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Testing the Limits of Privatization: Argentine Railroads

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Summary. — Just how far can privatization be pushed, and with what consequences? Based on a study of Argentine railroads, this paper concludes that even large, unprofitable firms in developing countries faced with market failures can be privatized, but the gains from doing so depend on how badly the state enterprise was performing to begin with, and the potential for introducing competition *in* the market and *for* the market. The broader lesson is that when both market failures and government failures are present, a public-private solution is preferable to a purely private or a purely public solution. Privatization is not a panacea but potentially a palliative, when it comes to reducing subsidies or coping with regulatory failures. © 1997 Elsevier Science Ltd. All rights reserved.

Key words — privatization, regulation, railroads, infrastructure, Argentina, Latin America

1. INTRODUCTION

This paper presents a study of the Argentine experience with railroad privatization, which is interesting because it allows one to explore the limits to which privatization can be pushed in developing countries and the consequences of doing so. In the last few years, private investment in infrastructure has increased sharply, and institutions such as the International Finance Corporation (IFC, 1996) and private consulting firms such as McKinsey & Co. (see Durchslag *et al.*, 1994) have been optimistic about the private sector's future role in building roads, ports, highways, telecommunication networks, and electricity generation, transmission, and distribution facilities. So far, however, more than two-thirds of the private investment in infrastructure in developing countries has been in only three sectors: airlines, telephones, and energy (especially oil and oil products). Privatizing other sectors, including railroads, presents greater technical and political difficulties than these three sectors. Like oil or telephone companies, railroads are big, but they are also monopolies and have important noncommercial objectives, and they do not promise growth or profitability like oil and telephone companies. This combination of size, monopoly, externalities, and unattractiveness to profit-oriented investors, makes railroads an interesting test of the limits to which privatization, especially of infrastructure, can be pushed in developing countries.

According to World Bank data, during 1988–93, the total proceeds from railroad privatization in the developing world was only $375.7 million, compared to $15,526.9 million from telecommunications, $5,350.9 million from airlines, and $6,254.7 million from petroleum (Sader, 1995). The same database reports only eight cases of railroad privatization, six of which occurred in one country, Argentina, which was not only the first developing country to do so but did so even before the United Kingdom. What can other countries learn from this Argentine experiment, and what does this case tell us about the promise and limits of privatization?

2. DIMENSIONS OF PRIVATIZATION DIFFICULTY

It was not unusual in the mid-1980s, as privatization was gaining steam in the developing world, to hear that this or that country had privatized more than 100 firms, only to discover later that the assets thus privatized accounted for a small percentage of the state enterprise sector (Ramamurti, 1991). The reason, of course, was that the firms targeted for early privatization were usually small, which made it

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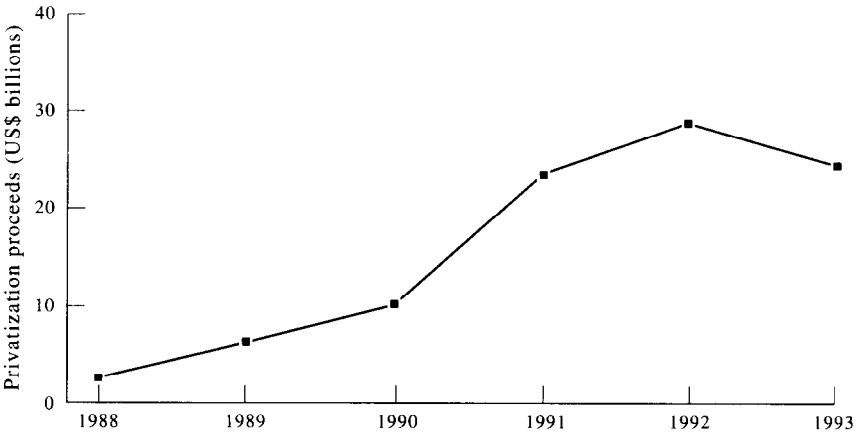
easy to find buyers for them, usually from within the country, and such firms posed no complicated regulatory issues because they had little market power. (These observations pertain to the mixed-economy developing countries, not the formerly centrally planned economies, where the magnitude and challenges of small-scale privatization were quite different.) Many of these small firms had been created in the private sector and were later nationalized for one reason or another; in an earlier time, their privatization would have been called "denationalization." Although privatizing small firms was easier, smallness implied that such privatizations affected only marginally a country's macroeconomic indicators, such as the public-private shares of GDP and gross domestic investment, the budget deficit, or the balance of payments. Nonetheless, an important benefit of the early phase of privatization was that it gave countries practice with implementing privatization, including learning how to sell the idea to domestic constituents, how to organize and staff privatization agencies, and how to attract and consummate deals with private investors.

