

Chapter 5

The Land Transport Sector

Introduction

Transport is a key means by which public investment can contribute to overall economic growth. Infrastructure services, including roads and railroads, are critical to the operation and efficiency of a modern economy. Major inputs in the provision of goods and services, they have a significant impact on the productivity and competitiveness of the economy. This is why adequate investment and increased efficiency in this sector are crucial to improving the living conditions of the population at large, particularly in a middle-income and geographically vast country such as Brazil. A potential lack of long-term investment in this sector could have negative implications. Indeed, this sector is part of the main objectives of the Brazilian Growth Acceleration Programme – PAC.

Traditionally, provision of infrastructure services in Brazil and in most of the developing countries has been provided by state-owned enterprises. There has generally been a lack of adequate planning, even though the transport system is crucial for the structuring of the country and, as just stated, its economic development. Recent research shows that improvement in interregional transport, with lower transportation costs and greater productivity, is one of the main factors contributing to city growth in the country.¹ State-owned enterprises had, moreover, often demonstrated a lack of efficiency. A first step to improve the provision of infrastructure services was the beginning of a general trend towards privatisation, mainly affecting railroad companies in the mid-1990s. Another step was to increase the supply of private sector investment, which has helped to supplement public sector funding and improve performance and coverage, particularly with the introduction of road concessions.

Infrastructure levels and quality significantly affect economic growth and poverty alleviation. As illustrated by a recent publication of the OECD ECMT (2007),² the first major empirical work by Aschauer (1989) confirmed that the elasticity of output to public capital ranged from 0.36 to 0.56, which would translate in a very high per annum gross result. These results, which at first seemed implausible, were further confirmed by later studies, given the large externalities of transport infrastructure investment that are uncounted by conventional microeconomic project evaluation procedures. Transportation infrastructure may have a profound impact on the breadth of the market, and the ability of producers to exploit economies of scale and specialisation. Wider markets bring benefits in terms of competition and contestability, as well as dissemination of knowledge and technology.

More robust and recent econometric studies have confirmed significant rates of return – albeit lower than the initial results produced by Aschauer – with a social rate of return of infrastructure of around 7.8% in the US manufacturing industry for the period 1955-86, compared to 8.7% return to private capital. However, these rates of return are much higher at the initial phase of investment, in Brazil as elsewhere. In ECMT (2007), Hulten has produced results for India that show a positive return of return of 2% in 1974, increasing to 5% in 1996. The overall infrastructure effects are much larger: There is a

combined highway electricity effect of 9%, and even more if implied spillover elasticities between Indian states are taken into account. Investment in infrastructure has clearly more significant effects in countries such as India, or Brazil, than in a built-up infrastructure-rich investment environment. These results are confirmed by cross-country econometric regressions, produced by Canning in ECMT (2007), which show much higher rates of returns for developing countries. These results should be borne in mind in the policy debates – particularly in Brazil, where much of the policy attention has been on the microeconomic cost/benefit ratios, which are clearly underestimating the overall economic effects.

Investment and infrastructure need to be supported by an adequate regulatory framework. This framework should be implemented before transferring rights to operate; provide adequate incentives for competition and for protecting users' rights where natural monopoly conditions exist; and, to the extent possible, prevent opportunistic behaviour by the government and the operators. A strong regulatory framework is required both to secure adequate private sector incentives, and to protect consumers' interests given information asymmetries.

Although privatisation, competitive restructuring and regulatory reforms may improve infrastructure performance, several issues must be considered and conditions met for these measures to achieve their policy goals. In a number of countries, infrastructure inefficiencies have constrained domestic economic growth, impaired international competitiveness, and discouraged foreign investment.

In Brazil, the transport sector represents about 2% of GDP. The Brazilian economy is disproportionately dependent on road transportation: according to 2005 data, 58% of the country's freight in terms of ton-km moves by truck, 25% by rail, and 13% by coastal navigation and inland waterways. The paved federal highway network (58 000 km) is the cornerstone of the country's transport sector.

Infrastructure investments in Brazil fell between 1980 and 2002 due to a contraction of public spending. Public investments in infrastructure fell from 3.6% of GDP during 1981-85 to 1% during 1996-2000.³ Consolidation of Brazilian public finances, which was also required to ensure long-term economic stability, came at a high price in terms of the infrastructures needed for long-term economic growth. In a context of shortages, there is evidence that better access to infrastructure services is strongly correlated with superior educational performance, and poverty with poor access. According to a World Bank Report,⁴ returns on infrastructure concessions in Brazil, as measured through microeconomic ratios, have not been sufficient to compensate for opportunity costs in the past. That reflects the risk associated with investment in this sector and the need for a strong and reliable regulatory framework to reduce the cost of capital for the country – the fourth highest among ten Latin American countries in 2004 according to the World Bank. However, conditions may now have changed. The rate of return of projects in the past was about 16-17% in 1996-97, which is much higher than that of the most recent bid (8.95%). Macroeconomic conditions have improved as well.

Railway

From an overall perspective, the rail industry poses unique problems in terms of regulation (IDEI, 2003), a multi-product activity with a potentially monopolistic cost structure; it has inputs and outputs that are indivisible; it involves environmental and

social externalities. The natural monopoly elements imply that there needs to be some kind of public intervention – a need that also arises when private management or ownership is introduced. Rail activities involve significant economies of scale, scope, and density. Fixed costs are large because of the infrastructure – track, stations, and the like – required for trains to run. Rail infrastructure has little value for other purposes and hence its fixed costs are largely sunk, creating significant barriers to entry. The multi-product nature of railroads implies that the same facilities, equipment, and labour are often used to produce different services. For example, passengers and freight are transported on the same track. In terms of freight, low-value commodities and high-value manufactured goods often share the same services and facilities. These shared costs confer economies of scope on carriers offering a multiplicity of transportation services: a carrier that provides an array of services can do so at lower cost than a set of carriers producing each service separately. The multi-product nature of railroads also implies that a large portion of rail costs cannot necessarily be attributed to a particular service at a particular point in time. Rather, a significant portion of costs are incurred on behalf of several activities, and do not vary with the amount of the service provided.

The key factor is striking a balance between preserving the economies of scale and scope inherent in the network and infrastructure, and introducing a degree of market pressure and openness to competition that will make it possible to optimise the service provided using this infrastructure. The ECMT (2004) considered that on the whole, the experience with mandated access and vertical separation remains limited, with a low level of competition. ECMT has provided an overview study of freight sector regulation (2001); this was followed by an ECMT roundtable (2004) and a best practice roundtable on competition policy (OECD, 2005).

However, the issues in Brazil differ from those in Europe. The railway sector in Brazil, under the jurisdiction of ANTT, is operated under long-term concession contracts, and concerns mainly freight transport. Passenger rail transport is essentially suburban transport in the large cities and, as it is within the boundaries of a single state, it does not fall within the remit of the federal agency. In this context, private companies need predictable financial conditions to ensure future investment in the sector, conditions that rail regulatory regimes have to fulfil if they are to be successful in the long term. Large cost savings can be brought about by creating a regulatory framework that gives management the freedom to optimise investments and the size of the network. The transparency and accountability of the regulator is fundamental to securing more investment in the rail system – and investment, in turn, is essential for achieving a transfer of freight from roads to railways in order to reduce the unbalanced nature of the transportation matrix.

An international overview of the regulatory experience

Brazil is closer to the case of the United States, Australia and Mexico, which have limited regulatory regimes, large commercial freedom, and a railway sector concentrated on long-distance freight transport (See Annex 5.A1, Table 5.A1.1). In North America, regulatory intervention has been more limited since the Staggers Rail Act of 1980, which significantly reduced the federal regulatory burden on freight transport. It also opened possibilities of judicial appeal if a party considers that it has been injured and government intervention in the event of a merger. Competition takes place between

vertically integrated companies. The deregulation of freight transportation in the United States led to a drop in prices of approximately 50%; corporate mergers resulted in higher productivity, reduced duplication of costs, and the development of seamless services nationwide (ECMT, 2001). The industrial structure that has developed on this market reaps economies of scale, while keeping unnecessary regulatory intervention to a minimum. The comparative data show that in Europe, traffic in ton – kilometres has generally stagnated since 1970, while it has recovered significantly (ECMT, 2007a) in the United States since 1982 and improved markedly since 1992 (ECMT, 2001). The evaluations available (Ivaldi and McCullough, 2001) show that although vertical integration does not provide any specific technological advantage, competitive access alone does not necessarily lead to effectively competitive results on rail markets. The cost ratio between freight and infrastructure, which involves transaction costs, determines the appropriateness of vertical integration. In any event, railways appear to be a natural monopoly. Competitive access can be seen as a complement to administrative regulation, which is necessary with regard to the large companies operating on integrated networks.

The US experience has also had implications for Canada – a geographically large country like Brazil, with densely populated areas concentrated in some parts of the country.⁵ A major company, CN, was privatised in 1995, and federal subsidy programmes were terminated. The North American Free Trade Act has had implications for Canadian companies, (CN and CPR) integrating their operations across North America. Since the 1987 National Transportation Act increased commercial freedom and competition, average freight rates have also declined, with a reduction of 35% between 1987 and 2000 in real inflation-adjusted terms. The ratios of the Canadian companies compared favourably to those of their US counterparts. The Canadian Commissioner of Competition has argued for regulatory oversight, which would prevent railways from charging excessive rates to captive shippers. Many rail shippers generally regard themselves as captive, and this lack of modal choice results in inappropriately high freight rates. The discussions also focused on ways to expand access to rails and on regulatory instruments. Canada has an independent Canadian Transportation Agency, which since the 1996 National Transportation Act oversees all transport activity in Canada under federal jurisdiction. This agency is an independent, quasi-judicial tribunal that makes decisions on a wide range of economic matters involving federally regulated modes of transportation (air, rail and marine); it has the powers, rights and privileges of a superior court to exercise its authority. Along with its roles as an economic regulator and aeronautical authority, the agency works to facilitate accessible transportation, and serves as a dispute resolution authority over certain transportation rate and service complaints.

The Australian approach is also interesting, for it combines aspects of the European and US approaches. It consists of an interstate railway that connects the various state networks. Each has had its own regulatory structures and regimes since the reforms introduced in the early 1990. Regulation combines elements of free access, as in Europe, with the regulatory flexibility of the US model. This is important for states in which the rail's share among transport modes is large and in which freight accounts for a large segment of traffic in relation to passenger transport. The interest of the Australian approach is that it makes it possible to evaluate alternative institutional solutions. It has been the subject of a major study (Productivity Commission, 1999; Owens, 2003), which

shows that different access and regulatory regimes are necessary for different types of rail activity. The report concludes that for urban passenger networks, there is no obvious advantage to vertical separation. Management can be franchised and granted to private companies in order to keep the level of public subsidies to a minimum. For freight transport in a situation in which a local operator has a dominant market position, an access regime should be implemented with vertical integration, which is the case in Brazil. For freight transport in a situation in which no operator is dominant (as in the United States), a reduced regulatory regime will suffice. Lastly, for interstate freight transport, when there is intermodal competition and many network managers, vertical separation is recommended, with a single network manager and an access regime supervised by the competition authority. The entire regulatory regime should be subject to high-quality regulatory standards.

The larger geographic areas of the countries mentioned in these examples also allow them to have a number of competing lines to serve freight markets. Interesting lessons can be drawn from this experience, in particular regarding the need for access to major infrastructure.

The European approach is different, with dense national networks, resulting often from the nationalisation of former private companies. There is a prevalence of passenger transport, and a strong public service dimension for the activity. In some cases, regulatory reform has also raised costs because of the fragmentation of activities, and has led to insufficient levels of investment, as was illustrated by certain aspects of reform in the United Kingdom at the beginning of the 1990s. However, new entrants may also be more efficient than historic companies because of more flexible management methods. The choices made in the United Kingdom⁶ represent one of the poles of the European approach, comprising a public strategy, a separate network manager, companies operating on this network, an independent regulator responsible for safety, performance and costs, and transit rights for freight on the most frequently used train paths. On the other hand, some European countries remained relatively sceptical and cautious about liberalisation and the comparative advantages of vertical disintegration.

Europe's goal has been more to foster the building of a railway market, through a number of directives. Independent regulatory authorities have been established to oversee this activity and third party access to national networks. One key issue is whether there should be vertical separation of infrastructure from service management, coupled with management of access rights and the establishment of regulatory authorities. The ECMT (2001) considers that the EU approach seems to be most appropriate in small countries that have significant trade with each other. Free access for passenger transport still appears to be a distant prospect in Europe; it is mostly developed for freight. In economic terms, the challenge is to obtain the efficient management of freight transport paths and to establish a non-discriminatory access-pricing system for the management and pricing of infrastructure use. This requires the intervention of independent regulatory and arbitration authorities, which have been reflected in European directives.

In Mexico, the rail network is mainly used for freight services (OECD, 2005). As in Brazil, the inefficiency of the previous state-owned operator, FNM, led to privatisation and divestment in 1997. As a result of privatisation, the share of traffic lost in favour of road freight transport recovered, and the performance of the sector generally improved.

However, significant inefficiencies have arisen; regulatory conflicts have been brought to the regulator and the competition authorities, as well as to courts. However, an independent sectoral regulator does not exist in that country, and licences are managed by the relevant Ministry, the *Secretaría de Comunicaciones y Transportes* (SCT). Access to key infrastructure is a major issue in Mexico, where the 1995 Railroad Services Law and the 1996 Regulations to the RSL established statutory interconnections and empowered the SCT to impose mandatory trackage rights and haulage agreements. There have been cases of difficulties of access, and decisions by the Ministry were challenged in courts. These have concerned general trackage rights, specific rights, and controversies over interconnection and terminal services. The competition authority had to intervene. Overall, operative improvements have been gained from privatisation, even if interlineal traffic has fallen as a result of strategic behaviour concerning interconnection, resulting in a sub-utilisation of existing facilities. The Mexican experience illustrates the need to have guidelines to resolve disagreements among concession holders, with sufficient powers for the sectoral regulator to implement these regulations, and a clear framework for interconnection fees and access conditions.

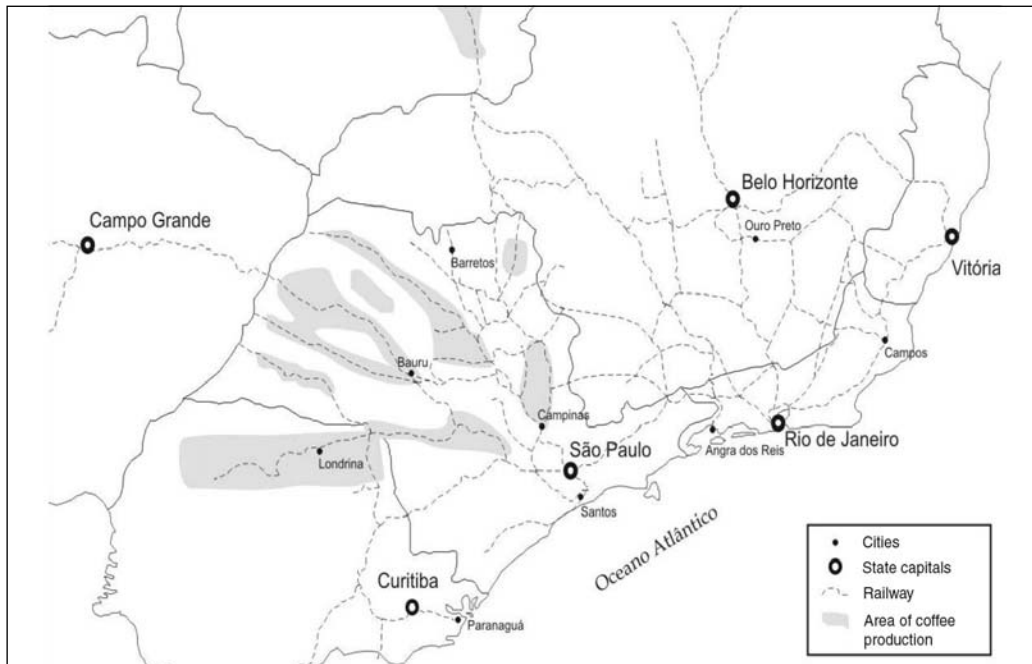
Brief history in Brazil

Due to a tight control over tariffs by the Federal Government as part of various adjustment plans, and the long-lasting fiscal crisis, there arose difficulties in investing in and even maintaining what ended up being one of the less-used rail systems of the Latin America, in spite of its tremendous potential.

The history of railways in Brazil started in the middle of the 19th century. It began with a railway network designed to link the agricultural production centres in the countryside to the production areas of São Paulo and Rio, and to the ports. The first railroad was completed in 1854, relatively late compared to the rest of Latin America. The overall railroad network was built to serve export markets, especially for coffee, which resulted in integration at the regional rather than national level. Figure 5.1 shows the close link between coffee production centres and railway lines. The centres started west of Rio de Janeiro, towards São Paulo and south of Minas Gerais. Investments increased steadily from 1890 to 1914 and remained concentrated in the South East, but the network remained limited by international standards (26 000 km). The slow growth was a result from the low rate of return on investment of private (to a large extent foreign) capital, and from the lack of attention of Brazilian authorities (Leff, 1982). Although two-thirds of the railroads were privately owned at the start, this was followed by extensive nationalisation: more than half of the network was in public hands at the end of the 1920s.

This was followed by a period of stagnation in the context of the great depression, which affected coffee consumption. There were excesses of production, partly compensated by a national coffee policy and an import substitution strategy. The Second World War stimulated the industrialisation of Brazil with difficulties related to imports, and there was greater focus on the expansion of the road network. In 1957 the Federal Railway Network (*Rede Ferroviária Federal* – RFFSA) was a mixed-economy company under the control of the Ministry of Transport. Five private rail companies in São Paulo were nationalised in 1971, becoming the FEPASA. However, these enterprises lacked capacity and resources to compete for the market, which led them to concentrate the supply on large users through special agreements, leaving remaining expenses to the Federal and

Figure 5.1. **Map of railway network linking countryside agricultural centres to productions areas of SP and RJ, and to overseas export markets**



Note: The map displays the areas of coffee production early in the 20th century while the first railways were constructed in the 19th century.

