What can regulatory economics learn from franchise systems?
Some additional arguments for vertical integration of railway companies*

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First draft
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*presented at
First Conference on Railroad Industry Structure, Competition and Investment

Toulouse, France
November, 7-8 2003
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1. Introduction

The scientific debate on optimal organisational forms of ex state-owned companies, in particular concerning those in network industries (telecommunications, railways, utilities), was shared in by different theoretical perspectives. The most dominant among them has been regulatory economics. The dominance of microeconomic methods is brought about, as in other fields too (i.e. Milgrom/Roberts for organization theory, Besanko for strategy, Sara Ann Reiter for accounting, Dieter Pfaff for controlling), by the clear structure and elegance of the mathematical tools which provide precise solutions to well-structured problems.¹ This implies a shift in focus away from generally defined research questions to a methodological treatment of neighbouring concerns that are accessible by the chosen instruments. The latent question here is whether organisational problems may be exhaustively analysed by the discipline of regulatory economics or if supplements are necessary?

Especially in the case of railways competition concerned regulatory economics shaped the discussion of optimal organisational forms. Theoretical competition oriented reasoning, which does not rely on real organisational experiences, although justified at the beginning of liberalisation, should by now be compared to the practical experiences made with particular organizational forms whereby new arguments as to the optimal organisational form could emerge. In this paper the organisational design of vertical disintegration which meets calls for more competition on the track is critically assessed. It is argued, that vertical integration may be explained even without reference to classical economic arguments and regulatory or political discretion. In other words: Firms that are exposed to intense competition do vertically integrate on efficiency grounds. However, if it is possible to show that the market generates a vertically integrated organizational form even in the absence of traditional economic arguments, then some conclusions may be drawn with respect to the debate on vertical disintegration of regulated state-owned companies. If vertical disintegration as postulated by regulatory economics is not the organizational form that emerges under unregulated conditions, then it is questionable if (and why) it should be imposed in other, related industries.

¹ This goes hand in hand with an immunisation towards the reality of organisational problems.
The essay outlines the limitations of regulatory requirements derived from regulatory economics which stem from an overexpansion of static assumptions and the abstraction from real organisational solutions that emerge in the market. Thereafter, organisational forms that turn out under unregulated conditions and which are assumed to be ex ante inefficient from the regulatory economics perspective are shown to exhibit the property to foster innovations.

The paper is organised as follows: First, classical regulatory economics arguments in favour of vertical (dis-)integration, different regulatory regimes and political organizational requirements are discussed (2.). Second, referring to the organisational form of the world’s leading restaurant chains (f.ex. McDonald’s) a different approach for the existence of vertical integration is presented. A restaurant chain like McDonald’s is a good example as its relation to third-party entrepreneurs (franchisees) is institutionalised on a contractual basis (3.). Third, under reference to (3.) innovation and interface issues in the railroad industry will be discussed (4.). Finally, some arguments on the relation of normative regulatory models and the positive organisational reality are put forward (5.).

### 2. Economies of scope and vertical integration

A vertically integrated transportation firm may only be considered the result of a “cost-minimizing market constellation” (Hedderich, Oz/Shy, Tirole (IO), Carlton/Perloff, Knieps, Windisch) if it exhibits vertical economies of scope. According to the literature, economies of scope result from transaction cost minimizations. Production-technology advantages are not sufficient if these advantages may also be realised by contracting between independent firms (Teece, Williamson, Hedderich, Milgrom/Roberts). Depending on the extent of the transaction costs a contractual solution between independent firms may not be feasible under certain conditions.

