The New British Railways Structure

A Transaction Cost Economics Analysis

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Abstract

The 1993 reform of rail transport in Great Britain led to an outright break-up of the British Rail vertically integrated monopoly. All railway activities have been isolated and divided among private operators whose relationships are determined by contracts.

This paper examines the relevance of a vertical separation between train operations and rolling stock ownership and the stability of this new structure. Transaction cost theory, which mainly concentrates on vertical integration and contractual coordination issues, provides a relevant analytical framework.

It is argued that the disintegrated governance structure is not suitable to the features of the relationships between lessors and lessees of rolling stock. Moreover, the coordinative mechanisms of existing leases cannot solve the problems caused by vertical separation. Therefore, operators have adapted the structure and change the characteristics of the rolling stock market transactions.

Keywords : vertical integration, public utilities reform, transaction cost economics

JEL: D23, L52, L92

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I. Introduction

The EC Directive 91/440/EEC only imposed to separate the accounting systems of railways infrastucture and operations. But, Great Britain has embarked on a much more radical restructuring programme as it split all railway activities at the time of British Rail (BR) reform. Thus, the 1993 Railways Act involved a vertical and horizontal disintegration of the industry. The result is a complex structure where decisions are not centralised as in the former monolithic BR, but divided among several tens of private operators linked by contracts.

The purpose of this paper is to analyse the revised British railway industry and the consequences of the change from a vertically integrated monopoly to a " hybrid " governance structure. Transaction Costs Economics (Coase, Williamson), which mainly focus on vertical integration and contractual coordination issues, is used to assess the efficiency of this reform.

The structure of this paper is as follows.

In section II the reformed structure of the rail system will be briefly described and the characteristics of the rolling stock leasing market transactions will be considered. The analysis will show that the vertical disintegration of rolling stock ownership and train operations is not relevant since relationship-specific investments are involved.

Section III examines the coordinative mechanisms of leasing contracts and reveals that they are not incitative enough to efficiently govern transactions with a high level of assets specificity.

Section IV addresses the several ways operators change the governance structure and modify assets specificity.

II. A transaction cost analysis of the rolling stock leasing market

1. The reformed structure of passenger transportation activity

In 1994 Great Britain became the first country to privatise railway operations resulting in fully separate activities.

John Major's Government wanted to splinter British Rail monopoly into potentially competitive elements. However the reform ultimately led beyond structural separation since a horizontal dimension was introduced, bringing about 100 firms.

1.1 Infrastructure

Rail infrastructure is separated from rail operation and is now under Railtrack's responsability. This company, whose key purpose is to own, maintain and develop Britain's mainline rail infrastructure (tracks, depots, stations and signalling), was successfully floated on the Stock Exchange in 1996**.**

Railtrack grants train operators access rights to the tracks for access charges and leases stations and depots to them.

1.2 Train operation

The passenger services have been reorganised on a geographical basis into 25 units : the Train Operating Companies (TOCs)

These TOCs have been sold as franchises of 7 to 15 years to private companies through the newly created Franchising Authority.

The franchisees earn revenue from fares and Government subsidies and pay infrastructure access charges to Railtrack and rolling stock leasing charges to the ROSCOs (Rolling Stock Operating Companies).

Indeed, the rolling stock assets of BR was passed to three private leasing companies, the Rolling Stock Operating Companies[1], who in turn lease it to franchise operators.

Theoretically, the ROSCOs provide finance for the procurement of new rolling stock and are responsible for the heavy maintenance of their fleet, but they generally procure these services from contractors.

While licences issued by the Regulator are required for Railtrack and the TOCs under the provisions of the Railways Act 1993, the ROSCOs are not regulated. Therefore, their activities and leases themselves are subject only to general competition law.