Source: Vencovsky, 2006.

State public owners. Rail freight activity increased as a result of the oil crisis in the mid-1970s, when it substituted for road freight. However, the sector experienced no structural change; it was under a system of price controls, with price levels and structures set by the government until 1989.

In the 1990s, the revenues of the main companies, RFFSA and FEPASA, were high compared to most of other freight railroads in America. However, the revenue/cost ratios were low and deficits had to be constantly underwritten with public subsidies. This resulted in a lack of investment and a deterioration of the tracks, rolling stock and power capacity. Railways were losing ground in its competition with other transport modes, as the market share of trucks and road transport increased.

Privatisation and regulatory reform

Privatisation in this sector, as in other sectors of the Brazilian economy, was driven by the will to reduce public debt, increase investments, improve resource allocation, develop market-based services and enhance the quality of services generally. Decree 473/1992 included RFFSA and AGEF in the National Privatisation Programme (*Programa Nacional de Desestatização – PND*). The BNDES was in charge of the sell-off. Privatisation included RFFSA, FEPASA and Ferroeste. RFFSA was horizontally divided in six companies before being sold off.

There were no pre-qualification requirements for candidates. The only measure to avoid excessive concentration of ownership was a 20% cap on the nominal capital share in

terms of ownership. This can result in complex management processes, as it is more difficult to obtain agreements and decisions. However, no restrictions were imposed on cross-holdings in different concessions or on the participation of major rail shippers or suppliers as shareholders in privately operated concessions. There were no specific provisions concerning the nationalities of individual shareholders. Concessions were granted for 30 years, with a possible extension for an additional 30-year period. The concessions established performance targets to be reached instead of specifying levels of investment. Some targets were established in the contracts, such as increase in production (TKU) and reduction in the rate of accidents.

This privatisation model of selling vertically integrated railway companies resulted in a situation of practically no direct competition between enterprises. Traditionally, rail freight transport has competitive advantages for long distances (over 800 km). However, this was undermined by the low cost of road transportation in Brazil, which reduces the relative modal competitiveness of rail freight transport.

Privatisation was accompanied by an update of the regulatory framework, which started in 1996 with the Decree 1 832. This includes the following elements:

1. Operators are allowed to freely set their prices for services if they face effective competition, including tariff differentiation to account for the needs of individual shippers.
2. Operators are required to enter into reciprocal switching when possible; otherwise they must quote unbundled rates and provide connecting service for joint hauls.
3. Regulators must allow operators to set prices that are responsive to differences in demand and in marginal costs, and to enter into voluntary shipper contracts with individualised terms and conditions.
4. Prices sets for captive shippers of a railway company, where it has monopoly power, are constrained using a revenue ceiling defined by the stand-alone cost of providing the service.
5. Concessionaires have to seek permission from the Federal Government before closing rail lines.

This created a relatively light regulatory framework on a fragmented and vertically integrated rail system. There are a number of economic arguments that tend to support vertical integration of railway companies under the condition that adequate competition exists or that third party access can be ensured (Box 5.1). There was also at first no regulatory authority in charge of ensuring third party access. Vertically integrated operators could both own rail companies and control ports. CVRD, the world's largest iron ore exporter, represents one example. It holds a major share in two railways, EFVM and EFC, and controls several ports in areas closed to its mines: competitors have to use CVRD railroads and ports.⁷ This form of light non-interventionist regulation lasted until the regulatory agency ANTT was established in 2001.

The new concessionaires were mostly US investors and Brazilian industrial groups and banks. Many of the shareholders of the new concessionaires have direct or indirect interests in companies that are rail service customers. The main results from the concession programme are shown in Table 5.1.

Box 5.1. Vertical integration

Vertical integration is a key issue in a regime of regulated access to track infrastructure. When promoting competition in a given rail service through regulated access, an important question is whether the infrastructure provider should be allowed to compete for provision of track services *and* remain vertically integrated. When the infrastructure provider is allowed to provide certain services, it has a potential incentive to use its position to deny or restrict the quality of access to third parties. Experience from the rail sector shows that it is often difficult for the regulator and/or the competition authority to control such behaviour. Many examples exist where integrated incumbent rail service providers have sought to use their position as the owners of the tracks to restrict or deny access to competing operators across OECD countries.¹ Competition authorities, which usually intervene *ex post*, are often ill-equipped to ensure timely or effective access in the face of incumbents determined to slow competition.² Access requires specific regulatory oversight *ex ante* from a sectoral regulator. Vertical separation, if it can increase competition, may also result in increased production costs, through the loss of economies of scope. It also increases the importance of effective regulatory incentives on the infrastructure provider.

Network companies have generally remained integrated in the majority of OECD countries, even in North America, where competition operates between vertically integrated companies. Many countries have accompanied mandated access to the tracks with various forms of separation of the infrastructure management from train operations. For example, Italy has noted that “guaranteeing conditions of equal access in freight services would require introducing a greater separation between the incumbent freight service operator and RFI. In practice this would imply privatising the freight service arm of Trenitalia. Vertical separation is not necessarily “all-or-nothing”. It is possible to apply vertical separation on a service-by-service basis. For example, vertical integration may be preserved for passenger services while prevailing for freight services (Denmark). This often takes the form of accounting separation or corporate separation. In Europe, EU directives require at least accounting separation between infrastructure and train services, as well as the complete separation of certain key regulatory tasks, such as train path allocation. In Italy for example, the former FS was separated into two parts, RFI and Trenitalia, which are under a single holding company. Switzerland also has accounting separation between passenger services and infrastructure services (cargo services of SBB are provided through a subsidiary). In Germany the rail path allocation body (Trassenagentur) will be established within the Federal rail regulator. In few countries, the owner of the infrastructure is not allowed to provide certain services and therefore is vertically separated for these services only. Very few have cut the link completely. In Europe, the United Kingdom and Sweden have prevented the infrastructure provider from providing all train services.

There are pros and cons to vertical separation. A decision whether or not to prevent the infrastructure provider from providing certain (or all) train services therefore depends on the answers to the following questions: i) What will be the effect on competition? ii) What will be the effect on the long-term utilisation of – and the provision of quality, reliability and enhanced capacity of – the infrastructure? iii) What will be the effect on production costs (through loss of economies of scope)? Vertical separation will be more beneficial if it results in a significant increase in competition. This depends in turn on the degree of competition that is likely to emerge in train services and the ability of the regulator to prevent anti-competitive behaviour by the incumbents. In the freight sector, entrants have tended to remain small. Incumbent freight operators have retained a significant market share, even with

Box 5.1. Vertical integration (cont.)

a high degree of vertical separation. For example, Germany, which is said to have one of the most open rail markets in Europe, has 120 railway companies offering freight transport services, but in 2003 the market share of new entrants was only 6.8%. This small market share may also be the result of underestimating the importance of non-discriminatory access to rolling stock as well as essential facilities like stations and terminals, service and maintenance facilities, marshalling yards, etc. Finally, vertical separation will be more attractive if increases in costs due to the loss of economies of scope remain moderate. Econometric studies have estimated those economies to be significant. Studies of US railroads have suggested that production costs could be as much as 20-40% higher as a result of total vertical separation.

1. In Germany the Bundeskartellamt found that an early version of the track access charging system used by Deutsche Bahn, which included volume discounts, favoured its own passenger subsidiary (DB Regio) over rivals. There were also complaints relating to access to the so-called "last mile" (loading, unloading and shunting facilities). In Switzerland an entrant, Lokoop, complained to the Swiss Competition Authority about SBB's failure to provide access to certain lines or access to shunting in SBB's stations.
2. Mexico observes that "It is difficult for [access] problems to be resolved through resolutions and sanctions by the Federal Competition Commission... It is not enough to require concessionaires to provide compulsory access; it is essential to strengthen the regulator so that it can intervene effectively when needed and have sufficient powers to define clear market rules."

Source: OECD, *Journal of Competition Law and Policy*, Vol. 8, No. 2, Paris.

Table 5.1. Results from the concession programme

	Oeste	Centro-Leste	Sudeste	Tereza Cristina	Sul	Nordeste	Paulista
Auction date	05-03-96	14-06-96	20-09-96	22-11-96	13-12-96	18-07-97	10-11-09
Transfer date	01-07-96	01-09-96	01-12-96	01-02-97	01-03-97	01-01-98	01-01-09
Number of bidders	2	1	1	2	4	4	2
Private operator	FNV	FCA	MRS	FTC	FSA	CFN	FBN
Main shareholders	Noel Group	min. Tacumã, Railtex, Ralph Partners, Judori and CSN	CSN, MBR, Usiminas	Banco Interfinance, Gemon G Eng Mont, Sta. Lucia	Ralph Partners, Judori	CSN, ABS, Taquari, CVRD	CVRD, PREVI, FUNCEF
Minimum bid (BRL million)	60.2	316.9	888.9	16.6	158	11.5	233.4
Actual bid (BRL million)	62.4	316.9	888.9	18.5	216.6	15.7	245
Premium (%)	3.5	0	0	11.3	37.1	37.9	4.9
To government	3	15.8	44.4	0.83	7.9	0.5	11.6

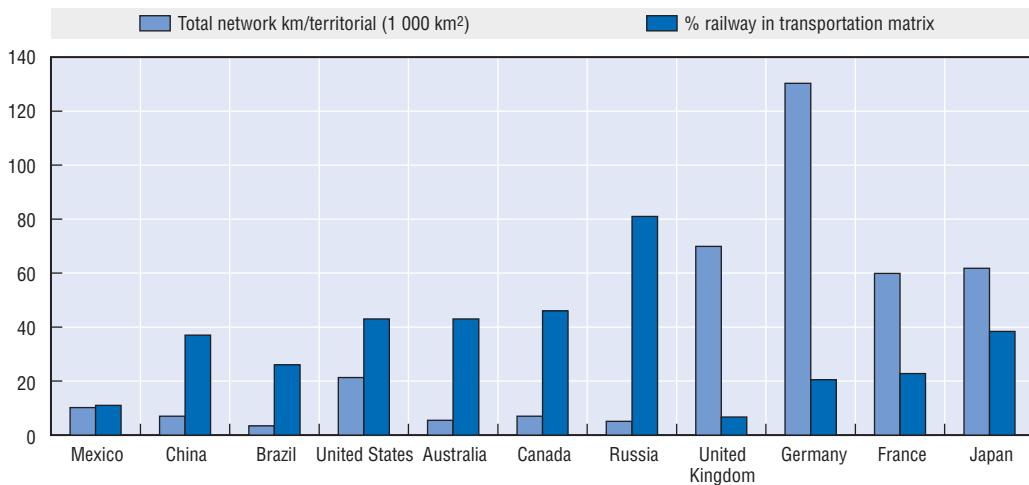
Source: Estache, Goldstein and Pittman, 2001.

Performance of the sector

Modal competition

The participation of railways in the transportation matrix is lower in Brazil than in a number of OECD countries, including Canada, the United States, Australia and Japan, or in two major non-OECD countries, Russia and China. However, the density of the network is also very low compared with most other countries.

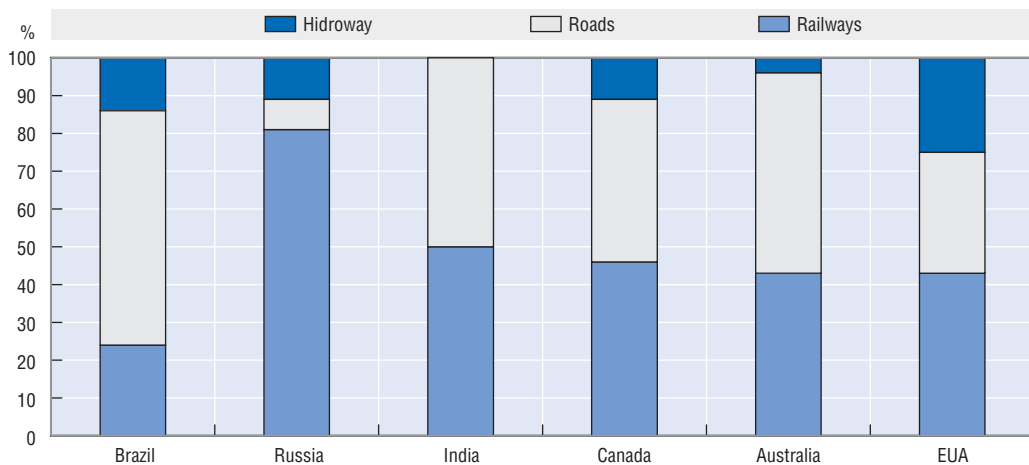
This is confirmed by Figure 5.3, which compares only countries of a continental dimension, and also by further results from a report by CEL/COPPEAD (see Bibliography). Brazil's transportation matrix is more similar to relatively smaller European countries, such as Denmark, Belgium, France, Germany and Hungary. This reflects the priority given to highways and the lack of investment in railways over the period 1955 to 1975. The low

Figure 5.2. **Participation of railways in the transportation matrix and total network**

Note: Data are for 2005 and 2006.

Source: Lang, 2007.

cost of road freight transportation, which is also associated with the low quality of transport on roads, is another factor preventing a rebalancing of the matrix. The national plan for logistics aims to address the issue of the imbalance of the transport matrix.

Figure 5.3. **Modal distribution of freight transport across major countries**

Note: Data are for 2004.

Source: XXXV Seminário de Fusão, Refino e Solidificação dos Metais e V Seminário de Fundição.

For agricultural products characterised by high volume and low aggregate value, and whose production centres are far from the ports, the railways should be preferable to roads. Logistic cost is an important factor for the competitiveness of the Brazilian products. However, in 1999, 81% of the agricultural crop was transported over roads (GEIPOT, 2001), and more recent data indicate that this share is still 60% (COPPEAD, 2002). According to ANTF, the participation of railways in the transport matrix was 19% in 1999 and 24% in 2003 – and there is a demand for more, as 78% of the freight transport on railways are of exports

(ANTF, 2003), and estimates suggest that the demand for Brazilian agricultural products will grow further.

The disequilibrium of the share of each mode leads to a high logistical cost. According to a study by the World Bank, this cost represents 20% of Brazilian GDP, higher than in countries such as Mexico (18%), Canada (12%), and the United States (10.5%).⁸

Multimodal transport

Besides the lack of balance within the transportation matrix, there are other problems of access to ports and railways terminals, which prevent smooth implementation of multimodal transport. The issue is exacerbated by the fragmented nature of the regulatory oversight, as two agencies are involved: ANTT for land transport and ANTAQ for ports. Regulatory instruments do exist. The law regulating multimodal freight transport is Law 9 611/1998. Decree 1 563/1995 establishes the terms ruling multimodal freight transport between Brazil, Argentina, Paraguay and Uruguay. ANTT Resolution 94/2004 establishes the bureaucratic procedures to become a Multimodal Transport Operator (OMT).

Nevertheless, access to ports and railway terminals remains an issue. According to a survey conducted by CEL/COPPEAD, access is more difficult than in the United States, whatever the criteria. An efficient transport system would require connected roads, railways and waterways, through efficient terminal transfers that are not costly. Fragmented administrative procedures are hindering such an integrated approach to multimodal transport.

Activity

Rail transport activity is focused on a reduced number of products. Seven of the 11 concessionaires were monofunctional in 2004, which is to say they had over 50% of their railway service production dedicated to two predominant products. Soy seeds and grain are two of the five main products. This production is seasonal, which may lead to an uneven pattern of use of the network.

The activity for railroad freight transport has significantly increased between 2001 and 2005 – by over 37%, up to 222 billion tons/km in 2005 against 162 billion in 2001, with the annual increase over 8.1%. Privatisation has brought in major improvements to the activity. However, this performance also reflects the increase in Brazilian exports, as most of the goods transported are raw material: iron ore, coke and mineral coal represented 71.4% of the goods transported in 2004, and soy 7%. The main factors affecting the use of rail were the relative costs, reliability of deadlines for delivery and the existence of “Take or – Pay” contracts,⁹ according to a survey by the National Committee of Transport (CNT).

From an international perspective, Brazil had the third-largest activity of a sample of OECD countries, behind the United States and Canada but above all the other countries, including a set of large European countries. Brazil also had the steadiest increase over the 2001-05 period, with the average annual increase 8.2% above Australia, 5.6% another producer of raw materials, and above Germany which had the fastest increase in Europe. During the same period, the activity only increased by 1.7% a year in the United States, and decreased by 5.8% a year in France and by 2.3% a year in Italy.

The volume of containers transported by rail, although still much lower than the volume that goes through the ports, has more than doubled from 2001 to 2005 (Hijar and Alexim, 2006). A survey carried out by COPPEAD in 2005 shows that most of the 26 main

Table 5.2. **Activity in rail freight transport, in million tons/km**

	2001	2002	2003	2004	2005	<i>Average annual increase</i>
Australia	136 910	150 460	161 110	165 590	170 200	5.6
Brazil	162 000	170 000	183 000	206 000	222 000	8.2
Canada	274 434	282 074	289 928	298 000	306 000	2.8
France	50 344	49 977	46 758	45 035	39 659	-5.8
Germany	76 165	76 283	79 841	86 409	95 421	5.8
Great Britain	19 400	18 700		21 000	22 100	3.3
Italy	24 352	23 060	22 457	23 271	22 199	-2.3
Spain	12 322	12 247	12 411	12 018	11 641	-1.4
United States	2 334 980	2 344 032	2 341 159	2 459 266		1.7

Source: ECMT, supplemented by Brazilian national data.

railway terminals are located in the south and South East of the country. The survey suggests that the main problems of road access to the railway terminals are the pavement conditions and signalling on the roads leading to these terminals. The managers of the terminals identify the lack of investment from the government as the central problem. The national plan for logistics (PNLT) has identified as a main issue the lack of logistical integration centres that would be connected to the overall economic and transportation network of the country.