#### 2.1 Vertical integration and transaction costs

In the following the term transaction costs is used as a “focal point” of different related perspectives. The differences between classical perspectives on hold-up risks (Williamson) or measurement problems (Barzel (1997), Alchian/Demsetz (1972)) are not treated here. Central to the transaction cost argument are investments that, due to their specificity, exhibit a high loss in value if they are transferred from their first-best use to the second-best (f.ex. power plants, railroads, signal systems, train controls). To the extent that economic actors invest specifically and contractual partners may expropriate the returns ex post, mechanisms to
hedge against the expropriation exist (Alchian/Crawford/Klein, Milgrom/Roberts, Tirole (1987)…). In general expropriation may occur if the difference in value between the first-best and second-best use of an irreversible investment is high. The possibility to expropriate lowers the incentive to undertake (i.e. cost-minimising) specific investments if transaction costs may only be realized in market exchange. Resulting (opportunity) costs may be avoided by vertical integration.

To the extent that vertical economies of scope are present, there are arguments to vertical integration that go beyond advantages resulting from the production technology. Vertical integration then would align the interests of previously independent contractual partners. Transaction costs, that imply advantages form vertical economies of scope, could manifest in diverging investment plans, long-term control of traffic flow on the railroad (quantity) as well as in prices and quantities concerning the access conditions.

A vertical separation in the railroad industry could result in diverging (dis-) investment plans of the infrastructure provider and the transportation companies. This may and will create conflicts concerning the allocation of routes (in the short and mid-term) and concerning prices and quantities of access conditions. Qualitative decisions about the shutdown of routes and changes in other route parameters (one vs. two ways, curve radius, extent of inclination) may create conflicts between the parties as these decisions have consequences on costs and are very specific.

With sufficiently high transaction costs economies of scope would determine vertical integration as the optimal contractual form. In the case of vertical integration, regulatory provision institutionalises access to the network (railroads). Conversely, in the absence of transaction costs, it is argued, there is no reason to vertically integrate a previously integrated firm. A classical argumentation can be found in Knieps (1992) who, in a chapter titled “Is the vertical integration of infrastructure and transportation companies necessary?” states:

“The continuous control and coordination of the traffic flow is also necessary (as it is for airlines, d. A.) for railroads (…) Regarding the extent of necessary coordination activities it is not relevant whether train control, network, and transportation is managed by one company or independently (…) If a firm is not only owner of the infrastructure and train control but also provider of transportation services competitive distortion may the consequence (…) One
possibility to guarantee an equal treatment of all transportation companies is given by an independent train control in analogy to air control (a.a.O., p. 285).

This extensive citation contains the core of competition centred rationales: From the presumption of missing transaction costs and in analogy to the airline industry – lastly on competition grounds - a case in favour of vertical disintegration (and the setup of an air control institution) is “derived”. In the following general and specific arguments (f.ex. McDonald’s) are presented why the analogy drawn is inconsistent and shown that the analysis of an optimal organisational design in network industries should refer to real organisational forms (Mahnke 2001).

2.2 The regulatory theory and conceived organisational forms

The emphasis of the new regulatory theory lays on the conception of access regimes specifying the usage of state-owned monopoly networks by new competitors (Laffont/Tirole, Vickers, Ehrmann). It offers the advantage of elaborated mathematical instruments. However, its applicability to real world regulation remains restricted as regulation is more than only the management of access regimes (Albach, Ehrmann). For the elaboration of a new organizational structure it is therefore important to assess the extent of scope economies that would be destroyed with vertical separation. Unambiguous empirical results are yet missing (Seabright, Beesley, Travers, Preston, Nash/Preston). Therefore, it is adequate to borrow from unregulated industries and to analyse their efficiency properties. A new configuration of control and property rights in railroad industries should provide space for long-term innovative and well functioning organizational forms. Instead of focussing on static considerations when discussing vertical integration, an efficient market control by private firms should be preferred. The basic reasoning is that organizational change follows – even with a large time lag – by changes in relative costs (Picot et al.).

The above mentioned claims on vertical disintegration are based on an inadequate model-perspective that argues via the presumed, not proven, omission of transaction costs. These beliefs are too simplified as to keep their validity in a realistic economic environment. When critics require a firm to vertically disintegrate in the absence of transaction costs, the question arises why McDonald’s is vertically integrated then? If there are good reasons, then some conclusions may be drawn for railways.
3. Why global restaurant chains are vertically integrated?