We now know that privatization in developing countries did not end with small firms (see Figure 1). The sharp acceleration of privatization after 1988 occurred because governments began to privatize large state enterprises, which were usually among the largest firms in the country.[1] Size complicated privatization in two ways. It increased political risks because of the greater visibility of the firms involved and the greater likelihood that the beneficiaries of state ownership, especially workers and unions, would organize to fight privatization. Second, it raised capital barriers to privatization, since national investors could have difficulty acquiring big state-owned enterprises (SOEs). Selling such SOEs to foreign investors would be seen as a threat to national sovereignty or as exploitation by foreigners. Yet, many developing countries obviously overcame these size-related problems, or else the trend shown in



Year	1988	1989	1990	1991	1992	1993
▪ Priv. proceeds ($ B)	2.59	6.15	10.06	23.57	29.01	24.45
Sectoral Breakdown (US$ M)						
Airlines	367	473	1925.5	268.6	1471.7	845.1
Telecommunications	324.9	212.5	3704	5815.7	3006.8	2463
Energy	106	2107.7	99.8	363.7	4961.7	1982.3
Banking	8	295.6	541.2	8125.7	6113.2	2720.2
Petroleum	0	8.5	295.7	1195.5	1088.7	3663.3
Light manufacturing	44.9	499.1	873	1858.7	2821.3	2798.1
Steel	0.3	109.4	287.5	2411.5	2415.1	3043.3
Chemicals	0	5.4	405.8	646.3	2704.8	1932.8
Mining	1360	49.9	554.4	235.8	543.6	188.4
Railroads	0	0	0	158.8	216.9	0
Others	382.6	2393	1518	2646.9	3881.8	4817.3

Figure 1. *Privatization trend in the developing world (includes formerly centrally planned economies).*

Figure 1 would not have occurred, and one interesting question is how they did so.

Apart from bigness, firms privatized after 1988 — such as national airlines, steel companies, telephone companies, and electric utilities — also had more market power than those privatized earlier. Some of these firms produced tradeables, which meant their market power could be contained by liberalizing imports, but others produced nontradeables, such as transport, telecommunications services, and electric power. Among the latter, some were natural monopolies and others were artificial monopolies, and among natural monopolies, some faced competition from close substitutes while others did not. Presumably, natural monopolies producing nontradeables and having few close substitutes would pose the greatest challenges to privatizers. In addition to bigness and market power, some firms also generated important externalities, such as contributing to regional development, public health, technological deepening, or environmental protection. Infrastructure sectors, of which there are many in the Figure 1 totals, often had such external effects, and presumably that too complicated the privatizer's task. Market power and externalities are, of course, specific examples of the more general problem of market failure.

Market failures complicate privatization because they require the government to spell out how the sector will be regulated after privatization, and to create regulatory agencies with the necessary skills, expertise, and enforcement powers. Privatization can mitigate the agency problems that bog down state-owned enterprises, such as goal ambiguity, weak monitoring of managers and ministers by owners (i.e. citizens), and ineffective managerial incentives (Aharoni, 1982), but it does not solve government failures associated with regulation (Wolf, 1988). In other words, privatization ends a government's responsibility for managing and financing state monopolies, but not its responsibility to regulate them after privatization. Is there any reason to believe that governments can regulate private monopolies better than they could state monopolies? Apparently, many governments believe the answer is Yes, or else one would not see the trends in Figure 1. The opposing point of view, in the context of developing countries, is presented by Killick and Commander:

> ...when divestiture occurs, there is likely to be a need to establish regulatory mechanisms for protecting the public interest: safeguarding against the abuse of monopoly power, ensuring some minimum coverage of the services provided and so on. At the same time, we hesitate to place much faith in such devices, for regulatory authorities [in LDCs] are notoriously prone to be captured by the special interests they are intended to oversee, or to be effective in the face of such interests (Killick and Commander, 1988, p. 1476).

Another argument advanced in favor of government ownership of monopolies is that arm's-length regulation of private monopolies, especially when contracts are long term and involve externalities, can be inflexible and cumbersome (Sappington and Stiglitz, 1987). Internalizing such businesses into the state apparatus through state-owned enterprise can lower transaction costs and offer a more efficient institutional arrangement.[2] A second interesting question for this paper, then, is to assess whether government regulation of the privatized firm was more effective than was its regulation of the state enterprise, and if so, why.

Figure 2 sums up the above discussion by presenting the two dimensions, size and market failures, on which firms privatized in recent years (i.e. after about 1988) differ from those in the early rounds of privatization (roughly pre-1988). In the first phase of privatization, most developing countries tackled enterprises in the first quadrant, that is, small firms with few or no market failure problems. But in the next phase, they began to privatize firms in quadrants 3 and 4, that is, large firms with *few* market failure problems (e.g., oil and steel companies operating in competitive or potentially competitive markets), and large firms with *significant* market failures (e.g., infrastructure sectors). The premise of this paper is that firms in quadrant 4 test the limits of privatization more stringently than firms in any of the other quadrants. Size affects the feasibility of privatization, while market failures affect the desirability of privatization. The underlying argument — that the ease of privatization, and the likely benefits from that policy, decrease as firm size and market failures increase, respectively — is simply the mirror image of traditional rationales for state ownership (for instance, Jones and Mason, 1982).

