The Economic Effects of Surface Transport Deregulation

by

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B.S. Physics
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M.A. Physics
Boston University, 2000

Submitted to the Engineering Systems Division
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Abstract

Over the past two decades, the deregulation of surface transport at both national and international levels has gathered momentum, particularly within the United States and European Union. The structural and performance changes associated with transport deregulation generated substantial redistribution of wealth among carriers, labor, shippers, and final customers and dramatically altered the costs and organization of transportation services. Many of these consequences were anticipated in the debate over deregulation; others have emerged during the regulatory transition. In general, economic regulation has led to net social benefits.

This thesis will discuss the origin of transportation regulation and the forces for regulatory reform. The effects of the removal of economic control are assessed. It also examines the issues emerging after the deregulation and possibility for re-regulation in an effort to enhance safety and reduce the environmental impact of surface transport.

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1. Introduction

Transportation performs a critical linking function in the world economy. Virtually every product consumed by the public originates away from its final marketplace and requires shipment by some form of carriage. Today, freight moves by rail, road, air and water and increasingly involves some combination of these modes. As regional markets are being integrated into the global market and globalization is gathering momentum, freight transportation will only continue to grow in importance for both direct users of these services and consumers at large.

The market for transport services has been traditionally the subject of government regulation and public ownership. For example, rate regulation in the railways and entry restriction in the trucking industry are examples of regulatory controls on transport that have been promoted in many circumstances worldwide. The economic model that supports such regulations in all transport modes has been based on the belief that, under some circumstances, private markets fail to provide transport services in the most efficient manner. Various causes of market failures include imperfect information among market agents, the presence of externalities, imperfect competition, or the existence of increasing returns to scale. Government market intervention may be direct – the legislation and administrative regulation of prices, quality of service, entry, and exit – or indirect, in the form of antitrust regulation intended to control firms in the unfettered exercise of their market power.

The economic model that supports such regulations in all transport modes has been based on the belief that, under some circumstances, private markets fail to provide transport services in the most efficient manner. Theoretically, this same model takes for granted that government intervention is flawless. It is not at all clear, however, that government cure works better than the private market illness. The belief that government intervention may produce more welfare losses than the absence of any intervention has been the driving force behind the movement for reform in transport that started in the late 1970s. Two interrelated issues are at the center of the debate: whether government intervention
is better than the absence of any intervention; and if some regulation is necessary, what should be the scope and content of such regulation.

Transport regulation can never be viewed in isolation. Attitudes and policies are influenced by a wide variety of factors many of which appear somewhat distant to transport itself. This is to be expected if one considers the role transport can play in such things as: helping to improve the geographical cohesion of a country; stimulating economic activities; and lubricating the wheels of commerce. Equally, but less often considered, the transport sector is a major component of most developed economies and, therefore, in its own right may exert influences over such macroeconomic matters as levels of inflation and the balance of payments.

Attitudes towards the regulation of industry have changed considerably since the mid 1970s. Whereas prior to that time the consensus view was that because of the scale and frequency of market failures it was important for government to take an active role in regulating industry, since then there has been a gradual withdrawal of the state from regulation and control.

In this thesis, we examine the effects of government intervention on the operations of the transportation industry, detailing the consequences of deregulation on participants, as well as on the national economy. More important, we analyze the causes of various government approaches to regulation in an effort to understand how political processes shape economic outcomes. Chapter 2 provides an overview of the transportation industry. Chapter 3 describes the origin and evolution of transport regulation. Following that, Chapter 4 discusses the forces for regulatory reforms and the experiences of deregulation in the United States and European countries. Chapter 5 details and examines the effects and consequences of transport deregulation, and Chapter 6 discusses issues following the regulatory reforms. Conclusion is made in Chapter 7.
2. Transportation and Economy

Transportation of people and goods constitutes a sizable portion of economy. In the United States, the transport sector now represents approximately 16 percent of gross domestic product (GDP) in 2000. Passenger transportation is the largest segment of the industry, representing roughly 10 percent of GDP. The freight transportation sector, or the shipment of goods, is smaller, at 6 percent of GDP, but it still generates about $560 billion in revenues.

Transport has a significant effect on the economy. Transport enters as an intermediate input into the production process, either directly in production or as a complement to other factors. Thus, the price and quality of transport affects the output of existing firms as well as the decision of potential firms concerning whether to enter an industry.2

Important differences exist in the economic effects of passenger and freight transportation. The passenger transportation sector is overwhelmingly private, with nearly 80 percent of revenue related to privately owned automobiles, with cars, gasoline, repairs, and other vehicles as the largest expenditures. Conversely, only 20 percent of revenues are generated from for-hire passenger carriers, including airlines, buses, taxicabs, and mass transit. Thus, transactions in the passenger transportation sector tend to have private and immediate effects, while transactions in the freight sector reverberate throughout the whole economy.

Starting from late 19th century, freight transportation has evolved into an integral part of the infrastructure for national economies. In fact, most goods purchased by consumers require several movements by freight transporters. Bulk raw materials, such as coal and agricultural products, must be moved from their point of excavation or growth to places where they are transformed into a higher-value-added product. Intermediate goods, such as steel for automobiles, must be moved from one chain of the production process to a later chain in the process. Finished goods, such as television sets, must be brought to stores that will sell them to consumers. Hence, the speed and economic efficiency of
freight transportation are critical to making a modern economy operate at an optimal level. This is especially true in the United States where manufacturing and retail inventories are now kept at record low levels and new techniques like “just-in-time inventory” are growing in use.

Freight transportation is also a vital component of the global economy. Its effect grows as multinational companies continue to expand into international market. Without coordinated freight carriage, international agreement such as the North American Free Trade Agreement (NAFTA) and the European Union would operate far less efficiently.

Considering the importance of freight transportation to the economic well-being of the nation, it is not surprising that government have felt compelled, at times, to intervene in the operations of freight transporters to ensure their successful performance.

2.1. Freight Transportation Modes and Trends

The freight transportation industry is composed primarily of five modes of carriage: truck, rail, water, air and pipeline. Table 2-1 presents the past forty years of trend in freight transportation market share in the United States. For most countries, trucking and railroads are the most important sector of the industry. In the United States, these two sectors generate more than 87% of the revenues of the freight transport industry. In 2000 alone, this amounted to more than $492.7 Billion in revenue, or about 5.3 percent of GDP.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (Billion)</th>
<th>Truck (%)</th>
<th>Rail (%)</th>
<th>Water (%)</th>
<th>Oil Pipe (%)</th>
<th>Air (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>47.8</td>
<td>68</td>
<td>19</td>
<td>7</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1970</td>
<td>84.0</td>
<td>74</td>
<td>14</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1980</td>
<td>213.7</td>
<td>73</td>
<td>13</td>
<td>7</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1990</td>
<td>351.9</td>
<td>77</td>
<td>9</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>1999</td>
<td>561.8</td>
<td>81</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Transportation in America 2000, page 4-7, Eno Foundation19
If other measures of market share by sector are employed, the relative output transported by each mode differs. For instance, if tons of freight carried are considered, trucking’s share falls to about 49.2% in the US and railroad’s share rises to 25.3%. If ton-miles (one ton of freight carried one mile in distance) are compared, trucking falls to about 29.4%. This comparison illustrates the point that different modes are more efficient to carry different types of freight for different distance.

Trucks charge more than others to carry higher-valued freight a shorter distance, which is consistent with trucking’s comparative advantage – flexibility to reach any destination easily. Railroads and barges carry lower-valued cargo longer distances, on more fixed routes with fewer stops. Airlines can carry freight to its destination most quickly but are most efficient for small and light-weight items.

The modal split in freight transport is strongly determined by transport distances. In general, the shorter the transport distance, the greater the modal share of road transport. The longer the transport distance, the greater the share of rail transport. Other factors, such as climate, economic environment, and regulation, also have effects on the relative importance of difference transportation modes. For example, Sweden is the country with the highest modal share of rail freight in EU. Long inland transport distances, high transport volume of goods such as iron ore and wood, little importance of inland navigation and pipeline transport and climate favoring rail over road transport contribute to the high modal share.

Demand for freight transport has been growing fast in the past few decades both in the US and Europe, outstripping both economic and population growth. At the same time, market shares have all changed dramatically. As the entire industry has grown, the trucking sector has steadily gained freight market share, largely at the expense of railroads, with the other modes remaining as minor players. Recently, airlines have grown in importance, posing increasing challenges to these traditional modes. In the US, the airlines’ market share has more than doubled in the past decade, with the air cargo industry now generating more than $25.3 Billion revenue in 1999. As a result of
differences in efficiency and market orientation as well as in interoperability and interconnectivity, road and air transport are growing faster than the more environmentally friendly modes. This leads to imbalances in the transport system.

Perhaps the most important recent trend in freight transportation is the use of intermodal carriers. Intermodal carriers often combine movements by ocean, rail, and truck carriers. By using multiple modes, shippers can enhance the speed and flexibility of delivery without substantially increasing costs, which is especially important in a time of shrinking inventories and expanding markets.
3. Regulation of Surface Transport

In this chapter, we analyze the factors that led to regulation in railroad and trucking sector. We follow the discussion with a brief examination of the issues and costs of regulation, and then discuss the historical development and forms of regulation. Experiences of regulation in the US are briefed at the end of this chapter.