Besides an increase in volume transported, other key indicators have also improved, such as the variety of services offered and the level of investment. The turnover of concessionaires has more than trebled over the period 1997-2005, with most of the increase in the past four years (CEL, COPPEAD). The number of fatalities and rate of accidents have decreased. However, the average distance covered by the trains and their speed have not improved significantly (Vencovsky, 2006). Moreover, the average productivity of each wagon measured in tons/km/year decreased in the early period of privatisation, from 1997 to 2004, as a result of an increase in rolling stock that was not accompanied by an expansion of the network. The number of locomotives increased from 1 365 in 1997 to 2 541 in 2004. This may also reflect a level of saturation in certain parts of the network, linked to the very high productivity of the railway system overall. Track quality is not the only factor explaining the difficulty of increasing speed: The tracks and railway are still suffering problems related to conflicts with illegal urban occupation.

The railway sector is mainly controlled by large national companies. A few are both controlling and using the tracks. CSN and CVRD are the main companies: Together, they use 53% of the network, produce 85% of the total traffic, and are responsible for 68% of the total investment in the sector. Even if privatisation had a generally positive impact in the sector, the gross revenue per wagon remains at a third of the US level, as is the case for total investments. The average traffic density and wagon productivity is still less than half those in the United States, even if the activity per km of network is higher.

Private investments are efficient to foster the competitiveness of some markets, mainly private ones. They can handle the development of the infrastructure necessary to enhance the competitiveness of Brazilian products. However, they cannot take into account all the economic and social externalities of transport, so as to promote regional

integration and foster development of the country as a whole. That requires a long-term strategy, planning, and government involvement.

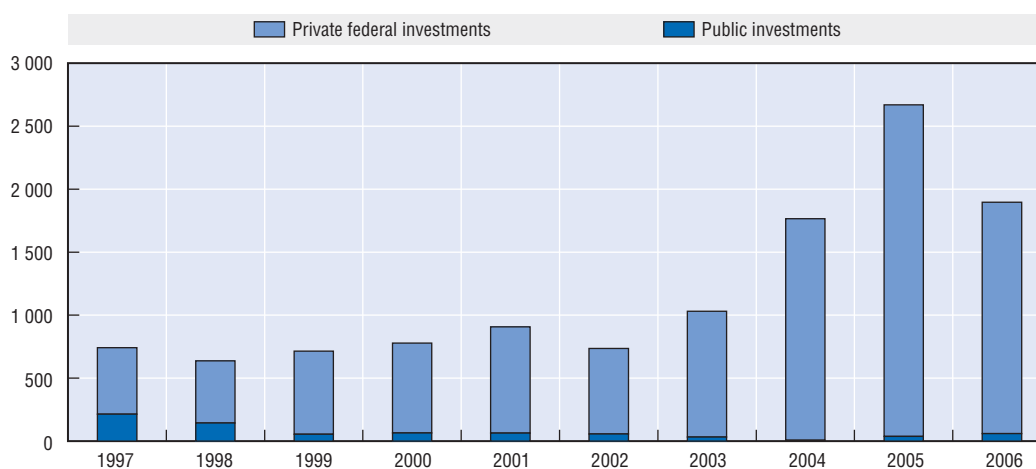
Railways also have an impact in terms of structuring local communities. These grew and consolidated around the tracks at the time of construction. Since then the communities have often invaded the area of the tracks, as a result of lack of urban planning. This reduces the speed of trains in some sections. According to the concessionaries, the State did not fulfil entirely its responsibility, stated in the concession contracts, for constructing the surroundings (railway belts) of the cities where the track area is being invaded.¹⁰ The Brazilian Growth Acceleration Programme – PAC includes nine projects in this area. The points of crossing between railroads and highways are another critical issue, which results in constant traffic interruption. This would require a highly sophisticated signalling and security system. A national programme for railway safety in urban areas was launched in 2001 to address this issue, but it was modified and relabelled as an overall programme for rail safety (*Programa Nacional de Segurança Ferroviária em Áreas Urbanas – PRONURB*). The national association of freight users (ANUT, *Associação Nacional dos Usuários do Transporte de Carga*) points to this issue, as well as the problem of invasion of the track areas, as the main factor slowing down the trains.

The concessionaires associated with the National Freight transport association have indicated a need of BRL 4.5 billion for priority projects to address logistical bottlenecks. These projects would not only enhance productivity, but also have the potential for improving the quality of life of the surrounding communities.

Investment

Since privatisation, total investments in the rail sector have increased, and they are now almost entirely private.¹¹ Around 80% of the investments on railways were bound to transport for export purposes (ANTF, 2003). The efforts made by Federal and State governments to enhance the fluidity of soy seeds and derivative products also illustrate the focus on investment in the transport sector for exportation purposes, facilitating the global reach of producers of commodities against the objective of national integration (Castillo, 2004).

Figure 5.4. **Public and private investments**

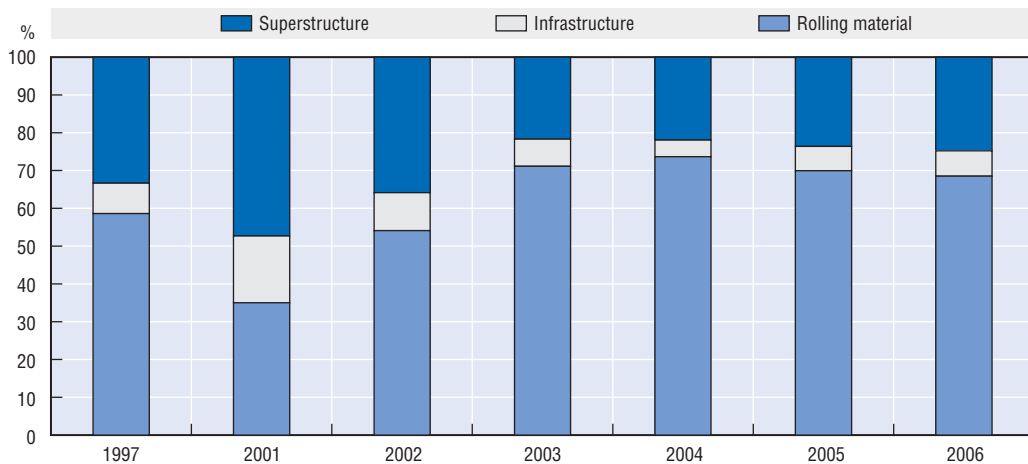


Source: CNT, (USD PPP, using FMI PPP index).

A linear model was applied to the debt payments of the concessionaires. This can restrict their ability to deliver higher investments in the beginning of the concession period, when revenues are smaller and the necessity for investment is high. The national association for rail transport, ANTF, has been trying to negotiate with the Federal Government a review in the lease contracts, in order to direct the payment of concessions to structural investments in the network.¹² COPPEAD (2002) points to this as one of the factors slowing down the sector's development. In addition, differences across states in the level of the ICMS – the tax on the movement of goods and service provision – result in inefficient logistics choices.

Privatisation improved the management of rail operations and increased investments in maintenance. Labour productivity significantly increased. This helped the existing networks to recover but did not result in network expansion.¹³ The size of the network was 28 717 km in 1994¹⁴ and 29 487 km in 2006 (of which 27 917 km is for freight transport).¹⁵ The new investments were generally more focused on the rolling material, as illustrated in Figure 5.5.

Figure 5.5. **Structure of investment in Brazilian railways**



Note: Rolling material are all types of vehicles which can circulate over a track.

Source: ANTT, 2007.

The attractiveness of investment in the sector depends on a number of factors. One is the overall interest rate in the country, which is relatively high in Brazil even if it has tended to decrease recently. As a result, concessionaires have to generate high rates of returns: The operational margin of the four main concessionaires (ALL, FCA, MRS and Ferrobán) is relatively high – the average margin was 31% in 2000 against 15% in the United States (CEL/COPPEAD). However, the return on equity was negative for all companies but one, which had a ROE of 5%. The average ROE in Brazil was –34%, while in United States it was 9% for the same year.

Roads

Roads represent a major economic sector, in terms of assets, employment, and turnover. The sector represents the largest assets in some developing and transition countries, with replacement costs of well over USD 500 billion (Heggie and Vickers, 1998).

In many countries, both OECD and non-OECD, roads are for the most part publicly managed and financed. However, traffic congestion and lack of maintenance represent important challenges. The costs of poor road management and inadequate financing are borne primarily by the users. Rural areas are also highly dependent on roads, and agricultural output suffers when the roads become impracticable due to bad weather conditions. The deterioration of roads also involves an increase in costs, as each dollar deferred on road maintenance increases vehicle-operating costs (VOCs) by about USD 2 to USD 3 (Heggie and Vickers, 1998). As a result, in many countries some roads with special characteristics are privately managed and sometimes privately owned, often where specific investment is required and there is significant commercial potential.

Road transport is the main transport mode in most countries, both for passenger and freight. It has also been generally growing at a faster rate than other types of transport. The possibility and scope for intermodal competition with rail, air or inland water transport depend on the availability of alternatives, on the type of goods or passengers being carried, on the origin-destination combination, and on the importance of timeliness. Charges for the use of infrastructure also affect intermodal competition. They should ideally be neutral, not distorting intermodal competition. Each transport mode should pay for its full infrastructure and environmental costs.

The road transport industry consists of many smaller sectors with very different characteristics. The most important distinction is between the passenger and freight markets. In the passenger market, further important distinctions can be made between long-distance and local services, between regular and charter services, and between buses and taxis. In the freight market, distinctions can be made between truckload and less-than-truckload services and between “own account” and “for hire or reward” services.

This section addresses the areas mainly affected by the Brazilian regulatory framework. It will not develop a full analysis of all the factors affecting the efficiency of road transport, but focus on two major aspects:

- The involvement of private capital in road construction (infrastructure).
- The regulatory framework for long-distance passenger transport. This will mainly correspond to interstate transport in Brazil (service provision).

As a result, urban transport and taxis will not be considered and road freight (trucking) only briefly discussed. The emphasis is on infrastructure; long-distance passenger transport will be discussed later.

An international overview of the concession experience

Many countries have provisions for private road concessions (Annex 5.A1, Table 5.A1.2). This is the case in a number of European countries, including France where there has been a general concession law since 1955, but also Italy and Spain. Further studies show that toll roads are widespread in Europe for interurban travel, or for specific bridges or tunnels, in Austria, Denmark, Spain, France, Greece, Italy, Norway and Portugal (Bousquet and Fayard, 2001). Toll roads exist in many countries outside Europe, such as Australia, Chile, Argentina and Mexico. They are only found to a limited extent locally in the United States, where most of the network is publicly financed at the federal level. One example is the Orlando Orange County Express Way authority (Lawther, 2000). Fewer countries have specific regulatory authorities to oversee the road concessions. This is the case in Argentina, and also in Spain and Australia with local agencies. Supervision is

ensured directly at the state level in France, Chile and Mexico. Such an authority was proposed at one point in Italy in the 1990s but, given the fragmented nature of the sector and the limited privatisation, it was abandoned. A consulting advisory expert authority internal to the Ministry of Economy was created instead (NARS). NARS was charged with infrastructure, excluding ports. This authority was facing both the regulated companies and the sectoral ministries allied with the regulated companies.¹⁶

Italy, France and Spain are the three major countries in Europe with a tolled motorway. There are 8 000 kms of tolled roads in France, managed in the past through semi-public companies, which have been partly privatised; 4 400 kms in Italy; and 2 500 km in Spain. (See Annex 5.A1, Table 5.A1.3). The size of the existing tolled network in Brazil is 1 500 km at federal level, and 8 500 km at the state level; the network is therefore very significant at the international level, even if small compared with the size of the country. In the United Kingdom there are less than 600 kms of tolled roads, and less than 400 kms in the United States. The only countries with a significant tolled network in the sample outside Europe or the United States are Argentina and Chile: 9 400 kms and 2 300 kms, respectively. The duration of concessions is relatively long: generally 30 years, with a minimum of 20 years and a maximum of 75 or even 99 years. The duration of the concession in Brazil is within average range. Few countries as of yet are making use of shadow tolls, with public authorities reimbursing the providers directly according to traffic. This is only the case in the United Kingdom, as part of public private partnerships that involve a specific risk sharing scheme, which differs from a concession.

Toll roads provide a significant share of overall investment and funding for national road systems in Europe. In France, over the period 1973-95, the state budget contribution dropped from 56% to 22% while toll revenue increased from 32% to 57%. In Spain, the equivalent figure is 46% (Bousquet and Fayard, 2001). The total income for toll roads in Brazil is relatively significant, much above the level observed in Argentina, about a third or half of the levels in Italy or France, and comparable to that of Spain (See Annex 5.A1).

Toll charges represent about EUR 0.05-0.06 per km in France and Italy, and up to EUR 0.086 in Spain. Comparatively, toll charges are USD 0.01 to USD 0.015 in Argentina, USD 0.02 to USD 0.03 in Chile, and were equivalent to USD 0.04 in Brazil, in line with other Latin American countries, and also with the European experience, once adjusted for relative differences in income per capita. In the United States, tolls for the tolled sections, which are rare, were about USD 0.15 to USD 0.20. Generally, the toll charges are two to three times higher for heavy vehicles (Bousquet and Fayard, 2001).

However, introducing toll roads also involves a number of challenges, some of an economic and regulatory nature: How to define a long-term concession contract? How to share risk? How to make contracts attractive for private operators while protecting the interest of consumers? It is often the task of the supervisory authority to define an optimal set of parameters. There are, however, other political and economic challenges, revolving round social acceptance of the tolls (ECMT, 2002). Lack of acceptance may lead users either to choose alternative routes, or to generate political pressure to be exerted on the concession companies. As a result, in many countries the construction of a toll road is considered only where an alternative non-tolled route already exists. However, in Brazil, given the general shape of the network, users of a main "tolled" highway may find themselves captives of the toll. In Spain, rejection of the tolls led to a cut in tariffs of 30-40% (Izquerido Vassalado in ECMT, 2007) in 1997, to bring them closer to European

levels. This was accompanied by compensating measures, such as possibilities of licences, new sections, a VAT tax cut, and state aid to the concession companies, as well as extension of the concessions to 75 years. This also shows that even when tariff revisions occur, they may be brought about through negotiation, facilitating social acceptance without undermining the economic balance of the concessions and increasing the regulatory risk.

Economic aspects of road freight

While long-distance passenger transport is regulated and will be discussed separately, this section provides a short overview of the international experience of road freight. In theory, trucking can sustain a high level of competition with few regulations (OECD, 2003), and most of the remaining controls are related to safety, cabotage or rights of foreign firms. A minority of countries have pricing or entry regulation guidelines, and public ownership (see Annex 5.A1, Table 5.A1.5). The sector was regulated as a device for protecting the rail industry. However, following the US experience as early as 1980, the United Kingdom, Australia and other countries have liberalised their markets, with significant economic benefits and a 15-25% drop in tariffs. Over the past ten years in Europe, during a period of liberalisation of road freight, this segment of the transport industry has increased its activity, while other modes of inland transport remained static at best (ECMT, 2002). In Mexico, deregulation led to an increase in the number of vehicles and a fall in prices. This reflected an increasing gap between small companies unable to modernise their fleet, and large companies able to take advantage of deregulation through a diversified set of services. However, within a deregulated environment, markets have tended to be increasingly concentrated for less than truckload and express services.

Brief history in Brazil

The early phase

Until the 1950s, all plans for transport emphasised that roads should not compete with rail, even though the rail system was known for being deficient. Roads were seen as necessary, but only as a complement to rail. A report by the National Department of Highways (DNER) released in 1946 criticised this view as having resulted in a rail monopoly in certain regions where parallel railways and roads were not allowed. A shift occurred in 1951, when the National Transport Plan specified that roads should have the lead. From then on, roads developed very rapidly in Brazil. In the 1970s road transport represented 73% of freight transport in the country¹⁷.

Construction of roads was financed by public funds. The National Road Fund (FRN) was created in 1945, and initially included fuel and lubricant fees. Another tax was levied in the 1960s on passenger and freight transport, adding a fee for the ownership of a vehicle. These resources were collected by the Federal Government to support the National Road Fund and to provide financial support to the States as well. The resources of the FRN were progressively transferred to the National Development Fund (FND) after 1974. This connection to the road sector was completely lost in 1982. Finally, the 1988 Constitution forbade the specific allocation of resources from fuel fees.

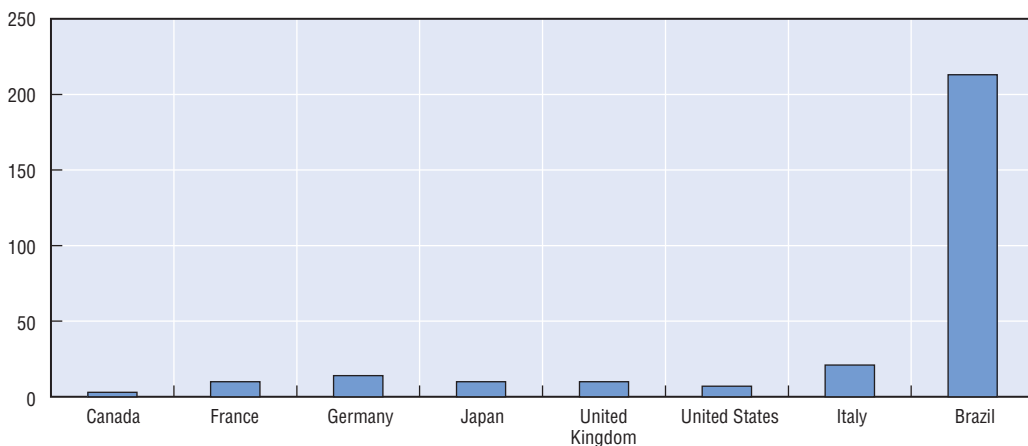
As a result, investment in roads became dependent upon the national budget from 1988 onwards. Investment in roads became more dependent on the Federal Budget. The tax on fuel and lubricant and the tax on transport services were transformed into the

tax on goods and services circulation (ICMS). The collection of this tax was left to States and Municipalities. The tax on vehicle property was transformed into the IPVA, with resources allocated to the States. These resources transferred to States and Municipalities were greater than the corresponding transfer of responsibility for intra-state and local roads to the local levels of government. The situation was exacerbated by the fiscal consolidation of the national budget. As a result, the quality of roads deteriorated from 1988 onwards, posing a number of economic and safety problems.

