
PRIVATIZATION OF THE TRANSPORTATION SECTOR IN BRAZIL

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1. Introduction

The private sector has been assuming a much greater role providing transportation services in Brazil in the 1990s. A central issue in this process is the role of public regulation, given the current level of development of the transportation sector, the need for private financing and the diversity of opportunities and situations which the sector presents.

The economic characteristics of the transportation sector make government intervention necessary either by direct ownership and operation, as in the recent past, or by regulation of private firms, as is now being done. It should be stressed at the outset that this sector is very difficult to regulate. The old regulatory systems failed to address the principal regulatory question in transportation and other public services (such as telecommunications, electricity and postal services), that is, the mix of competitive and monopolistic elements in the supply of services. In some countries in which the private sector is providing these services, inadequate regulation of this conflict can suppress competition, reduce benefits of economies of scale and hinder innovation, which ends with inefficient services and a few private operators enjoying "above normal" financial gains.

Government regulation should establish adequate, transparent and stable rules for private operation, whose aim is to attract new agents and financial resources in order to increase investment and capacity in the sector. After the current phase of privatization of existing assets, for which market risks are relatively small and construction and installation risks are practically nonexistent, the success in attracting new, green field projects will depend essentially upon how the sector is being regulated. In particular, new transportation projects will require differentiated and attractive market conditions vis-à-vis the energy and telecommunication sectors in terms of the rate of return and/or mitigation of risks. This, in turn, will put additional requirements on the structure of projects, particularly regarding the establishment of adequate guarantees for investors.

Given this general observation, this chapter attempts to highlight the main characteristics of privatization of the Brazilian

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transportation sector and analyze their implications for the performance of the sector and national economy as a whole. It stresses, among others, the following points: a) the complexity of an institutional and regulatory environment that deals with the complementary and competitive elements of the sector; b) the sector's financing needs; and c) the limits of a purely private "hands off" regulatory model for satisfying the need for services and increasing capacity.

The following section summarizes the evolution of the sector, emphasizing the institutional aspects that are most relevant to railway, highway and port subsectors, in which direct participation of the federal government has been greater than in others. Before describing the reforms currently under way, in Section 3 we indicate the main guidelines that are expected to foster the objectives of the reforms. In Section 4, the institutional and regulatory issues that are emerging with respect to government intervention are discussed. Finally, the conclusions are presented in Section 5.

2. Institutional Evolution of the Transportation Sector

2.1. History

It is worthwhile characterizing the situation in which Brazil finds itself in terms of the institutional development of the transportation sector by reviewing in historical evolution over the last several decades.

Accompanying the process of national industrialization, Brazil experienced a period of rapid growth in the demand for interregional transport. Commercial relations in the less industrialized peripheral regions were gradually directed towards the Southeast region of the country at the expense of international commerce. Intraregional commerce also flourished within states of the South and Southeast regions of the country [see Pimes (1984) and Cano (1985)].

On the supply side of this sharp increase in demand for transportation, the general lines were delineated by large public investments in the sector. In fact, until the middle of the 1960s, more than half the investments by the government and state-run companies went to the transportation sector; and until the end of the 1970s, this fraction remained roughly one-third [see Castro (1986)]. These investments during the post-World War II period (the Joppert Law, which created the National Highway Fund, was passed in December 1945) until the end of the 1970s were largely concentrated in establishing the national highway network. The

rationale for integrating regional markets after the industrialization of the Southeast region was to expand further north, while the configuration of the railway network had been defined beforehand, oriented mainly towards servicing the export flows of primary products.

After the first oil crisis, the federal government shifted its emphasis to developing rail and water transport. More funds were allocated to the construction and development of railways for grain and mining terminals at the ports, as well as for the development of the Brazilian merchant marine.

Many of the ambitious projects launched during this period were interrupted during the macroeconomic crisis in the early 1980s. Due to a drastic fall in economic growth and investment, the transportation sector lost its share of funds destined for basic infrastructure. The need to control inflation, on the other hand, led to the adoption of rigid public price and tariff controls, with a consequent reduction in the ability to maintain service levels. This deterioration of the sector was also felt in public agencies, which were not restructured to deal with the new issues and challenges of the sector deriving from the changes in public priorities and governmental guidelines arising from the new Constitution adopted in 1988. Six developments, in particular, are worth mentioning:

1) administrative decentralization from the federal to state governments and from state governments to municipalities;

2) a reduction in the participation of the state in productive activities and basic infrastructure investments, together with a shift towards private participation, hoping that it would bring improved technology and scrutiny in the analysis of projects;

3) redesigning economic regulation and intensifying social and environmental regulation of production activities;

4) maintaining price stability, favoring logistical decisions based on production and transport costs *vis-à-vis* financial costs;

5) opening the economy to foreign trade with increased pressure to enhance productivity and reduce costs; and

6) an expected tax reform in all levels of government, with an increase in the tax base, a reduction in tax rates, higher capacity for monitoring and greater selectivity in providing subsidies.

2.2. Evolution of the Sector

2.2.1. Railways

To some extent, the railway sector can be regarded as entering a third phase of its institutional evolution. The first, between 1852 and 1900, marked the introduction of railroads in Brazil, which were financed with foreign private capital via concessions giving attractive rates of return on capital that were then offered by then government. In the State of São Paulo, coffee-growers financed their own railroads, with the exception of EF Santos-Jundiaí (or São Paulo Railways), a company that had a transportation monopoly through the Serra do Mar mountains to the port of Santos.

The second phase involved nationalization of the railways. New construction was financed by foreign loans using guarantees provided by the National Treasury. By 1929, the government already owned 67 per cent of the Brazilian railway companies and was responsible for administering 41 per cent of the national network.

The creation of the Federal Railway Company (RFFSA) by Law 3,115 of 1957, consolidated the second phase. The company was expected to eliminate its creeping financial losses, which were responsible for 90 per cent of Brazilian public deficit [see Baer, Kerstenetzky and Simonsen (1962)]. In 1971 the State of São Paulo also created a railway company (Fepasa) by the consolidation of bankrupt private rail lines. The creation of the Fepasa by State Law 10,410 formalized the state's contribution to the maintenance of uneconomic services and to the pension fund of retired employees. By that time all private activity had ceased in the subsector.

The crisis of the 1980s sparked the beginning of the third cycle in the railway sector, namely, privatization. The first steps were taken under Decree 2,178 of 1984, which transferred all debts of the RFFSA to the National Treasury and formed the basis for the creation of the Brazilian Suburban Passenger Rail Company, absorbing the RFFSA's suburban passenger transport divisions which had been suffering heavy losses. The separation of cargo and passenger services, the transfer of the financial burden of providing uneconomic services to the federal government, and at least the intention of allowing companies to set tariffs freely marked the beginning of this new phase, which finally led to the inclusion of the RFFSA in the National Privatization Program by Decree 473 of 1992.

2.2.2. Ports

The history of the Brazilian port system is also characterized by a close relationship with the public sector. Because ports were almost the only means of entry and exit for merchandise in foreign trade, the scope and complexity of port activities were greatly expanded. The beginning of commercial port activity in Brazil dates back to 1888 when the concession for the port of Santos was granted to private investors for a period of 90 years. Santos soon became the largest port in the country in terms of the economic value of transshipped merchandise.

The first comprehensive regulation of Brazilian port activity was published in 1934 and modified in 1954 and 1956. The decrees of 1934 defined the area, installations and requirements for public ports whose management was to be conducted by the mediation of an administrative body separate from the port's basic operations. The decree also named and defined the various types of port services which could be offered, and regulated the use of port facilities.

The participation of private enterprises was also outlined at the time of Decree 24,559/34, which authorized the concession of port improvement projects and the exploration of respective traffic to the private sector. In 1966 Decree 5 created the concept of a "private terminal," which allowed "shippers or third parties... to construct or use port facilities without financial burden on the public or endangering national security, including the construction of installations for their own use." This decree not only added some flexibility to the monopoly of public port services but also introduced the collection of extraordinary revenues by charging an additional tariff for the movement of merchandise outside public quays, as well as a tariff for port use if the private terminals were situated in the area under the jurisdiction of the port administration (even when no services were provided).

From 1958 to 1981, the Port Improvement Tax (TMP) was the main source of funds for investment in the port system [see Portobrás (1985, pp. 6-7)]. With the advent of Decree 1,754 in 1981, 50 per cent of its receipts were allocated to the National Development Fund, and 100 per cent from 1982. Later, in order to finance port investments, Law 7,700 of December 28, 1988 created an Additional Port Tariff (ATP), a surcharge of 50 per cent over port tariffs on foreign trade flows. These revenues were also transformed into general revenues by Law 8.032, in 1990.¹

Until 1975, public ports were administered by state governments, state companies, or private concessionaires under the regulatory authority of the National Department of Ports and

1 The ATP was partially activated by Law 8,630/93, and then finally extinguished in 1996.

Navigable Waterways (DNPVN). In that year the sector was centralized by the establishment of Portobrás, a public company linked to the Ministry of Transportation (100 per cent of its capital was owned by the federal government).² Portobrás became the central body of the national port and waterway system, covering and controlling a wide range of institutions, which were divided into three parts:

- a) the Portobrás system (dock companies and direct port administration);
- b) the port concessionaire companies (private and state); and
- c) the private-use terminals.

On April 12, 1990, Law 8,029 was promulgated, authorizing the dissolution of Portobrás and setting in motion the process of port reform leading to the approval of Law 8,630 in February 1993.

2.2.3. Roads

The history of Brazilian highways can be seen as a successful use of public financing for development of infrastructure. The fundamental turning point was marked by the enactment of Decree 8,463 of December 27, 1945, which conceded administrative and financial autonomy to the National Department of Roads and Highways (DNER) and created the National Highway Fund (FRN), with resources generated by the Flat Tax on Lubricants and Liquid and Gaseous Fuels, the Joppert Law.

