. If this were all, a few wise and honest men might, once in a generation supervise the framing of a franchise in proper form, and nothing further would be necessary."

There is no standard franchise contract applicable to every industry, and in some cases industry may be better served by rate of return/RPI-x regulation. The greatest scope for franchising, where it can encourage efficiency the greatest, is when,

(i) The product/service can be simple and accurately specified and monitored.

(ii) Technology is static, simple and/or non-specific.

(iii) The environment is stable.

(iv) Idiosyncratic skills are negligible.

(v) Asset handover is easily accomplished.

The UK rail franchise proposals break all five of these assumptions, so how successful is franchising likely to be? A further look at the rail franchise case studies in the NERA study (1992) identifies that in all the cases their was little serious competition for the franchises. In Sweden only three firms competed for local service franchises, SJ (incumbent operator), BK-Tag and Linjebus (both bus companies). BK-Tag won two contracts, which have subsequently been lost to SJ. Both the MBTA and SCRRA have seen prospective franchises cut down to just two serious contenders in the form of Guilford Transportation Industries and Amtrack (MBTA) and Urban Transit Development Corporation and Amtrack (SCRRA), with Amtrack winning both contracts. In Argentina the majority of franchises have been contested by two consortiums with recent franchises attracting only one bidder.

Argentina apart, all the contracts have been short term (3-5 yrs) and 'operating franchises'. Although the NERA (1992) study gives little quantitative data on performance, it reports that in both the Swedish and MBTA cases costs and performance have improved. However, in the MBTA case this was only achieved after an initial period of disruption caused by the franchise handover from Guilford and poor specification of capital ownership and operating costs. The SCRRA and Argentine franchises have only just begun operations, so evaluations of them are difficult, however the SCRRA franchise contract has been hailed as the 'state of the art' rail passenger agreement in the country (NERA, 1992). The SCRRA franchise is a short term operating franchise, with a strong element of incentive payments to

ensure contract enforcement and well specified service, maintenance and technical proposals.

Can anything be learnt from the NERA (1992) study in relation to rail franchising in the UK? Firstly, it would appear that in all the cases the bidding process has not been very competitive and that the incumbent/experienced bidder is always successful. This could indicate that a large number of the UK franchises will go either to MEBOs or firms who have recruited large numbers of ex-BR management. Secondly, 'operating franchises' are short term to allow franchise authorities to replace franchisees with minimum fuss, although in the MBTA case disruption ensued following replacement. The figures of 7 to 15 years being proposed for UK rail franchises would appear to be on the high side and would probably have to contain contingencies for changes in circumstances during the franchise period. Thirdly, the franchises should have detailed service and quality specifications, backing these up with incentive related payments to ensure execution. Fourthly, the franchising authority and regulator should have access to accounts and receive regular performance reports.

3.4 Vertical Separation

3.4.1 Background

Historically railways have been viewed as natural monopoly. According to Starkie (1984),

"Railways...are referred to as 'natural' monopolies in the sense that a single, vertically integrated firm can fulfil market demand more cheaply than two."

This view reflects three characteristics of railways. Firstly, the size of unavoidable fixed costs of production. Studies carried out by BRB and ITS (1979 and 1994) suggest that between 25% and 33% of railway's costs are accounted for by track and signalling and that between 50% to 80% of these infrastructure costs are fixed in the short term. Moreover, as Brewer (1994), points out infrastructure assets are geographically specific, have long asset lives, are indivisible and lack a comprehensive second-hand market, so reducing their value to scrap. Infrastructure is committed irreversibly to the railway market.

It is clear from this last point that infrastructure is a 'sunk cost', which is the second characteristic of railways. Only rarely is it feasible for any other rail operator to build new 'ways' and terminals to compete with the existing railway. Moreover, if the incumbent proceeded to behave in a predatory manner (covering only his operating costs) the entrant could not leave the industry without incurring considerable expense e.g. infrastructure.

The third characteristic is that of the multi-product nature of rail industries. They serve different origins and destinations at different times. They also serve differing types of both passenger and freight traffic. Given fixed costs and indivisibilities this will give rise, according to Nash and Preston (1992), to both a large number of 'joint costs' and possible economies of scope. Such economies result from carrying different types of passengers on the same train rather than separate trains, or in relation to economies of density in that it is cheaper to provide freight and passenger services on one rather than two routes. The existence of such economies and the organisational problems of allocating 'joint costs' have led to the establishment of natural monopolies in rail provision.