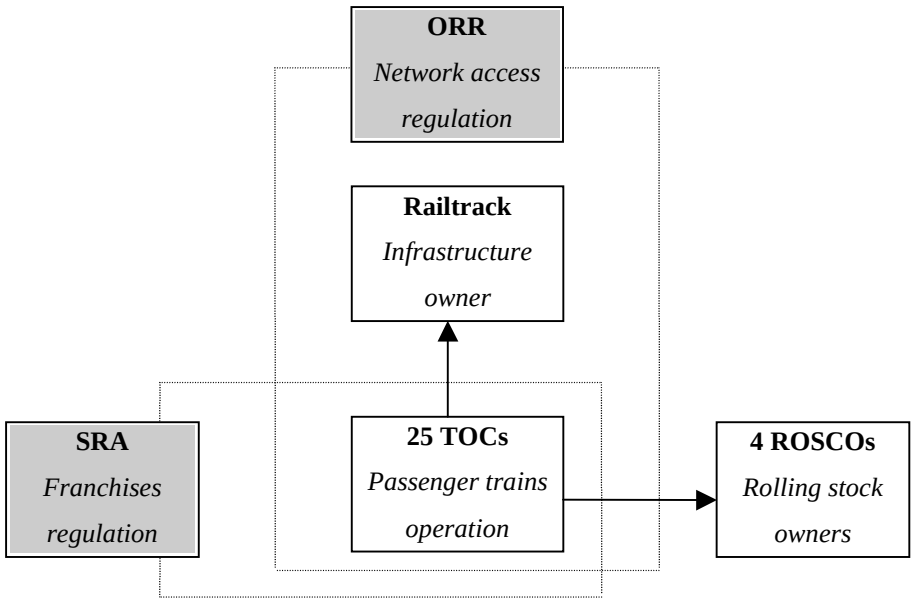
1.3 Regulation

Two key organisations regulate the industry.

The Office of Rail Regulator (ORR) regulates infrastructure access. It issues, modifies and enforces licences to operate trains, network, stations and depots. It oversees the agreements for track access as well as the charges of access. Lastly, it enforces competition law, prevents abuse of dominant position and protect consumer interests.

The Strategic Railways Authority (SRA) is responsible for administering and supervising the franchising of passenger rail services. It also controls the respect by the franchisees of the Passenger Service Requirement (PSR). The SRA also pays subsidies to the TOCs in order to preserve public utilities, insure profitability for shareholders and the payment of access charges to Railtrack.

The new passenger rail industry[2]



2. Transaction cost analysis of the new governance structure

Transaction cost theory (TCT) concentrates a lot on vertical integration issues. According to this theory, the reasons for integration are numerous but assets specificity[3] is held to be the most explicative element (Williamson [1985]). Thus,

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[1] Since 1999, there are 4 ROSCOs since a new one appeared on the occasion of new rolling stock orders made by Virgin.
[2] The broken line in the diagram denotes the general ambit of regulation by the ORR and the SRA.
[3] Relationship-specific assets are " durable investments that are undertaken in support of particular transactions " (Williamson [1985]), and that " have a higher value in their intended than in their next best use. " (Crocker-Masten [1991])

when an exchange between a buyer and a seller involves significant investments in relationship-specific assets, trading partners are locked into a bilateral dependency relationship. To avoid risks of expropriation of the rents accruing to the specific assets, the client can integrate his supplier's activity or draw up a long term agreement.

On the contrary, if a firm notices a loss of specificity of one of its activity, it would rather turn to the incitative structure of the market and chose to disintegrate this activity (Anderson [1988]). Therefore, TCT views disintegration in a dynamic way as the result of a loss of assets specificity .

As regard British railways reorganisation, and more particularly rolling stock related activities, disintegration is the result of the political wish to introduce competitive elements in the industry. It is not the result of a loss of rolling stock assets specificity. In fact, disintegration has not emerged as the obvious consequence of a change in rail assets specificity ; it has been chosen to introduce market forces without taking assets specificity into account, as we will see.

Our working hypothesis will therefore be the following :

The disintegrated governance structure of rolling stock related activities is not aligned with transaction attributes of these assets. Therefore operators have two options : to modify the governance structure or to change rolling stock assets specificity.

2.1 The rolling stock market transactions

2.1.1 The relationships between lessors and lessees of rolling stock

a) Physical-assets specificity[4]

The issue raised by the separation of train operation and rolling stock ownership is linked to assets specificity. Indeed, the rolling stock is not standard in Great Britain. On the one hand, " some vehicles are designed for specific purposes and are not fully interchangeable [commuter trains cannot run on intercity routes] " (*Review of the Rolling Stock Market. Report to the Deputy Prime Minister*, 1998). On the other hand, infrastructure imposes additional constraints since there are two types of power supply : by third rail and by catenary. Thus, there are restrictions on the parts of the network on which different types of rolling stock may operate. For instance, electric trains cannot operate on non electrified routes and electric trains with pantograph (power supply by catenary) cannot run on track supplied by third rail.