The federal and state highway network expanded rapidly from 47,000 kilometers (of which only 423 were paved) in 1945 to 97,715 kilometers (7,063 paved) in 1957, and further to 206,548 kilometers (81,308 paved) in 1980. By 1994 the total length of national highway network (federal, state and municipal) had reached 1.66 million kilometers, its replacement value was estimated at US\$ 150 billion. The annual cost of vehicle operation (excluding capital and maintenance costs of infrastructure), if the urban traffic is included, is US\$ 140 billion, or 20 per cent of the GDP.

The FRN was extinguished at the beginning of the 1980s. Up to 1975, the amount of annual investments in transportation infrastructure was always greater than 1 per cent of the GDP (on the average it was about 1.5 per cent of the GDP). During the second half of the 1970s, investments were significantly reduced,

² Its creation was authorized by Law 6,222 of July 10, 1975, with the aim of conducting activities related to the construction, administration, and use of ports and internal navigable waterways, and exercising the supervision, orientation, control and taxation of these activities

with the highway system being particularly affected. By 1980, the amount of annual investments in highways was equivalent to only 0.25 per cent of GDP, and dropped to half this figure by 1985 [see Castro (1987)].

The deterioration in the national highway system was accompanied by a decentralization of tax revenues on highway use to the states and municipalities. This had already been consolidated by the policy outlined prior to the transfer of vehicle ownership tax (TRU) revenues to the states (IPVA), which was later enshrined in the 1988 Constitution. Subsequently, an attempt to recreate earmarked taxes (e.g. toll stamps) failed. Today the only earmarked source of revenues is a tax on crude oil imports (except from the member countries of Mercosur). In 1993, the Ministry of Transportation created the Federal Highway Concession Program (Procofe) managed by the DNER, which marked the beginning of a new federal policy for the sector.

3. Reform of the Transportation Sector

3.1. Guidelines and Objectives

One of the main issues of a regulatory reform in transportation is how to strike a balance between the sector's competitive and monopolistic elements, that is, the competitive provision of services as opposed to monopolistic aspects accruing from economies of density, scope and innovation. It is worth describing some of the main conflicting principles that influence this balance sought in regulatory regimes. These principles are expected to be consistent with economic analysis and essential for protecting the public interests. Yet, a clear and coherent legal code for the sector has not yet been formulated in Brazil.

a) *intermodal competition* allows and encourages, whenever possible, competition between different modes of transport in order to both stimulate the productive efficiency of services and moderate rates, while at the same time minimizing the need for regulatory action by the public authority;

b) *intramodal competition*, with the same objectives noted above, allows and encourages, whenever possible, competition between different companies in the same mode of transport, both as a means for stimulating the productive efficiency of services and moderating rates.

In conflict with *a* and *b* are:

c) *intermodal complementarity* (multimodality) promotes the integration of different modes of transportation in a way that

will meet the demand for services in the most efficient manner possible, relying on the comparative advantage and availability of each mode of transport in order to benefit users and the transportation system in general;

d) *intramodal complementarity* (intramodality), with essentially the same objectives described above, promotes the integration of operators and operations within each mode of transportation in a way that will meet the demand for services in the most efficient manner possible, reducing institutional and administrative barriers to the continuous flow of goods in order to benefit users and the transport system in general;

e) *preservation and expansion of the transportation system* guarantee the development and continuity of the transportation system in a way that will meet national interests with intra- and interregional connectivity, allowing operators to collect adequate revenues, guarantee a return on their investment, and provide safe and efficient services.

In line with *a* and *b* but in conflict with *c*, *d*, and *e* are:

f) *tariff adequacy* in situations where there is insufficient effective competition and where tariffs favor revenues higher than what is necessary for the maintenance of the system and for attracting investments;

g) *prohibiting predatory pricing and practices*, avoiding market concentration that may allow discrimination against users or other operators, except when due to technical characteristics and specific cost structures, and limiting the practice of general tariff adjustments except in the case of significant inflation.

And, finally:

h) *guarantee the availability of reliable information* from operators, within appropriate and reasonable limits, in order to assist with planning and development of the sector.

3.2. Characteristics of the Reforms

3.2.1. The Case of the Railway System

The inclusion of the RFFSA in the Federal Privatization Program opened the way for enhancing the role of the railway system in the Brazilian transport sector and, in particular, its regulation. Restructuring and privatizing the federal railway system in the cargo transportation sector has entailed the following definitions:

a) restructuring the RFFSA according to the large-scale cargo transport organizational model, encompassing all functions;

b) subdividing the RFFSA into six regional networks, with functional uniqueness in each network;

c) transferring the possession of goods necessary for operation to the regional network concessions, including rolling stock and installations and sale of operational goods of small unit value; and

d) calls for tenders for the concessions under an auction process, with pre-identification of interested parties and the opening of concession auctions with predefined minimum values.

The bidding documents and concession contracts were published in advance of the auction and detailed the characteristics of the model to be adopted, including:

a) the definition of the minimum price for the auction and the form of payment required by the winning bid over a 30-year term of the concession, with one possibility of extension for another term;

b) the winning bidder's obligation to form a limited liability company, indicating the minimum value for authorized capital and requiring a later transformation into an open stock company;

c) the corporation's controlling group's obligation to set aside up to 10 per cent of each class of stock for the company's employees and, in addition, to maintain control in such a way that no stockholder owns more than 20 per cent of the corporation's voting capital (40 per cent in the case of the Northeast railroad) over the period of the concession, except when authorized otherwise by government;

d) determination of the number of RFFSA employees to be initially transferred to the concessionaire, and the conditions for lay-offs, including severance payments;

e) definition of rules for evaluating the services provided with respect to minimum annual production levels, and maximum indices for accidents; and

f) Indicative 3-year investment plans detailing the projects, their costs, and implementation programs.

Maximum tariffs are to be established by tariff caps, without an explicit definition of the methodology used for calculation. These tariffs vary according to distance, type of product, and geographical region (network). Moreover tariffs should be above long-term variable costs but thus far there has been no definition of these costs and how to calculate them.

It is expected that there will be negotiations between captive shippers and concessionaires. In the case of an impasse, the applicable tariff must be set by the government based on operational costs (there is no definition yet as to how to verify if a shipper is captive).

The most recent regulation of railway transportation was established by Decree 1,832 of March 1996 (RTF), and by the creation of the Federal Railway Transport Commission (Cofer), authorized by Decree 1,945 of June 1996.

The RTF was published on the eve of the first RFFSA network privatization auction. Even though this decree had the aim of removing various irrelevant aspects of previous regulations, few advances were made in terms of detailing criteria for critical points such as tariffs; closing down uneconomic low-density branch lines; traffic interchange and trackage rights; and the qualification requirements for railway operators.

In fact, the previous regulatory standard for the railway system, approved by Decree 51,813/63, was conceived for public services with monopolistic characteristics. Dozens of articles in that code covered the obligations of the railroads, typologies, procedures, and terminology. Very little was said about commercial policy, market competition, obligations of mutual traffic agreements and/or access by other operators. The old regulatory code was in fact inspired by railroads which carried cargoes from various shippers and passengers, charged published tariffs, whose trains operated at scheduled times, stopped at every station, and, most important, did not compete with nor complement other modes of transport, particularly the highway system. The regulation of railways was altered again by Decree 90,959 of February 14, 1985 which, in practice, made few changes to the previous decree.

The Federal Railway Transport Commission was given jurisdiction over the entire national railway system. It is an integral part of the Ministry of Transportation's organizational structure, with three members chosen by the Ministry, two by the concessionaire companies and two by shippers' associations. The president of the Commission, the Ministry of Transportation's Secretary of Land Transport, has a vote in the deliberations of the college and also the power of veto. The duties of the Commission are to: a) as a final resort, make a ruling in cases of conflict between the federal government and the concessionaires, or between the latter and shippers; b) report any modifications in the corporate structure of the concessionaire companies that could violate a contractual relationship or entice abusive economic practices; and c) report, whenever solicited, on proposals to expand or suppress railway services.

Besides these obligations, the Cofer acts as a consultative body, whenever solicited, on any subject pertinent to the concession contracts, particularly in relation to general standards for the level of quality and safety of services, the monitoring of concessionaire performance, and the disciplining of operational relations between concessionaires, and between them and end users.

3.2.2. The Case of the Port System

One of the main objectives of the port reform is to reformulate the centralized control model that was in place until the abolition of Portobrás in 1990. The basic elements of the reform are:

i) the creation of Port Authority Councils to be instituted in every organized port or in each concession area, with strategic management responsibilities;

ii) stimulating competition among terminals (intra-port) and ports through the leasing of public port facilities and terminals to private companies, as well as granting permission for the movement of third-party cargoes through private terminals;

iii) the transfer of cargo operations to private port operators;

iv) the transformation of dock companies into administrators of port infrastructure (i.e., common-use facilities; similar to a "Port Authority" model, even though not explicitly defined by legislation); and

v) decentralization of federal involvement in the sector to the state and municipal levels by delegation of port concessions.³

The reform of the port sector, established by Law 8,630/93, defines two types of ports: the Organized Public Port, whose traffic and port operations are under the jurisdiction of a Port Authority; and a Private-Use Port Installation, or facility, used by a public or private company either within or outside an Organized Public Port area. It is the federal government's right to operate an Organized Port either directly or via concession, always preceded by a call for tenders.

An Organized Public Port is directed by a Port Authority Council (CAP) and managed by a Port Administration Board. The Port Authority Council is composed of representatives from several sectors of activity, grouped into four blocs:

3 Specific legislation in the sector is defined by Law 8,630 of February 25, 1993 (the Port Law) and Law 9,277 of May 10, 1996, which allows for the transfer of ports and highways to states and municipalities.

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- the Public Authority Bloc, composed of a representative of the federal government, who is president of the Council, a representative from the state, and representatives of each of the municipalities in which the port lies;
 - the Port Operators' Bloc, with one representative from the Port Administration Board, one from the shipowners, one for the owners of private terminals within the port area, and one for other port operators;
 - the Port Workers' Bloc, with two representatives for autonomous workers and two for other port employees; and
 - the Port Users' Bloc, with two exporter/importer representatives, two persons representing merchandise owners or consignees, and one representative from the off-port terminals.