The result of these characteristics points towards an industry with 'declining costs', hence a natural monopoly. To restrict monopoly power and attain a welfare optimal level of output railways have traditionally been state monopolies.

Recently, as noted by Preston (1994), this view has been challenged on three fronts. Firstly, from the theory of contestable markets promulgated by Baumol et al, and set out in section 3.2 of this working paper. Secondly, through a series of econometric studies that suggest constant returns to scale but increasing returns to density for the use of infrastructure. Moreover, studies carried out by Hasenklamp (1976), Brown et al (1979) and Oum and Yu (1991) found evidence of diseconomies of scope where both freight and passenger trains are running on the same track. The evidence suggests that the only economies existing are those of density associated with infrastructure

not rail operations. For a more in-depth review see Nash and Preston (section three, 1992) or Preston (1994).

The third challenge has its roots in Liebenstein's 'x-inefficiency', see Liebenstein (1966). Liebenstein identifies technical inefficiencies, resulting from state ownership/control, that originate from poor employee motivation and lack of understanding of the firm's production function caused by distortion in price signals. Such a view suggests that opening up rail provision to the market would reduce 'x-inefficiencies' and provide large savings on the present set-up of a state owned industry. Supporting evidence for this comes from Oum and Yu (1991) whose study showed positive evidence that railways will be 11% less efficient when provided as a 'direct government agency' and 20% more efficient when provided as a 'quasi public corporation' than the organisational norm (state owned industry). Opposing evidence comes from Caves and Christensen (1980) whose study compared public and private railways in Canada, finding little statistical difference between both ownership types.

This three pronged attack was encompassed into policy recommendations by David Starkie (1984). Firstly, the vertical separation of the rail industry, with infrastructure remaining, at least initially, in public control but with operations split into units of various sizes and product homogeneity. Secondly, an 'open access' policy to ensure contestability. Thirdly, privatisation of the industry, an increase in managerial autonomy and a reduced subsidy level (to deal with X-inefficiency). The next section deals with horizontal disintegration, whilst this section will examine the issues raised by vertical separation and its role in Starkie's proposals.

3.4.2 Problems

Given Railtrack's mandate to cover costs and provide a rate of return on its capital assets, concern has been raised by Else (1994) and Nash and Preston (1993) that traffic will be priced out of the market at the margin. Such traffic is capable of generating revenue greater than the additional costs it incurs, and as such is 'profitable traffic'. Else (1994) develops this line of argument further noting that when one division of a company sells material inputs to another division which is responsible for the final product of that firm, the transfer price charged is set equal to marginal price e.g. the cost the division would avoid by not producing them. According to Else:

"This then allows the purchasing division to set its price for the final product at a level which is most beneficial to the company as a whole, taking account of all relevant costs."

The high percentage of fixed costs mean that Railtrack, as a separate concern is forced to price above marginal costs in order to break even. Not only does this price traffic at the margin out of the market it increases the fixed cost payments for remaining traffic, which may price them out of the market, the so called cascading down of costs effect. The traditional response to this problem (BR's response) has been to 'charge what the traffic will bear'. This results in price discrimination to recover a larger percentage of fixed costs (higher charges) from traffic more suited to rail. The problem with Railtrack carrying out this approach is (1) it is separated from the final

customers, so is less close to the market, (2) the regulator is unlikely to allow any undue discriminatory pricing, (3) franchise operators are likely to protest.

Developing this argument further is problematic given, as acknowledged by Preston (1994), the lack of empirical evidence on the subject, Sweden being the only large scale railway to be vertical separated. However, using economic theory, a set of scenarios can be evaluated. Such an approach has been taken on board by Else and James (1993a and 1993b). In their paper "Will the Fare be Fair?" they present a range of possible scenarios including, a 'bilateral monopoly', a 'complementary monopoly' and the present UK situation of a 'bilateral and complementary monopoly'. They examine the likely pricing and supply results from various rail organisations without strong regulation and assuming a unit demand curve.

The summary of their results can be seen in table 3.2 below.