Therefore, TOCs are dependent upon the ROSCO owning vehicles specific to the routes they operate and cannot find several suppliers for the type of trains they need. In the same way, for their specific trains, ROSCOs do not have many clients and thus are dependent upon the TOC(s) leasing specific rolling stock.

Thus, ROSCOs and TOCs are locked into a bilateral trading relationship since each ROSCO does not have a suitable fleet of the required size available for each TOC and because each TOC requires a different package of vehicles. (see Annex 1)

b) Dedicated assets specificity[5]

The second type of specificity is dedicated assets specificity.

The ROSCOs are reluctant to finance rolling stock with a likely operating life of 30 plus years for a TOC owning a franchise of at most 15 years. Indeed, ROSCOs are not assured that their clients will renew their franchise and that the new operators will lease the trains for the same price (subsidies will indeed decrease gradually). Moreover, uncertainties over the next franchise round cause the TOCs to be reluctant to finance new rolling stock as well. Indeed, they are not sure of their ability to make their investment profitable.

Consequently, neither ROSCOs nor TOCs have incentive to invest and the rolling stock is getting old. (see Annex 1)

Transactions between lessors and lessees of rolling stock are thus characterised by a physical specificity and a dedicated assets specificity which lock partners into a bilateral dependency relationship.

According to the TCE, such features work against the chosen solution that is to say vertical disintegration and short term contracts (between 6 and 8 years whereas rolling stock life duration is 30 years). On the contrary, in such a context, TCT advocates vertical integration of the supplier by the client. This phenomenon has already occurred since in June 1996, Stagecoach bus company, which runs the Island Line and South West Trains franchises, bought the ROSCO Porterbrook Leasing Company.

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[4] " When one or both parties to the transaction make investments in equipment and machinery that involve design characteristics specific to the transaction ", investments are physically specific. Joskow [1987]

Therefore, the boundary set up between rolling stock owners and trains operators does not seem natural at all because of the high level of assets specificity involved by their transactions. Theoretically, the existence of a bilateral dependency relationship between TOCs and ROSCOs is in opposition to the vertical disintegration solution. That is why modifications of the governance structure are expected. Vertical re-integration is an option but there are other ways to safeguard rents and attenuate opportunistic behaviours. Thus, initial leases renegotiation and new leases negotiation must be considered (section III).

2.3 The separation of rolling stock heavy maintenance and light maintenance

Theoretically, the TOCs are responsible for procuring running maintenance and repairs, that is to say light maintenance, and the ROSCOs procure heavy maintenance and repair. That is why leasing charges paid by the TOCs to the ROSCOs comprise two elements :

- the capital rent for the lease of the rolling stock,
- the non capital rent, which covers heavy maintenance costs.

However, to procure heavy maintenance, the ROSCOs do not have the required facilities and have to procure these services from contractors.

The separation of heavy maintenance, rolling stock ownership and light maintenance has thus introduced additional intermediaries called ROSCOs'subcontractors. Consequently, the non capital rent of lease payments

[5] Dedicated assets refer to " substantial, general-purpose investments that would not have been made outside a particular transaction, the commitment of which is necessary to serve a large customer." (Shelanski-Klein [1995])

includes contracting costs that can be avoided. Indeed, some TOCs have light maintenance facilities and can use their depots and staff for heavy maintenance, thus make significant savings in the provision of non capital items.

For these TOCs, integration of heavy and light maintenance is a way to reduce the costs.[6]

Therefore, the separation of heavy maintenance and light maintenance is inadequate is some cases and reintegration is envisaged.

For the rolling stock related activities, the main boundaries set up by the reform are artificial and do not coincide with current transactional attributes. The high level of assets specificity of rolling stock and maintenance facilities has not been taken into account. Therefore, according to TCT, this absence of proper judgement will lead to coordination issues, if the hybrid form set up to replace the integrated structure is inefficient.

[6] For those who do not have maintenance facilities, open competitive tender from all heavy maintenance providers reduces the costs of maintenance.