In the making of decisions, each bloc has one vote, with the president of the Council casting a tie-breaking vote if necessary. Members are nominated by their respective institutions or entities, and designated by the Ministry of Transport.

The administration of the port is exercised directly by the federal government or by the concessionaire. The Port Administration Board loses its monopoly on the movement and storage of merchandise in the port area and on public quays, having to compete with private port operators. On the other hand, it gains the right to prequalify port operators, and also the responsibility of monitoring port operations, which makes it both a judge and an interested party in the operating of the port. In the same vein, it is up to the Port Administration Board to set and collect port tariffs (for common-use port facilities), these having been duly approved by the CAP. New tariff structures that are adequate to the operational systems of each port should be submitted to the CAP within 60 days of the enactment of the new law. Besides these responsibilities, it is up to the Port Administration Board to establish work shifts on public-use quays and port operation hours, after approval by the CAP; and plan the utilization of the organized port area.

An Exclusive or Mixed Use Private Port Facility is an installation that is used by a private or public sector company, for either exclusive or mixed use, and whose contracts are bound by private law. Such a facility requires an authorization of the Ministry of Transport after having consulted with the Customs Authority, the applicable municipal government, and approval from an Environmental Impact Study (RIMA). A Private Port Facility is exempt from all port taxes, tariffs, contributions and other duties, except in the case that it uses access or protected waters or any other service of an organized port.

Terminals and other port facilities have been leased in open auctions and by sealed-bid (closed envelope) auctions. In most cases, as with terminals in the port of Santos, no specific concession contracts for providing port services by terminal operators were signed, only the lease contract. In the case of the leasing of the Santos container terminal (Tecon 1), an auction was conducted in which the bidders were required to form consortia of a minimum of three companies. Each bidder was required to present documents identifying its members and prove that all the legal stipulations of the call for tenders were duly complied with, in addition to presenting a methodology and execution proposal (PME) containing, at a minimum, an analysis of the markets, the quality of service and customer care, relationships with third parties, projects and equipment, operations, logistics, and environment. The PME and the other documents provided by the bidders are then analyzed by the São Paulo State Dock Company (Codesp) to determine the prequalification status of the bidders at the auction.

The tariff structure for services is established case by case, port by port, terminal by terminal. In the case of terminal leases, the norm is to apply maximum tariffs, which usually vary with respect to volume and time. In the particular case of the lease of the container terminal at the port of Santos (Tecon 1), the tariffs for moving containers (in compliance with the “liner terms” freight contracts) that have been in effect since the beginning of private operation are: in the first 6 months, R\$ 500.00; from 6 to 12 months, R\$ 330.00; from 12 to 18 months, R\$ 253.00; from 18 to 24 months, R\$ 195.00; from 24 to 36 months, R\$ 150.00; and after 36 months, free.

Beyond this, the contract obliges its holders to obtain ISO 9000 (quality) and ISO 14000 (environment) certifications within five years of the date of signing the contracts. The lessee has one year to present the standards, indicators, and quality benchmarks that are to be used, as well as present a program for obtaining the necessary ISO 9000 and 14000 certificates. The lessee is also obliged to implement any quality standards required by the competent authorities.

3.2.3. The Case of the Highway System

The reform of the highway sector is motivated by an immediate need for improving the network conditions and finding a way to self-finance the maintenance and expansion of the country’s main highways. The participation of private initiative in the direct management of the highway system (extrapolating from contracted services, as in the prior model) also reveals the prevailing concern over enhancing efficiency in management of infrastructure segments (paving, bridges, etc.). The federal government wants to decentralize public management of the highway

network to states and municipalities of the segments that do not belong to the main trunk system of the country.

The federal government has been primarily granting concessions for existing highways to private companies, which in turn promise to restore, maintain, and expand these highways in exchange for toll revenues. Several states have followed this path, but with their own types of concession.⁴ The legal basis for this process is found in Decree 791 of August 27, 1969 that authorizes the collection of tolls on blocked roads or express highways – although none, technically, exist in the country – and on bridges, viaducts, tunnels or important highway segments.

For federal highways, in the first phase of the program the winning bidder was the one that offered the lowest basic toll. This tariff is fixed by category of vehicle and paid for by users at the toll plaza, regardless of the distance actually traveled on the highway.⁵ The basic call-for-tenders procedure is as follows:

1) public hearing (where the interested community has the right to express opinions about the project);

2) prequalification (where the technical competence, fiscal regularity, and financial capacity of the interested bidders are examined);

3) execution methodology (where the bidders are required to demonstrate their capacity to execute the project through their own conception and understanding of the problem, and present their proposed implementation plan;

4) the Highway Exploration Program (where the DNER establishes a single project program consisting of the best technical and operational solutions presented by the proponents);⁶ and

5) the tariff proposals (where the bidders present their offers for basic toll tariffs based on adequate financial engineering).

4 The state of São Paulo had already established in the past an extensive road expansion program that was financed through tolls and administered by a public company (Dersa). That state is also granting the concessions of those highways to private enterprises.

5 Law 9,277 of May 10, 1996, which governs the transfer of port and highway control to states and municipalities, requires, in the case of highways, that revenues received through the collection of tolls must be applied on the same highway tolled, or to branch lines that link to it.

6 The Federal Highway Exploration Program consists of: 1) emergency recuperation projects that must be completed in a period of approximately six months before beginning of toll collection (the “initial works” phase); 2) structural recuperation projects, involving works that restore the public asset in an average period of three to five years, depending on the degree of complexity and the size of the investment required; 3) the improvement phase, which is targeted to satisfy the need of increasing the highway’s capacity over the long term, and normally has a strong correlation with future traffic projection studies; 4) highway policies, conservation and monitoring programs, linked respectively to the need of conducting routine procedures that guarantee a certain standard of quality of services provided to the user; and 5) planning the highway’s operational system, its backbone being the toll collection system and the providing of adequate services to the users, covering the areas of communication, medical and mechanical services, travelers’ information, complaints and suggestions, weighing, and security.

State highway networks have been divided into lots or systems for the purpose of allocating concessions to private companies (e.g., nine poles in the state of Rio Grande do Sul; 22 lots in the state of São Paulo; six lots in the state of Paraná; and five systems in the State of Santa Catarina). In São Paulo, the auction process takes place in two phases: i) prequalification and ii) the technical-financial proposals. The winner is the bidder who offers the highest payment for the concession; the tariffs are pre-established, taking into account, among other objectives, fiscal revenues collected from the auction. In the State of Paraná, the winner is the bidder who proposes the largest conservation program in terms of additional network to be maintained by the concessionaire. In Rio Grande do Sul, the basic criterion for judgment is the greatest amount of restoration and conservation that are considered as priorities by the state. The concession periods are variable, being 25 years in delegations to states and municipalities, with the possibility of prolongation, and between 20 to 25 years for federal and state concessions.

In the federal highway concession process, the economic-financial equilibrium of the concessionaire is defined by the balance between the commitments set in the call-for-tenders contract and the tariff structure proposed by the winning bidder. There is no guarantee of traffic volume (risk assumed by the concessionaire) nor is there, in principle, the possibility of changing the price structure initially defined for different types of vehicles (e.g., automobiles vs. trucks). As a matter of fact, the basic tariff multipliers for various vehicle categories do not adhere to an explicit methodology of direct or total cost allocation.⁷ There is also no provision for variable peak tariffs (in the European tradition of “congestion pricing”), except in specific cases (e.g., the state of Rio de Janeiro’s call for tenders for the Via Lagos highway, RJ-104, allows for higher rates on weekends). In all cases, tariffs can only be collected after the completion of the emergency repairs as stipulated in the concession edict.

3.3. The Progress of Reforms

The federal railway sector has entered the final phase of the transition to private management and operation. The concession auction for the Northeast network of the RFFSA was held in July 1997, and successfully concluded the privatization process for that subsystem; the privatization auction of the Compa-

7 The Rio de Janeiro-Juiz de Fora highway (BR-040): at each of the three posts, in each direction, the basic initial tariff in October 1995 was R\$ 2.38 (single-wheeled, two axles), and the multiplied tariffs were: R\$ 4.76 (double-wheeled, two axles); R\$ 7.14 (single-wheeled, three axles); R\$ 9.52 (single or double-wheeled, four axles); R\$ 11.90 (double-wheeled, five axles); R\$ 14.28 (double-wheeled, six axles); motorcycles and similar vehicles: R\$ 1.19. (The average is R\$ 0.04 per km in the case of vehicles with single wheels and two axles - automobiles.) In São Paulo state: pre-established by the Department of Roads and Highways (DER) to be between three and four US\$ cents per kilometer. Paraná: pre-fixed at R\$ 3.00/100 km (single highway) and R\$ 4.00/100 km (double highway).

nhia Vale do Rio Doce (CVRD) also included new contracts for two concessions (the Vitória-Minas Gerais and the Carajás railways). The privatization of the State of São Paulo's Fepasa railroad took place in November 1998. Now every cargo railway in the country is being operated by private companies, with contracts for 30 years, or 60 years in the event of prolongation.

The effects of this restructuring process can already be measured. In the labor area, the RFFSA reorganization in the pre-concession phase reduced the total number of employees in the system from about 40,000 to 20,000. Private operators further reduced this number to about 11,500 employees, with some increase in the volume of services provided. Investment projects that are already under way will lead to more significant increases in output and quality of services over the medium term, in spite of the fact that the concessionaires did not reach the (optimistic) output targets in the concession contract for the year 1997.

The implementation of the port reform proceeded slowly until the beginning of 1995 when the federal government created the Infrastructure Policy Committee (by Decree 1,465), and specifically in the port subsector, created the Port Modernization Executive Group (Tempo) (authorized by Decree 1,467). This Group is empowered with the elaboration, implementation, and monitoring of the Governmental Action Plan for the sector. By the end of 1996 the Port Authority Councils were functioning in all organized ports. The leasing of terminals in the subsector was successful in the largest public ports of Santos, Rio de Janeiro, September, and Rio Grande, involving around 40 contracts and investment commitments of more than US\$ 500 million. Hundreds of port operators have also been qualified, even though in some public ports the Dock Companies still perform cargo handling services.