Table 3.2: Summary of Results

Situation	Price	Output
Pareto Efficiency	$(c+d)$	$1-(c+d)$
Integrated Duopoly	$\frac{1+2(c+d)}{3}$	$\frac{2[1-(c+d)]}{3}$
Integrated Monopoly	$\frac{1+(c+d)}{2}$	$\frac{1-(c+d)}{2}$
Complementary Integrated Monopolies	$\frac{2+(c+d)}{3}$	$\frac{1-(c+d)}{3}$
Infrastructure Monopoly & Downstream Duopoly	$\frac{2+(c+d)}{3}$	$\frac{1-(c+d)}{3}$
Bilateral Monopoly (with price-taking downstream operator)	$\frac{3+(c+d)}{4}$	$\frac{1-(c+d)}{4}$
Bilateral & Complementary Monopoly (with price-taking downstream operators)	$\frac{5+(c+d)}{6}$	$\frac{1-(c+d)}{6}$

Source: Else and James (1993a)

c - constant marginal cost of infrastructure
d - constant marginal cost of operating costs

It can be noted that the only case producing a lower price than the integrated monopoly is the rather improbable 'competing integrated duopolist'. In fact the

highest price results from a separate track authority and complementary monopoly (franchise authority). This organisational structure reduces service levels to a sixth of the pareto-efficient output and to a third of the integrated monopoly. Else and James go on to note that cost reductions of 50% would be insufficient to overcome the difference between the two organisational set ups. Despite the simplicity of Else and Jame's models (they omit quality variables, price discrimination and the complexities of rail cost structures), they do reiterate the potential problems of replacing one integrated monopoly with two separate monopolies and the increase in costs accompanying this e.g. 'double marginalisation'. The point is picked up by Dodgson (1993a) and Nash and Preston (1993). Dodgson (1993a) feels that Railtrack will have an incentive to exploit its monopoly position and raise charges considerable, especially when TOUs/franchises have a 'lender of the last resort' in the guise of the franchise director to bail them out. Nash and Preston (1993) are concerned with the lack of incentives for the efficient management of Railtrack's resources, in its present public sector form, and monopoly abuse when it is transferred to the private sector. These fears once again raise the issue of regulation and its effectiveness in ensuring that Railtrack does not abuse its monopoly position.

Under the OfQ structure, almost all assets were assigned to one of the sector businesses. This gave managers direct day-to-day responsibility for the costs and quality of the infra-structure used by their trains. This maintained strong links between commercial planning and infrastructure planning and the commercial decisions of each sector. BR's 'Prime user' approach to infrastructure planning greatly increased the efficiency with which infrastructure was provided and utilised. Nash and Preston (1993) quote figures to back this up, (1) ratio of annual train operating revenue to track miles increasing from £96,831 per mile in 1985-86, to £125,619 in 1990-91 (in 1990-91 prices), (2) a reduction in annual track, signal and telecommunication costs per track mile from £42,759 in 1985-86 to £34,937 in 1990-91 (1990-91 prices). With a vertically separated rail structure these links are broken, furthermore the development of ROSCO's means that the only inputs into rail operations that managers will have direct control over is labour and marketing. The scope for innovative management is likely to be considerably reduced in this case.

The 'link break' leads into the next question of deciding the levels and type of investment and the finance behind it. Railtrack is responsible for new infrastructure investment and has several investment sources to choose from. Its main source comes from the income received from charges levied on train operators for track access and the lease income received for stations and depots. Other sources, are the National Loans Fund, government grants for desirable infrastructure schemes and private sector finance (the details of which the government is still setting out in the Private Finance Initiative) (see Department of Transport, 1994). One of the advantages from other UK privatisations has been the injection of private capital to finance new investment, see Williams (1994) e.g. BT's digital switching. From the government's point of view it has also reduced the public sector borrowing requirement e.g. passenger and freight rolling stock, maintenance facilities, stations and ultimately track and signalling (through the sale of Railtrack) will privatise some £1.5 billion of capital investment per year (Williams, 1994). Such reasoning has also been behind the rail privatisations in Japan, Argentina and Germany. Helm and Thompson (1991) looked at the incentive to invest in the public sector throughout the 60's, 70's and in