3.1. Need for Regulation

There is no single theoretical argument for regulating transport. A variety of reasons have been advanced in the literature and in public debate for public intervention. Much of the variation in approach stems form the fact that there are divergent views on the role of transport in modern society. In countries which might broadly be said to follow the Anglo-Saxon tradition of industrial policy – the UK and USA fit into this category – there is a tendency for governments to intervene in markets only when it appears that transport supply per se could be improved by such action. Contrasting this with countries such as France and Germany which are steeped in the traditions of the Napoleon Code, they tend to treat transport as an input into a wider social production function involving broader industries matters, regional policy, social equity, etc. and transport efficiency in its narrower sense may be sacrificed in this process. This is sometimes called the Continental approach.

Focusing on those countries that put emphasis on transport per se, the traditional argument is that markets cannot always be trusted to optimize the provision of transport services and hence there is in certain circumstances a need for government intervention, which is seen as serving the “public interest”. Efficient markets are assumed to function because of the availability of full information – this encourages all those involved to co-ordinate via the “invisible-hand”. There are arguments that such co-ordination is not automatically achieved in transport markets because of the lack of complete information linked with the existence of invisibilities in supply chain. Theoretically, the authorities
could act to remedy this problem by treating supply/demand information as a merit good and provide it directly to the market. This may be seen as either excessively expensive or impractical and, in consequence, the authorities directly regulate the supplying industries and users so that behavior conforms to that which would occur in the light of full information.

There are other reasons why markets may be said to have failed. Perhaps the most obvious is that the market is not always in optimum mainly because of monopoly power that suppliers can exercise. The traditional notion that price should be equal to marginal cost, so that Pareto optimality is attained, will not be achieved if there are profit-maximizing monopolists in the market. While perfect competition meets the Pareto criteria, monopolies inevitably charge above marginal cost and restrict supply. Similar types of problems arise where cartels exist – collusion by the supplying firms inevitably leads to exploitation of consumers – or where there are oligopolies. Even imperfect competition, where a large number of firms supply a diversified product, does not meet the Pareto criteria – although the firms do not make excessive profit because of the existence of competitors, they do not produce at minimum cost. This can also lead to instability in the supply of transport services as firms continually enter and leave the market with consequential disruptions to those wishing to use transport services. Regulation in these circumstances imposes pricing rules that essentially force the suppliers to mimic the behavior of a perfect competitive industry.

The market’s inability to always attain the private optimal supply is not, however, the only reason for government intervention. In many cases the costs that influence the behavior of transport suppliers and users are themselves incomplete. The lack of due consideration of external costs such as atmospheric pollution, noise, congestion, visual intrusion and safety means that both the scale of transport use and its nature (e.g. the modes used, the trip frequency, the routes chosen, etc.) are unlikely to be socially optimal. Essentially, users of transport are being subsidized by others, who bear these external costs, for their trip making. The reason for such problems is that lack of adequate allocation of property rights – the rights to possess and use - to such things as the
atmosphere, peace and quiet, etc. and it is well established in economic theory that they can be solved by simply allocating such rights. Government intervention, therefore, often involves either actions to allocate such rights to individuals or, and more frequently, to establish its own control over such rights. In this latter case the government then either sells rights to use the resource (e.g. pollution charges) or allocates them to users through the imposition of regulations and controls (e.g. vehicle exhaust emissions standards).

Because of the technical nature of much transport infrastructure, i.e. large initial investment and high maintenance cost, supply of transportation services would be sub-optimally small if left only to the private market. In general, many forms of infrastructure have public-good attributes which makes it difficult, and in the theoretical pure case, impossible, to exclude potential users. Roads, for example, are often cited as being a quasi-public good. The inability to exclude users means that cost recovery is impossible and, hence, commercial suppliers will limit their investments. Public supply, with finance drawn from general taxation, is often seen as the only way of ensuring that adequate provision of such facilities is forthcoming.
3.2. **Issues and Costs of Regulation**

While the public interest view of regulation held sway in economic thinking for many years it increasingly became the subject for criticism during the 1960s and early 1970s.

Good theoretical reasons exist for believing that because unregulated private firms are subject to the discipline of the market, they will perform better and enhance consumer welfare more than either regulated firms or government-owned companies. Conversely, regulation tends to protect firms from competition. Government monopolies are even worse since they are disciplined neither by the market nor by a regulator.

At the practical level, an increasing number of studies were raising doubts about the actual efficiency of the regulations then in force in attaining their stated objectives. In the USA, for instance, a number of studies of inter-state aviation found that regulated fares were considerably higher than those prevailing on comparable but unregulated intra-state services.\(^7\) In the UK the efficiency with which subsidies were being used by the railways and the viability of the system of road haulage regulation which had been in force since the early 1930s came under close scrutiny in, respectively the Beeching Report and the Geddes Report.\(^7\)

The theoretical attack on regulation by Stigler in 1971 and Peltzman in 1976\(^{18,19}\) demonstrated the possibility that regulatory failure may, in fact, be an inherent problem with government intervention and that indeed such failure could be more severe than market failures.

Whereas the market forces firms to provide the best service at the lowest cost, regulators have other goals; they are motivated by a desire to please their political superiors, politically influential groups, and the firms they oversee. For example, In the US, farmers were involved in securing railroad regulations and in opposing regulation of motor carriers carrying agricultural goods. If one traces back through the history of UK regulation, for instance, the Salter Conference, at which the rules governing the road
haulage industry for 35 years from 1933 were derived, was composed of railway executives and large, well established road haulers – both groups with interest in containing competition. By being in at the outset, therefore, incumbent suppliers can manipulate the regulatory regime to their advantage – indeed in some cases they have initiated the moves to regulate in the first place.

Since governments normally prohibit new companies from competing with existing regulated firms, regulations strengthen the monopoly position of firms already in the industry. Therefore, it may be better to suffer from an unregulated monopoly that is subject to potential competition than to rely on regulation. The major effect of monopoly is to transfer income from consumers to the stockholders of the corporation. In the case of transportation, the industry was regulated in an attempt to increase output or to enhance the welfare of particular groups of users. In many ways, transport regulation in this context is being used in an effort to achieve distributional objectives rather than to maximize economic efficiency in its more narrow sense.

Even if regulators were operating solely in the public interest, regulation is inherently faulty. Not only is information incomplete and biased, since it comes from the industry, but the regulatory process itself is defective to some extent. For instance, if there is some competition, companies can under-price their competitive business to justify larger investment and higher prices in their monopoly lines – a profit-increasing strategy. The introduction of X-box is a good example of this strategy whereas Microsoft subsidizes the project with profits generated from its software business. Not surprisingly, competitors view this as unfair competition. To illustrate, if a railroad subject to rate regulation competes with motor carriers for transporting certain commodities, it will be induced to cross-subsidize its competitive traffic and increase its rates for noncompetitive traffic. Having low rates in the competitive market allows it to justify investing more in equipment to move that traffic.

In the United States most public utilities, airlines, and railroads have historically been privately owned but regulated by the government. However, regulation limits the
freedom and therefore the property rights of firms. In other countries utilities are usually
government owned, which is the extreme example of limiting property rights. Hence, to
return these activities fully to the marketplace requires deregulation in the United States
and privatization elsewhere. In deregulating or privatizing an activity, governments
should foster competition. Structuring the policy correctly can often result in more
competition than if a single government monopoly or regulated monopoly is simply
privatized or deregulated. An example of a deregulated industry with lousy competition
would be telephone services in the United States. Because of the nature of the industry,
telephone companies still enjoy monopoly even without regulation, therefore new
policies need to be structured to introduce competition.

In summary, regulations fail due to the lack of good information available to
governments, the inherent biases of regulators, and regulatory process itself. Even though
unregulated private monopolies charge excessive prices and produce inefficiencies, they
are ultimately subject to potential competition by entrepreneurs seeking to earn a portion
of their profits. Consequently, policy-makers should weigh carefully proposals to regulate
an industry and move wherever possible to deregulate existing government-controlled
enterprises.
3.3. Origin of Regulation

The absence of perfect market cause government to own, control, or influence transportation industry. For many decades this attitude was used to justify the regulation of railroads, trucks, and other modes of transport. In countries, especially in developing countries, where cartel type agreements are unenforceable or impractical, carriers have often sought government help to stabilize rates and prevent “excessive” competition. These industries normally claim that such regulation is in the public interest, but the consumer, shipper or traveler almost always pays more.

The regulation of surface transport has a long history. Under British common law, ferries and bridge tolls were subject to state control by the start of the 17th century. In the United States, the first federal regulation of transport came with the Interstate Commerce Act of 1887, which required that rates be just and reasonable, prohibited discrimination against persons or shippers, and forbade the practice of charging more for a short haul than for a longer one.

3.3.1. Railroad Regulation

Virtually everywhere in the world, the pattern of regulation or government ownership of railroads originated in the 19th Century. Often, railroads were heavily subsidized by the government; national or regional railroad monopolies were common. As a result, governments frequently built railroads themselves, purchased them from private owners, or regulated them.

In the US, regulations arose, at least in part, from federal government subsidies providing for construction and from the interplay of various special interest groups such as farmers seeking to capture economic rents. Construction of railroads in the United States and in much of the rest of the world was heavily subsidized. In the United States, the result was considerable excess capacity in many major markets. This increased competitive pressure often led to rates being bid down to levels the industry claimed barely covered operating
costs, with nothing left over for overhead. Thus, railroads were sympathetic to any approach that would stabilize rates at profitable levels.

Where rival railroads did not exist, as for many short-haul movements, rate were often significantly higher than for through-traffic that faced competition. For this reason, grain shippers, businesses in small communities served by only a single railroad (particularly where they exercised monopoly power), and various port authorities wanted rates to be controlled.