The process of restructuring the Dock Companies, especially in the ports of Santos and Rio de Janeiro, is already advanced and in various cases wharfage activities have been discontinued, which has laid off about 2,100 workers in Santos alone. The number of workers effectively employed in public ports was reduced from 26,400 in 1990 to about 5,000 in December 1997. It is expected that apart from port operations, the Dock Companies will eventually employ less than 2,500 workers.

Labor Management Organs (OGMO) have been established in all public ports, but are not fully operational. Only in the port of Salvador, in May 1988, did an OGMO win a lawsuit in court, giving it the right to select autonomous workers in accordance with Law 8,630. In August 1998, the OGMO for the port of Rio de Janeiro obtained a similar legal decision, but still faces serious resistance from the workers.

The productivity gains observed up to now follow the same pattern of port reforms in other countries. In fact, the gains obtained as a result of rationalization of operations or investment in new equipment are spectacular. Increases of 200 per cent in container movement per hour are frequently noted after one or two years of private administration and some investment. These gains are also observed with respect to the berthing and waiting time of ships in the ports and the amount of time that cargo remains in terminals and warehouses.

In the federal highway sector, the collection of tolls under the direct administration of the DNER during the 1970s was implemented for five sections: BR-116 (Rio-São Paulo); BR-290 (Osório-Porto Alegre); BR-101 (Rio-Niterói bridge); BR-116 (Rio-Teresópolis); and BR-040 (Rio-Petrópolis). During the first phase of the federal highway concession program, these same sections were chosen to be auctioned (see Table 1), taking into account the traffic density of each one and the minimization of negative reactions by users [see DNER (1998)].

A second phase of the federal concessions program is currently under way. After a financial analysis, 10,379 kilometers of highway that were deemed viable for concession were selected. In this second phase, the DNER is preparing the Highway Exploration Programs before the launching of the bidding process in which 18 sections totaling 7,940 kilometers are scheduled for concession auctions during the 1998-99 period [see DNER (1998)]. A special process is expected for the auctions of the São Paulo-Curitiba-Florianópolis and the São Paulo-Belo Horizonte sections, in which investments for construction of double lanes are being made before the bidding process, by the federal government with some participation by the states. It will be up to the concessionaire to maintain the highways and being responsible for repayment of part of the investment loans to the multilateral credit organizations.

Table 1
Federal Highway Toll Collections

<i>Highway/Section</i>	<i>Length (km)</i>	<i>Toll Plazas</i>	<i>Concession Length (Years)</i>	<i>Contract Date</i>	<i>Start of Tolls</i>	<i>Estimated Investments (US\$ 10⁶)</i>	<i>Basic Initial Tariff (R\$)</i>	<i>Tariff in March 1998</i>	<i>Initial Tariff per km</i>
BR-116 (Rio-São Paulo)	406.8	4	25	Nov. 1995	Aug. 1996	799	2.86	3.30	0.032
BR-290 (Osório-Porto Alegre)	112.3	3	20	Mar. 1997	Oct. 1997	106	2.00	2.00	0.027
BR-101 (Rio-Niterói bridge)	13.2	Uni-directional	20	Dec. 1994	Aug. 1996	58	1.20	1.30	0.049
BR-116 (Rio-Além Paraíba)	144.4	1(+2 planned)	25	Nov. 1995	Sep. 1996	125	2.77	3.00	0.021
BR-040 (Rio-Petrópolis)	179.7	3	25	Oct. 1995	Aug. 1996	301	2.38	2.90	0.048

Source: DNER (1998).

The program of delegating responsibility for highways to the states has been drawn up according to the states' interest in including specific segments into their respective concession programs. Rio Grande do Sul and Paraná have already included 2,842 and 1,773 km, respectively. Negotiations with the state of Minas Gerais are expected to add another 2,000 kilometers to this program.

3.4. The Financial Impact of the Reforms

One of the main contributions of the privatization programs in many countries has been in the fiscal area, in other words, the funds obtained through the sale of companies and/or concessions, the transfer of debt and of future investments. In the case of the transportation sector in Brazil, however, this fiscal contribution, while not negligible, is of smaller importance compared with other sectors of infrastructure. Moreover, the sector, will continue to require public investments, even after privatization, to maintain an adequate level of service and expand the system's capacity.

These points become clear from Table 2, which indicates the relatively small amount of revenue received from privatization, compared with preparatory expenditure and the replacement value of the assets involved. The preparation costs basically involved severance payments, indemnities for canceling the registration of autonomous port workers, and emergency investments for the railway system. It should be also noted that the highest amount received was in the privatization of the RFFSA networks, in which about 80 per cent of the value received was financed by the federal government over a period of 30 years (with a two-year grace period).

The relationship between the value of the assets involved and the total value of each subsector (or part thereof) shows the range of the program: 100 per cent in the case of railways (with the privatization of Fepasa) and relatively small for the port and

Table 2
The Financial Impact of the Transportation Sector Reform*

	<i>Railways</i>	<i>Ports</i>	<i>Highways</i>
Expenses in Preparation for Privatization	0.5	0.6	0
Value Received	1.5	0.5	0
Replacement Value of Transferred Assets	16.0	0.6	4.0
Replacement Value of Subsector Assets	24.0	12.0	150.0
Investments Estimated over the Investment Period	1.0	0.5	2.4
Transferred Debts	0	0	0
Remaining Debts	3.0	0.9	n.a.
Government Subsidies 1985/95	6.0	1.5	8.0

**In present values US\$ billions 1998. Railways - only RFFSA; Ports - Rio de Janeiro Dock Company (CDRJ) and São Paulo Dock Company (Codesp); Highways - federal only, 1st phase. Values estimated by the author.*

highway sectors. Consequently, the expected amount of investment is small compared to the total demand for investment in transportation of about 1 per cent of the GDP per year, or US\$ 7 billion [see Castro (1987)]. In none of these cases has any debt been transferred, and the debt that remains with the government is significant, especially for the railways and ports systems. This debt basically consists of obligations to public institutions that have yet to be honored, i.e., corporate income tax (IRPJ), social security (INSS) and severance indemnity fund (FGTS) contributions, state taxes (ICMS) and municipal service tax (ISS) in the case of the ports, in addition to overdue delinquent contributions to pension funds, vendor and court-ordered labor obligations, and the deficit in the port workers' indemnity fund. Finally, Table 2 shows significant governmental subsidies during the 10-year period that preceded privatization which, in the case of the railways, were for operational costs and debt service.

4. Pending Questions

4.1. The Case of the Railways

4.1.1. Maximum Tariffs and Captive Shippers

The subject of tariffs raises a number of important issues, such as adjustments and revisions, maximum and minimum values, tariff differentiation, trackage right charges, etc. In this section, however, we will concentrate on tariffs for captive shippers, in other words, situations where it has not been possible to reach an agreement between the concessionaire and shippers over the price of transportation. The concession contract requires that the government should establish specific tariffs based on operational costs.⁸

When the railway system was operated by the government, the adequacy of tariff rates was guaranteed by the public control of the railway companies. In the past, large shippers (mining, steel companies, etc.) had to make decisions over investments and location, becoming captives of railway transport. In Brazilian these companies did not have long-term contracts with the railway companies. The change in control of the concessions to the private sector may allow an opportunistic revision of the tariffs for those services, i.e. charges higher than the amount that would be negotiated between shippers and the private concessionaires in the event that these shippers have not yet made investment and locational decisions.

8 For more details, see, for example, Castro, Esposito and Carris (1987).

Nevertheless, these tariff disputes have been in most cases postponed because the current form of concession permits large shippers to become stockholders in the railway companies that service them, up to a maximum of 20 per cent of the capital for each shipper.

The first thing relevant to the government's regulatory action is the ascertaining a shipper's dependence on railway transport. The shipper may have alternatives that offer similar services, in which case the user would not be considered captive or subject to excessive tariffs. Therefore, it is necessary to define those situations that characterize dependency as a starting point for establishing specific tariffs. It should be emphasized, however, that there is still no applicable standard for defining captive situations or for setting adequate tariff levels in such cases.

In this respect, it is necessary to consider all factors affecting the demand for or the value of services received by the consumer relevant to the establishment of tariff levels, including an understanding of the global logistics (not only the railway haul). These factors may include the nature of the merchandise to be transported, the degree of intermodal competition, competition between alternative ports (e.g., the port of Santos versus Sepetiba or Tubarão), and even the possibility of substituting equivalent merchandise or merchandise from another source (e.g. iron ore from the CVRD versus ore from MBR or from Australia).

In relation to competition faced by the railway transport, the procedures have to take into account the identification of actual and potential competition by other transport operators (railways or otherwise) which have already operated in the same market segment or which may be able to operate effectively in a time frame short enough to exercise some form of constraint on the tariff policy of the present operator in the given market.

Furthermore, a series of specific sunk investments could be undertaken by the shippers themselves, which could have the effect of reducing competition from other operators, particularly non-railway operators, in the sense that these investments tie the user to a specific railway system. Examples of these investments are branch railway lines and extensions, railway terminals, port terminals that are reached exclusively by railway lines, detours, loading and unloading facilities, and communication systems (rolling stock is, in principle, a recoverable item, depending on the technical specifications).

The determination of tariff adequacy in relation to the production costs of services is already represented by an effect owing to the existence of market dominance, or lack thereof. In this sense, the fact that an operator dominates a specific market segment does not necessarily imply that the tariffs it will charge will be abusive. In other words, the establishment of dependence

on railway transport is a necessary, but not sufficient condition for the existence of monopolistic tariffs. The railway agency should always verify the adequacy of tariffs charged in markets where dependency on railway transport is suspected. In determining this, the following possibilities should be considered:

- the quantity of traffic that is transported does not contribute to the payment of common and fixed costs identified with the market under analysis;
- the quantity of traffic that is transported contributes marginally to the payment of common and fixed costs identified with the market under analysis and the possibility of increasing revenues from this traffic; and
- the contribution of the market and traffic under analysis to the payment of the fixed and common costs.⁹

Following this analysis, any existing connections between the question of tariff inadequacy and the economic-financial equilibrium of the concession contract can be examined. In fact, it is an obligation on the part of the government to guarantee an equilibrium in terms of revenues, subject to an honest and efficient administration, in such a manner as to cover for operational expenses, including depreciation, obsolescence, leases, payment for the concession, loans, and new investments, and a reasonable profit proportional to the capital invested and the risk of the enterprise. In the United States, for example, existing legislation establishes a simple rule for determining the tariff adequacy by calculating the tariff/variable cost ratio. If this ratio is equal to or less than 180 per cent, it is automatically considered that the operator does not dominate the market and the tariff is reasonable. On the other hand, if the tariff ratio is greater than this percentage, it cannot be immediately determined whether there is domination of a market or whether the tariff in question is abusive. In the most important cases, however, the use of the stand-alone cost methodology is used to determine this.