both the public and private sectors in the 80's. A summary of their results is presented in Table 3.3. During the 1960's and 1970's weak financial controls, together with targeted returns often less than the opportunity cost of capital and a poorly defined principal/agent relationship (leading to managerial incentives to over invest), resulted in public utilities having an overall tendency to overinvest. The 1980's saw a reversal of this trend, largely as a result of the 1967 and 1978 White Papers and the 1986 Byatt Report. These led to the implementation of direct financial controls, based on Long Run Marginal Cost principles and administered by the External Financing Limit (EFL), along with ex post constraints on investment. According to Helm and Thompson (1991) these measures reduced the incentive to invest to a neutral level. They identify under investment as a problem for privatised industries regulated by RPI-x when investment is sunk and not considered explicitly. The problem is one of 'dynamic consistency' arising, with a risk that the regulator will ex post tighten price control. Knowing this the regulated firm will be likely to underinvest e.g. British Airport Authority. Given the government's plans for the eventual sell off of Railtrack and the RPI-x regulation scheme presently being employed, this leads to the conclusion that Railtrack may tend to underinvest. Holding to Helm and Thompson's analysis the disbenefits of underinvestment will tend to be greater than those of overinvestment where absolute price elasticity is less than unity e.g. former Network South East services.

Table 3.3: Investment Incentives and the Cost of Over/Under Investment

	Public sector 60's + 70's	Public sector 80's	Privatised RPI-x (with substantial sunk costs)
Incentive to invest	Over	Neutral	Under
Net social cost of under/over investment	Equal	Under>Over for low Ed (and vice versa)	Under>Over for low Ed (and vice versa)

Ed - elasticity of demand

Source: Helm and Thompson (1991)

In the short-term however Railtrack is constrained in the amount of investment it can undertake using finance raised on the open market. However, this doesn't necessarily mean a sharp curtailment in publicly funded investment. Since the separation of the Swedish railway, investment has increased almost tenfold. The increase is said to result from the 'clearer transparency' between investment and operating cost, facilitated by vertical disintegration, see the summary discussion in the ECMT Round Table report (1993). Policy makers are increasingly likely to fund a new investment project if they are assured that their funding is not leaking into operating costs.

Assuming that a finance source is secured, a problem still remains in deciding the level and type of infrastructure investment that should take place. Railtrack has

intimated that it will work closely with both passenger and freight operators to decide appropriate investment projects. Whilst it is likely that various schemes will be proposed the key point will be deciding the benefits and therefore, costs to appropriate users. It is to be hoped that there is a marked improvement in Railtrack's charge transparency to allow operators to discount costs and revenues over time. Any new investment will also require the cooperation of the ROSCO's to ensure that the leased rolling stock is capable of taking full advantage of the new investment e.g. electrification. The ROSCO's may want reassurances from the train operators that the new rolling stock will be leased, thus creating a further link in the investment process.

Despite such criticisms, some commentators have greeted vertical disintegration with some enthusiasm. They see it as a genuine opportunity to harmonise the conditions of competition between transport modes. Gylee (1993) sees such potential and argues that for rail privatisation to proceed successfully the following pre-requisite must be met:

"To have redefined the current rail subsidy as the legitimate revenues to the railway system, which arise simply because the highways are subsidised through various arms of taxation which also includes the corresponding inequitable and arbitrary charging of highway users ..., would allow the regulation of the privatised railway system to proceed in a more conventional manner."

However, Gylee's (1993) notion fails to recognise first best reasons for subsidising rail operations. Namely, the natural monopoly element of rail provision that means marginal cost pricing is not financially viable; the Mohring effect for user cost, that that an increase in train frequency reduces the average waiting time and so the passenger's cost of travel by train; and the network benefits when more direct/through services are operated.

In Sweden rail infrastructure charges are based upon the road model, incorporating environmental benefits and costs. Vertical separation of the rail industry does offer the chance to treat rail and road infrastructure consistently and fairly. Recently the British have been making advances in this direction with promise of further action in this area, see Newbery (LTT, 17th March 1994). The establishment of the new Highways Agency, responsible for Britain's trunk road and motorway system, mirrors to a certain extent the establishment of Railtrack. The Green Paper "Paying for Better Motorways" reviewed road taxation and proposed a number of alternative proposals. One of the options suggested replacing the current road track costings with capital costing, by means of an annual depreciation charge plus a required rate of return on the capital stock, which is the basis of Railtrack's financing system. Moreover, the SACTRA committee recommended in 1992 that there should be partial monetisation of environmental effects of road building. How far the government will go to putting road costs on a par with rail, and perhaps more importantly to what extent it will effect car use, are both debateable. The important thing is that the instruments are now in place to allow the creation of a more 'level playing field'.