3.1 What can railways learn from other vertically integrated firms?

The owner of the railway’s infrastructure and the headquarters of a global restaurant chain are structurally very similar as both provide some input services to their outlets and franchisees (alias transportation subsidiaries and competitors) which then transform these inputs into outputs offered to the customers. The input services determine to a relevant part the nature and quality of the services offered. The headquarters bring their brand and know-how as an asset into the production process of the downstream firm (see Table 1):

<table>
<thead>
<tr>
<th>Headquarters</th>
<th>Asset</th>
<th>Offer to franchisee</th>
<th>Activity of franchisee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroad company</td>
<td>brand, security, quality, know-how</td>
<td>Input services</td>
<td>Transportation services</td>
</tr>
<tr>
<td>Restaurant chain</td>
<td>brand, quality, know-how</td>
<td>Input services</td>
<td>Production and distribution</td>
</tr>
</tbody>
</table>

Table 1: Restaurant chain and railroad company

Despite all the economic and technical differences between railroads and restaurant chains both provide services to their customers via own and independent distribution companies under the constraint of system-wide uniform appearance and in a way that enhances brand value. Thus, railroads face similar management problems as restaurant chains do.

3.2 Transaction costs and the restaurant chain

A franchise concept that is offered by the franchisor to the franchisee includes the following components: a competitive distribution idea, a brand as well as distribution and organisation concepts. Transaction cost theory (see 2.1) predicts that the higher the degree of specificity of the production factors and the higher the frequency of transactions as well as exogenous and behavioural uncertainty the higher is the probability of opportunism between the contractual partners. The incentive to align the contractual partner’s interests through vertical integration is high. In the case of restaurant chains irreversible costs are limited to brand building, exogenous and behavioural uncertainty is low, and transactions are infrequent. In short: Transaction cost arguments do not support any form of vertical integration.
This argumentation is supported by the fact that restaurant chains are able to handle all relevant topics with franchisees on a contractual basis. Thus this can not be the reason for vertical integration. In addition, there should only be one optimal contractual form in the distribution system. As franchisees are more efficient than owned-outlets only franchisees should exist within any one chain. Besides other arguments this should hold because the management of different contractual forms in a firm is complicated and brings about higher management and administrative costs.

Thus, for a motivation of partial vertical integration further arguments have to be considered. The following general transaction cost arguments that have not been considered yet may provide a justification for firms like McDonald’s to vertically integrate despite potentially higher costs:

- Inability of markets to internalise externalities
- High coordination costs and
- Avoidance of being the prey of double-marginalisation of a firm with market power.

With respect to the solution “vertical integration” these costs may be interpreted in that contractual solutions are not chosen so as to very precisely provide optimal incentives. Often contractual and other solutions are only constructed to allow for an economic exchange in the first place. Vertical integration may be flexibility enhancing by avoiding the contractual specification with third parties. The consequences of transaction costs may cum grano salis be interpreted as rewarding strategic and opportunistic behaviour. Thus, investments in flexibility and innovation in general will be too low compared to the achievable level. In more general terms: transaction costs may be understood as interface-costs. It can be assumed that not all interfaces that may be identified on a legal or theoretical basis can be codified correctly (Mahnke 2001, Frey/Frost/Osterloh, Frey/Osterloh). Hence, the change in requirements must, as will be argued below, be controlled via other organisational provisions.

3.3. Restaurant chains, innovations and the plural form

Many restaurant or retail chains are organized in a plural form, i.e. a mix of chain-owned outlets representing (partial) vertical integration and franchisees representing contracts between independent companies.
What challenges do these firms face (Bradach)? In the context of dynamic markets, national or international retail chains need to have the possibility to innovate and standardise simultaneously within the system. This requires a combination of local entrepreneurial activities and a firm-wide perspective. The local aspect is represented by independently acting franchisees. The franchisor and the owned outlets take on a firm-wide perspective. Innovations emerge from the owned outlets although franchisees may propose modifications.