If captivity is established in relation to the railway transport, the government is obliged to fix tariffs based on the operational costs involved. In this case it is important to consider the conceptual elements on which the measurement of these costs relies. Due to a significant part of the common costs in the railway systems it is practically impossible to set tariffs based on variable costs only, while at the same time guaranteeing the economic-financial balance of the concession. This is because these common costs can not be unequivocally attributable to specific services, and any attempt to assign them is thus arbitrary. Therefore it is necessary to define some form of verifying the adequacy of dif-

9 For a deeper discussion of the regulatory issue in railways, see Guasch and Blitzer (1992) and Kessides and Willing (1995).

ferentiated prices, even those initially established in the call-for-tenders documents for the concessions. For that purpose, regulatory practices regarding the cases of captive users of railways have usually placed three restrictions or “tests” on the application of differentiated prices: the stand-alone cost test, the test of production efficiency, and the restriction of adequate total revenues.

The first test guarantees that the captive user will not be charged more for a service than the cost by an alternative supplier specializing in that service. It is worth mentioning that this is a theoretical test and highly specific, as it varies greatly from one case to another. Notwithstanding, the idea of developing a method for calculating the lowest theoretical cost of providing alternative services to a captive user (or group of captive users) is attractive because it enables an unequivocal price ceiling for the services in question to be determined. In the Brazilian context, however, there are some additional complexities. The concessionaires receive existing operational assets, which means that they have not constructed their railway lines from scratch. In this respect the amount paid for the concession is unrelated to the value of the operational assets. The amount paid is determined, on the revenue side, by exactly what the concessionaire can collect from current and potential users. In this way the sunken cost component of the calculation, which is the amount paid for the concession, depends on the regulatory structure and its implementation, about which little is known so far.

This problem can be bypassed in the event that barriers to the entry and exit of new service suppliers are eliminated in the analysis of individualized costs. That would remove any advantages enjoyed by the existing railway concession; an advantage that gives it monopoly power. In this way one can estimate the stand-alone cost through a simulation in which the shipper itself carries out the railway transport, operating the concessionaire’s lines, for which the shipper would pay a fee for trackage rights. This fee can be calculated based on the direct cost of wear and tear on the railway caused by the traffic of the shipper.

Second, the production efficiency test investigates any eventual aberration in the management of the concession. Consequently, any eventual defense by the concessionaire of its tariff policy should be based on an unequivocally efficient administration.

Third, the test for adequate total revenues functions in two ways. For one thing, the regulator should guarantee that the concessionaire collects sufficient revenues to cover operational expenses, including depreciation, obsolescence, leasing, payment for the concession, loans, and new investments, while affording a reasonable rate of profits proportional to the capital invested in the enterprise. For another, the government must verify whether

an eventual opportunistic use of monopoly power allows the concessionaire to collect excessive revenues.

Some basic guidelines exist for determining an adequate level of total revenues. Initially, the profitability obtained by the concessionaire ought to be similar to that generated by enterprises in other sectors of the economy that have similar risk structures. This comparison should not be made with respect to other companies in the same railway sector, since all of them are subject to the same set of external factors. Also, all returns obtained must be constrained by a rigid number that should be adhered to every year and never exceeded, imposed on the concessionaire as a long-term goal. On the other hand, this test should not act as a disincentive for the concessionaire to try to improve operations and reduce costs.

It is important that the concessionaire keep a reliable record of financial flows, assets and liabilities and provide these records when inquired about tariff questions. Accounting records are one of the best way to monitor tariff adequacy. Nonetheless, there are difficulties related to the accounting practices of Brazilian railway concessions.

One difficulty concerns the issue of incremental versus average costs. Incremental costs are essentially related to opportunity costs and use current prices for the replacement of assets and inputs. On the other hand, evaluations of average costs are based on historical records which could overestimate or underestimate prices. These discrepancies create challenges for the regulator with respect establishing the correct prices for services and how to guarantee remuneration and the replacement of assets.

Another problem for the regulatory agency stems from the accounting complexity created by the concession of existing assets, with or without a leasing arrangement explicitly outlined in a separate contract, as is the case with the railway concessions. In this case, the appropriations and expenses mainly associated with the assets of the concessionaires do not conform to the existing models for accounting appropriations, nor to the cost systems in accounting literature and used in practice.

It is worth emphasizing that the use of current expenses, for the purpose of setting tariffs, may also distort cost estimates because of the disparities which exist between the accounting values and the actual replacement cost of the assets. This problem is particularly relevant in the depreciation of railway rolling stock and equipment (using historical values), as well as in the case of postponement of current maintenance.

4.1.2. The Lower Tariff Limit

The railway concession contracts establish a lower limit for railway tariffs that are equal to the long-run variable costs. In fact, there might be situations in which the government should intervene against the practice of predatory tariffs or rates lower than the incremental cost of each service. These costs, however, vary widely according to the specific conditions of each cargo flow, and sometimes they can be very low (e.g. backhaul flows). Likewise, the greater input mobility of competing modes of transport, such as trucking, makes the practice of predatory pricing for the purpose of establishing market dominance innocuous in the medium term. Notwithstanding, there may be some cases in which this practice may be sought after, justifying the prohibition of charging prices lower than the incremental cost for each service, which, in turn, typically differs from the long-term variable cost.

It is possible that the specific objective of this restriction, in the case of the RFFSA, can have the effect of limiting the ability of shipper-concessionaire shareholders to establish low tariffs for themselves, while maintaining or increasing tariffs for shippers who are not represented in the boardroom. On the other hand, the general objective for establishing a tariff floor is to prevent railway companies from providing services that do not yield a minimum financial benefit. It is true, however, that railways will always benefit from serving any traffic which supports a remuneration above any avoidable short-term costs. By not providing these services, the railway company loses a contribution that could help cover its fixed and common costs.

This level of short-term tariffs could be much lower than long-term marginal costs. In making the decision to invest in a common-use facility, for example, the railway concessionaire should take into consideration the associated costs, evaluate the remuneration expected, the tariff levels to be charged to produce an adequate return on the capital invested. But, once the investment decision is made, it becomes a common and/or fixed asset, and should not be taken into account when determining specific tariff levels. This recommendation is particularly important when demand for services is influenced by cycles or seasonalities, and especially, in the Brazilian case, where assets have been leased for amounts that are far less than their effective replacement costs. Even when some services might be financially viable over the medium term, there may be years or seasons of lower demand, requiring adjustments in tariffs to levels that may eventually be lower than long-run marginal costs. Thus, long-run marginal costs should not be used in a rigid manner to establish a tariff floor, except in situations of opportunistic tariff practices by shipper-concessionaires.

4.1.3. Tariffs and the Economic-Financial Equilibrium of the Concessionaire

Here there are at least two interesting considerations. One is the structural balance of the concession in terms of its economic-financial equilibrium, as defined in the bidding outcome, and the possibility of adjusting this service according to the institutional model established by the Concession Law 8,987/95. The other concerns the procedures that are required for the revision of tariffs in accord to the economic-financial balance stipulated in the concession contract.

In this context, a case in which the Federal Supreme Court (STF) decided in favor of Transbrasil Airlines, an air transport concessionaire, provides a good example in two respects [see *Gazeta Mercantil* (1997, p. A-11)].

First, the case demonstrates that the federal government is in fact responsible for ensuring the economic-financial equilibrium of the concessionaire and that deleterious tariff freezes may require indemnification. The second aspect concerns the amount of work involved in proving that the company is indeed managed efficiently. The deregulation of air transport in various countries has revealed that inefficiencies can be significantly reduced by creating a competitive environment. In the Brazilian context, the federal government is both the conceding power and the regulator of the sector (through the Ministry of Aeronautics/Department of Civil Aviation, which exercises strict control over capacity, entry and, at that time, tariffs) and maintains a market that is artificially segmented. Therefore, the federal government is also responsible for part of the sector's inefficiencies [see Castro and Lamy (1992*b*)].

Another case of interest is one in which the economic-financial imbalance of the concession is structural, and has been previously identified by government, at least in the horizon under consideration. This could have been the case with the Northeast network of the RFFSA railways if the government had not made additional investments in the network before the concession auction began. This may occur with an expansion of the national railway system, or even with rail or metro passenger transport systems whose models of concession are now being defined, following the example of the concession subsidies adopted in Argentina in the case of suburban passenger railway and metro system of Buenos Aires.

In the concession laws of Brazil, which are regulated by Article 175 of the Federal Constitution, there are few guidelines for such situations. The first occurs in the chapter on tariff policy, where legislation allows "the possibility of other sources of income deriving from alternative, complementary, or accessory revenues, or from associated projects, with or without exclusivity, aiming

at favoring tariff adequacy” (Art. 11, Law 8,987). This possibility is subject to the provision in Article 17 that rules out “any proposal that, for its viability, requires advantages or subsidies that are not previously authorized by law and that are not available to all competitors.”

The existence of significant complementary revenues may lead to a combination of conflicting interests in the concessionaire’s total remuneration equation. In particular, a significant part of this remuneration could originate from businesses that are completely divorced from the objective of the concession, which may create disincentives for the effective operation of the concession, specially over the medium to long term. On the other hand, the use of complementary revenues requires that they should be explicitly itemized in the call-for-tenders documents, in accordance with Article 11 of Law 8,987/95, and necessarily considered in the economic-financial equilibrium of the contract. The bidding documents thus must specify which types of revenues should be considered, in what amounts, and in reference to which specific projects. In this manner, the principle of equal opportunity is guaranteed to all bidders involved, in terms of the remuneration and attractiveness of the business.