3.4.3 Summary:

The main aim of Starkie's proposal (1984) for vertically separating the rail industry was to take out the 'sunk cost'/natural monopoly element of rail provision and create a more contestable environment. In doing so several problems have been indirectly created. An increase in transaction costs between Railtrack and train operators; possible abuse of Railtrack's monopoly position; problems of co-ordinating investment in track infrastructure and rolling stock; problems of obtaining finance for new investment; concern about coordinating infrastructure maintenance and the responsibility for any delays caused; and the creation of operating managers who have no control over a vital input into their business, infrastructure.

While a strong regulator, and close co-operation, may deal with the problems of monopoly abuse and investment co-ordination, the first and last problem appear unavoidable. Unless Railtrack is able to develop a reputation for delivering a reliable, fast service then it would be understandable if potential franchises were, in Dodgson's (1993) words:

"...very reluctant to be dependent on another organisation for the day-to-day and year-to-year provision of their infrastructure."

If the vertical separation of rail does encourage competition 'on the rails' and leads to the creation of a 'level playing field' between rail and road then all good and proper. However, whether such drastic action was required to achieve these objects is highly debateable.

Perhaps the final word should come from the Centre for Policy Studies (Redwood, 1988) and their conference on rail privatisation. Discussion on setting up a separate track authority brought the following response:

"The Secretary of State saw three difficulties in this model. First, the track authority itself would be a monopoly creating pricing and quality problems. Second, the track authority would be remote from the customers; responsibility and accountability for shortcomings on this morning or that would be hard to pin down. Third, investment would be hard to attract. Sir Christopher Foster of Lybrand and Cooper was especially damming about this model."

3.5 Horizontal Separation

The privatisation proposals not only create a vertically disintegrated rail industry, they have also lead to the creation of a horizontally separated rail operation industry, namely the 25 TOC's/franchises. The theme of this section will be the effect of horizontal disintegration in respect of minimum efficient size of rail operations, service co-ordination/provision of complementary services and network benefits.

Section 3.4 briefly mentioned several econometric studies that led to the conclusion that the only economies existing in the provision of rail services were those of density associated with infrastructure not rail operations. Tables 3.4 and 3.5, taken from Preston (1994), present the aforementioned studies.

Table 3.4

		Returns to Density	Returns to Scale	
			Fixed haul and trip length	Increased haul and trip length
Friedlander and Spady	1981	1.16	0.88-1.08	1.07-1.37
Caves et al.	1980	-	1.01	1.13
Harmatuck	1979	1.92	1.01	1.02
Harnis	1977	1.72	0.93	1.02
Keeler	1974	1.79	1.01	-
Caves et al.	1985	1.76	0.98	1.00
Friedlander et al.	1993	2.24(SR) 4.03(LR)	1.27(SR)	1.21(LR)

Source: Preston, 1994

Table 3.5

	Data	Returns to Scale	Returns to Density
Foreman-Peck (1987)	(a) Britain 1865 (b) 12 countries 1910-40*	1.05 1.25 (Capital Costs Only)	
Dodgson (1993)	(a) Britain 1912-Translog (b) Log Linear	1.00 1.00	0.81 >1.00
McGeehan (1993)	CIE 1973-1983	0.99	1.33
Fillippini and Maggi (1993)	Swiss Private Railways 1985-88	1.03-1.35	1.45-1.55
* Includes United States, Australia, Canada and India			

Source: Preston, 1994

The studies shown in Table 3.4 show constant returns to scale, which may increase slightly if trip length or length of haul vary. Conversely, they also show increasing returns to density (train km increased whilst network km are held constant), thus implying that economies of scale result from the use of infrastructure rather than operational factors (Preston, 1994). These studies are based on Class I North American rail operations which do not reflect the diverse, short haul characteristics of European railways. Table 3.5 presents the studies carried out based upon European rail operations, and again suggest constant returns to scale and increasing returns to density, although it should be noted that Dodgson (1993b) found diseconomies of density for the larger railways in Britain around 1912 and Fillippini and Maggi (1993) found increasing returns to scale for the small, private Swiss railways.

The result of these studies and others carried out by Hasenklamp (1976), Brown et al (1979) and Oum and Yu (1991), is to suggest that horizontal separation will not reduce a rail operator's ability to produce at minimum cost. In other words that rail operations exhibit constant average costs.