In 2001, a tax was created with the goal of financing transport infrastructure: The Contribution of Intervention in Economic Domain (CIDE), on the import and commercialisation of oil, natural gas, alcohol fuel, and related derivative products. However, most of the corresponding resources were retained for meeting fiscal targets relating to primary surplus. It is estimated that only 40.4% of the collection was used for investments in roads by the Federal Government over the period 2002-07.¹⁸ As a result, public investment in the road network per km represented only 7% of the corresponding investment in the United States (CEL, COPPEAD). Since 2006, the use of CIDE contribution for transport has increased again.

This led to a significant deterioration of quality, which can be measured through a number of indexes. For example, 80.3% of the network analysed was said to be in a terrible or deficient state according to a research by the National Transport Confederation (CNT) in 2000. (Recent figures (CNT, 2007) show that some improvements have been made, since 26.1% were found to be in good condition while 40.8% were regular and 33.1% in poor condition.) The rate of accidents and the case fatality were very high, much higher than in all OECD countries.¹⁹ More than 38 000 people die each year in Brazil from traffic accidents. The mortality rate is among the highest in the world and three to four times higher than in developed countries. The economic and social costs of traffic accidents exceed USD 3.3 billion per year (World Bank, 2007). Maintenance costs for trucks are 50% higher than normally estimated, according to a report by CEL/COPPEAD (BRL 0.23 to BRL 0.16) – a reflection of the poor quality of roads.

Figure 5.6. **Fatalities on roads per 1 000 kms**



Source: World Bank, 2007.

The role of privatisation in the 1990s

Brazil privatised its transport sector – as did many other developing countries, and particularly in Latin America – through a concession programme involving different terms for each concession and the participation of all levels of government, Federal, State and Municipal. Besides raising funds, the main goal of privatisation in the sector was to attract additional private investments, and also to facilitate maintenance and safety through private management.

The choice was to transfer the high-traffic-density sections to the private sector, as these were the most likely to be economically viable. The DNER published edicts for the concession of five federal roads, which had been previously tolled in 1993. The Concession Law 8 987 in 1995 established rules for the relations between the licensing authority and the concessionaires of public services, which cleared the way for an effective transfer. Five sections of federal roads were offered to concession for 20 to 25 years between 1994 and 1997. The concessions were managed by the DNER. The winners of the biddings were selected on the basis of the lowest toll. The concessionaires had to present an investment plan. Another concession was offered by the Government of Rio Grande do Sul State in 1998, which was afterwards transferred to Federal Government responsibility. As a result, a total of 1 493.2 km of federal roads were transferred under the responsibility of the private sector.

DNER had initially defined two stages for the concessions and foreign participation was limited. The first stage resulted in five sections, with an investment of BRL 871 million [USD 1 228 million (PPP)], of which 41% was financed by the BNDES (Table 5.3). The concession model used for highways was based on franchise bidding. In the auctions organised for privatisation at the federal level, a minimum level of investment was set, and the concession was offered to the bidder with the lowest toll rate. These initial concessions were not subject to public criticism, as they were relatively new.

Table 5.3. Overview of main road concessions

	Size (kms)	Term (years)	Basic tariff (USD PPP/km)	Number of tollbooths	Internal rate of return %	Concession companies	Start
Rio – Juiz de Fora	179.7	25	0.076	3	16.5	Concer	Oct-95
Ponte Rio – Niterói	13.2	20	0.069	1	16.6	Ponte	Aug-96
Presidente Dutra	406.8	25	0.045	5	17.9	Nova Dutra	Aug-96
Rio – Teresópolis – Além Paraíba	144.4	25	0.059	5	23.3	CRT	Sep-96
Osório – Porto Alegre – Acesso Guaíba	112.3	20	0.038	3	24.0	Concepa	Oct-97

Source: Pires and Giambiagi, 2000.

In addition to the concessions, Law 9 277 from 1996 also authorised the Federal Government to delegate administration of federal roads to the States. Supervision of the delegation process was under DNER responsibility. The State Concession Programme led to the concession of 9 253 km to the state level.

A second stage of concessions, with 7 093.3 km, was planned to be proposed by the DNER to the private sector in 2000. However, this could not be implemented then due to the lack of a regulatory authority and uncertainty on how to define the rules over the tariffs and the bidding process. Although the first stage had been quite successful in terms of enhancing the quality of privately operated highways, public concerns remained concerning expansions of the network using this model. The possibility of extending the

concession model further to the rest of the network was also constrained in terms of the economic viability of the remaining sections of the network. The issue of regulatory risk had been faced in two road concession programmes (Paraná and Rio Grande do Sul). The high tolls necessary to construct costly new roads may reduce demand and increase political risk.

However, optimistic tariff forecasts, related investment obligations and generous contract renegotiation rules have led to negotiation of contract amendments, resulting in tariff increases for the users – who in a sense have borne part of the risks.

The second stage of concessions was launched again in 2004 by the Ministry of Transport. This programme foresaw the transfer of 2 600.88 km of publicly managed roads to the private sector. However, due to a number of delays, and questioning by auditing authorities, including the National Audit Office (*Tribunal de Contas da União* – TCU), bidding occurred only in October 2007. The new concessions were granted to the lowest proposed bid. They did not generate revenue for the government and incentives for expansion of the network were reduced, while the users will benefit more due to the lower tariffs. The outcome of this last concession is described in Tables 5.4.

Table 5.4. **Results of the October 2007 Concessions**

	Concession companies	Size (Kms)	Number of tollbooths	Toll (BRL)	Toll per Km (BRL)
BR-116 (Régis Bittencourt) São Paulo-Curitiba	OHL (Spain)	401.6	6	1.26	0.019
BR-381 (Fernão Dias) Belo-Horizonte – São Paulo	OHL (Spain)	562.1	8	0.99	0.013
BR116/PR, BR-376/PR, BR 101/SC Curitiba-Florianópolis	OHL (Spain)	382.3	5	1.02	0.020
BR-101 Rio de Janeiro	OHL (Spain)	320.1	5	2.25	0.024
BR-153 São Paulo	BRVias (Brazil)	321.6	4	2.45	0.024
BR-116 Curitiba until device SC-RS	OHL (Spain)	412.7	5	2.54	0.018
BR-393 Device MG-RJ until the crossing point with Dutra	Acciona (Spain)	200.4	3	2.94	0.038

Source: Brazilian Press, October 2007.

Different models of concessions have been adopted at the state level, such as awarding to the bidder offering the highest payment for the concession (Rio de Janeiro and São Paulo), or to the bidder offering to maintain the largest extension (Paraná and Rio Grande do Sul). BNDES was also involved in these concessions; it had contracted loans with 23 concessionaires by 2001, with a total value of BRL 1.8 billion. Some states also cross-subsidise toll roads, including Paraná and Rio Grande do Sul.

Performance of the sector

The network represents 1 610 038 km in total – with 72 800 km Federal, 225 323 km State and the rest Municipal. One hundred ninety six thousand, two hundred and forty four kilometres of the roads are paved (12%), mainly at the Federal level: 80% of the Federal roads and 51% of the State roads are paved. The share of the private sector overall is quite limited, as only 2.6% of the paved Federal roads, 7.2% of the State roads and 0.1% of the Municipal roads are under private concessions.

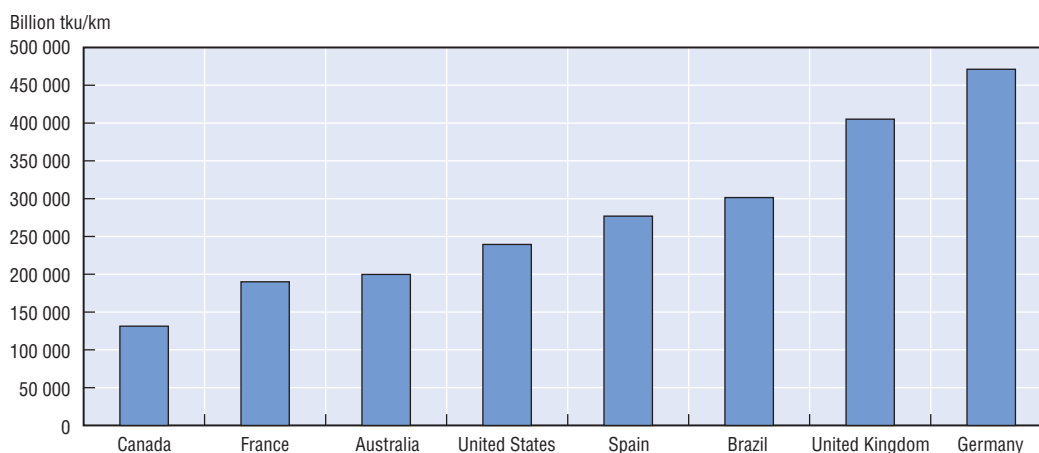
From an international perspective, Brazil has the second-largest road network of a sample of OECD countries, just behind the United States, and ahead of Canada and all European countries. In terms of raw activity, the index (billion tons/km) was also second across OECD countries, representing one-fourth that of the United States, but equivalent to the total of those for France and Germany in Europe (Table 5.5).

Table 5.5. **Data on activity and length of road networks**

	Billion <i>Tku</i>	Length (km)	Tku/length
Australia	168	810 624	207 247
Brazil	485	1 610 077	301 414
Canada	185	1 408 800	131 317
United States	1 919	6 407 622	299 487
France	193	998 001	193 539
Spain	227	666 204	341 308
United Kingdom	160	412 838	388 312
Germany	310	644 467	481 194

Note: Data are from 2005 for Australia, Brazil, Germany, France and the United Kingdom, and 2004 for the United States. Source: UNECE Handbook, *Trends in the Transport Sector*, [ECMT and CNT/COPPEAD].

Freight transport on roads represents 58% of the total freight transported in Brazil. The intensity of use of the network for freight is also high, in terms of tons/km of network, as it is similar to the measure for the United States, another large country. It is higher than that for Australia and Canada but remains below the United Kingdom, Germany and Spain. However, the labour productivity of the sector still has scope for improvement, at 1.8 million TKUs by worker in 2004.²⁰

Figure 5.7. **Intensity of use of the road network for freight purposes**

Note: Data are for 2005 for Brazil and Germany; 2004 for Canada, France and the United Kingdom; and 2003 for Spain and the United States.

Source: Handbook UNECE, *Trends in the transport sector*, ECMT and CNT, COPPEAD.

Road freight is only lightly regulated in Brazil. There are no specific quality requirements, such as the maximum time for renewing vehicles, security, or qualification of the workers. Eighty three per cent of the operators registered were autonomous shippers in 2006, representing 57% of the total fleet (CEL/COPPEAD). These are mainly small operators that have lower costs, and seemingly also a low level of maintenance – equal to 70% of the adequate level, according to a CNT report. As a result, road transport has taken a large share of the overall freight transport due to its low cost. This may be seen partly as a result of high use and high productivity, but it may also reflect lack of quality and maintenance.

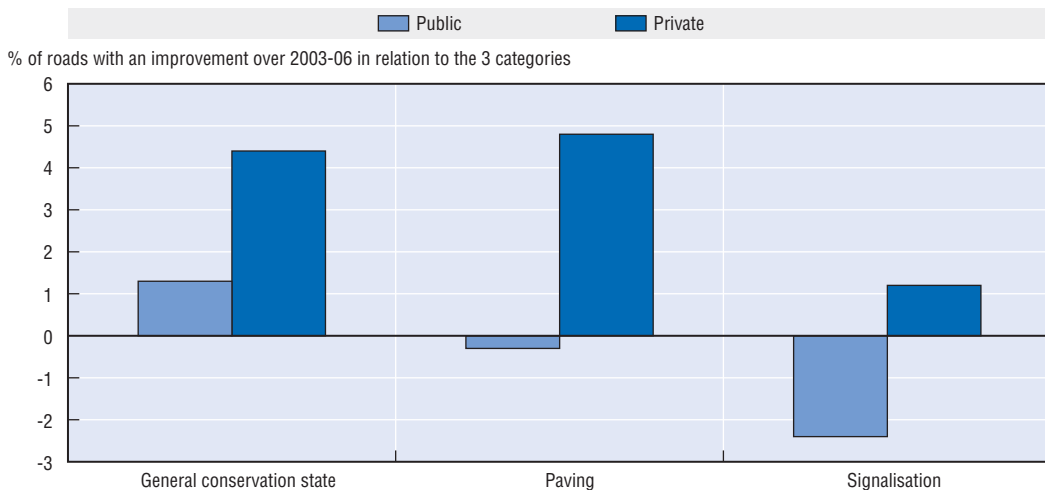
However, this intensity of use may also be linked to the high level of accidents, as well as other problems. For example, the bad condition of the roads also facilitates robbery, as the speed is very low, the lack of signalling may induce errors, and accidents in remote places also facilitate robbery. There were 10 650 cases of stolen freight reported in 2005 (CEL/COPPEAD), which is 53.4 occurrences for 1 000 km in the paved roads. This raises the need for the operators to increase security, with associated costs. Accidents also increase the probability of losing the transported goods.

Impact of the concessions

In this global context, the concessions have had a favourable impact, mitigating the effect of lack of investment in those sections that were under concession. For example, the concessionaires had invested BRL 1.1 billion by 1999 and also created 13 000 new working places.²¹ Capacity and quality indices improved for those roads under concessions, which was monitored by the DNER and altered by the ANTT.

The conditions of highways were improved. The performance of the roads under concession improved more than that of the ones under public management according to the results of a survey conducted by CNT in 2003 and 2006 (CEL/COPPEAD; see Figure 5.8): 79.7% of the roads under concession in good or great condition, against only 16.9% for those publicly managed. Only 16.3% of the roads under concession are in regular condition and 3.9% in bad or terrible shape, against 41.7% and 41.4% of those publicly managed.

Figure 5.8. Improvements on roads 2003-2006



Source: COPPEAD, CEL.

Passenger transport

A large share of long-distance passenger transport is handled by buses, as rail is not very developed for long-distance transit.²² Long-distance rail transport is in relative decline due to a number of factors. One is the development of small cities in Brazil, which means that more amenities are on offer during a journey than in the past and there is less need to travel to larger urban centres. Another is the increase in private car ownership due to raised living standards, which facilitates private journeys. This type of transport is also affected by the development of illegal transport, particularly the vans, which can offer a

more customised service. Other factors hampering the activity include the condition of the road terminals, the difficulty in accessing them, and the lack of flexibility of the route in case of traffic jam. These result in relatively slow travel, decreasing the willingness to travel and moving part of the demand to illegal transport and private cars. Another factor is the increasing market share of the low-cost airlines, which shifts some of the demand away.

An international overview of the regulatory experience

In the bus industry, long-distance bus services are liberalised in some countries, where they have enjoyed economic success. (For an international overview of Road passenger transport regulations, see Annex 5.A1, Table 5.A1.6). Economies of scale and scope in network operation have a significant influence on the market (OECD, 2003). In certain countries, market opening has led to the emergence of single market operators. The United States the United Kingdom and Australia have only a single nationwide operator, even if competition remains on smaller networks and on certain routes. However, competition may also be ensured in OECD countries through intermodal channels, with air transport in the United States or Australia, and rail transport (together with passenger car) in European countries.

Meyer and Gomez-Ibañez (1993) provide a general overview and Banister and Berechman (1992) focus on Europe. The interurban services were generally less regulated than the urban services. The United Kingdom's experience has been the most closely studied. After deregulation was enacted in 1984, road service licensing was reduced to notification, the national bus company was broken into separate companies that were privatised, and subsidies were cut for urban travel. This industry was in relative decline before privatisation due to the joint rise in private car ownership, similar to the Brazilian case (Darbera, 2004). Following privatisation and deregulation, output increased and bus operating costs fell by 30%, compared to the previous publicly managed company. However, opinions differ. Glaister (1993) and Beesley (1997) are very positive, as productivity was increased and earnings reduced. Competition increased in a first phase, and safety was maintained as deregulation did not suppress the need for inspection and safety controls by the traffic commissioners in order to obtain the licence (White, 1985). For some time, deregulation was able to stop the relative decline of the industry, increase supply and stabilise total turnover. Other analysts were more reserved. An industry that was fragmented at the time of deregulation could be expected to lead to the emergence of regionally dominant operators (Nash, 1993; Mc Kenzie Nash, 1995). Market analysis shows that economic barriers to entry exist, but are not sufficient to prevent entry in many places. In a second phase, there was a process of re-oligopolisation (Langridge and Sealey, 2000). The industry reformed itself into larger groups: six in the mid-1990s, providing a variety of services, including express delivery. This confirms the existence of some economies of scale and scope, and the fact that the market is imperfectly contestable. Concerning the long-distance interurban passenger market, one company, National Express, was a dominant carrier, accounting for 95% of the total passenger revenue in the mid- to end-1990s. Some of these companies may also have the ownership or control of adjacent rail lines (White and Farrington, 1998).

In Europe, some countries had retained controls on entry and prices (Switzerland, Greece, Ireland and Italy (Bannister and Berechman, 1992). Some of these controls may be justified by the need to protect rail transport, a concern that may not exist in Brazil. In

Europe, bus services are seen as a complement, bringing the passengers to the nearest mainline station.

When countries maintain exclusive rights on certain routes, an alternative is to have calls for tender. As reviewed by Hensher and Wallis (2005), this is the case in a large number of countries, including Norway, Sweden, Finland, Denmark, the Netherlands, and some cities in Australia, New Zealand and Australia. The Scandinavian experience shows a clear alternative to full deregulation with calls for tender and bidding processes (Andersen, 1992). The tendering process might specify the frequency of service, or the quality of the bus, with a tender on the price of services. This competition “for the market” also has the potential to reduce rents offered to operators. Hensher and Wallis (2005) find a significant reduction of costs, from 15% to 40% across countries. However, bus operators are still limited in their ability to initiate new services, to withdraw from old services and to rationalise their networks at short notice in order to better serve demand. Brazil is very similar to this category of countries.