Under these conditions, the railroads supported regulations to stabilize and raise rates on competitive routes, and grain shippers and small communities did so to obtain protection against monopoly pricing. This coalition was able to secure legislation establishing the ICC. The result was that rates increased on long haul and declined a little on short haul. The same pressures existed around the world but, probably because central government was stronger than in the United States, state ownership was often substituted for regulation.

3.3.2. Trucking Regulation

The regulation of trucks grew out of their competition with railroads, which had enjoyed a monopoly position in many short-haul markets (although the longer routes were usually competitive). With the advent of motor carriers, however, short-haul transport was subject to increased competition. Virtually everywhere, motor carrier were brought under government supervision not because they failed to perform satisfactorily, but to protect railroad interests. Moreover, in the case of trucking, many economists and transport scholars claimed that regulations were appropriate: the motor carrier industry was viewed as “excessively” competitive. Entry was too easy. Firms fail to understand their costs. Prices were bid down “too low”.

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In the US, railroads began to agitate for extending regulations to trucking almost from the first horseless carriage. Partly because of opposition from the trucking industry, Congress failed to act until 1935, in the depth of the depression, when the American Trucking Associations, speaking for large trucking firms, turned to supporting regulations. The growth of socialist ideas, and a belief that government engineering of the economy could cure instabilities and inequities all contributed to the belief that regulations were superior to the market. The Motor Carrier Act of 1935 was a natural response to the Great Depression, which nearly destroyed the railroads. The general thrust in trucking was the same as it had been for the railroads to reduce competition and stabilize rates.

Without the agitation of railroad interests, motor carriers would have remained uncontrolled. For example, in Great Britain the Road and Rail Traffic Act of 1933 established controls over entry into the trucking industry. This imposition of controls was a direct result of the Depression and the increased competition with railroads, which found it increasingly difficult to compete with the new mode. Germany imposed controls over its motor carrier industry in 1931. Unlike the British but more like the United States four years later, the Germans established comprehensive rate controls that tied truck rate to rail rates. The main objective was the protection of rail traffic. As in most countries, the road haulage industry was taking the most profitable traffic, leaving the railroads with uneconomic goods, much of which the government required the railroads to carry at a loss.

New Zealand, which deregulated its road freight transport industry in 1983, introduced controls over road haulage in 1936 “primarily to protect the government-owned railways’ revenue and to establish price stability in the freight transport industry.” Prior to the 1983 act deregulating the industry, trucking firms were subject to price controls, route restrictions, and distance limitations.
3.4. Forms of Regulation

Most transportation regulatory systems can essentially be divided into three broad forms of controls. There is “economic regulation”, which places constraints over such things as charges, number of suppliers, output levels, etc. and certainly there has been liberalization in many sectors with respect to such regulation. In contrast there is also “social regulation”, governing such things as safety standards, consumer protection, qualifications of suppliers, etc, and here there has been no discernible abatement in regulation. Finally, there is “anti-trust” policy which is aimed at controlling monopoly power, mergers, etc, and here while there have been few legal changes there has been some liberalization in the way policy has been implemented.

At the outset it is useful to separate what is called economic regulation in North America (sometimes called quantity controls in other countries) from social regulation (quality controls).

Social regulation is designed to influence the impact that transport has both on those involved in working in the industry and on those third parties that are affected by transport. These forms of government intervention are not only widespread but have often been growing in importance in recent years while economic regulations have been liberalized. For instance, economic regulatory instruments are used to optimize the social costs of transport. Tax differentials on leaded and unleaded fuels are increasingly common with a powerful positive impact being seen on reducing the use of the former. Some countries, such as Germany, have differential vehicle taxation dependent upon whether catalytic converters are fitted or not, In the USA tradable permits (i.e. a limited number of licenses to use lead were issued to refineries and these could subsequently be bought and sold hence encouraging less efficient refineries to reduce gasoline production) were used to facilitate an efficient transition to lead-free gasoline.

Economic regulations explicitly affect the prices charged for transport services and the amount of the services that may be offered. Two categories of economic regulations that
are widely used are: rate control and entry control. In the United States, Germany, and New Zealand (to take but three examples), for instance, regulation over time led to higher rates, monopoly pricing, and less competition.

3.4.1. Rate control

Rate controls over the railways have an extended history going back almost to the initiation of the required technology, while such controls over road transport are much less widely spread. They applied for many years in the USA on inter-state activities (i.e. from passing of the Motor Carrier Act of 1935 to its reform in 1980) and have been a feature of the road haulage industry in many European continental countries (e.g. Germany used a “forked” tariff system, which sets maximum and minimum rates). Other countries such the UK have never regulated road haulage rates.7,12

These rate regulations are often, and especially in cases of transport industries which were perceived to be prone to monopoly exploitation, of the “rate of return” type. Suppliers were required to price so that a predefined rate of return was achieved, this being designed to enable the supplier to recover costs while at the same time earning a normal profit. In other, more fragmented industries, published and controlled rates had to be adhered to. The use of “forked” tariffs is designed to enable some flexibility in this arrangement to permit suppliers to respond to short-term fluctuations in market conditions.

Price controls in transport have often been accompanied by subsidies. In many instances these are cross-subsidies where rate controls on some routes or services prevent a reasonable return being earned and this is compensated for by allowing higher rates elsewhere. Such a practice, for instance, typified the regulation of UK bus fares from 1930 to 1968. In other cases direct subsidies form central government or local administrations are provided. This latter approach is normally supported by economists who question both the efficiency of cross-subsidization (it means that both groups
involved are charged at rates which deviate from their allocated marginal cost) and its equity implications (it means one group of travelers finances another).

3.4.2. Entry Control

Entry control is usually operated through licensing systems. They effectively control the supply of transport. For instance, in the United States, MCA 1935 required that all common carriers own operating certificates issued by the ICC. They also often stipulate condition of supply such as common carrier obligations that oblige a license holder to carry all traffic offered at the prescribed rate. Further, in many cases the licenses are given to specific transport suppliers and are non-marketable so that it is not simply the amount of transport which is limited but who actually supplies it. Many European road haulage licensing schemes operate without transferability. In other cases licenses may be traded and here it is only the aggregate supply that is limited. The New York and Boston taxi medallion system is an example of such a scheme and, indeed, medallions change hands very regularly and at very high prices.

Regulation is this paper means "economic regulation", that is, public intervention in the rates or services offered by an entity that sells goods or services to the public. To the extent that the distinction can be made, this definition excludes public interventions for reasons of worker health and safety, or working condition, although these have obvious economic implications. Also, the definition of regulation should not be viewed statically: in fact, it has changed considerably over time, as has the ability of economists to define the objectives and measure the impact of economic regulation.
3.5. Transport Regulation in the United States

As in many countries, the modern phase of transport regulation in the USA came about because of fears over the potential monopoly power of railroads. The rationale for regulation of trucking was somewhat different to that of the railroads. There were, as with the railroads, a range of social arguments for regulation concerning such things as safe operations and the need for adequate services. In addition, however, questions of market stability (especially at a time of serious economic depression) and competition with the railroads were important motivation factors. Within the trucking industry in particular there were also established, incumbent operators seeking protection from the rigors of competition from new entrants.

The ICC was given powers to control railway rates and entry and exit into and out of the industry. Rates were required to be reasonable and just and had to be published. Prohibitions were placed on such activities as charging higher rates on shorter hauls than longer if the former formed a component of the longer haul. There should be no discrimination in rates between persons, and concealed rebates of tariffs were prohibited, so was geographic discrimination.

Interestingly, in the US, railway regulation came about because of a belief that there was too much competition: railways had been over-built in many areas of the country mainly because of financial speculation in the creation of railway companies. As a result, the perceived “high fixed cost, low variable cost” structure of railways tended to generate severe rate cutting and tariff instability whenever railways directly competed for traffic, and the railways did not favor this sort of competition.

In the case of trucking, the ICC had powers to control market entry to routes and to establish maximum and minimum rates. The ICC awarded grandfather certificates of public convenience and necessity that confined the truckers to those routes and goods they could prove they had hauled prior to 1935. After the initial grandfathering, it was virtually impossible for new firms to enter the trucking industry: to secure a new
certificate of public convenience and necessity, the commission required the applicant to show not only that there was a demand for its service but also that existing carriers would not be able or willing to provide the service. Table 3-1 shows the regulation of trucking industry under MCA 1935 in the United States.\textsuperscript{12}

<table>
<thead>
<tr>
<th>Common</th>
<th>Contract</th>
<th>Exempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>- Operate under a certificate of public convenience and necessity - Grandfather Clause</td>
<td>- Need a permit of PC&amp;N - Less restrictive</td>
</tr>
<tr>
<td>Rates</td>
<td>- Just and reasonable - All rates to be published</td>
<td>- Publish minimum tariffs only</td>
</tr>
<tr>
<td>Service</td>
<td>- Specified routes, commodities, and end points - Very specific and restrictive</td>
<td>- Specialized service - Limited number of customers, distinct needs</td>
</tr>
</tbody>
</table>
4. Regulatory Reform of Surface Transport

In this chapter, we analyze forces that led to the regulatory reform. We then compare privatization and deregulation, which are two alternative approaches in regulatory reforms. Experiences of deregulation in the US are discussed as an example at the end of this chapter.

4.1. The Forces for Change

A large number of economists argue, almost from the outset, that many of the regulations over transport would not achieve their stated objectives and may actually prove counter-productivity. Much of the regulation was aimed at non-economic or even anti-economic considerations. For example, the basis for the notion of "reasonable and just" rail charges in the United States was equity, not economic efficiency. The emphasis on geographic equalization was an explicit attempt to reach political objectives, with the knowledge that the result would be clear inefficiency in transport operations.