The most recent study to examine economies of scale, density and scope is that by Preston (1994). The study uses a translog model of operating costs to test for such economies for 15 western European railways. Preston concludes that in terms of economies of scale with respect to operating costs, the smallest operators exhibit increasing returns, the medium sized operators exhibit constant returns and the largest operators exhibit decreasing returns. In terms of returns to density, with the exception of the most heavily used systems (Switzerland and Holland) all the operators exhibited increasing returns. These results suggest that to a certain degree the size of a network does matter. To minimise operating costs Preston suggests that the optimal railway would have a network of around 4,000 km, run 120 million train km per annum, giving it a density of around 30,000 train km per line km per annum. In the UK case this suggests splitting the rail network into four similar sized units. On this basis the division of the British railways into 25 passenger franchises and at least six freight and parcel companies would not appear to be optimal, and a period of re-agglomeration may be anticipated in the medium to long term. It is important to note that Preston's conclusions apply to network activities, some branch lines may be operated efficiently as free standing units e.g. micro-franchising.

The provision of complementary services is another issue raised by horizontal separation. The problem arises because of the interdependency between different operators in terms of providing and attracting passengers e.g. InterCity rely to a great extent upon Regional railways to provide passengers. The actions of a Regional operator will therefore have repercussions for an InterCity operator's revenue. A problem occurs when a service is unprofitable for an independent operator but could be profitable for a more integrated concern. As Else (1994) acknowledges, the problem may be overcome if train operators are willing to pay compensation to another operator to run a particular service. However, such an approach requires detailed information and could become very complex if more than one operator is involved. To an extent this problem is negated by the franchise director who provides compensation, in the form of subsidy, to train operators for a specified level of service. However, the efficiency of such a second best approach must be questioned. A single

integrated organisation would surely be better aware of such interdependencies to identify all possible optimal arrangements quickly and with minimum information costs.

Further issues raised by 'horizontal separation' can be grouped under the heading of 'network benefits'. They are:

(1) Co-ordinated/integrated timetables and publicity.

(2) Through ticketing.

(3) Inter availability of tickets.

Producing a national co-ordinated and integrated timetable is the responsibility of Railtrack. Initially the TOC's will propose the services they wish to operate. Railtrack will then assemble the proposals into a workable whole, eliminating conflicts along the way. The timetable will be changed every six months and will also have to accommodate 'open access' operators, minor changes may also be permitted. Such a timetable is of major importance to rail passengers, especially for trips involving interchange with two or more TOC's. The timetable should have the characteristics of allowing passengers to plan their journeys with a large degree of certainty and minimise passenger interchange time. With 'horizontal separation', the complexities of producing such a timetable have increased, especially given 'open access'. There is also some confusion on the allocation mechanism for train paths, will such allocation follow a commercial or a social criteria? For example, will InterCity services take priority over local services? A further issue is the publicity of the national timetable, Railtrack have a responsibility to produce it but the costs of publicising it may dampen Railtrack's publicity fervour. Already, the Rail Users Consultative Committee (RUCC) have claimed;

"...since the break-up of BR into different operators, passengers are finding it harder to obtain information about tickets and timetables in other parts of the country."

(Source: Yorkshire Post, 15/6/94)

This may just be a teething problem, soon to be soothed away when Railtrack and the TOC's realise that it makes commercial sense to co-ordinate services. The danger is lack of co-ordination and reduced network benefits for the passenger.

The government has given assurances that 'through ticketing' will continue, however no such guarantees have been given for the continued inter availability of ticketing. If tickets are not made inter available this will represent a huge loss in network benefits for the rail passengers, reducing the number of trains available to them. For example, travelling between Leeds and Wakefield, passengers have a choice between East Coast Main Line and North East Regional trains. Withdrawing inter availability of ticketing will reduce this choice to either East Coast Main Line or North East Regional trains (and possibly/or open access trains) trains. This leads to the loss of the Mohring effect benefits referred to earlier.

Whether inter availability of ticketing is retained will depend to a large extent on the methods used to allocate fare revenue. If 'smart card' technology were available the inter availability of ticketing would be less of a concern for TOCs. For the moment allocation of fare revenue is likely to rely on the forecasting models used by BR. This may be acceptable, in the short term, to the TOCs, but their views may change in the long term with the predicted entry of 'open access' operators into the market. If 'open access' operators were to enter the market and operate peak services only, the TOCs might want to exclude such passengers from returning on their own trains during the 'off peak'. The issue may ultimately rest with the regulator, who might interpret such practices as predatory behaviour.