Besides Europe and other OECD countries, interurban buses were also deregulated in Chile starting in 1977/79 (Brown, 1993), after a system of concessions and maximum bus fares. The number of concessions increased, as well as the number of companies. After the 1982 financial crisis, the number of buses had to be cut. After an initial period of increase, fares dropped after the entry of new companies in the market and were, on the whole, stable. Large companies have tended to grow larger, with an increasing concentration of the market; the experience shows that maintaining a competitive market is a challenge, with operators having exclusive access to their own bus terminals.

Finally Chinese Taipei, where this mode of transport covers 60% of intercity passenger trips, also experienced deregulation of interurban passenger transit in 1995 (Chang and Yeh, 2005). The experience brought lower fares and more frequent services. However, econometric analysis shows evidence of a safety decrease, as deregulation was not accompanied by strict safety regulation, as was the case in the United Kingdom. Despite newer buses, which improved safety, other characteristics of the bus companies led to some deterioration.

Overall, market analysis shows that competition and efficiency may require a combination of liberalisation associated with re-regulation to ensure that competition works. That might entail pro-competitive measures such as ensuring non-discriminatory access to bus terminals and other essential facilities, but also aspects such as loyalty schemes or travel agent incentive schemes of incumbent operators (OECD, 2003).

Performance of the sector

Multimodal aspects

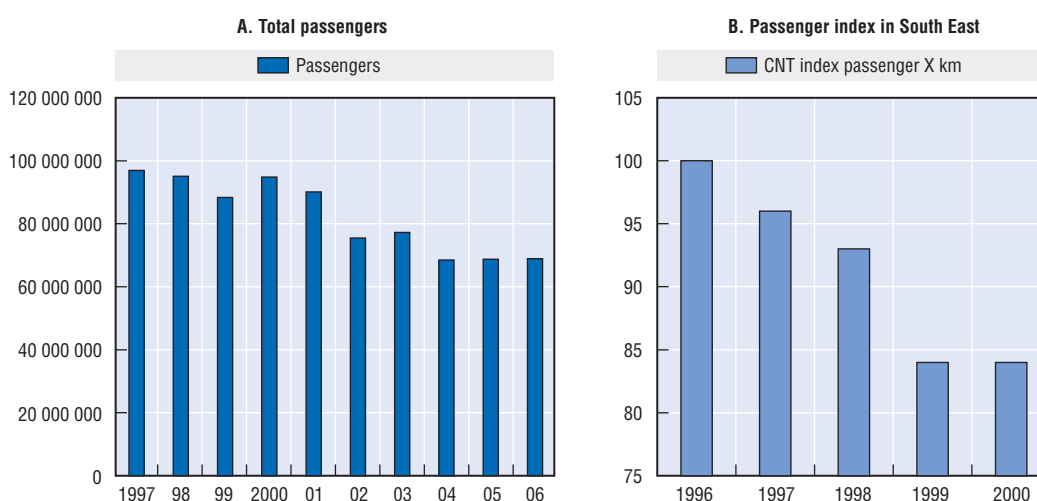
This sector is in competition with air transport and private passenger cars, apart from informal transport. Air transport was deregulated in the early 1990s: Liberalisation effectively started in 1992, although some areas had been deregulated since 1989 (fare bounds, for example). As a result, traffic more than doubled in ten years, to 26.7 billion passenger-kms in 2002 against 11.8 billion in 1992, with a yearly growth rate of around 7%. An estimate of passenger transit between the large city markets shows that air transport grew by 87% between 1998 and 2004, while interstate road passenger transport decreased by 2% over the same period.²³ Demand studies on passenger road transport should take into account the evolution of the air industry, as substitution does occur.

Another factor is the development of informal transport, and the taxation and regulatory framework. Informal transport is not subject to taxes, while interstate operators are facing a tax rate of around 40% of their total revenues (COPPEAD, 2002) and they also have to enforce labour regulations. The poor conditions of roads facilitate assaults, which are frequent on some sections of the roads.²⁴ Between 2000 and April 2007 the State of Bahia had 130 assaults to passenger buses reported.²⁵

Recent activity trends

This resulted in a decline in passenger demand for interstate collective transport. The total traffic has declined by around 30% since 1997, and is now around 65 million passengers.²⁶

Figure 5.9. Passenger transport



Source: COPPEAD, 2002 and Fundação Instituto de Pesquisas Econômicas (FIPE).

The network also allowed the transportation of 30 244 960 000 passenger-km through collective services in 2006.²⁷ In terms of overall activity, the bus and coach network provided a service of around 30.3 billion passengers-km in 2006, only counting passengers for interstate and international travel.²⁸ The sector had about 600 000 employees in 2006, with a productivity of 49 600 passenger-kms per worker.

The regulatory framework after 2001

The general regulatory oversight for the sector was remodelled in 2001, only after the privatisation and deregulation that had taken place earlier. The Ministry of Transport was restructured by Law 10 233/2001: The DNER disappeared, and three bodies were created for the administration of transport: The National Department of Transport Infrastructure (DNIT) as part of the Ministry, and two regulatory agencies: The National Waterway Transportation Agency (ANTAQ) and the National Surface Transports Agency (ANTT). Before this restructuring, the bodies playing this role were the Land Transport Secretary (STT) and the Federal Commission of Railways Transportation (COFER). The original project for regulatory oversight, which was conceived by the government and sent to Congress, involved only one regulatory agency instead of two. The project was modified afterwards;

the argument for splitting into two agencies was that this would allow appropriate attention to be paid to port regulation.²⁹ However, the initiative was criticised at that time, due to lack of intermodal integration and the fragmentation of the regulatory oversight. DNIT is in charge of executing the transport policy defined by the Federal Government, and of performing construction tasks related to the maintenance and operation of infrastructure in the segments of the SFV under direct Federal administration in the roadway, railway and waterway modes. All these agencies were first staffed by the employees from the former organs. A process of admitting new public employees started in 2006.

In this context, ANTT is a regulatory agency charged with enforcement and responsible for implementing policy. In theory, guidance on the policy framework should be provided by CONIT (the National Committee on Transport Infrastructure, which has not yet been implemented). ANTT is in charge of regulating the rails and roads conceded to the private market, freight transport, multimodal transport and interstate and international passenger road transport. ANTT oversees the exploitation of the railway infrastructure and

Box 5.2. The issue of analytical capacity for transport planning

Transport systems require strategic long-term planning, as transport is a service that structures all the other economic activities and that also needs to take into account a large set of constraints and needs. Most OECD countries have specific analytical centres, either in or outside their ministries, to help with transport planning. Brazil had established such a unit, called GEIPOT, with the support of the World Bank in the 1960s, which was located within the Ministry of Transport. Its role related to the planning, formulating and assessment of transport policy.

In the move to create the regulatory agency, and in the aftermath of the privatisation process, this unit was dismantled. Various bodies, including the Ministry's autarchy DNIT and the agencies ANTAQ and ANTT, took responsibility for some of its tasks. After the extinction of GEIPOT, ANTT assumed the duty of promoting research and studies on traffic and demand of transport services, and on tariffs, prices, costs, investments and freights. Article 9 of Resolution 1/2002 establishes that ANTT has to elaborate an annual report of its activities.

This led to the unhealthy situation of the Ministry being deprived of most of its strategic planning capacity while the regulatory agency, despite its limited resources, was called upon to conduct research and assessment on the transport sector. However, ANTT is an agency primarily charged with enforcement and regulatory oversight; as a regulator, it is not normally charged with policy development. Partial solutions are also being found, for example with the Transport Ministry relying on the Ministry of Defence for planning capacities and on some independent academic centres to develop strategic planning.

This situation bears some resemblance to that in the electricity sector. In the latter however, crises and the power shortages led to a restructuring of the planning and analytical capacity of the sector through the creation of the EPE. No similar move has yet been made in the transport sector, even if there are encouraging signs. In 2006-07 the Ministry developed a new National Plan for Logistic and Transport – PNLT, as part of a process of rethinking long-term planning and policy making – one of its main responsibilities. This is also leading to a discussion about the creation of a specific transport planning body.

the leasing of the corresponding assets. ANTT is also in charge of registration and authorisation for enterprises providing charter services. The launch of the agency operations was delayed, as it only functioned effectively in 2002. As a result, the sector was left without regulatory oversight for a time.

Regulatory framework for railroads

The regulatory framework for rail regulation includes, in addition to the general ANTT Law mentioned above, Decree 1 832; Decree 98 973 and Resolution 420, which regulate the transportation of dangerous goods; Concession Law 8 987; and Law 9 074/1995, which establishes norms for grants and prorogation of concessions and permissions. These decrees are rather general in nature and were established before the creation of the ANTT. Many other aspects have to be determined later and framed by ANTT through a number of resolutions.

ANTT has to share oversight of the transport of dangerous products with the Environmental Protection Agency, IBAMA, according to Decree 78/91, and Law 7 735/89 related to the IBAMA that must be licensed by this authority, according to Article 4 of Resolution 237/97. The prices are regulated through a system of price caps, reviewed every year and adjusted for inflation with the IGP-DI (Resolution 1 212/ANTT), after consulting with the Ministry of Finance, SEAE.

ANTT has also a clear responsibility for ensuring third party access and mutual traffic, which is important in the case of the fragmented Brazilian network³⁰ (Resolutions 433/2004 and 895/2005). The concessionaires are in charge of negotiating the Specific Operational Contract, which must be sent to ANTT no later than 30 days after its conclusion. ANTT is in charge of solving the issue if the parties cannot reach an agreement. The Law does not establish any specific terms for the contracts, such as maximum tariffs and minimum level of service. Current rules for third party access and mutual traffic could still be improved to facilitate efficient use of the rail network (CNT, 2003, 2006). ANTT had to intervene in 2006, setting the conditions and tariffs for access of EFC from CVRD (through Resolution 1733/2006).

This system still leaves the transport users dependent on the network owners, as often substitute solutions do not exist. That gives significant market power to the owner of the tracks, which needs to be managed by ANTT according to Law 10 233; potential abuse is to be referred to the competition authorities when detected. Other countries are also wrestling the issue of ensuring third party access. Brazil at least has an explicit independent regulator in charge of facilitating access, which for example does not exist in Mexico or in some European countries. Access to third parties is relatively recent as it was established in the 1990s for many OECD countries (excepting Canada and Australia, where it occurred earlier).

Management of the rail and road concessions

An important responsibility of the agency is to award and design infrastructure concessions, including both the rail and road aspects. This refers to a sensitive aspect of the regulatory framework in Brazil: The notion of “*Poder de Outorga*” which, according to the Constitution, is in essence a prerogative of the Executive. The current Law Bills on Agencies (Box 6.2) would transfer this power back to the Ministry, while the implementation could be delegated to the agency. However, the current lack of capacities of the Ministries (Box 5.2) has often meant that regulators were charged with most of the related aspects.

In transport, the current concessions include the first wave of road concessions as well as existing rail concessions. In Brazil, the rate of contract renegotiation is relatively high compared to other Latin America countries, 57% in the transport sector. In addition, the first renegotiation occurs relatively earlier: one year after the signature of the first contract, against three years in Latin America and the Caribbean Region; the share of renegotiations initiated by the government is also higher, 73% against 26% for the infrastructure sector.³¹ This rate of renegotiation initiated by the government has the potential to increase uncertainty and regulatory risks, translating into higher long-term interest rates. There are also strategic implications for future contracts, as investors may factor this into the negotiation process. However, after the creation of the agency, the renegotiation level decreased considerably, even if investment programmes for the concessionaires are revised annually. As a result, the establishment of the agency has contributed to clarifying the regulatory framework and to reducing the level of regulatory risk.

In the rail sector, the issue is more for the existing concessionaires to maintain their infrastructure. The association of the concessionaires outlined that the conditions to obtain loans with the BNDES are not sufficiently attractive, hindering the development of the rail industry (ANTF, 2003). In situations where rolling stock and locomotives are imported, market players are calling for relaxing the possibilities of importing used locomotives, as well as for reducing import taxes on the components that have to be imported.

Penalties can be applied by the ANTT to the rail concessionaires that do not comply with the production and accident targets specified in the contracts (Resolution 288/2003). However, the results of the supervision are not publicly released by ANTT. In 2006, Terms of Conduct Adjustment (TAC) were signed between the agency and the concessionaires that had not reached their target.

At a general level, ANTT had established partnerships with other institutions to contribute to the supervision and oversight the Federal Road Police (DPRF), as well as state ministries and agencies: The Regulatory Agency of Goiana (AGR), the Secretary of Infrastructure of Piauí (SEINFRA/PI) and of Tocantins (SEINF-TO), the Regulatory Agency of Mato Grosso (AGER/MT), the Regulatory Agency of Mato Grosso do Sul (AGEPAN), and the Regulatory Agency of Transport Services of São Paulo (ARTESP), the Department of Transport and Terminals of Santa Catarina (DETER/SC), the Regulatory Agency in Bahia (AGEBRA), and the Secretary of Transport of the Federal District (SETRAN/DF). Other partnerships with academic entities have also been established for analytical purposes.

Regulatory framework for road transportation

ANTT has the following responsibilities for road transportation:

- To regulate and supervise current concessions.
- To elaborate and suggest new concessions and realise the bidding of federal roads.
- To promote studies and surveys related to truck fleets, enterprises and autonomous operators.
- To keep a national registration of road freight transport.

Supervision of road freight

There is little regulation on road freight transport. In Brazil, domestic operators need only to register in ANTT. For international freight transport an authorisation from ANTT is

needed, and there are restrictions for foreign operators to provide cabotage transport. Brazil is not that unlike a number of other countries, including the United States. The main difference is that safety regulations are more strongly enforced in other countries, and their overall network is better maintained than the Brazilian one. The issue is more to bring the level of safety oversight in Brazil in line with that of other countries than to discuss the possible extent of economic regulation.

This light regulatory framework has facilitated price competition and increase in traffic, albeit with implications for quality and safety. A first step towards consolidating regulatory oversight has been to establish a National Register for Freight Road Carriers (RNTRC). This will imply mandatory registration for operators.

The issue of the new concessions

Although ANTT elaborates the terms of the concession contracts in view of its technical expertise, these terms are subject to approval by the National Audit Office (TCU). Highway concessions are a sensitive political issue, given the impact of tolls on consumers' budgets. The temptation is great for the government to change the terms of the concessions, as happened in Paraná: 50 days after the beginning of a tollbooth operation, the government reduced the tariffs by 50%, unilaterally. This caused disequilibrium in the contract, with a need for subsequent readjustments.

These concessions are subject to intense scrutiny *ex ante*. The Audit Courts can require a copy of the bidding act, and have the power to suspend the bidding, to give recommendations and to require more information.³² This power has already been exercised, when TCU requested changes in the foreseen toll tariffs in the acts for the second stage of concessions. In July 2006 the TCU suspended the bidding, requesting more information concerning the tariffs. The government and the regulatory agency make the point that tariffs have to be attractive for the private sector to buy in, otherwise there is a need for subsequent readjustment. However, the TCU claims that it is not interfering with the contracts, simply requesting technical information about the terms.³³

Another issue is the type of institutional framework for delegating the supply to the private sector. Until now, Brazil has focused on traditional-style concessions. However, the government stated in 2006 that it intended to use Public Private Partnerships (PPPs) for investment in the road sector (BR-116 and BR-324). After one year, public authorities modified their view, considering that a balance could be obtained under a traditional concession model, and they turned back to this model.³⁴ That hesitation reflects the difficulties in implementing a PPP approach. PPPs (or sponsored concessions according to Law 11 079/2004) would be interesting since they open the possibility of the direct remuneration of the private party, through a form of shadow toll, for the traffic on the road (although the shadow toll was not considered in the BR-324/116 case). They would offer the possibility to extend the delegation to the private sector further in some sections, where traffic and direct financing by users may not be enough to cover all the investment required during the concession period.

A new impetus for the second stage of road concessions was given by the Growth Acceleration Programme (PAC), launched by the government in early 2007. In the transport sector, its strategy is consistent with the Transport National Logistic Plan (PNLT).³⁵ The programme defines directions for the next 15 years, and among its goals it aims at transferring part of the freight transport from roads to railways and waterways. It indicates

that from 2015 to 2023 the financial resources will be more focused on railways than on roads. The plan foresees BRL 503.9 billion of infrastructure investments over the 2007-10 period. This should include the construction and improvement of 45 000 km of roads, together with a consolidation of the regulatory framework, a reduction of the loan rates, and improved co-ordination across levels of government.

The first analysis of the PAC, performed in May 2007, showed that the TCU had approved the viability studies of concessions. However, there was a lack of agreement on the internal rate of return, and on the determination of the price caps for tariffs.

Much of the dispute concerns the internal rate of return, given the constraint of the country's relatively high long-term interest rates. The concessions are constrained by the interest rates offered by the BNDES. However, Brazil is currently experiencing an improvement in its regulatory framework and a reduction in its long-term interest rates, due to fiscal stabilisation but also to improvements within the regulatory framework. Some disagreement exists at the domestic level between various institutions, regarding the rate at which this is occurring. The TCU, which sees itself as protecting the national interest, is exerting pressure in order to reduce the implicit rents that will have to be given to the concessionaires. While this certainly will help the welfare of the consumers in the long run, it also has created some additional uncertainty and delays, which may result in an opportunity cost. In addition, it may also be equally important to reduce the scope for renegotiation *ex post*, as these may also have costly implications.

As a result, ANTT had to resend to TCU the revised rules of the concession contracts. In order to accelerate the bidding, it was decided that the new concession contracts would not again be subject to a public hearing.³⁶ The TCU approved the edict of the bidding for seven sections of federal roads in July 2007 – recommending, however, that the ROI should be reduced to 8.95% (instead of 18% as initially specified) in order to reduce the cost of the tolls, and to improve the political acceptance of such concessions.