Both organizational parts have to be controlled so as to guarantee that they meet their respective requirements. It is important that the organization and organizational units have, besides correct incentives, possibilities for learning.

Organizational learning is seen differently in the two arms of the organization. With James March (1991) one can make the difference between Exploitation and Exploration. Exploration is the uncovering of new potentially profitable resources and technologies; this type of learning is attributed to the franchisees. Exploitation is the incremental improvement of existing routines in order to enhance efficiency: this type of learning is considered to be undertaken by the owned outlets. No single of these learning mechanisms, which were briefly outlined (for empirical results see Sorensen/Sörenson), are sufficient for a firm to succeed in the long-run. A predominant focus on exploration to the expense of exploitation would provide too little experiences thereby blocking the efficient large scale application of capabilities over all products and services. Without exploration the firm would not generate enough innovations, the orientation on the optimization of routines would be too high, and the firm would be unable to adapt to external changes. Empirical studies show that the system-wide quality shrinks with the number of franchisees in the system (Michael in JEBO). Managers emphasise: “We would have chaos if people were given too much of an incentive to maximize financial results. They would screw up the business concept in an effort to maximize financial results.” (Bradach, p. 288). Thus, the balance between exploitation and exploration is critical to achieve standardised, system-wide innovation.

The two types of learning may be attributed to the management teams of the organizational parts. Managers of owned-outlets use exploitation, managers of franchisees use exploration. The firm has to setup control processes for that both types of learning are realised. Incentives and monitoring activities for the two arms of the firm have to be differently configured. Managers of owned-outlets are compensated by a fixum with little monetary incentives;
incentives are provided to meet the standards. Owned-outlets are intensely monitored also with respect to the efficiency of the managers. Bureaucratic mechanisms are supported by management information systems.

Franchisees, that share 4-10% of their revenues with the franchisor, are controlled via monetary incentives; Innovations can not be introduced per ordre de mufti but rather the franchisor has to convince the individual, more or less independent franchisee to introduce an innovation.

Two important processes for the management of the plural form are mutual learning processes and the “ratchet brace-processes”. The mutual learning process relates to the dynamic nature of strategy creation: the generation of ideas, their selection and implementation. Experience groups which comprehend the franchisee’s experiences as well as performance data supplied by the franchisor play a key role.

The ratchet processes make sure that the performance requirements of the franchisees are bounded by the performance of the owned-outlets. Therefore the exchange of management information system’s data between the franchisees, the outlets and the franchisor is critical. As franchisees generally perform better than company owned-outlets they are by this process protected from unrealistic requirements by the franchisor. In other words: they might thereby generate economic rents. Hence, the integration into management processes of both organisational arms is important.

What do we know then from the management of a vertically integrated restaurant chain? Most of the restaurant chains (or retail chains) that use franchising and vertical integration do not exhibit significant changes in the numerical relation of franchisees to owned-outlets over time. The reasons for vertical integration are not based, as was outlined above, on technological advantages. Nor are they justified by transaction cost reasoning because the basis of collaboration between the parties is contractual in nature. The key argument for the vertical integration lays in the reputation of the franchisor as well as in the preservation of innovations.
4. Innovation and interface issues
In the following some general and specific innovation and interface issues relating to the discussion of vertical integration in railroad industries will be discussed. Only learning and codification issues will be considered.

4.1 General reasoning
The starting point for the following analysis is the presumption that the changes in costs are not observable when switching from a vertically integrated firm to disintegration. With vertical separation, additional transaction costs lead to lower levels of learning and investments in innovation and security. These additional costs are observable only indirectly due to a lack of observed variety of vertical separation cases. The arguments so far give rise to the following presumptions about vertical separation:

- in the absence of headquarters a firm-wide perspective is missing
- instead of a mix of exploration and exploitation, only exploitation will be emphasised
- uncertain investments in innovations and security will be reduced by and large
- the focus of the participating firms will be on cost minimising, as this is the main possibility to adapt with fixed system parameters.