One clear difference in the 1970s from the preceding periods was the recognition that regulation was not costless, either in the static sense of minimizing current costs of supply or in the dynamic sense of encouraging and permitting innovation. Equally, there was increasing doubt as to the need for regulation, certainly not on the scale that had developed, as many of the earlier fears of the dangers of free markets began to be debated.16 This was particularly true, for instance, after 1935 when there were continuing assertions that modes such as trucking are inherently competitive and economic regulation, therefore, is unnecessary. However, hard evidence about the impacts of regulation of road and railway transport was only slowly accumulated.

The Western industrialized economies in particular were suffering from stagnating levels of productivity and low profit margins. The dominant role of railways at the beginning of the regulatory period was clear: even as late as 1929, railways carried about 74 percent of
the volume of intercity freight per ton-km in the United States. By 1980, however, the share had fallen to only 37.5 percent. Profitability followed the same trend. Many railroads were in extremely shaky financial condition by the end of the 1970's. Political economists argued that removal of regulation would not only produce lower costs but would also increase productivity and, ultimately, generate profits nearer a long-term equilibrium level.\textsuperscript{12}

Part of the pressure continues to come from the academic world where studies were appearing pointing to the high costs of regulation. Regulation had grown up in the belief that it served the public interest. However, there are somewhat different views that argued that regulation tended to be captured either by those whose behavior it was intended to control or by the regulators themselves who are more interested in pursuing their own self interests than meeting social criteria. Market, often suffer from imperfections but these represent the lesser of two evils when contrasted to the imperfection of regulation.\textsuperscript{1}

This rather pessimistic view of markets and regulation was supplemented by the more optimistic message that by creating “contestable markets” one could achieve both economic efficiency and avoid the problems of regulatory capture. Provided markets are so free that entry and exist is costless then there is no scope for exploitation and consumers cannot be exploited. The fear that new entrants will begin providing transport services at a lower price will deter incumbents from setting fares or rates above costs. This is true irrespective of the number of suppliers and, indeed, where there are economies of scale or scope (where costs are reduced by producing a range of services) it is quite possible that a single supplier will meet all the market’s demand. Of course, this does not preclude the need for intervention for safety reasons or to supply socially important services.

The driving forces behind regulatory reform in other countries are similar but with contain differences. For instance, Canada started deregulation because of the concern and/or belief that trucking controls have resulted in economic costs far outweighing any
benefits. In addition to this, a number of other factors independent of the US experience led to a reevaluation of regulation. First, the Canadian economy had been depressed for several years in the early 1980s. During that period, the public in general and policymakers in particular were amenable to changes from the status quo to deal with pressing problems. After 50 years of regulation, deregulation had such an appeal. Second, existing regulation was not always enforced effectively and this often placed regulated carriers who dutifully performed their common carrier obligation, at a disadvantage. The recognition of these realities led many carriers to support reductions in regulation to a more enforceable level. Some carriers even preferred complete deregulation rather than having to compete in a partially regulated environment. 13
4.2. **Deregulation vs. Privatization**

Transport deregulation should be understood in a wider setting. While in the United States, transportation enterprises are historically private-owned, in many parts of the world, instead of regulating privately owned industries, governments choose to own and operate the utility or mode of transport itself. While the motivation for nationalizing the industry was often the same as that for regulating it, the results were somewhat different. Moreover, when the deregulation movement began to sweep the world, in sectors where the government owned the operating companies the movement took the form of privatization.

Generally, privatization and deregulation are alternative approaches to restoring competitive private markets in transportation that the government has controlled since the 19th century, or early in this century, when many governments nationalized or regulated them. The forces and considerations that led governments to remove them from the market and, more recently, return them to the unregulated private sector are virtually identical.

The term “privatization” appears to mean different things to different commentators. Some preferring a rather restricted definition concentrating mainly on the highly visible sales of major nationalized industries, whereas others would wish to include a range of areas where state involvement has been reduced, whether in direct provision of services, regulation, or the allocation of subsidy. It was an earlier loss of faith in the competitive market that resulted in government takeovers of specific industries. However, government ownership and regulation were also problematic. Both theoretically and empirically, unregulated private markets work better than controlled ones or government-owned monopolies.

There were some pragmatic reasons for deregulation and especially privatization of transport activities. For instance, much of the transport infrastructure existing in the mid-twentieth century resulted from investment, some 100 or more year ago. By the 1970s
there was perceived to be a need for an injection of new resources in transport and private funding was seen as a source for at least part of this. In the USA, for example, states such as Florida, Texas and California have encouraged land developers to provide road infrastructure as a *quid pro quo* for development rights. A similar system operates in the UK. In Japan, railways have been privatized but 100 per cent of the shares are government owned – the point here is that the new companies can now raise money from private sources. Similar types of arrangements are now to be found with regard to road construction in countries such as Austria.

In the UK, the post-war trend has been for increasing direct state involvement in industry, increased economic and social regulation and greater free or partly subsidized provision of services by central and local government. In the US, however, direct nationalization has never been a significant force.

The United States has been a leader in deregulation at the national level, most notably with the relaxation of government controls over airlines, trucking and railroads. European, by contrast, and particularly UK and France, have been leaders in privatization, in large part because the European countries nationalized many industries that have always remained in the private sector in the United States and thus had more state enterprises to sell back to private investors. The developing countries also experimented with privatization and deregulation in the 1980s, with varying degrees of enthusiasm and effectiveness.
4.3. Experiences in the United States

Starting from the mid-1950s, the railroad industry's severe economic problems became apparent, but the motor carrier industry was prospering. The 1958 Transportation Act looked to improve the declining status of the rail industry while leading toward a more rational rate structure. The act allowed the railroads to eliminate much of their money-losing passenger traffic and moved much of what used to be oversight by states to the ICC. This change helped the industry but still did not push it toward long-term economic viability.

The established system of controls remained until the Railroad Revitalization and Reform Act of 1976 increased the rate setting freedom of the railroads in addition to injecting $6.5 billion of investment funds and loans into them. It also facilitated easier mergers and the abandonment of unprofitable routes that the regulatory system had retained and financed through a system of cross-subsidization. The Staggers Act of 1980 continues this process by further increasing rate setting freedom leaving only about a third of maximum rates controlled – and allowing the railroads to abandon more unprofitable lines. Controls, however, have been retained to ensure that shippers captive to the railways are not exploited. The aim is to protect producers of low value bulk commodities, such as coal and ores, where motor transport is not a viable mode and no waterway competition exists, but even here there were subsequent relaxations as with export coal rates in 1983.12

In the case of trucking industry, from 1977 the ICC had been adopting a more liberal policy towards market entry by using powers set down under the original 1935 Act. For example, the burden of proof switched in 1978 from the applicant having to demonstrate his route authority was in the public interest to the objector showing it was not. Again from 1978, private truckers were enabled to compete with for-hire carriers in certain circumstances. The Motor Carrier Reform Act 1980 ratified such policies. In effect there was an expansion in the types of services that are totally exempt from entry controls other than that the applicant is fit, able and willing and that a useful public service is served.
Entry to other services was also made considerably easier. Additionally, with regard to rates, wide zones of freedom were introduced, which essentially took control out of the hands of the ICC when rates were set by individuals.\textsuperscript{12}

The Motor Carrier Act of 1980 substantially relaxed controls on entry into interstate trucking by shifting the burden of proof from the applicant to the protestor (reverse onus). Formerly the applicant had to prove that the new operating authority was required by the “the present or future public convenience and necessity”; under the new legislation, the protesting carrier was required to show that the applicant’s operations were inconsistent with public convenience and necessity. In practice, applications for new routes have been rarely denied by the ICC since the MCA. The MCA also reduced geographic and commodity – operating restrictions on current carrier authorities, while subsequent ICC decision have eliminated similar restrictions on private and contract carriers.\textsuperscript{12} In short, regulatory barriers to new or existing carriers to freely enter any interstate truck markets have been generally eliminated.

The MCA sought to encourage competitive pricing by creating a zone of reasonableness and limiting the scope of collective rate-making. The zone of reasonableness allowed carriers to adjust rates, plus or minus 10 per cent annually without ICC approval. In practice, this zone of rate-making freedom was broad enough to impose few limitations on independently filed rate changes. More importantly, the ICC rarely rejected independently filed rate decreases so protests of such pricing conduct were seldom successful.
5. **Effects of Economic Deregulation**

Regulatory reforms starting from the late 1970s dramatically transformed the structure and performance of the surface freight transportation industry. In the United States, after four decades of gradual declines, the number of firms in the interstate trucking industry exploded, increasing from 14610 in 1980 to 52419 in 1994. Real rates of LTL sector fell nearly 30 percent over the same period. Deregulation of the rail industry led to mergers and consolidation that have slashed the number of large (Class I) carriers from 41 in 1980 to 8 in 2000. Real average revenue per ton-mile declined by 21 percent, while real net railway operating income rose by over 160 percent from 1978 to 1985.

The structural and performance changes associated with transport deregulation generated substantial redistribution of wealth among carriers, labor, shippers, and final customers and dramatically altered the costs and organization of transportation services. Many of these consequences were anticipated in the debate over deregulation; others have emerged during the regulatory transition. In general, economic regulation has led to net social benefits.