III. The coordinative power of leasing contracts

The new governance structure of rolling stock related transactions is based on contracts. Since the separation of the different rolling stock activities induces bilateral dependency relationships, what is the coordinative power of these contracts ? Can they solve the issues addressed in section II, that is to say are they incitative enough to reduce the contractors'opportunistic behaviours ?

To answer these questions and assess the efficiency of the new governance structure, the leases various provisions are studied.

1. Duration

The rolling stock leasing agreements length varies between 6 and 8 years. This duration does not match an assets life duration of up to 30 years and a high level of assets

specificity (Joskow [1987]). That is why lease charges are high.

Indeed, a way to compensate the disadvantage of short term contracts is to set high revenues, which can be considered price premiums. (Williamson [1985]).

However, in terms of efficiency, this option does not seem to be the more appropriate to the transactions attributes, and in particular to the high level of assets specificity. This situation is certainly comfortable for the ROSCOs since their investments profitability is assured. But, it jeopardises the plans of British railways modernisation because it does not incite the parties to invest.

2. Coordination modalities

2.1 Incentives mechanisms and sanction clauses

There is a system of monetary compensations that TOCs must pay in case of rolling stock damage. Schedule 4 of the leasing agreements also provides for TOCs compensations by the ROSCOs in case of technical or endemic failures of trains (that is to say problems due to trains design). The ROSCOs also have to compensate the TOCs if failures due to an awkward heavy maintenance are observed while ROSCOs are in charge of this activity.

Also there is in place a system by which constructors compensate ROSCO's if train design drawbacks cause recurring problems.

In case of technical failures, both ROSCOs and designers are responsible : the designers to ROSCOS, and the ROSCOs to TOCs.

Consequently, liabilities are difficult to determine with reasonable certainty and speed. For example, when a train breaks down, it is difficult to know fast the cause of this failure : an awkward light maintenance ? (in this case, the TOC is responsible), a negligence on the light maintenance supplier company's part ? (which is a TOC or a ROSCO's subcontractor), a design drawback (designer and ROSCOs) ? The investigation period can be long and costly for the TOCs, since " their " trains are immobilised as long as the responsible is not found.

Therefore, it is not the incentive system which is inefficient, it is the governance structure and the separation between TOCs and ROSCOs which raise an issue. To disintegrate activities involving highly specific assets and to replace the integrated structure by short term contracts is the opposite of what TCT advocates. Whatever the incentive mechanisms are, transactions complexity, linked to assets specificity, makes

the drafting of complete contracts almost impossible and thus leaves the door open to opportunistic behaviours of the parties. Each tries to capture as much rent as possible and biases or hides information. In case of train failures the investigation periods are then longer and trickier, which induces extra costs and makes the governance structure inefficient.

2.2 Arbitration procedures and institutional aspects

Several arbitration conflict procedures[7] are defined in the contracts but their effectiveness depends on information availability and thus is subject to agents' opportunistic behaviours.

2.3 Contracts negotiation

Since ROSCOs are neither obliged nor incited to invest in the contract, TOCs try to find other coordination mechanisms, in particular the (re)negotiation of contractual clauses. Thus, negotiation plays an essential role in the coordination between TOCs and ROSCOs.

2.3.1 Negotiation of changes to existing leases

TOCs experience difficulties in negotiation of changes to existing leases on such matters as lease charges and vehicles availability. Indeed, prices are imposed and non renegotiable. Furthermore, because of the tight balance between demand for stock of desirable types and available supply, the TOCs face a lack of flexibility and choices.

However, as regard maintenance, the TOCs have negotiated significant changes and found alternative arrangements. Indeed, some of them have obtained that maintenance repairs can be carried out at their own maintenance depots and not at the ROSCOs depots.

Thus, by negotiating contractual clauses relative to rolling stock heavy maintenance, the TOCs get to a new governance structure : integration of heavy and light maintenance.

2.3.2 Negotiation at lease renewal

On the one hand, the expiration of some leasing contracts will give TOCs a greater power of negotiation. TOCs can threaten ROSCOs not to renew their leasing agreements. Therefore, lessors are incited to accept new clauses, in favour of the TOCs.