Finally, the date for the auction was set to be in October 2007, after a period of 9 years of hesitation and various dealings between ANTT, the TCU and the Ministry. Private parties interested in the bidding process have to submit feasibility studies according to the terms of reference set by ANTT for the auction. As a result, private sector parties requested a delay in submitting a bid, due to the need for careful *ex ante* assessment; this was not accepted. However, such careful assessment reflects the importance of the corresponding investment, and may also translate into a smoother process in the long term.

Interstate and international passenger transport

The oversight of interstate and international passenger collective transport services was under DNER's responsibility until 1990, when Law 8 028 and Decree 99 244 transferred these tasks to the Infrastructure Ministry. In 1992, the Ministry of Transport and Communication was transformed into the Ministry of Transport, which was charged with the regulation of this sub-sector until 2001, when it was transferred to the newly established ANTT.

Regulation of the sub-sector began in the early 1970s, with Decree 6 8961/1971, which defined the services and rules for establishing new connections. These rules were modified in 1985 by Decrees 90 958 and 92 353/1986, Decree 952/1993 and 99 072/1998. This last decree is still part of the current regulatory framework, with Law 10 233/2001, Law 8 987/1995, Law 8 666/1993 and the agency-specific resolutions and decrees. A specific department of

ANTT is in charge of regulating the supply of interstate and international passenger transport; its responsibilities also include application of penalties, proposal of new granting of licences, and analysis for tariff revisions.

The agency is responsible for supervising the interstate and international collective transport, and for avoiding non-authorized passenger transport. The right to operate a line is earned through a bidding process, managed by the agency. Economic *ex ante* assessment of the viability of the line may be performed by ANTT for approval, or the interested party may themselves have to present such a feasibility study.³⁷

The terms of the bid include a minimum frequency, timing, tariffs and methodology for tariff revisions. Promotional differential tariffs can be set freely only since the 28 March 2007 (ANTT Resolution 1 928). ANTT can still veto the promotion if it finds evidence of predatory pricing, or any element reflecting an infringement of the economic order (involving consultation with the SDBC in the case of market concentration process). The current rules for requiring a reduction of the minimum frequency are established in Resolution 2275/2007. However, even if a reduction in frequency is accepted at one stage, this can be subsequently reversed.³⁸ ANTT also publishes an index of service regulation for each provider, an index of efficiency, and an index assessing the quality of service.

Overall, while freight transport is only lightly regulated in Brazil, passenger transport is more heavily regulated – even if the mode of competitive bids for tender mirrors the experience of some Nordic countries.

Notes

1. Da Mata *et al.* (2005).
2. OECD-ECMT (2007a), “Transport Infrastructure Investment and Productivity”, Roundtable No. 132. See contribution by Pr. Hulthen, Pr. Bennathan and Pr. Kopp.
3. World Bank Report No. 36 624, 2007.
4. World Bank Report No. 36 624-BR, 2007.
5. Canada Transportation Act Review Panel (2000).
6. The Future of Rail, White Paper HMSO (2004).
7. However, evidence of anti-competitive behaviour has not to date been found by the ANTT or the SDBC.
8. From the National Plan for Logistics and Transport (PNLT); *source*: the World Bank.
9. With this type of contract, the clients have to announce the quantity of cargo established in advance.
10. According to a report by Valor.
11. *Source*: ANTF, 2007.
12. Fleury, Valor.
13. Marcos Regulatórios no Brasil, 2005.
14. Global Trends to Railway Concessions Delivering Positive Results, 1997.
15. ANTT.
16. Ponti in ECMT (2006).
17. Senna and Michel, 2007, quoting Barat, (1978).
18. Economic Bulletin, CNT.
19. Data are from CEL/COPPEAD, from GEIPOT (2001) and the Bureau of Transportation Statistics, United States.

20. *Services Annual Survey, 2004-2005*, IBGE and CNT.
21. *Infrastructure Notebook*, BNDES, 2001.
22. Even if there is a project of a high-speed train between the major cities of Rio and São Paulo.
23. PNLT. See note below.
24. When the roads are in very bad condition, pedestrians can assault buses.
25. Itapemirim.
26. COPPEAD, 2002 and Fundação Instituto de Pesquisas Econômicas (FIPE).
27. ANTT Statistical Annual Book.
28. ANTT Statistical Annual Book.
29. "Valor on-line", 27/04/2001.
30. Article 25, Law 10 233.
31. World Bank, Report 36 624, 2007 and Guash, Laffont and Straub, WB, 2003.
32. Laws 8 666 and 8 883.
33. Santa Catarina and Paraná Passenger Transport Enterprises Union (FEPASC), 14/07/2005.
34. "Valor", 17/07/2007.
35. The PNLT was elaborated by the Ministry of Transport in co-operation with the Transport Engineering Expertise Centre (CENTRAM) from the Ministry of Defence. Its goal is to formalise analysis instruments for the planning of public and private intervention in the sector in the medium and long term, in accordance with the economic, social and environmental targets for the country. This is the first attempt to co-ordinate a technical plan for the development of the sector since 1985 (when GEIPOT launched the Development Programme for the Transport Sector – PRODEST).
36. "Valor", 21/06/2007.
37. Note 2894/2007 – GERPA/SUPAS/ANTT.
38. E.g. Resolution 2 126 of July 2007 accepted the request by Viação Itapemirim to reduce the minimum frequency in one itinerary, and the decision was repealed three months later by Resolution 2 266.

Bibliography

- Andersen B. (1992), "Factors affecting European privatisation and deregulation policies in local public transport: The evidence from Scandinavia", *Transportation research*, Vol. 26, No. 2, March, pp. 179-191.
- ANTF (Associação Nacional dos Transportadores Ferroviários) (2003), "Desafio do Comércio Exterior: A participação das Ferrovias na Logística de Exportação", Associação Nacional dos Transportadores Ferroviários by Julio Fontana, Chairman. www.antf.org.br/cgi-bin/pagesvrex.exe/Get?id_doc=285.
- ANTT (Agência Nacional de Transportes Terrestres) (2006), Management Report 2006, www.antt.gov.br.
- ANTT (2007), "Evolução recente do transporte ferroviário", www.antt.gov.br.
- ANTT and CNT (Confederação Nacional do Transporte) (2006), "Logística de transporte e o papel das ferrovias no Brasil", www.cnt.org.br.
- Associação Brasileira de Concessionárias de Rodovias (2005), Annual report, www.abcr.org.br.
- Associação Nacional dos Usuários do Transporte de Carga, "Solução para a competitividade logística", www.anut.org.br.
- Banister D., Berechman J. (1992), "Competitive regimes within the European Bus Industry: Theory and Practice", *Transportation research*, Vol. 26, No. 2, March, pp. 167-178.
- Barrett. S. (2000), *Bus Deregulation in Ireland, response to a New Institutional and Regulatory Framework for Public Transport*, Department of Public enterprise, August.
- Beesley M.E. (1997), *Bus Deregulation in Privatisation, Regulation and Deregulation*, ed. Routledge.
- Biggar D. (2002), "Competition Issues in Road Transport, background note", *OECD Journal of Competition Law and Policy*, Volume 4, Issue 4.

- Boucher M. (1993), "L'industrie québécoise du transport par autocar: réglementation, pratiques et performance", *L'actualité économique, revue d'analyse économique*, Vol. 69, No. 4, décembre.
- Bousquet, Franck and Fayard, Alain (2001), "Road infrastructure concession practice in Europe", *Policy Research Working Paper 2 675*, World Bank, Washington.
- Braeutigam R. R., Noll R.G. (1984), "The Regulation of Surface Freight Transportation: The Welfare Effects Revisited", *The Review of Economics and Statistics*, Vol. 66, No. 1, pp. 80-87.
- Brown, Robert T. (1993), "The Political Framework of Regulatory Reform in Transport Enterprises: Bus and Truck Deregulation in Chile", in *Regulatory Reform in Transport: Some Recent Experiences*, edited by José Cabajo, World Bank, April.
- Canada Transportation Act Review Panel (2000), "Competitive Rail Access", Interim Report, 29 December.
- Castillo, Ricardo (2004), *Transporte e logística de granéis sólidos agrícolas: componentes estruturais do novo sistema de movimentos do território brasileiro*, *Investigaciones geográficas*, N. 055, Universidad Nacional Autónoma de México, México.
- Castro, Newton de (2000), "Os desafios da regulação do setor de transporte no Brasil", *Revista de administração pública*, Vol. 34, Set./Out.
- Cavalcanti, Bianor Scelza (2002), "Reformas políticas regulatórias na área de transportes", VII Congresso Internacional del CLAD sobre la Reforma del Estado y la Administración Pública, Lisboa, Portugal, 8-11 Oct.
- CEL (Centro de Estudos em Logística)/COPPEAD, "Índices Logísticos", www.centrodelogistica.com.br.
- CEL/COPPEAD, *Transporte de cargas no Brasil: ameaças e oportunidades para o desenvolvimento do país*.
- Chambers E.J., Dunn M.J., Gillen D.W., Gordon Tyndall D. (1980), Bill C-20, "An Evaluation from the Perspective of Current Transportation Policy and Regulatory Performance", *Canadian Public Policy* Vol. 6, No. 1, winter, pp. 47-62.
- Chang H.L., Yeh C.C. (2005), "Factors affecting the safety performance of bus companies, The experience of Taiwan bus deregulation", *Safety Science* 43, pp. 323-44.
- Chujoh U. (1989), "Learning from Medium and Small-Sized Bus services in developing countries: is Regulation Necessary?", *Transportation Research*, Vol. 23A, No. 1, pp. 19-28.
- CNT (Confederação Nacional do Transporte), Pesquisa Ferroviária (2006), "Relatório analítico", www.cnt.com.br.
- CNT (2006), "Pesquisa Rodoviária", www.cnt.com.br.
- COPPEAD (2002), "Transporte de Carga no Brasil, Ameaças e Oportunidades para o Desenvolvimento do País", Joint study with the Confederação Nacional de Transportes and the Centro de Estudos Em Logística do Coppead, Universidade Federal do Rio de Janeiro, available at: www.centrodelogistica.com.br/new/fs-pesquisa.htm.
- Da Mata, Deichmann U. Henderson J.V., Lall S.V., Wang H. (2005), "Determinants of City Growth in Brazil", *NBER Working Paper*, No. 11 585.
- Darbera R. (2004), "L'expérience anglaise de deregulation des transports par autobus", *Les Cahiers scientifiques du transport*, No. 46, pp. 25-44.
- De Borger B. (1984), "Cost and Productivity in Regional Bus Transportation: The Belgian Case", *The Journal of Industrial Economics*, Vol. 33, No. 1, pp. 37-54.
- De Paula, Germano Mendes and de Avellar, Ana Paula Macedo (2007), "Reforms and infrastructure regulation in Brazil: The experience of ANTT and ANTAQ", *The Quarterly Review of Economics and Finance*, doi:10.1016/j.qref.2006.12.008.
- ECMT (European Conference of Ministers of Transport) (2001), *Railway Reform: Regulation of Freight Transport Markets*, European Conference of Ministers of Transport, Paris.
- ECMT (2002a), *Regulatory reform in Road Freight Transport*, Paris.
- ECMT (2002b), "Tolls on interurban infrastructure, an economic evaluation", Roundtable No. 118.
- ECMT (2004), "European Integration of Rail Freight Transport", Roundtable No. 125, Report of the 125th Roundtable on Transport Economics held in Paris on 28-29 November 2002, European Conference of Ministers of Transport, OECD, Paris.
- ECMT (2005), "National systems of transport infrastructure planning", Roundtable 128, OECD, Paris.

- ECMT (2006), *Transport services: The limits of (de)regulation*, OECD, Paris.
- ECMT (2007a), "Transport Infrastructure Investment and Economic Productivity", Roundtable No. 132, European Conference of Ministers of Transport, OECD, Paris.
- ECMT (2007b), "Transport infrastructure charges and capacity choice, self financing road maintenance and construction", Roundtable No. 135, OECD, Paris.
- ECMT (2007c), "Market access, trade in transport services and trade facilitation", Roundtable 134, OECD, Paris.
- ECMT (2007d), *Trends in the Transport Sector: 1970-2005*, OECD, Paris.
- Estache, Antonio (1999), "Privatisation and regulation of transport infrastructure in 1990s", *Policy Research Working Paper 2 248*, World Bank, Washington.
- Estache, Antonio et al. (2000), "The long and winding path to private financing and regulation of toll roads", *Policy Research Working Paper 2 387*, World Bank, Washington.
- Estache, Antonio et al. (2001), "Privatisation and regulatory reform in Brazil: The case of freight railways", *IPEA Working Paper*, No. 9, Brazil.
- European Union Road Federation, *European Road Statistics* (2006).
- Filho, Bolívar Pêgo et al. (1999), "Investimento e financiamento da infra-estrutura no Brasil: 1990/2002", *IPEA Discussion Paper No. 680*, Brazil.
- Friebel G., Ivaldi M., Vîbes C. (2004), "Railway (De)Regulation, A European Efficiency Comparison", Center for Economic Policy Research, Discussion paper No. 4 319.
- Garrido, Juan (2006), "Mais carga nos mesmos trilhos, Valor Setorial Ferrovias".
- GEIPOT (2001), Ministério dos Transportes: Anuário Estatístico, www.geipot.gov.br/anuario2001/index.html.
- Glaister S. Brown, Robert T., (1993), "Bus Deregulation in the United Kingdom", in *Regulatory Reform in Transport: Some Recent Experiences*, edited by José Cabajo, World Bank, April.
- Gomez Lobo A. Hinojosa S. (2000), "Broad roads in a thin country", *Policy Research Working Paper No. 2 279*, World Bank.
- Guash, Laffont and Straub (2003), "Renegotiation of concession contracts in Latin America", *Policy Research Working Paper 3 011*, the World Bank, Washington, DC.
- Guimarães, Eduardo Augusto and Salgado, Lucia Helena (2003), "A regulação no transporte rodoviário brasileiro", *Notas técnicas 4*, IPEA, Brazil.
- Heggie, Ian G. and Vickers, Pires (1998), "Comercial Management and financing of roads", *World Bank technical paper 409*, Washington, DC.
- Hensher D.A., Wallis I.P. (2005), "Competitive Tendering as a Contracting Mechanism for Subsidising Transport, the Bus Experience", *Journal of Transport Economics and Policy*, Vol. 39, Part 3, pp. 295-321.
- Hijjar, Maria Fernanda and Alexim, Flavia Menna Barreto (2006), *Avaliação do acesso aos terminais portuários e ferroviários de contêineres no Brasil*, Centro de Estudos em Logística/COPPEAD.
- HMSO (2004), *The Future of Rail White Paper*, Report presented to Parliament by the Secretary of State for Transport, UK.
- IBM (2004), "Summary of the Rail Liberalisation Index 2004", *Comparison of the Market Opening in the Rail Markets of the Member States of the European Union, Switzerland and Norway*, IBM Consulting Group, in conjunction with Pr. Christian Kirchner, Humboldt University, Berlin.
- IDEI (2003a), "The Economics of Passenger Entry in the Passenger Rail Industry: a Theoretical Investigation", Institut d'Économie Industrielle, Toulouse, Report #2 on Passenger Rail Transport.
- IDEI (2003b), "Entry in the Passenger Rail Industry: a Theoretical Investigation", Institut d'Économie Industrielle, Toulouse, Report #2 on Passenger Rail Transport.
- IDEI (2003c), "Railway Regulation: A European Efficiency Comparison Report #3", in *Passenger Rail Transport*.
- Ireland N.J. (1991), "A Product Differentiation model of bus deregulation", *Journal of Transport Economics and Policy*, pp. 153-162, May.
- Ivaldi M., McCullough G.J. (2001), "Density and Integration Effects on Class I US Freight Railroads", *Journal of Regulatory Economics* 19:2, pp. 161-182.

- Lacerda, Sander Magalhães (2002), “O transporte ferroviário de cargas”, BNDES 50 Anos – Histórias Setoriais: O Transporte Ferroviário de Cargas, BNDES.
- Lacerda, Sander Magalhães (2005), *O financiamento da infra-estrutura rodoviária através de contribuintes e usuários*, BNDES Setorial, Rio de Janeiro, No. 21, p. 141-159, March.
- Lang, Aline Eloyse (2007), “As ferrovias no Brasil e a avaliação econômica de projetos: uma aplicação em projetos ferroviários”, master dissertation, UNB, Brazil.
- Langridge R., Sealey R. (2000), “Contestability in the UK Bus Industry? The National Bus Company and the ‘Tilling Mark II’ effect”, *Transport Policy*, pp. 105-115.
- Lawther W.C. (2000), *Privatizing Toll roads, a public private partnership*, Praeger, ed. Westport, Connecticut.
- Leff N. (1982), *Underdevelopment and Development in Brazil*, ed. Unwin Hyman.
- Lima, Rachel Fanti Coelho (2006), *Benchmarking de tarifas e práticas do transporte rodoviário*, Centro de Estudos em Logística/COPPEAD.
- Mackie P., Preston J., Nash C. (1995), “Bus deregulation: Ten years on”, *Transport Reviews*, Vol. 15, No. 3, pp. 229-251.
- Marques, Sérgio de Azevedo (1996), “Privatização do sistema ferroviário brasileiro”, texto para discussão 434, IPEA.
- Meyer J., Gomez-Ibañez J. (1993), “Transit Bus Privatisation and Deregulation Around the World: Some Perspectives and Lessons” in *Regulatory Reform in Transport: Some Recent Experiences*, ed. José Cabajo, World Bank, April.
- Ministério dos Transportes and Ministério da Defesa, “Plano Nacional de Logística and Transportes: relatório executivo”, www.centran.eb.br.
- Nasch C. (2004), “The EU Transport Policy White Paper: An Assessment of Progress”, Institute for Transport Studies, Leeds University.
- Nash C., Rivera-Trujillo C. (2004), “Rail Regulatory Reform in Europe”, paper presented at the Stella Focus Group 5, p. 107.
- Nash C.A. (1993), “British bus Deregulation”, *The Economic Journal*, Vol. 103, No. 419, July, pp. 1 042-1 049.
- Nelson J.D., Saleh W., Prilezsky I. (1997), “Ownership and control in the bus industry, the case of Hungary”, *Journal of Transport Geography*, Vol. 5, pp. 137-146.
- OECD (2005), “Structural Reform in the Rail Industry: Should Train operations be separated from the Provision of the track infrastructure”, OECD website on Competition Law and Policy, Best Practice Roundtables on Competition Policy, www.oecd.org/competition.
- OECD (2006a), “Access to key transport facilities”, Competition Committee, OECD, Paris.
- OECD (2006d), *Infrastructure to 2030: Telecom, Land Transport, Water and Electricity*, OECD, Paris
- OECD (2007a), *OECD Principles for Private Sector Participation in Infrastructure*, Paris.
- OECD (2007b), “Mapping Policy for Electricity, Water and Transport”, *Infrastructure to 2030*, Vol. 2.
- Peci, Alketa (2002), “Modelos regulatórios na area de transportes: a experiência Americana”, VII Congresso Internacional del CLAD sobre la Reforma del Estado y la Administración Pública, Lisboa, Portugal, 8-11 October.
- Pires, José Claudio Linhares and Giambiagi, Fabio (2000), “Retorno dos novos investimentos privados em contextos da incerteza: uma proposta de mudança do mecanismo de concessão de rodovias no Brasil”, Rio de Janeiro: BNDES, Texto para Discussão 81.
- Productivity Commission Australia (1999), “Progress in Rail Reform”, Report No. 6, August.
- Reschenthaler G.B. (1982), “Public Policy and the Intercity Bus Industry in Canada”, *Canadian Public Policy*, Vol. 8, No. 1, pp. 80-87.
- Ribeiro, Maurício Portugal (2005), “Aspectos jurídicos e regulatórios do compartilhamento de infra-estrutura no setor ferroviário”, *Revista eletrônica de direito administrative econômico*, No. 3, August/September/October, Bahia, Brazil.
- Rodrigues, J.A.C. et al. (2004), “O crescimento do transporte ferroviário de carga no Brasil e seu reflexo na industria”, XXXV Seminário de fusão, refino e solidificação dos metais e V seminário de fundição, Salvador, Bahia, 17-19 May.