This chapter reviews the effects of deregulation on ten aspects of surface transportation industry: cost-saving, competition/market share, entry to market, industry concentration, infrastructure, costs/productivity, profitability/financial performance, own-account carrier, rates and service quality. Effects of trucking and railway deregulation are compared.
5.1. Cost-savings from Deregulation

The costs of regulations to society turned out to be substantial. First, rates were held above marginal costs for both road and railway transport; and, second, entry and exit restrictions substantially raised carriers' costs. Rate distortions cost society roughly $1 billion annually in the United States.\textsuperscript{15} Distortions in the case of trucking were worse in the less-than-truckload sector, where shipper had no recourse to the private carriage and rail alternatives available to truckload shipper.\textsuperscript{16} Exit regulation created substantial excess capacity in rail that amounted to annual production cost inefficiencies of roughly $2.5 billion.\textsuperscript{15}

The structural and performance changes associated with transport deregulation generated substantial redistribution of wealth among carriers, labor shippers, and final customer and dramatically altered the costs and organization of transportation services. In general, deregulation has led to substantial social benefits.

In the USA, the surface freight regulation has led to significant savings for the American economy. One study indicates that aggregate welfare gains in such sectors as airlines, railways, and road freight from deregulation amounted to $35 billion to $46 billion (1990 dollars) per year. These benefits have come largely in the form of reduced inventory costs resulting from “just-in-time” shipping, which has been enhanced because trucking and rail are able to offer better service – more off-line and guaranteed delivery – than they could under regulation.\textsuperscript{8}
Figure 5-1. Trends of Inventory and Transportation Cost, USA, 1975-2000
Source: Transportation in America 2000, Eno Foundation\textsuperscript{12}; CASS Conference 2001\textsuperscript{20}

Figure 5-1 depicts the changes in the US national freight bill and inventory carrying costs over time. Between 1980 and 2000 the freight bill was changed from 7.8\% of the GNP to 6\%. At the same time the total cost of inventory changed from 9.3\% of the GNP to 3.9\%. Resources devoted to transportation and logistics have declined considerably over the period of deregulation, with a significant fraction of this reduction attributable to improved efficiencies associated with deregulation.
5.2. Effects on Competition and Market Share

Competition between trucking and railway industry was intensified following the deregulation in 1980. However, truck and rail transportation are affected differently by the deregulations, which altered the competitive balance between the two modes.

Much of trucking deregulation was directed at improving the efficiency of LTL transportation by eliminating various operating restrictions, liberalizing entry, increasing price flexibility, and fostering price competition. Although these aspects did greatly improve the efficiency of LTL operations, they had little effect on the competitive relationship between truck and rail. Generally, railroad carloads are characterized by larger shipment sizes, while LTL shipments are much smaller. Carload shipments typically travel more than 600 mile, whereas LTL shipments travel all distances, but predominantly less than 600 miles. Finally, the types of goods moving by LTL truck include emergence and high-value shipment along with manufactured articles. By contrast, carload shipments include a considerable portion of agricultural exempt commodities and food in addition to manufactured articles. As a result, the railroads have largely discontinued handling less-than-carload shipments, so they don't compete for LTL traffic.8

Deregulation significantly affected truck-rail competition in TL operations. Unregulated for-hire TL operations were improved by deregulation, which liberalized backhaul authority, ease entry restrictions, and increased price flexibility. Similarly, private carriage operation is also improved by deregulation, which liberalized intracorporate hauling and allowed trip leasing to increase utilization on backhauls.

The change in production structure after deregulation has led to the more general use of just-in-time systems whereby a greater number of smaller consignments are carried over longer distances and the predominant requirements will be speed and punctuality. Quality of service is in fact at present assuming greater importance than the price of transport.
alone, which makes road transport more competitive and favorable because of the coverage of road networks and the flexible services motor carriers could offer.

5.2.1. Traffic and Market Share

Transportation progress in the US can be measured by comparing the change in total intercity ton-miles with changes in the Gross National Product (GNP) – using constant dollars to eliminate the effects of inflation. Figure 5-2 shows that ton-miles closely parallels changes in the GNP before the deregulation of trucking and railway industry in 1980. Since 1980, GNP has out paced ton-miles. Heavier loads, lighter materials and packaging, fewer empty and unprofitable mileages, and smaller inventories through the use of just-in-time deliveries in manufacturing have contributed to the slower level of growth experienced in ton-miles.

![Trends in GNP and Transportation, USA, 1965-2000](source)

**Figure 5-2. Trends in GNP and Transportation, USA, 1965-2000**

Source: Transportation in America 2000, Eno Foundation
Output of both railways and trucking, measured in ton-mile, increased after deregulation, shown in Figure 5-3. However, the signals were mixed. On one hand, greater growth in road transportation indicated a shift in transport patterns to road haulage. The easing of abandonment caused some rail traffic to be diverted to truck. However, because the lines being abandoned carried little traffic, the amount of diversion was small. The efficiency improvement in TL trucking arising from the deregulation, which was likely to be modest, also caused a small diversion in traffic from rail to truck.

![Trends in Rail and Road Transportation, USA, 1965-2000](image)

**Figure 5-3. Trends in Rail and Road Transportation, USA, 1965-2000**
Source: Transportation in America 2000, Page 12, Eno Foundation

On the other hand, the railway traffic, measured by ton-mile, increased faster after deregulation, posting an annual growth of 2.5 percent compared with 1.84 percent between 1965 and 1980. And the market share of railway stopped decreasing, as shown in the Figure 5-4.
In terms of the transport pattern, the trend towards small loads and a premium on speed and reliability of delivery has favored road transport, while railway has some monopoly power in bulk commodity transport markets although road haulage still imposes a ceiling on the price in many cases.

As shown in Table 5-1, trucking accounted for 28.3% of total ton-miles in 1999, compared with 81.3% of total freight revenue in the same year. Since truck typically haul low-weight, high-value goods over shorter distances than rail, trucking’s share of ton-miles are much lower than its percentages for revenue, tonnage and value of shipments; in fact, according to the Commodity Flow Survey, 1997, the average length-of-haul for trucks was 144 miles compared with 769 for railroad.\textsuperscript{13}
Table 5-1. Market Shares of Trucking and Railroad in Different Metrics, USA

<table>
<thead>
<tr>
<th></th>
<th>Share of Ton-Miles</th>
<th>Share of Total Freight Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucking</td>
<td>22.3%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Railroad</td>
<td>37.5%</td>
<td>37.7%</td>
</tr>
</tbody>
</table>

Source: Transportation in America 2000, Eno Foundation

Many motor carriers sought niches or reduced their scope of the operations. For example, LTL carriers generally got out of the TL markets and if they chose to compete in this market, would do so with TL subsidiaries which were operationally distinct from the LTL operations.
5.3. Effects on Entry to Market

Before the deregulation in 1980, the ICC’s control of entry into the industry requires regulated for-hire carriers to receive operating authority from the commission. It was virtually impossible for new firms to enter the trucking industry. The MCA 1980 substantially relaxed controls on entry into interstate trucking by shifting the burden of proof from the applicant to the protestor (revenue onus). As a result, applications for new routes have been rarely denied by the ICC since the MCA. The MCA also reduced geographic and commodity-operating restrictions on current carrier authorities, while subsequent ICC decisions have eliminated similar restrictions on private and contract carrier. In short, regulatory barriers to new or existing carriers to freely enter any interstate truck markets have been generally eliminated.

Figure 5-5. Effect on Entry to Market, 1978-1994, USA
Source: Annual Report, American Trucking Associations

The relaxation of market entry requirements, but even more the increasing demand for total logistical solutions – in the satisfaction of which road freight will play an even greater role – led to an expansion in entry to market. After the passage of the MCA 1980,
the number of common-carrier operators increased. Significant new entry occurred in most product and geographic markets from existing carriers and from new firms, especially in the truck-load business, which became increasingly dominated by highly competitive small operators. The major exception was the long haul LTL market where concentration increased. Figure 5-5 shows that the number of small carriers exploded, from 14,610 in 1980 to 52,419 in 1994, while the number of large carriers declined.
5.4. Effects on Industry Concentration

5.4.1. Concentration in Trucking Industry

Many of the opponents of trucking deregulation warned that regulatory reforms would increase industry concentration, ultimately reducing competition and leading to higher rather than lower prices. However, the significant of market concentration differs substantially between industry sectors.

Table 5-2. Relative Degrees of Industry Concentration, USA

<table>
<thead>
<tr>
<th></th>
<th>Largest Fours Carriers</th>
<th>Largest Twenty Carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Less-than-truckload</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>20%</td>
<td>43%</td>
</tr>
<tr>
<td>1985</td>
<td>35%</td>
<td>67%</td>
</tr>
<tr>
<td>1997</td>
<td>37%</td>
<td>68%</td>
</tr>
<tr>
<td><strong>Truckload</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>10%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Source: ICC data and ATA, Inc. report; 1997 Economic Census

Concentration has increased significantly in the largest segment of trucking, less-than-truckload sector. As shown in Table 5-2, in 1978 the top four interstate LTL carriers had a fifth of the market for such freight, and the top twenty had 43 percent. At that time these percentages already revealed a significant degree of economic concentration, considering that there were nearly 17,000 interstate motor common carriers of general freight in 1978. Then came deregulation.

By 1985 the amount of interstate LTL traffic carried by the four largest carriers had risen to 35 percent, and the twenty largest had 67 percent of the market. Between 1985 and 1997, concentration of the LTL sector slowed down, and by 1997, the market shares of the four and twenty largest carrier were 37 percent and 68 percent, respectively. The reason for this startling increase in concentration are that many large and small LTL carriers have gone out of business since 1980, no new large interstate LTL carriers have
able to enter the market, and many of the surviving group of large LTL carriers have expanded their terminal networks substantially in terms of both numbers and area coverage.