On the other hand, at the leases renewal, the TOCs will be able to include clauses relative to investment in rolling stock. They will be able to condition lease renewal to the financing of new trains by the ROSCOs. Unlike the first rolling stock leasing agreements, the new contracts will then be incentive.

Nevertheless, to convince the ROSCOs to purchase new trains and to lease at reasonable prices, the TOCs will have to present low-risk investments plans. Therefore, the TOCs will have to propose the ROSCOs standard rolling stock ; this implies indeed that the ROSCOs will have less difficulties to find lessees and will be able to recover their investments. Moreover, in order to reduce the risk inherent in this

[7] Appeal to access dispute resolution committee, mediation, arbitration, expertise.

investment, the TOCs could propose, in return for discounts on leasing prices, long-term contracts dealing with a greater number of trains.[8]

To propose standard projects is a way to reduce the rolling stock assets physical specificity and thus to set up a governance structure with market-type attributes. In this way, the coordination mechanisms of the contracts could be completed and replaced by the incentive forces of the market.

The lease incentive mechanisms cannot completely coordinate the contractors actions, since these contracts are short-term but deal with highly specific assets. That is why agents attempt to modify both structure and assets.

IV. Remedies

The issues raised by the vertical separation of rolling stock ownership and train operation are due to the mis-match of the disintegrated contractual structure and the high level of assets specificity. When the governance structure is not aligned with the transactions attributes, TCT expects the structure to be altered by agents. Indeed, transactions characteristics are often considered exogeneous and therefore are not modified.

However, in our case, agents found two types of remedy : changes in the governance structure, which is the " classical " TCT's solution, and modification of assets specificity, which is a much more original solution.

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[8] The negotiation between Connex South Eastern and Forward Trust as regard the financing of new electrostar trains illustrates this point.
Indeed, Connex has succeeded to convince the ROSCO Forward Trust to invest in these new trains (class 375 trains) which are of high technology but standard (they can indeed run on all types of tracks,

1. Parties action upon governance structure

1.1 Integration of ROSCOs by TOCs

As already mentioned, the ROSCO Porterbrook has been purchased by the TOC Stagecoach. This vertical re-integration process confirms the theory's predictions : a high level of asset specificity matches an integrated governance structure.

1.2 Joint financing of new rolling stock

An alternative approach is the joint financing of new rolling stock by rolling stock manufacturers and franchisees. Thus, ownership of rolling stock and train operation are not separated any longer since TOCs partly own the trains they operate and do not have to go through ROSCOs.[9]

1.3 Integration of the rolling stock heavy maintenance activity

To avoid intermediaries (ROSCOs and maintenance companies), some TOCs procure trains heavy maintenance by themselves. By integrating the heavy maintenance activity, TOCs save on the non capital rent and reduce transaction costs. Two main factors facilitate this re-integration phenomenon : first, the staff TOCs employ for light maintenance is already skilled to do heavy maintenance tasks. Thus, the TOCs who decide to integrate the heavy maintenance activity do not have to bear additional employees training costs. Second, TOCs save on transaction costs. Indeed, for the ROSCOs, to do maintenance induces additional costs. These are : normal on-

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with catenary or third rail. The operating company has also negotiated more attractive leasing prices in return for a long-term commitment and for the leasing of several trains units.

[9] For instance, Connex South Eastern is self-financing new rolling stock.

going maintenance costs and transactional costs involved by agreements with subcontractors, trains transferring and parking expenditures and the compensations given to the TOCs for trains unavailability. All extraordinary costs are eliminated by integration. Accordingly integration is often preferred by TOCs to the initial governance structure.

Once again, in front of a governance structure unsuitable to their transactions, agents (TOCs) modify it. Integration tends to be, as for rolling stock heavy maintenance, the most judicious and the less costly solution.

1.3 Franchise period lengthening

Some franchises, which contain commitments to obtain new or refurbished rolling

stock, are longer (15 years) than the standard ones. The other agreements provide for an adaptation of franchise duration to investment constraints. Franchise period lengthening is indeed a way to get closer to an integrated governance structure, which is more adapted to the high level of rolling stock assets specificity.