Supplementary forms of remuneration by tariff subsidies have to be approved by law and are subject to budget approval uncertainties each fiscal year. Concession contracts with significant amounts of subsidies involved (whether capital lump or current subsidies) are in fact more like a performance management contract in an inappropriate institutional and legal framework.

4.1.4. The Connectivity of the Railway System

Reform of the transportation sector is currently underway in more than 30 countries around the world, all involving increased participation of private agents. One common objective of the reforms is increasing the connectivity among the various modes and links that make up the transportation sector. In order to achieve this objective, the privatization process should combine elements that stimulate and regulate the conduct of private agents. A major consideration in this respect is the qualification of candidates, imposing restrictions on the participation of groups that may have conflicts of interest between their original commercial interests and those of the end activity being transferred (e.g. large users of transportation in relation to trunk ways that provide access to major markets or transfer facilities).

In a nutshell, the problem of railway connectivity is the delineation of a regulatory policy that allows competitors’ access to critical segments of the system in such a way as to impede the occurrence of vertical obstruction in relevant parts of the network.

This vertical obstruction can also be caused by end-to-end mergers, that is, railways which connect at their terminal points or even by the geographical segmentation established by the privatization model itself.

Alternative solutions for the problem of access are being formulated in various industries. Typical examples include obligatory interconnections between competitors and restrictions in the business segment of the telecommunications sector, separation or “unbundling” of the transportation and energy components in the final price of natural gas markets, and equal access to marketing and sales channels (example: computer reservation systems) in the airlines sector.

In transportation, some characteristics are fundamental to determining the institutional and policy models that increase the system’s level of connectivity. The first is that some fixed transport installations require nonexclusive use. In some industries, the separation of exclusive and nonexclusive use assets almost serves as a paradigm: the generation, transmission and distribution of electrical energy is perhaps the most salient case. In the case of railways, at the one extreme is the model successfully adopted in England, which separated the infrastructure management from operation of the transportation, a model which has generated a lot of controversy in the orthodox world of railways. At the other extreme, there is the Brazilian model which has deepened, through geographical segmentation, the monolithic arrangement of all the functions and activities involved in the provision of railway services into a single company. In this model, the only separation of functions is the requirement for allocating a certain number of slots for passenger transport (from other eventual concessionaires), as well as the handling of mutual traffic or trackage rights between concessionaires, notwithstanding the practical limitations of these arrangements.

There are also other dimensions where the connectivity of infrastructure services can be enhanced. Infrastructure services are usually offered by interconnected networks that need to follow certain explicit functional rules. The planning and establishment of these rules normally require a coordinating body that supervises the strict outcomes of market forces. In the case of railways, for example, this coordination is identifiable in the definition of standards for lines (e.g., gauges), equipment (e.g., rail-car couplings), operation (e.g., timetables) and management (e.g., data communication protocols), which increases the connectivity of the system by facilitating the interchange among agents.

Intra- and intermodal transport is particularly sensitive to the level of connectivity of the transportation system. A government can help by establishing rules and priorities that can be used in common facilities. The removal of existing obstacles to the commercial leasing of transport material may also foster the

growth of a leasing industry for wagons and containers, which is fundamental for the growth of intra- and intermodal transport. In the same vein, the definition of parameters for the flow of data exchange among various shippers, transporters and service providers, would foster connectivity and the geographical integration of the markets for products, to the extent that geographically differentiated prices can be more easily established.

A number of fundamental questions pertaining to antitrust issues and the prevention of abuse of economic power still remain. These need to be addressed, for example, when mergers of the companies that make up part of the network of transportation services eventually occurs. The complexity of these systems, however, rarely present polarized cases in which competition or complementarity exist exclusively. In the first case, competition would involve the merger of two independent railway companies serving the same regions and shippers. The second case, complementarity would involve two companies with networks each being a physical extension of the other, without any kind of competitiveness to the other. Reality is certainly more complex than these examples and encompass elements of competition and complementarity between companies that are planning to merge, and between the merged company and other companies in the market.

In Brazil, the connectivity of railway subsystems is a strategic element for the development of intermodal transport and for the integration of the national transport system. The railway concession contract has the character of exclusivity in terms of the exploration and development of railway cargo transport by the concessionaire. On the other hand, this requires the obligation of handling mutual traffic, or, if this is impossible, allowing the right of way for other railway operators, and subject to regulations in terms of controlling economic abuse and ensuring traffic safety.¹⁰

There is solid evidence that there is a huge potential market in Brazil for railway transport services that require inter-line shipments. However, a precondition for that is that more than one railway company has to participate in the development of

10 Another important aspect related to the issue of mutual traffic is related to new railway projects. These are typically projects that are necessarily interconnected to the existing system, being therefore totally dependent on adequate conditions of intramodal transport. Ferroeste, for example, is extending the Paraná state railway system from the Guarapuava region to the Cascavel region with a future railway branch line from Cascavel up to the region of Dourados, in the state of Mato Grosso do Sul, as well as with a branch to Foz de Iguaçu. The Ferroeste project requires broad and continuous negotiations between its subconcessionaire and the South concessionaire in order to obtain an equalization of infrastructure capacity and operational conditions. The Ferronorte project has already encompassed the establishment of a railway cargo transport system involving the construction, operation, exploration and conservation of the railroad between Cuiabá (MT) and: a) Uberaba/Uberlândia (MG); b) Santa Fé do Sul (SP), on the right bank of the Paraná River; c) Porto Velho (RO); and d) Santarém (PA). The composition of Ferronorte, based on rights of passage (trackage rights) accords, allows it to access ports of destination through the networks of the future concessionaire for Fepasa (Santos) and, possibly, MRS (Sepetiba). The negotiation of these agreements is also an important factor in the development of this enterprise.

these markets. In this sense, the issue of railway access in Brazil is more the question of stimulating intramodal integration than promoting intramodal competition. Thus, the railway transport regulator should go beyond simple obligatory statutes requiring concessionaires to allow mutual traffic and develop mechanisms that encourage the negotiation of multilateral interchange agreements under certain minimum conditions. One of these is that railway companies may cancel such agreements if they can prove that they are detrimental to their financial performance. On the other hand, a railway operator interested in mutual traffic may appeal to the regulator to establish minimum levels of service and maximum tariffs (trackage rights) in the case that private negotiations fail.

There may also be circumstances where the railway companies have competitive relationships which should be preserved. For example, two operators may transport the same cargoes through alternative arrangements (e.g. grain, fertilizer, or iron ore) from/to the same origin but to/from different ports. In these cases, integration between competitors, or horizontal merging, should be restrained.

It is important to bear in mind that the privatization in Brazil brought shippers into the ownership structure of the railway concessions. The Southeast railway is already controlled by large users together with the CVRD's two railroads. The conclusion of the privatization of Fepasa makes the Brazilian railway system unique in terms of the vertical integration of industrial and mining producers in railway transport.

Another notable characteristic is the structure of the consortia that were formed to control these companies, which had a limitation of 20 per cent maximum participation for each member (except the Northeast and FTC railroads, for which this limit has been raised to 40 per cent and one-third, respectively). This provision allowed various users and other interested parties to share the control of each concession. This multiplicity of control has interesting effects on the performance of these concessionaires. From the very beginning, conflicts of interest between captive shippers and railway operators have, to a great extent, moved from the regulator to the boardroom of the concessionaires, which has changed the locus of conflict and reduced the regulatory burden.

In addition, the mosaic of ownership in railway concessions as well as in the industrial and mining companies that control them could make some "light mergers" possible. If the conditions of commercial conflict between companies beyond the transport markets are overwhelming, this "stockholding net" may allow some convergence of interests in the direction of development of traffic interchange or other forms of intramodal movement. In any event, the regulator has to understand the strategic

implications of the ownership structures of the concessions and their controlling companies. This understanding must go beyond railways into ports and terminals as well (to which the railways are connected), evaluating possible impacts on competition. In this context, it is important to note that the privatization model for Fepasa provides incentives and conditions favorable to the development of intramodal railway transport.

It should be emphasized that the current contractual limits found in the concessions are not final, since the government retains the prerogative of unilaterally modifying any contract in the public interest as long as the concession's economic-financial equilibrium is preserved. This right should be exercised in such a way so as to enhance good performance and improvement of the objective of the concession. Nevertheless, it is hard to imagine that interventionist conduct will be followed in Brazil, given the gradualist approach of the Brazilian public administration. The American experience shows that the regulatory agency, even when limited in its power to interfere in the operational and commercial decisions of the railway companies (more limited than in the Brazilian situation), can interfere by provisions that allow the opening of traffic to other operators and by taking advantage of various situations that depend on administrative approval. In the Brazilian case, these would involve negotiations for the elimination of branch lines, sale of stock positions, waiver of production targets, safety and investment goals, and so on. In fact, the question of competitive access is as relevant to the system performance as the elimination of branch lines or the control of stock is for the railway companies.

Finally, the government should pay due attention to the question of mutual traffic relationship between small (or new) railways and large ones. Given that the small railways are strictly connected to the major lines, this involves a wide range of mutual dependencies, from the fixing and administering tariffs to setting joint responsibility in the case of eventual damages to merchandise being transported. In stable circumstances, the tendency is for small railway companies to participate in joint agreements on tariffs with the major lines. In this case, private contracts between the railway companies should specify the basis for collecting and dividing revenues. Such agreements may also help determining the viability of new railway projects.

4.2. The Case of the Ports

4.2.1. The Institutional Model

Before the approval of Law 8,630 in February 1993, existing studies had already suggested "the possibilities opened by the new bill", namely:

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- i) allowing private terminals to move third party cargoes;
 - ii) the autonomy for setting tariffs for cargo handling services;
 - iii) the possibility of the private sector leasing completing port facilities in the organized ports; and
 - iv) the end of union monopoly on the supply of labor.