To underline the above mentioned arguments illustrative evidence from a major train accident in a (partially) vertically separated system and investment behaviour in inappropriate infrastructure and locomotives will be provided underneath.

4.2 Lord Cullen Report, regulation and learning
According to Lord Cullen’s report on the Ladbroke Grove accident, regulatory incentives to avoid delay led Railtrack to omit necessary repairs (3.). The omission of investments in security and quality manifests itself f.ex. in train accidents, and is not amenable to be controlled by the regulatory commission. Again according to Lord Cullen’s report the regulatory commission did not have the necessary technical or economic monitoring competency or capacity. ²
An additional problem is given by the missing system-wide management perspective in a vertically separated system. In Great-Britain, the partial management perspective displaced the formerly system-wide perspective. The result was a lack of commitment to secure quality
and to neglect security guidelines especially in the case of Railtrack. The large number of interfaces, which was equally considered as a fragmentation of the overall railroad industry, must lead to weak considerations of system-wide concerns if the actors have strong partial incentives, such as the avoidance of delay. According to the Lord Cullen report these incentives led to a culture of incompetence in regard to questions of quality and security. As already mentioned, real-life regulatory responses to such problem are hard to find.

As investment incentives in innovations are very weak in a fragmentised system, there will be no investment at all in such a regulated separation. It is to be expected that common R&D investments within the railroad industry will be omitted at once after vertical separation (see Michael (2000)). Along with the disappearance of a headquarters that controls these investments, both the incentives and an institutional framework, where projects are initiated and planned, will be missing. In other words: The realisation of quality improvements in infrastructure in a vertically separated system is posing a problem, because the interests of transportation companies and the infrastructure provider diverge. Thus both separated firms are unable to internalise externalities from exploration and thus are constrained to the use of exploitation.

This reasoning is illustrated ex negativo through a very interesting contractual arrangement between the former firm Railtrack and Virgin. In light of the quality improvements on the Westcoast-Mainline the firms agreed to share profits. This is, the incentives for the infrastructure provider Railtrack to improve quality that were provided by regulation were not in line with the actual interests of the transportation firms (Michael 2000). The profit-sharing agreement can be interpreted as a (partial) vertical (re-) integration that was driven by market forces and which rewards improvements in quality. In other words: Only the participation of Railtrack in Virgin’s revenues stemming from higher quality provided the right incentive for the infrastructure provider to invest.

Another problem related to investment incentives is worthy of attention. This problem results from the price-cap-regulation that is also used, due to its simplicity in implementation, in telecommunications. The problem arises for industries in which the irreversible part of the investments is high (IDEI report an passenger Rail Transport, p. 95). To the extent that sunk costs are incurred the regulator has the possibility, by a specific price-cap-regulation, to preclude the infrastructure firm from gaining a return on the investments. That is, if a sunk

2 This problem is likely to be even worse in Germany as the regulatory commission is characterized by legal
investment has been incurred the regulator will only acknowledge future cost saving potential within the infrastructure firm. The expropriation of past, cost saving investments may be higher, the higher the degree of irreversibility of these investments. These popular regulatory “cost saving effects” are anticipated by infrastructure firms leading to low incentives for investments. A popular example is given with the retention of investments by BAA at Heathrow’s terminal 5.

4.3 Railroad specific illustration of underinvestment problems

Two further innovation issues related to railroads illustrate the importance of the consideration of underinvestment. First a (partially) vertically integrated firm can consider different interests (of transport firms and the infrastructure provider) as to questions about the combination of physical properties of wheels and roads, the choice of vehicle boundaries and illumination profiles, matching of innovative vehicles and the roads, and can focus on security issues. The coordination of technical issues needs an in-the-process-alignment that forecloses opportunistic behaviour after the conclusion of the contract.