As the TCT advocates, when agents cannot reach the organisational structure that matches a high level of assets specificity, they chose the hybrid structure of long-term contracts. (Joskow [1987], Crocker [1988])

2. Parties action upon assets specificity : rolling stock standardisation

The former British Rail policy was to design trains for specific lines (supplied by third rail or catenary). Furthermore, as a unique client, BR played an essential role

in the technical definition of rolling stock and let little margin to innovate to designers.

Nowadays, the relationship between rolling stock buyers and designers are quite different. On the one hand, the liability of rolling stock technical definition is also incumbent upon suppliers (and not only upon clients). On the other hand, designers, ROSCOs and TOCs attempt to standardise rolling stock.[10]

The rolling stock standardisation tends to improve the governance structure efficiency. Indeed, by designing standard trains that are adapted to the whole network, manufacturers modify the existing bilateral dependency between TOCs and ROSCOs. The significant investments made by designers and ROSCOs are more easily redeployable when they apply to standard vehicles, capable of use on a number of different lines. Furthermore, TOCs can protect themselves against the risk of opportunistic behaviour and rent appropriation by their partners because the supplier switching costs are lower in such cases (low asset specificity).

By reducing trains physical specificity, operators contribute to the setting up of a market structure, in accordance with the reforms objectives and the theoretical hypothesis. (TCT indeed draws a direct link between de-integration and loss of asset specificity.)

However, if standardisation reduces the dependency between clients and suppliers, concentration of the designers market ultimately will reinforce it.

[10] Thus, the new flexible trains designed by Adtranz will be able to run on all the lines. Moreover, this designer intends to develop modulary trains with characteristics standard enough to satisfy the maximum clients. Adtranz is not the only company to bet on standardisation since GEC-Alsthom, another important designer, has just launched a new concept of standard train (“ Juniper ”).

Furthermore, because of the low standardisation of rail at the international level (each country has its own particularities as regard electricity supplying system, signalling, track gauges), the appeal to foreign suppliers is limited.

At last, rolling stock standardisation is a long-range process which depends on the specific rolling stock life duration and on the infrastructure modernisation programs.

Thus, rolling stock standardisation partly solves the governance structure inefficiency problem.

V. Conclusion

The new British rail structure is already being transformed, in particular as regard rolling stock related activities. Indeed, to attenuate the opportunistic behaviours (rent appropriation, underinvestment) that the rolling stock assets specificity induces, agents are altering the contractual disintegrated structure and changing the level of assets specificity, as TCT advocates.

However, in the new rail system, train operators are subject to regulatory constraints as regard the passenger services they must procure, whereas rolling stock owners are not. Consequently, TOCs are more incited to implement changes than ROSCOs, whose revenue is secure, at least in the mid-range. That is why the British Department of Transport is envisaging a possible re-regulation of trains owners.

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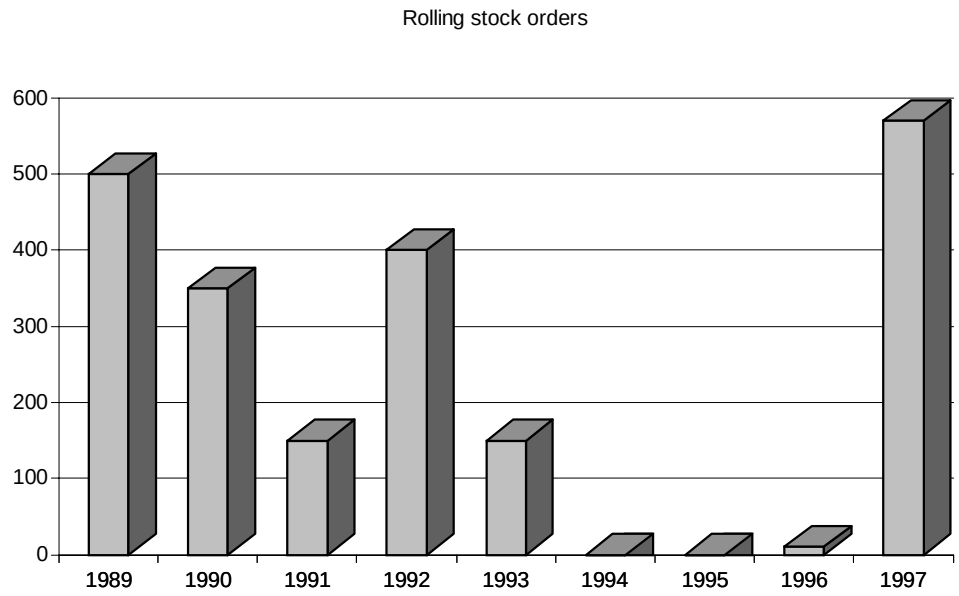
Annex 1 : The fleet of the 3 initial ROSCOs