Such opportunities “give rise to numerous alternatives for offering competitive port services based on improved productivity and better prices”[see Castro and Lamy (1992a, p. 37)]. This notwithstanding, we can also notice the lack of definition or even contradictions in the institutional model embedded in the law aimed at reforming the sector.

Some recent work has elaborated these conflicts regarding the institutional model that is being adopted [see Lontra and Portella (1997)]. For instance, the Geipot study points out that “Law 8,630... was written in accordance with a traditional perspective [that of the dominant role of the federal government], reinforcing the Constitutional responsibility of the Union in the ports sector and being essentially preoccupied with eliminating bottlenecks that increase the costs of transportation. This law did not provide an entrepreneurial vision to port administrations, nor did it prepare it for the great changes underway in the international arena and the continental integration of South America. On the contrary, in instituting the Port Authority Councils (CAPs), it introduced the concept of a condominium, confirmed by the list of their legal attributes (the explanatory phrase between brackets was added by the author)”[see Geipot (1998, p. 54)].

As emphasized in the report just quoted, the new Brazilian port model is quite young. A series of important issues still needs to be defined or clarified in a way to create a favorable environment for the long-awaited development of the sector. Among these questions are:

- the scope of the federal government’s role in the planning, regulation, and financing of the sector;
- the strategy and criteria for decentralization of the port system to the states and municipalities, and their role in the sector;
- the new institutional model for the port administrations;
- the restructuring of the Dock Companies;
- the institutional and economic configuration of the CAP, public ports and private terminal jurisdictions, particu-

larly with respect to the definition of the boundaries of the public port area; and

- the institutional configuration of the CAP and the OGMO, their representative structures, and the viability of exercising their respective responsibilities [see Castro (1998a)].

It should also be studied whether converting the Dock Companies into port authorities and keeping these companies under public control is the most desirable option, when taking into account the commercial activity expected of these companies as well as the policy of competition between ports that is desired by the federal government. We can further ask if this competition is compatible with predominant federal control of these companies, besides the federal government's investment subsidies still flowing to the subsector.

Moreover, effective regulation by the port administration boards is at serious risk, even as public companies. because the CAPs are composed of groups having conflicting interests, without any rules for their deliberations, and the representatives have no responsibility whatsoever for the choices they make. The situation also severely limits the attractiveness for private capital in an eventual privatization of the port concessions.

4.2.2. Regulation of Competition

In a recent article Oliveira and Mattos argue that competition among ports in Brazil is imperfect, given the great distances involved, a fact which tends to raise the prices charged for services above competitive levels. Moreover, various other factors come into play which also influence the lack of competition in the supply of port services [see Oliveira and Mattos (1997)]. In relation to the question of competition among ports, "the idea that permeates the post-1990 system after the extinction of Portobrás is that competition among ports can be promoted in spite of the sole responsibility by the Ministry of Transport, the continuity of administration by the Dock Companies, and the natural concentration of cargo in the port of Santos..."[Oliveira and Mattos (1997, p. 3)] The most important obstacles to competition among ports are the existence of high-cost barriers to land transport, the lack of appropriate facilities for each type of cargo, the low frequency of ships traveling to/from different markets/sources of supply, and the balkanized market structure of the transportation, principally in railways and inter-modal cargo terminals.

Examining the issue of intra-port competition, the first problem to be mentioned is the ambiguous position of the port's administration, which plays a double role both as the only qualified operator specified by law and as the agency that ap-

proves the entry of new operators.¹¹ Furthermore, definite limits also exist for the scale and minimum size of terminals and installations, which further restrict the sustained expansion of the number of competitors in the same area of activity, considering the types and volumes of cargo that might be involved.

Furthermore, mention should be made of the current cost asymmetries between terminals inside and outside the port area, which is determined essentially by the fact that the latter are not required to use unionized labor. While this may be an effective way to reduce operational costs inside the public ports, such treatment nevertheless represents a serious form of discrimination. To this should be added that no defined regulatory criteria exist for the establishment of these port areas. This makes the government's strategy weak and its decisions non-transparent.

4.2.3. Labor Relations

Surplus labor is the rule in Brazilian ports institutions, and, in fact, in many ports throughout the world. The combination of traditional, rigid port labor relations and significant gains in productivity brought about by improvements in handling equipment and increasing unitization of cargo has been largely responsible for this situation. It is critical that an assisted and balanced solution be found for this issue, mostly because of the concentrated pattern of local labor markets, which makes the absorption of excess labor in these limited areas more difficult.

Nonetheless, the potential gains in productivity may facilitate the adoption of measures that are both socially and financially acceptable. In this sense, once the restructuring of the Dock Companies and of the supply of union workers is completed, an analysis of the port labor situation should endeavor to find policy options to deal with the downsizing of the labor force to match local needs. The OGMOs should be regarded as an intermediate answer to this question, with their future abolition being a necessary step for increasing the flexibility of port labor supply. Furthermore, already the question of multifunctionality of port labor is a challenge that must be faced, with labor training programs for improving the situation.

4.2.4. Development and Financing of the Sector

Independent of private involvement in the ports sector, the federal and state governments should retain the responsibility for the general planning of port development. This planning should set the guidelines for the country and the regions to supply

11 The ambiguity of this position was emphasized even before the promulgation of Law 8,630 [see Castro and Lamy (1992a, pp. 42-43)].

efficient transportation services to increase Brazilian competitiveness in foreign markets. The port interface is a strategic element in the successful achievement of these objectives.

The restructuring of the planning capacity at the federal level is particularly important for the assessment of certain large-scale projects. In this respect, an analysis of hub ports from both national and regional perspectives could provide an important input for redefining government investment policies and re-assessing financial needs of the port sector.

4.2.5. Performance of the Customs Authority

The ports combine a complex set of jurisdictions and authorities that do not always work in harmony, nor necessarily promote the continuous and efficient movement of cargo. Of these authorities, the one which most directly influences the logistical performance of the flow of foreign trade is the customs authority. In Brazil, there are indications that the objectives of this authority favor, in the first place, the maximization of tax revenues, while simultaneously restraining smuggling, and, secondly, the collection of commercial data. The objective of facilitating trade only seems to be a third-ranking priority. As such, the Brazilian customs service does not meet its clients' needs. The current incentive structure for agents has little bearing on the speeding-up of cargo handling and reducing the costs for importers and exporters.

To be fair, much progress has already been achieved with the introduction of a computerized customs system for foreign trade (Siscomex), and the increased number of licenses granted for operating terminals and bonded warehouses in the ports (Eadi). Nevertheless, a more profound reform of customs practices, in line with successful reforms underway in other countries, could bring about a significant reduction in transaction costs related to foreign trade.¹² However, this problem has not received enough attention in public debate.

4.3. The Case of the Highways

4.3.1. Costs and Benefits of the Concession Program

After the initial phase of improvement of the pavement conditions of the toll roads, which improved user satisfaction, protests broke out in various parts of the country. After the state of Paraná auctioned lots which required investments of more than R\$ 3 billion, the state government unilaterally decided to reduce

12 With respect to the Mexican experience, see Bird (1996).

the value of the tolls on the state's roads by 50 per cent (and the investments by an equivalent proportion), due to the political pressure of organized user groups. Trucks carrying primary or raw agricultural products were exempted from the tolls until the end of 1998. Work on the so-called Integration Ring was initiated in December 1998 and after routine surface improvements tolls began to be collected at toll plazas installed every 80 kilometers on the highway, with the basic rate for passenger cars varying from R\$ 2.20 to R\$ 4.10 [see *Gazeta Mercantil* (1998b)].

Users in Rio Grande do Sul state also protested against the collection of tolls at all of the state's 39 planned toll plazas, especially the Union of Cargo Transport Companies. In this case, the State Highway Concession Program had transferred 2,817 kilometers of highways to operation by private concessionaires, equivalent to 30 per cent of the state's paved network. The state's Autonomous Highways Department (DAER) is already studying ways of reducing the tolls for cargo trucks [see *Gazeta Mercantil* (1998a)].

Protests against the amounts charged at various points in the federal highway system have also occurred. The users involved even protested against the scaling of toll revisions, which was significantly higher than increases in the general price indexes.

In the State of São Paulo where toll collection has been in effect for a longer period of time, the evolution of toll prices has also greatly exceeded the rate of inflation. In the period July 1, 1994 to July 1, 1998, the basic toll on state highways rose from R\$ 1.25 to R\$ 4.40, in other words, an increase of 252 per cent, against an average inflation of 70 per cent over the period [see *Gazeta Mercantil* (1998c)].

At least two questions emerge from this discussion. The first is related to the costs and benefits of the toll system for users. The second deals with the control mechanisms that exist between the concessionaires and the government agencies in charge of the concession contracts.

In our view, the costs-benefits relationship of the toll system thus far has been addressed in an inappropriate way. Usually toll rates are set on the basis of the operational costs of

Table 3
Toll Rates

<i>Toll</i>	<i>Initial Price</i>	<i>Current Price</i>	<i>% of Increase</i>	<i>Inflation (%)</i>
Rio-São Paulo	2.86 on Aug. 1, 1996	3.50 on Aug. 6, 1998	22.38	8.57
Ponte Rio-Niterói	1.20 on Aug. 18, 1996	1.40 on Aug. 6, 1998	16.67	8.57
Rio-Juiz de Fora	2.38 on Aug. 20, 1996	2.90 on Feb. 22, 1998	21.85	6.93

Source: O Globo (*January 9, 1998*). Average inflation calculated by the National Consumer Price Index.

the vehicles that use the highways, mostly trucks in Brazil, relating those costs to the pavement roughness. Bad pavement conditions were in fact normal in the highway system before the concession program began. The concession contracts stipulate that pavements should be kept in good or excellent condition. The conclusion usually put forward is that “even with the burden of the tolls, total operational costs for users should be less than the previous situation (with eroded surfaces). Drivers tend to be ignorant of or, at least, do not perceive the magnitude and composition of the operational costs of their vehicles, reasoning only in terms of the so-called immediate payments, such as fuel, tolls, and parking” [see DNER (1998, p. 67)].