On the basis of indisputable hard evidence, it is clear that one of the most significant results of deregulation of the motor carrier industry is that *large scale interstate LTL motor carriage has become a closed club with a dwindling number of members.*

While there were increases in the market share of the largest carriers, this does not necessarily threaten competition and may confer significant benefits. Indeed larger enterprises, because of their greater financial strength and capital-raising ability but also because of their organizational potential, are in a better position to develop the necessary system infrastructures than small firms and many medium-sized firms. Even if concentration has increased, it may be that even a small number of firms sufficient to maintain competitive pricing in national markets.

The picture in regard to truckload traffic is almost exactly opposite what happened in the LTL sector of the industry. Due to the difference in operating cost structure between truckload and LTL, deregulation has spawned about 40,000 new truckload carrier. Many of these are very small operations with just a few trucks. The large number of new entrants into the truckload sector was predicted by both the proregulators and deregulators because the absence of barriers to entry into truckload operations was so obvious.

Further, there is no possibility of economic concentration in the truckload sector because it does indeed come very close to meeting the classical economic definition of pure competition, including easy entry and exit coupled with high variable costs. It is not likely, therefore, that there will be any diminution of competition for truckload traffic despite the low profit margins being realized by most truckload operators.
Experiences of European countries are different. In the UK, there is little evidence that deregulation increased the overall degree of concentration within the trucking industry. A comparison of the structure of the British trucking industry in 1969, the year prior to full deregulation, with that in 1995 reveals almost identical proportions of operators and vehicles in the different fleet size categories, as shown in Table 5-2. Across those European countries with deregulated haulage markets, Cooper could find ‘little evidence of concentration of ownership’ reaching a point where some carriers were able to ‘dominate important segments of the market’. He observed that, ‘Only in the express sector is there a marked degree of concentration but this is almost a requirement in a sector that requires extensive networks of terminals and transport links.’ In the absence of any strong tendency for traffic and revenue to concentrate, competitive conditions can continue to thrive in deregulated haulage markets.

Table 5-3. Structure of the UK Trucking Industry, 1969 and 1995

<table>
<thead>
<tr>
<th>Fleet Size</th>
<th>% of Operators</th>
<th></th>
<th>% of Vehicles</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>83</td>
<td>85</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>6-10</td>
<td>9</td>
<td>8</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>&gt;10</td>
<td>8</td>
<td>7</td>
<td>53</td>
<td>54</td>
</tr>
</tbody>
</table>

5.4.2. Consolidation of Railways

Like many deregulated industries in the US, the rail industry has responded to its economic freedoms by consolidating operations through mergers, which have occurred in waves after deregulation. The number of Class I rail carriers, the largest railroads in the country, dropped from 40 to 8. Generally, mergers have led to small cost reductions and some service improvements, although they may have reduced competition in some markets.

With the consolidation in Class I sector, similar to the LTL industry, the number of short-lines and regional railroads has been increasing as new lines were “spun off” from Class I carriers after the passage of the Stagger Act. A distinguishing aspect of the railway
deregulation has been the emergence of a small railroad segment with the industry. Between 1970 and 2000, over 300 small and regional railroads began operations. By 2000, these small rail carriers operated 50,000 miles of track or approximately 29 percent of the total national network, compared with only 6 percent before the deregulation. This change has been referred to as the “short line revolution.”

Table 5-4. Consolidation of Railroad in the USA

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>41</td>
<td>22</td>
<td>8</td>
<td>94</td>
<td>85</td>
<td>71</td>
</tr>
<tr>
<td>Regional &amp; Local</td>
<td>N/A</td>
<td>480</td>
<td>552</td>
<td>6</td>
<td>15</td>
<td>29</td>
</tr>
</tbody>
</table>

Source: Railroad Facts, Association of American Railroads23
5.5. Effects on Railway Infrastructure

Deregulation allows railroads to have freedom to downsize, therefore reduce the excess capacity. Since the passage of the Stagger Act, the US railroads have abandoned thousands of miles of track and merged operations. Class I railroads reduced system mileage by 40 percent between 1980 and 2000.

Figure 5-6. Total Route of Class I Railway, 1980-2000, USA

Relieving railroads of their infrastructure obligations reduced their costs, by enabling them to optimize their network, which led to higher traffic densities and longer lengths of haul. A radically transformed railroad track network, in which unprofitable and lightly used lines were sold off, enabled the enterprise that manages the rail infrastructure to break even by setting efficient marginal cost track user charges.6

Experiences from Sweden show that between 1988 and 1994, 500 electric and diesel locomotives and 13500 freight cars were retired from the fleet, representing cuts of 40
percent and 45 percent, respectively, from 1988 levels, when the deregulation started. Small freight terminal have been closed with the result that the number of train assembly points was reduced from 30 to 6. Similar reductions in numbers of locomotives are observed in the USA and New Zealand over the periods of deregulation.

![Total Locomotives](image)

**Figure 5-7. Total Locomotives in USA, New Zealand and Sweden**

*Source: World Bank Railway Database*  

The greater control that railroad had over capital investment and disinvestments since the deregulation has allowed new innovations in infrastructure, particularly in intermodel operations whereas freight is carried in a box that can be passed from one form of transportation to another (for example, ship to train or train to truck). Since 1981 when the ICC exempted intermodel traffic from rate regulation, Rail intermodel traffic had more than tripled from 3.06 million trailers and containers in 1980 to 9.2 million in 1992. The railroads in 1984 introduced specialized railcars with depressed platforms that double-stacked (two high) containers. According to one estimate, this innovation alone has reduced the cost of transporting a railroad container by 30-45 percent.  

Containers
from Pacific Rim shipping can now move rapidly through West Coast ports to inland destinations on such double-stacked trains, carrying exports and domestic traffic on the backhaul. Double-stacked cars now account for approximately 40 percent of total intermodal capacity and 80 percent of containers in the US.\textsuperscript{12}

![Intermodal Traffic, USA, 1965-2000](image)

Figure 5-8. Intermodal Traffic, 1965-2000, USA

Source: Railroads Database, US Department of Transportation\textsuperscript{25}
5.6. Effects on Costs and Productivity

5.6.1. Trucking

Studies of the regulated trucking industry suggested that regulatory restrictions raised costs by preventing companies from optimizing networks and traffic flows. Deregulation resulted in realignment of the route and commodity structures that regulation imposed on carriers. With deregulation, trucking firms developed efficient hub-and-spoke systems for collecting, transporting, and delivering freight for a large enough group of shippers to ensure a consistently high load factor on each truck. Efficiency gains also emerged as trucking firms filled more backhauls and used more efficient routes.

Significant benefits have been observed to result from regulatory reform, especially from deregulating the trucking and intercity bus businesses. In the USA, the Department of Transportation reported that trucking productivity grew from average increases of 3.2 percent from 1973 to 1979, to 3.7 percent from 1980 to 1990.\(^{10}\)

5.6.2. Railway

For railways, changes in costs and productivity over the deregulated period have been dramatic both in the US and other European countries. While some gains may be unrelated to regulatory reforms, deregulation intensified cost-reduction pressures by increasing competition within the industry and enhancing flexibility in operating decisions. Progress has been made on a number of fronts.

Deregulation spurred the railroad industry to transform itself by achieving a much better match between its huge physical plants and work forces on the one hand and available traffic on the other by abandoning thousands of miles of track and merging operations. As a result, traffic density in the US (revenue ton-miles per mile of road) has increased by 150 percent over the 1980-2000 period.
Single car shipments have been increasingly replaced by multiple car shipments and unit trains, which reduce switching and handling costs. "Piggybacking" (trailers-on-flatcar and containers-on-flatcar) has been widely used after deregulation, accounting for 15 percent of total carloading in 1985. These improve service quality and reduce rail-handling costs, and have enabled railroads to capture some intercity traffic from motor carriers. Railways also used contracts to align cars and equipment with shippers’ demand and to reduce their vulnerability to problems caused by overcapacity; and expanded the use of intermodal operations and double-stack rail cars to provide faster, more reliable service.12

After deregulation, real operating costs per ton-mile have fallen steadily, and, as of 1998, were 60 percent lower than when deregulation began. Some of the cost decline can be
attributed to the long-run trend in rail's traffic mix to include a greater proportion of low-cost bulk traffic, but deregulation's contribution is substantial.9

Figure 5-10. Railroad Operating Costs per Revenue Ton-Mile, 1980-1998, USA
Source: Association of American Railroads9

Continued reductions in excess labor and increases in average car size, train length, and distance traveled also contribute to enormous productivity gains. As a result, both labor productivity (measured as ton-mile/employee) and locomotive productivity (measured as ton-mile/locomotive) increased dramatically after deregulation, as shown in the figure.
Figure 5-11. Productivity Gains after Deregulation, 1980-2000, USA
Source: Railway Data Base 2001, World Bank\textsuperscript{24}

Figure 5-12. Productivity Gains after Deregulation, 1980-1996, Sweden
Source: Railway Data Base 2001, World Bank\textsuperscript{24}
Similar changes were observed in other countries. The Swedish 1988 reform pioneered railway restructuring for all of Europe. Substantial costs reduction and productivity increase were achieved from abandonment of infrastructure spending and extensive asset rationalization, since the deregulation.
5.7. Effects on Profitability and Financial Performance

Deregulation has had significant but opposite effects on profitability in the trucking and railroad industries. Increased competition reduced profits in the trucking industry, bringing industry profits more in line with “normal” competitive rates of return. While this resulted in significant wealth losses for owners of regulated trucking firms, there is no evidence that it has impaired the financial viability of the trucking industry. In contrast, rail deregulation has considerably improved railroad profitability. Increased earnings have prompted new investment and enhanced the long-term financial outlook for the industry.