3.5.1 Summary:

The main argument to come out of this section is that the creation of 25 rail operating franchises is unlikely to be optimal, in the sense of allowing rail operators to take advantage of cost economies, or in providing revenue maximising services at the margin. Concern is also expressed as regards Network Benefits especially the maintenance of inter availability of ticketing.

The issues of inter availability of ticketing, through ticketing, concessionary fares and discounted fares are politically very sensitive and so it is understandable that the government has been keen to stress they will continue in some form. Realistically, it would not be surprising if some restrictions were to evolve in the long-term, especially in relation to inter availability of ticketing and discounted fares.

4. CONCLUSIONS

The first part of this paper described the proposals for rail privatisation in Great Britain. In subsequent sections we turned to an examination of the light that economic theory could shed on the likely effects of privatisation. First, we considered the extent to which rail transport could be considered to be a contestable market. The British proposals here were particularly ingenious in attempting to create a contestable market for train operations, both for the franchises and via open access. However, there remained doubts about some aspects, especially the scope for 'hit and run' entry by open access operators without the incumbent being able to respond.

Secondly, the theory of franchising was considered. Here there were doubts about the degree of competition and the scope the successful franchisee would have to renegotiate terms during the life of the franchise.

The third area examined was vertical and horizontal integration. Whilst vertical disintegration was very helpful in promoting competition, a number of potential disadvantages were identified, including increased transaction costs, the risk of poorer planning of the system and a lack of competitive pressure on Railtrack. Horizontal disintegration risked the formation of companies below minimum efficient size, as well as a possible loss of some forms of network benefits such as through and interchangeable tickets.

In conclusion, it is not possible to reach any firm predictions of the results of the British rail privatisation on the basis of theory. What is clear is that in designing a very complex and innovative form of privatisation to maximise the potential for competition, the British government has introduced many features which may create serious problems. In an attempt to simplify the issues and potential problems Table 4.1 sets out future hypotheses that will require future attention. Whether these are so serious as to outweigh the benefits of increased competition will only be known after many years of experience.

Table 4.1: Summary Points

Hypothesis to be tested	For the Proposals	Against the Proposals
Overall Assessment	Allocative efficiency will be increased through the operation of more trains and more efficient pricing.	Allocative efficiency will be reduced through either the operation of more trains but at higher prices (small group competition) or the operation of less trains at higher prices (monopoly).
	Productive efficiency will be increased through the introduction of private sector practices.	There will be some scope for increased productivity efficiency (particularly for infrastructure and vehicle maintenance) but may be off set by other factors.
	Dynamic efficiency will be increased as a result of greater innovation.	Dynamic efficiency will not be increased. There may be: *Excessive product differentiation (small group competition) *Limited innovation (monopoly, large group competition).
	There will be no loss of network benefits nor any negative externalities.	There will be a loss of network benefits and the incursion of negative externalities (congestion, accidents, environmental costs) may be significant.
	Net social benefit will be increased. Passenger volumes will increase and passenger service levels will increase.	Net social benefit will be decreased. Passenger volumes will decrease and passenger service levels will decrease.
Vertical Separation	Will put rail on a similar basis to roads	There is greater technological linkage between operations and infrastructure for rail than roads.
	Will place greater emphasis on infrastructure maintenance and provision.	Infrastructure planning requires detailed knowledge of operations. Railtrack one step removed from the market. Information asymmetries.
	Contracting out and ultimately privatisation will increase efficiency in infrastructure provision.	Railtrack has a monopoly. Will often serve a monopoly operator. Potential problem of bilateral monopoly.
	Regulatory incentives can be designed to ensure optimum quality (performance payments) and investment (RPI-x)	Danger of regulatory capture. RPI-x may lead to under investment.
	Efficient pricing and access regimes can be established.	Pricing will not be efficient if: *Railtrack required to operate without lump sum subsidy. *Discrimination prohibited.
	Modern Equivalent Asset Value (MEAV) approach correctly determines capital costs	MEAV approach over-estimates capital costs.
	More efficient use will be made of land holdings, station floorspace etc....	Scope for cross subsidy between rail operators and other activities reduced.