The second innovation related issue, which will gain in importance in the future, concerns technical innovations, which requires a stronger learning community between infrastructure and transportation firm. In principle, this concerns interfaces that regulate the duties and incentives of transportation firms and infrastructure providers. With vertical separation, there is always the problem that the definition of an interface does not include controlling mechanisms for rail maintenance or equivalently that the infrastructure provider does not have any contractual or quality related duties vis-à-vis the transport company? Interesting examples are provided by the acquisition of locomotives, which hints at the importance of the learning mode exploitation (with the exclusive relevance of cost reductions), the disappearance of the system-wide perspective, and the externalisation of investments in security. In the beginning of the nineties the ÖBB bought three types of locomotive prototypes that admittedly had the lowest requirements of maintenance work in infrastructure. Locomotives that were bought in large quantities did not, however, exhibit these cost reducing properties. Yet they were cheaper in acquisition than the three prototypes. EU-directive 440/91 attributes the financial responsibility of infrastructure depreciation to the infrastructure provider (i.e the state). Similar results hold for Switzerland: 30 years ago a specific locomotive was developed for the Gotthard. This locomotive brought about high maintenance costs for the infrastructure. It was
only put in use when the SBB was organizationally adapted to the EU-directive and the maintenance costs were incurred by the separate infrastructure firm. These examples confirm the disappearance of exploration at the expense of exploitation. The hope to overcome these problems by regulation abstracts from the “attenuation of property rights” in the public domain as well as problems of missing codification of interfaces. These problems illustrate that innovations, be it concerning rolling stock or concerning the infrastructure, can only be provided by taking on a firm-wide perspective.

A further application can be made to the next innovation step exceeding the security technique (ETCS), which is the guidance of trains through the central operating division. This implies that the infrastructure provider extends its part in the value creation process vis-à-vis the transportation firms. These innovations will enhance operating security, compatibility and the quality of the total system. The alignment of interests of the transportation firms and the infrastructure provider and the implicit information exchange create the basis, as it is in the case of the plural form, for appropriation of returns on investments in innovations. Due to the underinvestment issues, it is not imaginable that these investments in innovation would be undertaken in a vertically separated system. It is to emphasise that innovations would generate additional costs. Would the infrastructure provider have to have all ever used train control systems in place for all third party transport companies? And if yes at which costs?

4.4 Additional incentives from vertical separation and the presumption that regulation would not be an effective remedy

So far the arguments made plausible why only under vertical separation the system-wide perspective would disappear. In reality, the economic incentives to emphasise exploitation and to neglect a system-wide perspective are even stronger. In particular, pressures from the capital markets provide economic incentives for regulated railroad companies. The incentives for cost reduction provided by the capital markets enhance the incentives for outsourcing of diverse input services of infrastructure and transportation firms alike. These incentives are intensified by the above mentioned generic monitoring problems of weak security and quality levels by the regulator.

One consequence is the disappearance of a legal entity (i.e. vertically integrated firm) that is liable for problems on any level of the value chain. This liability limits the room for externalising insufficient investments as a consequence of exploitation (Bradach(1997): 288).
Outsourcing may be understood as a form of cost reduction through specialisation but also a way to limit liabilities resulting from quality deficiencies. That is, a firm may enhance monitoring problems of the regulatory commission by increasing the interfaces through outsourcing. With increasing contractual partners the number of issues to be regulated increases dramatically. The attribution of quality problems to the failing firm is highly problematic in such cases (problem of simulation). These problems of liability may then be circumvented by subcontracting with entrepreneurs that cannot be held liable. This objective conditioned by regulation was intensely used in Great-Britain. These problems of vertical separation are not new to economic life. A market oriented solution will be proposed in the following.

5. Conceived regulatory models and organisational reality

5.1 Franchising

Propositions as to the reorganization of regulated firms are limited as to their orientation at real existing (and functioning) organizational forms. The answer to the question “why a global restaurant chain is vertically integrated” should have illustrated:

- why the plural form as a side-by-side of vertical integration and franchising is used
- how vertical integration works within a firm
- why an orientation at the regulation of market access regimes is not sufficient as an economic argument to determine the optimal organizational form.