The fallacy of this argument is to allocate the benefits generated by an improvement in the surface condition to the toll system. The toll system is just one of many possible ways of financing surface improvements, and other improvements or increases in capacity. Users are aware of that, because in past decades they financed the construction and conservation (good or bad) of the Brazilian highway system, through earmarked taxes (IUCLG, TRU, ISTR, and IST), which also allowed for the growth of the civil construction industry which later took control of these highway concessions.

The real benefits that can be attributed to the highway toll system, therefore, are gains in efficiency from the private management of the highways, minimizing the costs of providing the level of service specified in the concession contracts, greater production and allocative efficiency derived from the direct charging of users for the services they use, in the sense that “users pay their way”, and not via the more generalized allocation which occurs through taxation, and the greater equity of a more equitable distribution of the burden of highway transportation. In short, those who use the system pay for it.

On the other hand, the highway toll system involves collections costs that, in many cases, may compromise the viability of the system. It has been pointed out that “in Brazil, even considering the low pay of the personnel involved in the process, the cost of collecting tolls and other concessionaire duties can account for more than 40 per cent of the gross receipts collected” [see Magalhães (1998)]. This same study shows that, in terms of present value, expenses associated with the collection of tolls and the concessionaire’s own profit margin (excluding financial costs) represent, respectively, 20.7 per cent and 17.8 per cent of the amount collected on the sections of federal highways which have already been conceded. Moreover, these sections are the most dense in terms of traffic volume, and the cost of toll collection is particularly sensitive to this variable, resulting in even higher percentages for those sections that are planned to be auctioned in the second phase of the federal and state concession programs.

This discussion highlights the importance of highway financing schemes in the context of the networks that still remain under the direct custody of the public sector, and which are far from being solved. Even in the context of the private sector, the issue does not appear to have been adequately addressed. In fact, the private highway concessions already in operation have not managed to find long-term private financing for their investments, despite the fact that they provide a favorable cash flow and have captive demand. Thus far concessionaires who managed to obtain private financing have used short-term instruments such as commercial paper.

4.3.2. Social Control of Relationships between Concessionaires and Regulatory Agencies

Put in a more general form, this issue goes beyond the highway concession program to the transportation sector as a whole, as well as to other infrastructure sectors. If the future transportation agency adopts schemes similar to other infrastructure sectors (e.g., petroleum), it will incorporate not only regulatory functions but also the planning and implementation of the concession contracts and direct administration of the sector. Existing conflicts in the performance of these functions have already been discussed” [see Moraes (1997)], and are evident in the current form of management of the concession program on the part of the DNER and the other Highway Departments and reflected in the frequent real tariff increases which have been greater than the prevailing rate of inflation.

These conflicts are aggravated by the distribution of risk that was incorporated in the (federal) concession contracts, in which any increase (or its anticipation) in the quantity of work or services are passed directly onto users in the form of tariff adjustments. On the other hand, risks in traffic variations are born by the concessionaire only. Since the concessionaire in practice has a monopoly in the providing highway services, and thus demand is highly inelastic, this risk allocation may work as an incentive to underestimate the growth in traffic and reap the benefits of the “additional” flow necessary for achieving the financial equilibrium of the concession.¹³

It is, therefore, necessary that a new transportation agency be established for the control, regulation and monitoring of the concessions, with the planning and execution of the concession program being assigned to an independent institution. The experience that has been acquired from the current programs suggests that standardization proposals should be brought up for

13 As a matter of fact, the current concessions contracts are very similar to public works contracts in many aspects, in which payments are associated with the collection of tolls, and a bonus given for excess traffic.

discussion with interested user groups, in such a way as to increase transparency of decision making in tariff revisions.

There is certainly room for improvement in the concession contracts for dealing with the mechanisms for distributing risks. The current forms of risk distribution generate few effective incentives for increasing the concessionaires' efficiency or for eventual private financiers. The transfer of risks that cannot be managed by the concessionaire alone leads to increases in tariffs. However, the failure to transfer manageable risks brings up the question of moral hazard, amplified by the relative lack of preparation by the monitoring agencies for identifying the real efforts of the concessionaires in managing these assets adequately.

5. Conclusion

The initial phase of privatization of the transportation sector in Brazil has had unequivocal success.. Its most remarkable achievement has been the dismantling of the antiquated and burdensome state management structures that operated in the sector, though some of them are still exist. The most significant benefits already obtained are a reduction in the fiscal resources necessary to maintain these structures and efficiency gains accruing from private management. The completion of this process is still awaited in the ports sector, mainly because of the delicate question of labor relations and improvement of the current institutional model. New opportunities are expected to arise with the opening of the airports to private management and investment.

A second phase of public involvement in the sector has already begun, which will require the a strategic plan for the sector. A new institutional model is currently being formulated for the sector that includes the creation of one or more regulatory agencies, maintained by the appropriate institutions and resources. In this plan, two questions are fundamental: adequate economic regulation, and the resolution of financing problems, particularly for new projects.

Regarding the first issue, the privatization process has divided the ownership structure of the transportation system into a mosaic of private participation and interests. There is no guarantee that "market forces" will be sufficient to coordinate entry and exit of companies in the sector or to determine investment decisions and prices in an efficient and effective manner. In fact, this new multifirm environment has created a new form of uncertainty regarding the timing of investments by different decision making units which may have an effect of deterring or postponing the decisions to increase the sector's capacity. This

uncertainty is amplified by the magnitude of the competitive and complementary relations that characterize the transportation systems [see Castro (1998b)].

As such, the regulatory function assumes even greater importance as it incorporates the dynamic elements of monitoring the transportation market with the intent of searching for the instruments for inducing private agents to make decisions that are closer to the public interest. In relation to private financing, these instruments will need to guarantee mechanisms that are able to attenuate commercial risks associated with new investment projects. Without such mechanisms, it is difficult to expect a significant private participation in increasing the capacity of the transportation infrastructure.

On the other hand, the “bundling” of interests formed by vertical integration of industrial companies, particularly in the railway and port subsystems, deserves special attention on the part of regulators, as this raises the question of controlling access to adequate services, because of eventual competition in the markets for the products of these companies. Only the existence of a well-structured regulatory agency, independent and transparent, will be able to steer entrepreneurial conduct in line with the public interests.

References

- Baer, W., I. Kerstenetzky and M. Simonsen (1962), “Transporte e Inflação: Um Estudo da Formulação Irracional de Política no Brasil”, *Revista Brasileira de Economia*.
- Bird (1996), *Brazil – Transport Sector Reform and Multimodal Options*, Report 16361-BR, Infrastructure and Urban Development/Country Cept. I/LACR, The World Bank.
- Bussinger, F, *et al.* (1997), *Reformas Portuárias: Definição e Implementação dos Marcos Regulatórios*, Final Report, Ipea, mimeo.
- Cano, W. (1985), *Desequilíbrios Regionais e Concentração Industrial no Brasil, 1930-1970*, Campinas, Global.
- Castro, N. (1986), *O Redirecionamento da Política de Investimento e Preço*, Coleção Temas e Teses, No. 7, Rio de Janeiro, Andima.
- Castro, N. (1987), “A Retomada dos Investimentos em Transportes”, in *Perspectivas da Economia Brasileira – 1987*, Rio de Janeiro, Ipea.

-
- Castro, N. (1998a), *A Modernização do Setor Portuário*, Proposal for Research Reference Terms, Ipea, mimeo.
- Castro, N. (1998b), *Revisiting the Nature of Multi-Firm Transport Services*, Discussion Text, Nemesis, October (www.nemesis.org.br).
- Castro, N., J. R. Esposito and L. Carris (1997), *Definição e Implementação dos Novos Marcos Regulatórios nas Áreas de Infra-Estrutura: Setor Ferroviário*, Brasília, Ipea/Sest.
- Castro, N. and P. Lamy (1992a), *A Desregulamentação do Setor Transportes: O Caso do Subsetor Portuário*, Discussion Paper, No. 284, Rio de Janeiro, Ipea, November.
- Castro, N. and P. Lamy (1992b), *A Desregulamentação do Setor de Transporte: O Caso do Subsetor de Transporte Aéreo de Passageiros*, Discussion Paper, No. 319, Rio de Janeiro, Ipea, November.
- DNER (1998), *Federal Highway Concession Program*, Brasília, Ministério dos Transportes, March.
- Gazeta Mercantil* (1997), "Supremo Manda Indenizar a Transbrasil", June 18.
- Gazeta Mercantil* (1998a), "Transportadoras Reclamam do Preço dos Pedágios", June 30.
- Gazeta Mercantil* (1998b), "Lerner Reduz em 50% a Tarifa nos Pedágios", July 20.
- Gazeta Mercantil* (1998c), "Depto. de Custos Operacionais e Pesquisas Econômicas/NTC", July 22.
- Geipot (1998), *Financiamento ao Subsetor Portuário*, Brasília.
- Guasch, J. Luis and Charles Blitzer (1992), *State-owned Monopolies: Horizontal and Vertical Restructuring and Private Sector Access Issues*, World Bank.
- Kessides, Ioannis N. and Robert D. Willing (1995), *Restructuring Regulation of the Railroad Industry*, FPD Note, No. 58, World Bank.
- Lontra, G. D. and Gianotti Portella (1997), "A Reestruturação do Sistema Portuário", in *Perspectiva da Reestruturação Financeira e Institucional dos Setores de Infra-Estrutura*, Vol. 2: Transportes, Ipea.
- Magalhães, V. L. (1998), *Concessão de Rodovias e o Financiamento do Sistema Rodoviário Nacional*, Technical Note, Brasília, Geipot, March.
-

Moraes, L. (1997), *Definição e Implementação dos Novos Marcos Regulatórios nas Áreas de Infra-Estrutura: Características Gerais e Perspectivas - Aspectos Jurídicos da Regulação*, Ipea/Sest.

Oliveira, C. and C. Mattos (1997), *Defesa da Concorrência nos Portos*, Brasília, Cade, mimeo.

Pimes (1984), *Desigualdades Regionais no Desenvolvimento Brasileiro*, Recife, Sudene.

Portobrás (1985), *A Taxa de Melhoramento dos Portos*, Brasília, Ministério dos Transportes.