	Angel	*Forward Trust*	*Porterbrook*	*Total*
Electric units	2099	2684	1615	6398
Diesel units	1094	0	681	2155
High speed trains	539	0	370	1775
Locomotives	0	1366	789	909
Total number of vehicles	3732	4050	3455	11237
Total number of clients	19	16	16	
Average age	16	17.6	16	

(Sources : *Review of the Rolling Stock Market*, ORR, May 1998

Department of Transport release, November 1995.)

Annex 1 : Rolling stock orders



(Source : *RIA Designers*)

The recovery in 1997 is due to the enforcement of new measures concerning the replacement of old slam doors trains. Despite this recovery, the level of orders will not be sufficient to maintain the trains fleet in a good state.

Danish **R**esearch **U**nit for **I**ndustrial **D**ynamics

The Research Programme

The DRUID-research programme is organised in 3 different research themes:

- The firm as a learning organisation

- Competence building and inter-firm dynamics

- The learning economy and the competitiveness of systems of innovation

In each of the three areas there is one strategic theoretical and one central empirical and policy oriented orientation.

Theme A: The firm as a learning organisation

The theoretical perspective confronts and combines the resource-based view (Penrose, 1959) with recent approaches where the focus is on learning and the dynamic capabilities of the firm (Dosi, Teece and Winter, 1992). The aim of this theoretical work is to develop an analytical understanding of the firm as a learning organisation.

The empirical and policy issues relate to the nexus technology, productivity, organisational change and human resources. More insight in the dynamic interplay between these factors at the level of the firm is crucial to understand international differences in performance at the macro level in terms of economic growth and employment.

Theme B: Competence building and inter-firm dynamics

The theoretical perspective relates to the dynamics of the inter-firm division of labour and the formation of network relationships between firms. An attempt will be made to develop evolutionary models with Schumpeterian innovations as the motor driving a Marshallian evolution of the division of labour.

The empirical and policy issues relate the formation of knowledge-intensive regional and sectoral networks of firms to competitiveness and structural change. Data on the structure of production will be combined with indicators of knowledge and learning. IO-matrixes which include flows of knowledge and new technologies will be developed and supplemented by data from case-studies and questionnaires.

Theme C: The learning economy and the competitiveness of systems of innovation.

The third theme aims at a stronger conceptual and theoretical base for new concepts such as 'systems of innovation' and 'the learning economy' and to link these concepts to the ecological dimension. The focus is on the interaction between institutional and technical change in a specified geographical space. An attempt will be made to synthesise theories of economic development emphasising the role of science based-sectors with those emphasising learning-by-producing and the growing knowledge-intensity of all economic activities.

The main empirical and policy issues are related to changes in the local dimensions of innovation and learning. What remains of the relative autonomy of national systems of innovation? Is there a tendency towards convergence or divergence in the specialisation in trade, production, innovation and in the knowledge base itself when we compare regions and nations?

The Ph.D.-programme

There are at present more than 10 Ph.D.-students working in close connection to the DRUID research programme. DRUID organises regularly specific Ph.D-activities such as workshops, seminars and courses, often in a co-operation with other Danish or international institutes. Also important is the role of DRUID as an environment which stimulates the Ph.D.-students to become creative and effective. This involves several elements:

- access to the international network in the form of visiting fellows and visits at the sister institutions
- participation in research projects
- access to supervision of theses
- access to databases

Each year DRUID welcomes a limited number of foreign Ph.D.-students who wants to work on subjects and project close to the core of the DRUID-research programme.

External projects

DRUID-members are involved in projects with external support. One major project which covers several of the elements of the research programme is DISKO; a comparative analysis of the Danish Innovation System; and there are several projects involving international co-operation within EU's 4th Framework Programme. DRUID is open to host other projects as far as they fall within its research profile. Special attention is given to the communication of research results from such projects to a wide set of social actors and policy makers.

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