The economic reasons for the use of vertical integration by a restaurant chain are to be emphasised. Two classical references to transaction cost theory are not valid because (Bradach 1997, Sorenson/Sörensen 2001, Frey/Osterloh 1999):

1. as a restaurant chain regulates all relevant questions with franchisees on a contractual basis there is no case that vertical integration occurs because of contract setup costs.
2. due to the higher performance of franchisees compared to owned-outlets there is rather an incentive to franchise rather than to continue with the plural form.

Thus, if a restaurant chain acted in a stable environment there would be no reason for (partial) vertical integration. Only in a dynamic context, where the elaboration of innovations is essential, the partially vertically integrated system makes sense. One argument is to be
reconsidered here which refers to the plural form as a means to leverage two learning modes. An overemphasis on exploitation goes hand in hand with the peril of destroying the organization through free-riding (Bradach 1997, p. 288). Empirical studies point to the fact that an insufficient alignment of interests to the long-term interest of the overall system reduces the quality of the output (Michael 2000, p. 307ff). An improvement in quality can already be attained by providing the perspective to running additional franchisees (Michael 2000, p. 301 and p. 307ff.). Current empirical studies affirm that vertically integrated firms more successfully managed the innovation requirements posed by the internet than their separated counterparts (Gertner/Stilmann 2001). Especially coordination and problems of internalisation are better managed by the former than by the latter.

5.2 Restaurant chains, franchisees and railroads
If one translates the logic of restaurant chains into a static regulated environment, then regulatory economics had to call for vertical separation. If this would not realise/materialise automatically then a regulatory body would define a market access regime for franchisees for the presumption would be that the franchisors discriminate the franchisees vis-à-vis the owned-outlets. A regulatory balance would have to be created. Empirical results suggest that there is no discrimination of franchisees within franchise systems that use the plural form as the rate of acceptance of franchisees is around 2% for the most successful systems (Lafontaine/Kaufman 1994, Ehrmann 2001). In addition, the possibility to capture economic rents is given to the franchisees (Lafontaine/Kaufmann 1994). The regulation of input factors, possibly including quality and prices, would round up the regulatory regimes outlined here. These considerations of regulatory economics would not seriously be considered in the case of restaurant chains. In the light of structural similarities between railroads and restaurant chains it is to be questioned whether the propositions of regulatory economics should be accepted at face value.

6. Conclusion
The essay started by considering methodological limitations of regulatory economics’ reasoning as regards vertical separation in railroad industries. The real success of such reasoning may be observed in “mature networks” such as gas, utilities and telecommunications. In an industry where the requirements for innovation and investments is high there seem to be problems inherent in this approach to vertical separation.
For this reason the focus lay on real organizational forms in dynamic markets. The example of franchising systems that use the plural form was shown to be less complex with respect to liabilities and investment issues than the railroad industry. Furthermore, the codification of interfaces is much more difficult in the case of railroads due to these higher complexities. Thus, from a regulatory economics’ perspective it should be surprising that even in these industries, where transaction costs are absent, vertical integration is seen as the most efficient organizational form. The learning modes exploration and exploitation are especially important for generating innovations and thus important for the overall system ‘railroads’. This is especially relevant for an industry which seeks to integrate the transportation and infrastructure technologies through automated computer based systems. Of course, discrimination problems are to be acknowledged. These problems may however be alleviated by other regulatory mechanisms than by the elimination of common exploration-generating headquarters.

The arguments above showed ex negativo some limitations of the current regulatory debate. They showed how franchise systems use learning to meet the requirements in dynamic markets. Further research should analyse the learning potential in the railroad industry en detail. It is possible that some corrections to reasoning on franchise systems may be justified. Nevertheless, it seems to be justified to understand the common learning potential of infrastructure and transportation companies and to institutionalise these in future.
References