5.7.1. Trucking

Deregulation prompted a substantial transfer of wealth from owners of regulated trucking firms to their customers and final consumers. The effect of deregulation on profitability also is reflected in reduced market values of publicly-traded trucking firms. Stock market values fell by 10-20 percent after deregulation, representing capitalized losses of more than $872 million (1986 dollars), or 8 percent of gross revenues, for 32 carriers included in the study by Rose.¹

The indisputable fact of deregulation is that many carriers have gone bankrupt or otherwise ceased operations since the passage of the 1980 MCA, as shown in the Table. The business failure rate during the transition from regulation to competition was expected to be much higher than either the rate under regulation or the long-term expected rate under competition: inefficient firms that relied on the regulatory umbrella for protection were forced out in the transition to a competition; carriers that were slow to adopt the new strategies and technologies demanded by a competitive environment were left behind; many of the small and inexperienced entrants that flooded the market when regulatory barriers to entry were struck down will fail.
Table 5-5. Trends of Trucking Carrier Failures, 1978-1984, USA

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Carrier Failures</th>
<th>Failure Rate per 10,000 Carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>162</td>
<td>24.2</td>
</tr>
<tr>
<td>1979</td>
<td>186</td>
<td>27.2</td>
</tr>
<tr>
<td>1980</td>
<td>382</td>
<td>52.9</td>
</tr>
<tr>
<td>1981</td>
<td>610</td>
<td>81.2</td>
</tr>
<tr>
<td>1982</td>
<td>960</td>
<td>121.3</td>
</tr>
<tr>
<td>1983</td>
<td>1,228</td>
<td>147.5</td>
</tr>
<tr>
<td>1984</td>
<td>1,409</td>
<td>180.5</td>
</tr>
</tbody>
</table>

Source: Dun & Bradstreet

During the same period, 1978 to 1984, regulated motor carrier profits during this period, as measured by return on equity, plunged far below the average for all manufacturers. Although, as shown in the Figure 5-13, the general level of rates has increased since deregulation, the industry has not benefited from this because its operating expenses have increased more than its rate.\textsuperscript{11}

![Return on Equity of Railway Industry](image)

Figure 5-13. Return on Equity of Railway Industry, 1978-1984, USA
In Canada, the evidence suggests that the competitive environment fostered before the Motor Vehicle Transport Act (MVTA) in 1987 and continued by the MVTA has resulted in the decline in overall trucking profitability Canada-wide. Certain sectors such as forest products carriers have offset lower prices with increased productivity. However, there is a question as to how much more productivity can be increased.\(^7\)

### 5.7.2. Railway

In the United States, railway industry was in extremely shaky financial condition by the end of the 1970’s. Profits had almost nowhere to go but up in the aftermath of deregulation. In the USA, Staggers Act in 1980 liberalized the ICC criteria and procedures for rail abandonment. The railroad abandoned thousands of miles of track and scaled back inefficient operations, which helped to cut operating costs.
The rate freedom provided after deregulation allows railroads to set rates via new provisions on commodity exemptions, confidential contracts and maximum rate determination. With these new provisions, railroads are able to set rates on the basis of the costs of the specific service being provided. The pricing provisions of deregulation allowed railroads increased flexibility in establishing lower rates to offset the superior service provided by motor carriers. Under previous regulatory system, the requirement of minimal rate had prevented railroads from taking advantage of their lower costs by reducing rates to attract traffic from trucks. Motor carries, by contrast, had been able to set rates competitively on TL shipments, as most TL traffic were carried under negotiated rather than regulated rates. As a result of restrictive rail rate regulation, considerable intercity freight was carried by trucks when it could be more economically carried by rail, even taking into account the service disadvantage of railroads. Thus, allowing railroads to lower their rates where it serves their interests to do so resulted in substantial diversion of TL traffic from truck to rail.

Cost reductions and productivity improvements stemmed the long-run erosion in market share and boosted profitability. The rate of return on net investment averaged less than 2 percent during the 1970s. Railroad profitability has improved dramatically since the Staggers Act, reflecting the dominance of productivity gains over average rate reductions. Real net railway operating income rose 160 percent between 1975 and 1985, from $677 million to $1.793 billion. The rate of return on net investment increased, averaging 4 percent during the 1980s and 10.7 percent during 1990s. For a number of railroads, returns appear to be approaching the corporate average rate of return. The Staggers Act cannot claim credit for all of this improvement; part is due to accounting changes and part to tax changes implemented in 1981. It is, however, unlikely that the improvements would have been so dramatic in the absence of substantial regulatory reform.

Table 5-6. Return on Net Investment of Railroad, 1978-1984, USA

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Net Investment (%)</td>
<td>1.73</td>
<td>1.20</td>
<td>1.58</td>
<td>4.22</td>
<td>3.98</td>
<td>4.29</td>
<td>3.83</td>
</tr>
</tbody>
</table>

58
Profitability improvement was also observed in Sweden.\(^6\) Figure 5-15 provides data on SJ’s (the Swedish State Railways) performance. Using all three measures, it is obvious that SJ’s financial results improved tremendously after 1988, the time when railway deregulation began. In 1989 SJ’s net income before extraordinary items was negative (Skr 555 million). Since the deregulation, SJ’s net income has been positive each year, with the exception of 1989, and the result has increased from Skr 290 million in 1990 to Skr 440 million in 1993 to Skr 471 million in 1994.

![Figure 5-15. Financial Performance of Railroad, 1964-1993, Sweden](image)

Source: SJ Annual Report, Sweden\(^6\)
5.8. Effects on Own-Account Carriers

Road freight transport for own-account represents a major share of inland transport in the USA and Europe. Yet own-account transport, which is not regarded as a logistics activity, tends to be overlooked. Within own-account transport, there are two quite distinct categories of operation: operations in which a company transports its own goods from one place to another and operations in which tradesmen use a vehicle as a tool of their trade to transport the equipment or goods they need to their place of work.

In the USA, own-account operations are impacted by regulatory reform that deals with the hauling of goods for corporate affiliates. In the past private fleets have tended to "skim the cream" off of the TL common carrier market by carrying those commodities in short-haul markets for which they clearly defined backhauls. This constrained the return loading of own-account vehicles and can limit opportunities for consolidating loads on the outbound journey. After the deregulation, if private fleets could find suitable backhauls among corporate affiliates, they would be able to expand their operations. For those industries that are located in out-of-the-way spots, the service level by common carrier actually dropped as a result of fighting between major common carriers and their concentration on heavy trade route. Therefore, private trucking became more prevalent in these places.7

The regulation change regarding "trip leasing" is also important to owner-operators, since it permits certain short-term collaboration between the owner-operator and various other types of haulers. For example, an exempt agricultural commodity could be hauled on the forehaul and the owner-operator could trip lease to a common carrier on the backhaul. In fact, some common carriers have set up special commodity divisions or owner-operator divisions to brokerage full truckloads for carriage by owner-operator. However, the practice also caught in the common carriers of motor freight that operate with nonunionized terminals and owner-operators on contracts. The low-cost operations of an owner-operator made this an attractive possibility for some situations.14
However, there has been a major shift of traffic from own-account to hire-and-reward operations throughout the USA and Europe. The freedom of own-account operators to ‘carry for others’ has done little to restrain the sharp increase in professional haulers’ share of the freight market. The deregulation of the commercial haulage sector has been a major contributing factor. With deregulation, prices in the sector have fallen, service quality has improved and operators have been more flexible in responding to logistics requirements. Providers started offering services that more closely matched needs. The rising intensity of competition following the deregulation in trucking also fueled the tendency on the part of shippers to subcontract shipments previously made using their own vehicle fleets to freight carriers operating on their own account. In the Europe, this decrease was substantial during 1990s, which saw a 30 per cent increase in the numbers employed in third-party transport and a 25 percent reduction in the numbers employed in own-account transport.  

However, the decline in own-account transport cannot be explained solely by the deregulation of the professional haulage sector. Certainly, while industries such as manufacturers and retailers refocused on their core business dropping ancillary activities, including own-account transport. They outsourced all activities that were perceived as non-core. The decline in heavy industry, the growth of small and medium-size enterprises (SMEs) and the proliferation of long-distance flows also contribute the decrease in own-account transport, since private fleets are costly to maintain and are usually cover a short distance around companies.
5.9. Effects on Rates

Assessing the actual impact of regulatory reform on freight prices is difficult given the multiproduct nature of the transport industry: there are literally thousands of prices to be considered, each applying to a particular commodity, shipment size, and origin-destination. Multiproduct price systems have two characteristics: the overall price level, or average price, and the pricing structure, or pattern of relative prices across different types of shipments. Regulatory reforms generally reduced the price level in both the trucking and railroad industries. These declines have been quite uneven, however. As a consequence, price structure effects have provoked considerable debate, particularly in the rail industry.¹

5.9.1. Trucking

Massive increases in entry by both new and existing carriers put tremendous downward pressure on trucking rates. While available evidence suggests overall rate reductions since deregulation, rates have not decreased uniformly.

Many observers of the motor carrier industry, including many economists, have historically characterized the whole industry as being atomistic in character, in TL segment particularly, having no significant operating economies of scale, having a large number of competitors (under condition of free entry), having very low financial barriers to entry, using relatively low technology as to both equipment and labor skills required, and being one of the beneficiaries of the huge public capital investment that has been made to create the nation's highway network.