Horizontal Separation	Smaller companies will be more efficient and more in touch with their markets.	Very small or very large companies will be inefficient.
	Operators exhibit constant returns to scale.	Operations exhibit increasing returns up to a minimum efficient scale. Beyond a maximum efficient scale may exhibit decreasing returns.
	Rail industry can support a large number of train operating units.	Optimum number of train operating units only 2-3 mergers likely.
Contestability	Rail operations have near zero sunk costs and few barriers to entry and exit.	Human capital a substantial sunk costs.
	Reaction periods long making 'hit and run' entry feasible.	Reaction periods short (especially in terms of price).
	Rail operations contestable. Prices and service levels will not vary with market concentration.	Rail operations not contestable. Prices and services levels will vary with market concentration.
On-the-track Competition ('Open Access')	Will be substantial.	Will be limited to 'cherry picking'.
	Will lead to improvements in productive, allocative and dynamic efficiency.	May lead to improvements in productive and dynamic efficiency but deterioration in dynamic efficiency.
	Will not lead to losses of cost and demand complementarities.	Will lead to losses of cost and demand complementarities.
	Can be made compatible with franchising.	Incompatible with franchising.
Off-the-track Competition ('Franchising')	Will be substantial.	Will be limited.
	Bidding will be competitive.	Bidding will not be competitive.
	Bidding will be based on net subsidy.	Alternative bidding regimes should be considered.
	Contract specification not a major issue. Preference for short term, operating contracts of relatively large size.	Contract specification a major issue. Argument for long term and exclusive complete contracts of variable size (including micro-franchising).
	Non compliant bids can be dealt with.	Non compliant bids difficult to assess.
	Contracts can be easily enforced.	Contracts difficult to enforce.
	Handover not an issue.	Handover is an issue.
Organisational Issues	Splitting BR into c.100 units will make transactions more transparent and hence more efficient.	Splitting BR into c.100 units will increase number of transactions and reduce efficiency.
	Developments in IT have reduced transaction costs.	Developments in IT have had little effect on transaction costs.
	There will be no conflicts between the new organisations.	There are conflicts between the objectives of OPRAF and ORR.
	Transitional costs will be insignificant.	Transitional costs will be significant.

APPENDIX ONE

Franchise	Train miles(m)	Pass. (m)	Pass.Miles (m)	Average Load	Pass.Rev (£m)	Other Rev. (£m)	Staff
ECML	10.9	10.5	1,812	166	209.0	11.0	7,325
Gatwick Express	1.4	5.0	135	96	n/a	n/a	356
Great Western	8.8	15.9	1,351	154	158.9	11.1	6,771
Anglia	1.8	3.8	279	155	n/a	n/a	443
Cross Country	10.6	11.2	1,247	118	n/a	n/a	3,589[1]
Midland Main Line	3.4	6.0	486	143	n/a	n/a	---
WCML	13.2	13.6	2,203	167	239.2	20.0	9,666
Isle of Wight	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LT & S	n/a	25.8	n/a	n/a	56.3	2.8	1,247
Thames[2]	6.7	21.9	n/a	n/a	43.5	2.2	2,147
Chiltern	---	---	---	---	---	---	---
Great Eastern	7.4	46.5	n/a	n/a	100.3	11.8	4,177
Kent Services	16.7	112.5	n/a	n/a	205.0	14.4	7,464
Northampton & North London	5.3	35.2	n/a	n/a	50.6	4.7	1,350
S.London & Sussex Coast	13.8	84.1	n/a	n/a	151.1	13.8	5,660
South Western	22.6	110.4	n/a	n/a	230.3	9.1	7,603
Thameslink	5.7	20.2	n/a	n/a	50.3	1.6	580
West Anglia & Great Northern	10.7	45.9	n/a	n/a	94.6	2.5	2,260
ScotRail	19.2	49.2	926.8	48.3	81.6	n/a	9,344
Cardiff Valleys Line	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Central	18.4	32.7	91.7(?)	4.9(?)	67.9	16.9	6,147
MerseyRail Electric Services	n/a	n/a	n/a	n/a	n/a	n/a	n/a
North West	17.2	62.1	740.8	43.1	65.1	---	9,162
North East	17.2	30.7	575.9	33.5	48.9	---	6,002
South Wales & West	11.2	19.8	432.3	38.5	39.6	---	4310

[1] This is a joint figure for both MML and Cross Country

[2] Joint figures with Chiltern

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