- Saintive, Marcelo Barbosa and Chacur, Regina Simões (2006), "A regulação tarifária e o comportamento dos preços administrados", *SEAE Working Document No. 33*, Brazil.
- Senna, Luiz Afonso dos Santos and Michel, Fernando Dutra (2007), *Rodovias auto-sustentadas: o desafio do século XXI*, ed. CLA, Brazil.
- Steer Davies Gleave (2003), "EU Passenger Rail Liberalisation", *Extended Impact Assessment*.
- United Nations (2006), *Handbook of Transport Statistics in the UNECE region*.
- Valor Econômico, "Governo define data para leilão de rodovias", 27/07/2007.
- Valor Econômico, "Governo pode adiar em um mês leilão de rodovias", 17/07/2007.
- Valor Econômico, "Questões ANTT divulga versão final de editais para leilão de rodovias federais", 17/07/2007.
- Valor Econômico, "Questões técnicas determinaram recuo em PPPs de rodovias, dizem especialistas" 17/07/2007.
- Valor Econômico, "TCU analisará regras do leilão de rodovias", 21/06/2007.
- Valor Econômico, "TCU libera concessão de 7 trechos de rodovias", 26/07/2007.
- Valor Econômico, "União desiste de usar PPP para duas rodovias", 18/07/2007.
- Vencovsky, Vitor Pires (2006), "Sistema ferroviário e o uso do território brasileiro. Uma análise do movimento de produtos agrícolas", master dissertation, UNICAMP, Brazil.
- White P. (1995), "Deregulation of local bus services in Great Britain: an introductory review", *Transport Reviews*, Vol. 15, No. 2, pp. 185-209.
- White P., Farrington J. (1998), "Bus and coach deregulation and privatisation in Great Britain", with particular reference to Scotland, *Journal of Transport Geography*, Vol. 6, No. 2, pp. 135-141.
- World Bank (1999), "Analysis of highway concessions in Europe", French Highway Directorate, Report for the Western European Road Directors, Washington DC.
- Yordon W.Y. (1968), "Regulation of Intercity bus fares: The Problem of Cost Analysis", *Land Economics*, Vol. 44, No. 2, pp. 245-253.

ANNEX 5.A1

*Regulatory Frameworks for Transport*Table 5.A1.1. **Regulatory framework for railway services and provisions for third party access in selected countries**

	Status of incumbent operator			Access		
	Company	Status of company	Dates for key recent reforms	Structural separation	Third party access	Freight
Australia	Most interstate rail networks have been privatised and/or separated.	Freight operators: seven: Corporatised/privatised; vertically integrated/separated entities and responsible for different intra-interstate tracks.	1995. Application of general provisions of the National Competition Policy (NCP).	Yes. By 2002 only Queensland government has retained ownership of a corporative vertically integrated freight rail operation.	National Access Regime is set out in Part IIIA of the Trade Practices Act 1974 (Part IIIA topic link). (Amended in 1995), regulated by ACCC.	Yes. In 2002 the ARTC access regime for the interstate freight track was approved.
Brazil	The national company RFFSA was split and privatised in 1996 CVRD and FEPASA .	Mainly private. 28 225 km are private, 1 262 are public (mostly suburban lines).	Presidential Decree 1 832/1996 National privatisation plan for rail .	No. Local private monopolies.	Resolution 433/2004.	The users of the infrastructure can negotiate with the concessionaire. If they do not reach an agreement ANTT will arbitrate.
Canada	Canadian National and Canadian Pacific own almost 80% of the tracks.	Private	1996. Canada Transportation Act.	No	1987	Three competitive access provisions: inter-switching, running rights and competitive line rates (CLRs). Inter-switching and the power of regulators to impose running rights, dating back to the early 1900s. CLRs have existed only since 1987.
France	SNCF	EPICs (Public establishment with industrial and commercial purpose).	1997	Yes	1997	Partly. 2003: international freight 2007: Total freight
Germany	DB AG	State-owned private stock company.	1994: merging DB and DR. 1999: legal separation of the business units.		1994	Yes
Italy	Trenitalia	Part of Gruppo Ferrovie dello Stato SpA, a holding company 100% state-owned.	2000	Yes	1999	Mandated access within a (soft) vertical separation framework.

Table 5.A1.1. **Regulatory framework for railway services and provisions for third party access in selected countries** (cont.)

	Status of incumbent operator			Access		
	Company	Status of company	Dates for key recent reforms	Structural separation	Third party access	Freight
Mexico	1997 State company FNM was divested and most railways were privatised.	3 private regional companies and some short lines, mainly private.	1995, 1996: constitutional amendment and sectoral legislation.	No	Articles 35 and 36 of the RSL and concession titles.	Terminal and Interconnection services: mandatory trackage and haulage rights may be bilaterally negotiated between private operators, with SCT reserving the right to intervene if no agreement is reached within 90 days.
United Kingdom	Incumbent was split and does not exist anymore.	All railway operating companies are private.	1993 and 2000	Yes	1993	Yes
Spain	Renfe + ADIF	Public corporations under the direction of Ministry of Development (MdF).	2 004	Yes	Yes	Open to international freight for all routes
United States	Five of the 9 major carriers represent 94% of Class I freight railway revenue. Numerous smaller carriers (541 in 1997).	Class I railways are all privately owned. There are some short lines and one regional in public ownership.	1995. Surface Transportation Board (STB) replaced the Interstate Commerce Commission (ICC Termination Act).	No	No forced access	Three kinds of competitive access provisions: reciprocal switching, by which railways can be required to switch cars to nearby competing railways in terminal areas at a reasonable charge; alternative through routing, by which a railway can be required to interline traffic with another railway; terminal trackage rights, by which a railway must permit physical access over its lines to the trains and crews of a competing carrier for a fee.

Source: National Submissions to Rail Roundtable, OECD (2005). Steer Davies Gleave for the European Commission, NEA transport research and training for the European Commission adjusted by the OECD Secretariat. Australia: Productivity Commission Inquiry Report, 2006. United States: Railway Reform, ECMT, 2001. Class I railroad, as defined by the Association of American Railroads, has an operating revenue exceeding USD 319.3 million.

Table 5.A1.2. **Regulatory framework for road concessions across a sample of countries**

	Ministry	Concession law	Regulatory agency	Responsibility of regulatory agency	Related bodies for consultation and technical input for preparing strategic options
Argentina	Federal Planning Ministry (<i>Ministerio de Planificación Federal</i>)	Law 17 520/67; 23 696/89; Decree 1 105/89.	OCCCOVI – supervision of road concessions (<i>Organo de Control de Concesiones Viales</i>).	Control and supervision of contracts	
Australia	State and local governments, Federal Government	No Federal Concession Law.	Only at state and local level.	Not relevant.	Australian Transport Council (ATC) for advice on the co-ordination and integration of transport at national level. The Department of Transport and Regional Services (DOTARS) provides policy advice for the Transport and Regional Services portfolio. Technical body is the Bureau of Transport and Regional Economics (BTRE).
Brazil	Ministry of Transport	Law 8 987/95 and 9.074/95.	National agency for land transportation (<i>Agencia Nacional de Transportes Terrestre</i>) (ANTT).	To implement the policy formulated by the CONIT and the Ministry and regulate or supervise the services and use of the infrastructure of transports by third parties.	National Council for the Integration of Transport Policies – <i>Conselho Nacional de Integração de Políticas de Transporte</i> (CONIT) to define the national transport policy. No technical body at the moment. Until 2002, it was the GEIPOP (a planning agency for the Ministry of Transport).
Chile	MOP: Ministry of Public Works – <i>Ministerio de Obras Públicas</i> (specifically General Direction of Public Works – <i>Dirección General de Obras Públicas</i>)	Special Decree 164/1991. Law on Public Works Concessions (<i>ley de Concesiones de Obras Públicas</i>)/1996.	Direct supervision by the Ministry.	Not relevant.	Planning, projecting and constructing public infrastructure as well as their conservation and administration, fixing tariff intervals.
France ²	Ministry of Ecology and Sustainable Development and Planning Unit for oversight of highway under concessions, special under-directorate for technical control.	General Law of 1955; Law 93-122; and corresponding orders in Council. ³ Law on Competition and Price Freedom, 1986. ⁴	No agency.		National Transport Committee. National Committee on Transport accounts. Technical body inside Ministry of Ecology and Sustainable Development and Planning.
Italy	Ministry of Infrastructures Ministry of Transports	Law 1 137/29 “Disposizioni sulla Concessione di Opere Pubbliche” General Law for Public Works 19/1994 Presidential Decree 554/1999.	ANAS (Ministry of Transports) And CIPE (Interministerial Committee for Economic Programmation).	CIPE granting authority responsible for state road, Supervises maintenance and construction of infrastructures Tariff revisions. ANAS Tariff revisions set quality standards. Includes quality correction in price cap formula.	NARS, group of expert attached to Treasury providing technical support for tariff adjustment agreed between the licensee and the regulator.
Hungary	Ministry of Economy and Transport	Act XVI of 1991	Road administration	Road user charges	<i>Transport Infrastructure Development in Hungary</i>
Mexico	Secretariat for Communications and Transport (<i>Secretaria de Comunicaciones e transportes</i>)	Law on Roads, Bridges and Federal Trucking.	No, SCT directly.	Not relevant.	Administration of the planning for private tolled roads.

Table 5.A1.2. **Regulatory framework for road concessions across a sample of countries (cont.)**

	Ministry	Concession law	Regulatory agency	Responsibility of regulatory agency	Related bodies for consultation and technical input for preparing strategic options
Spain	State Secretariat for Infrastructure and Planning (<i>Secretaria de Estado de Infraestructuras y Planificaci3n</i>)	Tolled Motorway Act (1972) amended in 1996-1996. A royal decree is required to approve a concession; Law 13/1996. ³	Some regions have autonomous or semi-autonomous toll road agencies.	Not relevant.	Policy for Infrastructure and Transport. The national plan is called the Strategy Plan for Infrastructure and Transport – <i>Plan Estrat3gico de Infraestructuras y Transporte</i> (PEIT).
United States ¹	USDOT	Intermodal Surface Efficiency Act, 1991.	No	Not relevant.	

1. www.highways.gov.uk/aboutus/about.aspx.

2. “Analysis of Highway Concessions in Europe”, WB, 2004.

3. Data are from 1998.

4. “Rodovias Auto-Sustentadas”, 2007, p. 303.

Table 5.A1.3. **Key aspects of road concessions across a sample of countries**

	Tolled roads (km)	Network size Motorway kms	Toll roads		Duration of concessions	Existence of shadow toll
			Public	Private		
Argentina	9 383 of the National Troncal Network ³	10 400 (expressway 1999)	0	9 383 km (of the National Troncal Network) ¹³	First phase: 12 years, Second phase: 22 years ²	No
Australia	168 none of them in the National Highways System ⁵	18 700 km (National Highway System) ⁹	0	168 ^{5, 12}	18-48 years ⁵	No
Brazil	1 492 federal 8 357 State and municipal (2005)	1 300 km	n.a.	1 493 ⁸	Three federal concessions of 25 years and two other of 20 years	No
Chile	79 604 total roads 2 300 tolled roads		0	2 289 ^{1, 6}	20-30 years generally Maximum 50 years	No
France	7 840 (tolled highways 2004)	10 383 ¹⁰	6 940 ²	900 ²	30 years	As a possibility
Italy	About 6 000 km of motorway	6 840 ¹⁰ total	1 202 ²	4 392 ² (After privatisation of Autostrade)	30 years	No
Mexico	6 000 ⁷	5 683 (1999)			n.a.	No (in bidding process 2006)
Spain	2 255 (1999); 2 900 (2004)	10 500 ¹⁰ (25% tolled)		2 497.4 ²	Maximum 75 years (extended in 1997)	
United Kingdom	580	3 476 ¹⁰		580 ²	30 years	Yes
United States	8 439 (2007)	Total highways 91 287 (2003) ¹¹	8 101 (2007)	338 (2007)	20-99 years	No

1. “Rodovias Auto-Sustentadas”, 2007, p. 303.

2. 1998. Policy Research Working Paper No. 2 249, WB, 1999.

3. Website Ministerio (17/07/2007)

4. BTRE Information Sheet 23, 2004.

5. “Australian Toll Road Sector – Stepping Up a Gear”, Fitch Ratings, 2005.

6. Website Coordinaci3n de concesiones de MOP.

7. Data from 2004.

8. Questionnaire answers ANTT. Relates to federal concessions. The total would be 9 296.

9. Year 2001-02. Data include expenditure on administration, regulation and subsidies. Source: BTRE Information Sheet, 2004.

10. Transport infrastructure investment, ECMT. Quoting data from Fayard (2006).

11. Handbook of Transport Statistics, UNECE.

12. “Australian Toll Road Sector – Stepping Up a Gear”, Fitch Ratings (2005).

13. Resumen de concesiones viales otorgadas, CEPAL (2003).

Source: ECMT Report; Bousquet (1999).

Table 5.A1.4. **Economic aspects of toll roads across a sample of countries**

	Road expenditure	Toll revenue Million USD PPP, 2005	Toll price
Argentina	USD 349 million public and USD 161 million private ^{8, 9, 14} 18% for maintenance.	300 ²	Phase 1: USD 0.015 per km Phase 2: Approximately USD 0.01 per km – USD 0.0156 per km car rates (road corridor); USD 0.035 per km car rates (urban access) ⁵
Australia	Total: USD 8.779 billion (public: USD 8.252 billion (22% are commonwealth expenditure). Private: USD 527 million ^{10, 11}	USD 731 (2001-2002) ^{4, 6}	n.a.
Brazil	Private: USD 2 263 million ¹⁷	1 977 ¹⁷	USD 0.04 per km (2007)
Chile	MOP: CLP 92 billion (43% main regional roads); total roads: 286 billion. Private: USD 43 million ^{12, 13, 14}	n.a.	First generation: USD 0.02-0.03 per km car rates (1999) ⁵
France	EUR 2 700 million (2006) ¹⁵ Of which for maintenance: EUR 1 740 million (2006) ¹⁵	6 778	0.062 EUR/km (1999)
Italy	EUR 12 900 million (1999) ¹⁵ maintenance 1 250 million EUR (1999) ¹⁵	4 598 ^{3, 15}	0.047 EUR/km (1999)
Spain	EUR 1 350 million (2005) ¹⁵ of which EUR 634 million (2005) ¹⁵	2 336 ¹	0.086 EUR/km (1999)
United Kingdom	2 500 million EUR (2005) ^{2, 15} of which 2 147 for maintenance	n.a.	GBP 3 /car (2005, motorway) ⁷
United States ¹	Public (2004): 136.4 billion ¹⁶	Public: 8 544 (2004) ¹⁶	Public: 0.15-0.2 per km per car (2000)

1. Million ECU. Source: "Analysis of Highway Concessions in Europe", WB (2004).
2. Only Motorway included. "Analysis of Highway Concession in Europe" quoting PIARC (2003) as a source.
3. "Analysis of Highway Concessions in Europe", WB (2004). Data are from 1998.
4. For category 1 vehicles, maximum toll established by contract. WB Study, Part III: Case Studies.
5. "The long and winding path to private financing and regulation of toll roads", WB (2000).
6. Bureau of Transportation and Regional Economics, www.btre.gov.au/statistics/roadrail/mvtaxesandcharges.aspx.
7. Toll for M6 (the only toll motorway). Roundtable 135, ECMT. Quoting www.m6toll.co.uk, 2005.
8. Transport infrastructure investment, ECMT. Quoting data from Fayard (2006).
9. Year 2001-02. Data include expenditure on administration, regulation and subsidies. BTRE Information Sheet, 2004.
10. Year 2003-04. BTRE Information Sheet, 2006.
11. "Australian Toll Road Sector – Stepping Up a Gear", Fitch Ratings (2005).
12. Cuenta de gestion MOPTT (2005).
13. Sistema de Concesiones en Chile 1990-2003, 2003.
14. Resumen de concesiones viales otorgadas, CEPAL (2003).
15. ERF. Most European countries distinguish "regular" and "non-regular" costs of maintenance, but the expenditures included in each category differ from one country to another. In the Netherlands, for instance, the terms fixed and variable maintenance are applied, while structural and operational maintenance are the definitions in Austria, routine and periodic maintenance are those in Sweden and routine and special maintenance are those in Spain. The European Commission proposes to apply the following distinction: "Regular" costs aim at maintaining the functionality of existing infrastructure within its original lifetime (local repairs, like fixing cracks or potholes, winter maintenance, cleaning rest areas, maintaining grass areas, etc.). "Non-regular" costs are renewal expenditures prolonging the lifetime of the infrastructure without adding new functionalities (renewal of roadways and structures of bridges and tunnels, maintenance of road equipment, etc.)
16. ECMT report. Questionnaire answered by ANTT. Relates to federal concessions. The total would be 9 296.
17. Annual Report 2005, Relatório CNT, 2006.