The characteristics just mentioned do properly describe the truckload (TL) segment of the industry. However, the less-than-truckload (LTL) carriers are quite another story. The LTL for-hire carrier segment of the industry is not atomistic in any sense of the word. A small group of increasingly large firms dominates this traffic nationally. LTL operations do have significant operating economies of scale. The established large national LTL
carriers are the beneficiaries of an almost insurmountable financial barrier to entry: their large and widespread terminal networks. And, the LTL carriers do employ increasingly sophisticated, IT-based management techniques. The only significant similarities between the TL and LTL segments of the industry are that they both operate trucks and both use the highway network.\textsuperscript{11}

The results of these differences between LTL and TL carrier are reflected in what has happened to rates in the motor carrier industry since the passage of the Motor Carrier Act of 1980, as shown in the figure.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure5-16.png}
\caption{Effect of US Deregulation}
\end{figure}

\textbf{Figure 5-16. Trends of Rate after Deregulation, USA}
Source: Transportation in America 2000, Eno Foundation\textsuperscript{19}

It should be noticed that truckload rates in general have always been very competitive. The alternatives of contract and private carriage have historically put a “cap” on the truckload rates that could be charged by common carriers. Further, freedom of entry under deregulation has greatly increased the number of truckload carriers in the form of
new entrants, as well as private carriers seeking for-hire traffic. The large number of new entrants into truckload sector has produced intense price competition for truckload traffic. As a result, after years of sharp increase, truckload rate have declined since the passage of the MCA.

Trend of less-than-truckload rates since 1980 has been quite different. As noted above, the barriers to entry in the LTL segment are formidable, especially at the national level. The principal barrier is the need for the carrier to have in place a large and comprehensive terminal network. In the absence of new entrants, LTL rates have been able to keep their level even in the real term.

Table 5-7 shows the comparison of rate declines following the abolition of regulation, which happened during late 70s to mid-80s, in the UK, the US, New Zealand and France. In the case of these countries, cost savings of 15-25% were achieved over varying time-scales. The magnitude of these cost savings partly depended on the stringency of the regulations and their level of enforcement.\textsuperscript{18}

\begin{table}
\centering
\caption{Average Rate Reductions Following Truck Deregulation.}
\begin{tabular}{lcc}
\hline
Country & Time Period & Rate Reduction \\
\hline
UK & 1970-1978 & 25\% \\
United States & 1980-1985 & 12-25\% \\
New Zealand & 1984-1987 & 25\% \\
France & 1987-1990 & 15\% \\
\hline
\end{tabular}
\end{table}

One must exercise caution in interpreting these figures, however, as the observed variations in freight rates cannot be attributed solely to deregulation. Road haulage rates are, after all, sensitive to short term fluctuations in the level of economic activity and, in the longer term, to infrastructural and technological change. For example, the 1980-1982 recession in the US contributed to the rate decline as did the domestic traffic erosion effects of increasing imports of parts, components and finished goods by manufacturers and distributors.\textsuperscript{11} The analysis of the time-series data is further complicated by the fact
that, in many countries, the deregulation of road haulage has been phased over a number of years. The available evidence, nevertheless, confirms that, over differing time-scales, the deregulation of trucking industry exerts a downward pressure on freight rates.

Supporters of deregulation in Canada expected to see benefits comparable to the US experience. However, the same level of performance improvement was not realized because: (a) Canadian provinces had never regulated rates; (b) Canadian carriers had never utilized tariff bureaus to the degree found in the USA; and (c) because of the lack of enforcement in Canada. As a result, trucking rate in Canada did not show significant change after deregulation.3

5.9.2. Railway

Deregulation has had enormous effects on both the average rate level and the structure of railroad rates across commodities. After the passage of Stagger Act of 1980, average railroad revenue per ton-mile, as shown in the figure above, has declined by an annual rate of approximately 1.5 percent, compared with increases of 3 percent per year in the five years before 1980.

Reduction of rail rate reflects the decrease of operating costs after Stagger Act, and a continuing shift of traffic toward lower revenue bulk commodities. It has also been encouraged by the widespread use of confidential rail contracts authorized by Staggers, which enable railroads to grant price reductions to shippers in exchange for traffic volume and other commitments.1
Rail rate reductions have not been uniform across commodities. Although rail rates have been driven toward marginal costs in competitive markets, pricing freedoms also enable carriers to raise rates in more insulated markets. Indeed, given the presence of substantial fixed costs in rail transportation, some rates must be set above marginal costs if railroads are to avoid losses. In the rail industry, coal markets tend to be among the least competitive and therefore, at least in theory, likely to bear a large share of fixed costs. The actual effect of deregulation on coal rates is controversial. On the one hand, utilities and coal producers advocate active regulatory intervention in ratemaking to limit what they view as railroad exploitation of monopoly power. On the other hand, average revenue per ton for coal shipments has been roughly constant in real terms since enactment of Staggers.\(^1\)
5.10. Effects on Service Quality

One of the principal objectives of deregulation of the motor carrier industry was to throw off the shackles of regulation that have until now prevented motor carriers from offering shippers new and innovative services. The ability of carriers to offer custom service tailored to shippers’ particular needs appear to be a major benefit of deregulation.

Of all the effects of deregulation, perhaps the most useful to carriers and shippers alike has been the opportunity for carrier route rationalization. It has enabled shippers to reduce the number of motor carriers with whom they do business, resulted in less interlining, and it has enabled the motor carriers to serve their chosen markets in a more organized and economical fashion.

Moreover, rate flexibility and increased contract carriage permitted carriers to offer a range of service quality/price combinations, allowing shippers to choose the level that best meets their needs. Expanded entry opportunities and reduced restrictions on contract carriers have enabled shippers to dramatically reduce the number of carriers they deal with. Studies investigating the effect of deregulation on service to small communities find no deterioration, and in many cases, significant improvements, in service availability and quality.
6. Reregulation

The spate of changes which has occurred since the mid-1970s has still left much residual regulation and inevitably this will be modified over both in response to changing external conditions but also as the effects of deregulation elsewhere exercise knock-on effects. The relationship between road and rail freight transport is a case in point where many railroads rates are still regulated. As the relative performance of road and rail change over time so fine tuning of the degree of such regulation will inevitably have to be undertaken.

The question that will face the surface freight transportation industry in the 21st century is whether the current deregulated environment is appropriate or whether a return to some additional oversight is necessary.

For the motor carrier sector, the future of regulation appears to be primarily in the area of safety and size regulation. One primary difference between the motor carrier industry and the railroads is the ease of entry and exit from the industry. As a startup, a motor carrier firm requires minimal capital, whereas a railroad requires not only significant capital but also a high level of infrastructure development. In many ways, the motor carrier industry resembles the economic model of a perfectly competitive industry in which competition, market entries and exits, and a generally homogeneous product work together to force rates toward the minimum, long-run average variable cost. Firms that are able to produce most efficiently survive, but the less efficient do not. An important side effect of the relatively competitive motor carrier industry is that when traffic is competitive with the railroads, the motor carrier rates act as a constraint on rail rates. As long as these industry characteristics are maintained, forces to reregulate the economic side of the motor carrier industry probably will not prevail. The railroad industry might face a somewhat different future. Partially as a result of deregulation allowing rail mergers with less regulatory oversight, the industry has shrunk to four primary (and several lesser) Class I carriers. With only two primary carriers in the east and two in the west, debate over the appropriateness of reregulation is ongoing. Martland has argued that the industry should consider the possibility of supporting reregulation as a means of increasing profitability.6
Many shippers argue that the reduction in the number of potential carriers, especially for bulk commodities, has led to abuses of market power when there is only one dominant carrier. This argument eventually will lead to the subject of competitive access, which would potentially introduce competition. This could take the form of access by one railroad over the trackage of another railroad in an effort to create competition between carriers where it otherwise might not exist. More likely, it might mean a return to one carrier having mandatory interchange rights to industry on another carrier’s trackage.
7. Conclusion

Various modes of freight transportation have faced similar regulatory issues over the past 100 years. Governments first promoted the development of these industries and then began to regulate them, tentatively at first, but with more restrictive regulation developing over time. Regulation is supported in terms of: 1) facilitating comprehensive transport networks, including those which are unremunerative; 2) thereby, providing access to less-mobile social groups; 3) ensuring safety of operation and protecting infrastructure; 4) creating order out of potential chaos. Transportation regulations have been effective to varying degrees, but none was satisfactory, as they protected regulated firms or classes of shippers rather than consumer generally.

Regulation contributed to the diminution of the railroads from the dominant transportation mode to a relatively minor one. Trucking regulation helped many truckers and the industry grew rapidly, but such regulation certainly harmed shippers and the economy as a whole. As a result, starting from 1970s deregulation emerged as the common cure to the differing problems of the freight transportation industry. Studies of various deregulation initiatives have shown them to be great successes, though the transition from a system of rigid regulatory control to relatively unconstrained market competition has not been free from hassles. Substantial benefits have been conferred on shippers and presumably passed on to final consumers. Resources devoted to transportation and logistics have declined considerably, with a significant fraction of this reduction attributable to improved efficiencies associated with deregulation.

Deregulation does not mean abolishing all regulations, since antitrust and safety constraints are normally maintained. Operating licenses are still required and carriers must file rates of tariffs. And as the relative performance of road and rail change over time, certain regulation will inevitably have to be undertaken to introduce competition.
Reference:

22. 1997 Economic Census, U.S. Census Bureau
24. World Bank Railway Database, 2001
25. *Railroads Database*, US Department of Transportation