Table 5.A1.5. Road freight regulatory constraints, comparison between Brazil and a set of OECD countries in the late 1990S

Regulatory Constraint		Number and identity of OECD countries concerned and Brazil
Rights of foreign firms constrained relative to domestic firms	16	United States, Germany, France, Italy, Canada, Mexico, Norway, Portugal, Sweden, Turkey, Hungary, Poland, Austria, Belgium, Greece, Switzerland, Brazil
<i>Of which:</i>		
• Complete prohibition of cabotage	6	France, Belgium, Mexico, Switzerland, Turkey, Hungary, Brazil
• Domestic carrier requirement for public traffic	5	Greece, Mexico, Norway, Hungary, Poland
• Restrictions on the possibilities for foreign firm pick-up	9	United States, France, Italy, Canada, Greece, Mexico, Norway, Sweden, Hungary
Criteria other than technical, financial and safety considered in granting a licence/permit/concession	12	Germany, France, Italy, Austria, Belgium, Mexico, Norway, Spain, Sweden, Czech Republic, Korea, Poland
Professional body enforces pricing or entry regulations or guidelines	10	Netherlands, Portugal, Spain, Switzerland, Czech Republic, Hungary, Poland, Italy, Austria, Greece
Regulator can limit capacity in some way	9	Germany, Italy, Belgium, Greece, Spain, Czech Republic, Hungary, Korea, Poland
Public ownership/control in road freight	9	Germany, Belgium, Denmark, Finland, France, Australia, Norway, Czech Republic, Poland
Regulation can restrict the number of competitors in some way	5	Italy, Norway, Turkey, Czech Republic, Poland
Regulations prevent or constrain backhauling	5	Finland, Greece, Netherlands, Norway, Hungary
Regulations prevent or constrain private carriage	5	Finland, Greece, Mexico, Netherlands, Switzerland
Regulations prevent or constrain contract carriage	3	Mexico, Switzerland, Hungary
Regulations prevent or constrain intermodal operation	3	Finland, Mexico, Hungary
Prices regulated in some way	3	Japan, Italy, Greece
Competition law exemption for road freight in some form	3 (+15)	United States, Japan, Turkey (and the European Community), Brazil
Competition agency not involved in enforcement	2	Switzerland, Greece, Brazil

Source: OECD International Regulation Data 1998.

Table 5.A1.6. **Road passenger transport regulations, comparison between Brazil and a set of OECD countries in the late 1990s**

Regulatory controls	
Australia	Passenger services are regulated by State and territory government agencies. There are private bus services and government-owned services.
Brazil	A bidding process is required for the provision of regular service.
Belgium	Regular and specialised regular services are operated directly or contracted out to private operators by the railway company SNCV and by different local transport corporations. As well as satisfying quality controls, passenger carriers are subject to fare regulation by the relevant ministry in the case of domestic services and by agreement with other countries on international services.
Canada	Bus services are primarily regulated by the provinces. New entry is rare because of a strictly applied public convenience and necessity entry test (with the exception of Alberta). Provincial boards generally specify intra- and extra-provincial bus routes, capacity, service quality, safety standards and insurance requirements.
Denmark	The provision of bus services requires a licence from either the local authorities or from the Danish Passenger Transport Council. The prices of scheduled services are controlled by the transport authorities.
France	Urban and interurban bus and coach services, whether scheduled or non-scheduled, are organised solely by the public authorities. The 1982 Act on Inland Transport confers on the <i>départements</i> the main task of organising inter-city passenger services. The departmental authorities draw up and keep up-to-date the Departmental Plan which contains the routes and services that have been authorised. The actual operation of these services may be carried out by the department directly or by private firms contracted to do so. Fares must be approved by the organising authority. Urban transport is the responsibility of local authorities who may either operate the services directly or contract them out to a private firm. The local authorities also have the task of approving fares for scheduled local services.
Germany	An authorisation must be obtained for the paid or commercial carriage of passengers in motor vehicles, street cars and trolley buses. Before an authorisation is issued, the public interest in having such services established is considered. The authorisation is refused if <i>a</i>) the needs can be satisfactorily met by existing services; <i>b</i>) the services applied for would cover transport tasks already carried out by existing carriers or railroads without providing a significant improvement of transport conditions; <i>c</i>) existing carriers or railroads that provide such transport are willing to extend their own service. Rates are controlled.
Greece	Public passenger road transport is closely regulated as regards numbers of buses and fares. New buses are licensed for carriage if there is a need for further services. At present the number of buses is considered adequate for present demand.
Ireland	Private bus operators are required to hold licences for scheduled road passenger services. The key statutory requirement to be considered before granting a licence is to have regard to the passenger road services and other forms of passenger transport available to the public on, or in the neighbourhood of, the route of a proposed service. As a result of the restrictive nature of the legislation, relatively few licences have been issued to private bus operators.
Japan	A new road passenger licence is granted if <i>a</i>) the proposed service is in line with demand for transport services and <i>b</i>) the new service will not bring about an imbalance between capacity and demand. All passenger fares must be approved by the Minister of Transport, taking into account that the charges or fares would not cause undue competition with other carriers.
Switzerland	An applicant for a licence has to fulfil two conditions: <i>a</i>) they must prove that there is a need for the service they propose and <i>b</i>) the existing transport network must not be subject to significant competition from the new service. Public transport enterprises are free to set their own prices subject to the possibility of intervention by the confederation in the event of abusive fares.
European Union	Scheduled international services within the European Union still require a licence from member states which, until 31 December 1999, could block the opening of a new service if it threatened the viability of a rail service over the same route. Cabotage (carriage of passengers within another member state) is not permitted except for occasional services (where these are the extension of an international journey) and for special services (provided they do not go outside border areas).

Source: OECD (1990), Chapter 2; OECD, (2001).

Table of Contents

Executive Summary	11
Introduction	17
The evolving debate in Brazil	17
The evolving international and regulatory context	20
The challenge of establishing independent regulatory authorities	21
The institutional framework of regulation in Brazil	24
Notes	27
<i>Part I</i>	
Overall Regulatory Framework	
Chapter 1. Government Capacity to Assure High-quality Regulation in Brazil	31
The national setting for regulatory reform	32
Drivers of regulatory reform: National policies and institutions	40
Administrative capacities for making new regulations	52
Dynamic change: Keeping regulation up-to-date	70
Notes	73
Bibliography	74
Annex 1.A1. Regulatory Agencies and Oversight Bodies	76
<i>Part II</i>	
Current Trends and Regulatory Frameworks in Selected Sectors	
Chapter 2. The Power Sector	83
Introduction	84
Market and policy background	84
Key features and performance of Brazil's power sector	84
Brazil's current approach to power sector management	93
Key elements of the current framework	93
Notes	101
Bibliography	103
Annex 2.A1. Regulatory Authorities in the Energy Sector	104
Chapter 3. The Private Health Insurance Sector	109
Introduction	110
Private health insurance market imperfections and the need for regulation	110

The PHI sector in Brazil in perspective	115
The institutional and regulatory framework	120
Notes	132
Bibliography	133
Annex 3.A1. Regulatory Authorities in the Private Health Insurance Sector	135
Chapter 4. The Telecommunications Sector	141
Overview	142
The international dimension from a global perspective	142
The pathway of transition in Brazil	145
Brazilian market trends from a global perspective	147
Institutional and regulatory aspects	154
Notes	158
Bibliography	158
Chapter 5. The Land Transport Sector	161
Introduction	162
Railway	163
Roads	176
Passenger transport	184
The regulatory framework after 2001	187
Notes	193
Bibliography	194
Annex 5.A1. Regulatory Frameworks for Transport	199

Part III

Regulatory Governance in Selected Sectors

Chapter 6. Independence and Accountability of Regulatory Authorities	209
Institutional aspects	210
Balancing independence with accountability	217
The system for appeals and relationships with the judiciary	222
Human and financial resources	227
Policy implications	231
Notes	232
Bibliography	233
Annex 6.A1. Institutional Aspects of Regulatory Authorities	235
Chapter 7. Horizontal Institutional Architecture	243
Issues relating to transversal architecture by function or by sector	244
Co-ordination with other agencies	247
Policy implications	261
Notes	262
Bibliography	262
Annex 7.A1. Sectoral Responsibilities and Missions of Regulatory Authorities	264

Chapter 8. Powers for High-quality Regulation	269
Powers of the regulatory authorities concerned	270
The powers of Brazilian regulators from an overall perspective	279
Maximising the quality of regulatory power	280
Implications for public action	284
Notes	286
Bibliography	287
Annex 8.A1. Powers of Regulatory Authorities	288
Chapter 9. Assessing the Performance of Regulatory Authorities	301
Assessing performance on the basis of achievements	302
The various dimensions of evaluation	302
Current auditing and assessment practices in Brazil	303
Implications for public action	306
Notes	307
Bibliography	307
Conclusions and Recommendations	309
Towards improved governance for growth	310
Policy options for consideration	315

List of boxes

0.1. The OECD's work on independent regulatory authorities	23
1.1. What is regulation?	32
1.2. The evolution of the public administration in Brazil	34
1.3. State reform and privatisation in Brazil: Milestones of the process	35
1.4. The legal instruments in Brazil	36
1.5. Good practices for improving the capacities of national administration to assure regulatory quality and performance	41
1.6. The law-making process in Brazil	43
1.7. Central oversight bodies for regulatory quality: The OECD experience	47
1.8. Oversight bodies in OECD countries: Examples of key functions	48
1.9. Institutional forms of co-ordination mechanisms across levels of government in OECD countries	51
1.10. Initiatives of <i>ex ante</i> assessment of legislative proposals' enforceability in OECD countries	56
1.11. Appeals procedures in Brazil	59
1.12. The use of alternatives in the Brazilian regulatory system	62
1.13. The Crescendo Project: Regulation and Active Citizenship	63
1.14. Self-regulation in the Brazilian health system	64
1.15. Regulatory Impact Analysis in OECD countries	65
1.16. Legal basis for RIA in OECD countries	66
1.17. Targeting RIA efforts: the OECD experience	68
1.18. Legal consolidation efforts in OECD countries	71
1.19. Legal consolidation in the State of São Paulo	73
2.1. Eletrobrás and Petrobrás	85

2.2. Essential conditions for investment in power generation	88
2.3. Natural gas for power	89
2.4. A brief review of Brazil's power sector reforms	94
2.5. The role of the EPE (Empresa de Pesquisa Energética)	97
2.6. Regulatory accounts in support of effective competition	100
2.7. Brazil's power sector reforms and objectives: A comparative view	101
3.1. Definition of the functions of private health insurance	112
3.2. Blurring borders between financing arrangements across countries	113
3.3. Private health insurance and the loss and administrative cost ratios	119
3.4. Private health insurance regulation, the US example	122
3.5. Classification of contracts	124
4.1. The European transformation	143
4.2. Liberalisation of telecommunications in the WTO context	145
4.3. Budget planning and FUST	157
5.1. Vertical integration	170
5.2. The issue of analytical capacity for transport planning	188
6.1. PEC 81 Proposal of Amendment to the Constitution	217
6.2. The new law for regulatory agencies, Law Proposal 3 337	221
7.1. The Brazilian Competition Policy System (SBDC)	249
7.2. Project on restructuring the competition authorities, Law Bill 5 877	250
7.3. Environmental licensing: The sequence of events	257

List of tables

1.1. Legal regulations in Brazil adopted after the 1988 Constitution	37
1.2. Public confidence in the judicial system	61
1.3. Opinion about the time for cases in justice	61
1.4. Some proposals for consolidation sent to Congress by the Executive	72
1.A1.1. Regulatory agencies at federal, state and municipal level in Brazil (1997-2005) . . .	76
1.A1.2. Regulatory quality oversight bodies in OECD countries	78
2.A1.1. General description of regulatory authorities in the energy sector across selected countries	104
2.A1.2. Market and policy context of the energy sector in selected countries	106
3.A1.1. General description of regulatory authorities in the private health insurance sector in selected countries	135
3.A1.2. Characteristics of PHI subscribers across OECD countries	137
3.A1.3. Group and individual purchasers of PHI	139
5.1. Results from the concession programme	171
5.2. Activity in rail freight transport	174
5.3. Overview of main road concessions	181
5.4. Results of the October 2007 Concessions	182
5.5. Data on activity and length of road networks	183
5.A1.1. Regulatory framework for railway services and provisions for third party access in selected countries	199
5.A1.2. Regulatory framework for road concessions across a sample of countries	201
5.A1.3. Key aspects of road concessions across a sample of countries	202
5.A1.4. Economic aspects of toll roads across a sample of countries	203

5.A1.5. Road freight regulatory constraints, comparison between Brazil and a set of OECD countries in the late 1990S	204
5.A1.6. Road passenger transport regulations, comparison between Brazil and a set of OECD countries in the late 1990s	205
6.1. Impact of the fiscal contingency on ANATEL	229
6.2. ANTT approved and actual resources in recent years	229
6.A1.1. General description of selected regulatory authorities at federal level	235
6.A1.2. Independence and financing of regulatory authorities	236
6.A1.3. Structure and independence of regulatory authorities in the energy sector in selected countries	237
6.A1.4. Resource aspects of regulatory authorities in the energy sector	238
6.A1.5. Structure and independence of regulatory authorities in the private health insurance sector in selected countries	239
6.A1.6. Resources and financing of regulatory authorities for private health insurance in selected countries	240
6.A1.7. Appointment of the Head of the Telecommunication regulators across countries	241
7.A1.1. Selected regulatory authorities: assignment and tasks	264
7.A1.2. Mission and responsibilities of energy regulators in selected countries	265
7.A1.3. Missions and tasks of regulatory authorities in the private health insurance sector in selected countries	267
8.A1.1. Powers of selected regulatory authorities	288
8.A1.2. Powers of regulatory authorities in the energy sector in selected countries	290
8.A1.3. Powers of the regulatory authorities in the private health insurance sector in selected countries	293
8.A1.4. Regulations of interconnection in the telecommunication sector across countries	295
8.A1.5. Regulating pricing in the telecommunication sector across countries	296
8.A1.6. Telecommunication regulations regarding universal service across countries	298
8.A1.7. Licensing and safety regulation for railway services across selected countries	299

List of figures

0.1. Independent regulatory authorities (IRA) in OECD member countries	22
1.1. Facilitating licences, permits and administrative requirements	38
1.2. Quality of the consultation process	53
1.3. Transparency and easy access to regulations	55
1.4. The judicial system in Brazil	58
2.1. Brazilian electricity mix	86
2.2. Electricity investment as a proportion of GDP by region	87
2.3. Electricity tariff increases compared with the inflation rate	92
2.4. Electricity consumption per capita in relation to GDP	93
3.1. Health expenditures by source of funding	116
3.2. Percentage of health expenditure in GDP and GDP per capita	116
3.3. PHI's expenses per capita and GDP per capita	117
3.4. Share of PHI's expenses in THE and share of population covered by PHI	117

3.5.	Share of collective plans as a percentage of total	118
3.6.	Types of expenses	119
3.7.	Share of the population covered by private health insurance per region	120
3.8.	Collective plans: Premium share by operator	127
3.9.	Individual plans: Premium share by operator	127
3.10.	Price index of health plans	128
4.1.	Public telecommunications investment per GPD	147
4.2.	Telecommunications revenue as a percentage of GDP	148
4.3.	Fixed line subscribers as a percentage of the population	148
4.4.	Fixed line penetration in relation to GDP per capita in USD PPP	149
4.5.	Cellular mobile subscribers as a percentage of the population	150
4.6.	Mobile subscription rate in relation to GDP per capita (PPP)	151
4.7.	Share of pre-paid mobile subscription in total mobile subscriptions	151
4.8.	Share of prepaid subscription in total mobile subscriptions in relation to GDP per capita (PPP)	152
4.9.	Broadband access as a percentage of the population	153
4.10.	Broadband access as a percentage of households in relation to GDP per capita (PPP)	153
5.1.	Map of railway network linking countryside agricultural centres to productions areas of SP and RJ, and to overseas export markets	168
5.2.	Participation of railways in the transportation matrix and total network	172
5.3.	Modal distribution of freight transport across major countries	172
5.4.	Public and private investments	175
5.5.	Structure of investment in Brazilian railways	176
5.6.	Fatalities on roads per 1 000 kms	180
5.7.	Intensity of use of the road network for freight purposes	183
5.8.	Improvements on roads	184
5.9.	Passenger transport	187
6.1.	Terms of appointment	213
6.2.	Appointment of regulatory heads	214
6.3.	Governance structure of regulators	215
6.4.	Sources of funding for regulatory authorities in OECD member countries	228
9.1.	Mandatory release of periodic performance assessment reports on achievement of objectives	303



From:
OECD Reviews of Regulatory Reform: Brazil 2008
Strengthening Governance for Growth

Access the complete publication at:
<https://doi.org/10.1787/9789264042940-en>

Please cite this chapter as:

OECD (2008), "The Land Transport Sector", in *OECD Reviews of Regulatory Reform: Brazil 2008: Strengthening Governance for Growth*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264042940-8-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.