Within each quadrant, a further distinction should be made between enterprises that are "plums," and those that are "lemons" (Ramamurti, 1996, pp. 11–12). The former are attractive to private investors because of their growth and profit potential, while the latter are in stagnant or declining markets and have poor profit prospects. (To be sure, a firm's profit potential depends on the government's competition and price policies, but its growth potential is an exogenous variable.)

In terms of the above distinctions, railroads fall in quadrant 4 of Figure 2, because they are often among the largest enterprises in a country, and rail track (though not rolling stock and engines) is a natural monopoly. Rail transportation is nontradeable. Rail transport also produces important externalities, such as opening up distant regions to commerce and development, helping to integrate different parts of a

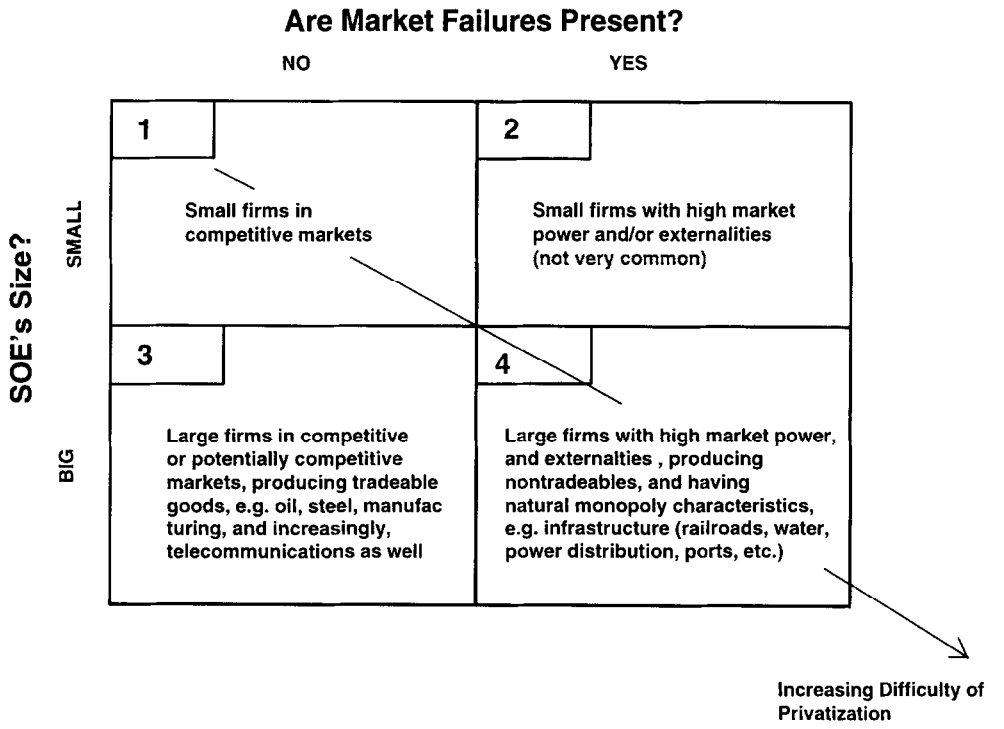


Figure 2. *Dimensions of privatization difficulty.*

country, facilitating troop and arms movement in times of war or internal strife, and, in the case of suburban rail service, reducing congestion and pollution in urban areas (Eichengreen, 1995). Further, railroads are closer to being lemons than plums. For one thing, they are mature industries, unlike telecommunications or energy, where pent up demand offers the prospect of double-digit growth after privatization. In many developing countries, the share of freight and passengers moved by rail has declined, while that of trucks, planes, buses, and cars has increased. In a few, including Argentina, the absolute volumes of freight and passenger traffic carried by rail have shown a secular decline. Second, in most countries, railroads are beset by a host of political and managerial problems, including over-employment, powerful and militant unions, rigid and archaic work rules, accumulated losses and debt, undermaintained track and rolling stock, a poor reputation for service, politically determined fares that are frequently too low to cover costs, especially for passenger service, and a bureaucratic culture that prevents change and adaptation (Kopicki and Thompson, 1995).

The third and final objective of this paper is to understand the consequences of rail privatization, once the obstacles to its implementation have somehow been overcome.

3. BACKGROUND ON ARGENTINE RAILROADS

In 1990, at the time of its privatization, the Argentine railroad enterprise, Ferrocarriles Argentinos (FA), met the conditions of bigness, monopoly, and externalities, that characterize firms in quadrant 4 of Figure 2. In addition, from the standpoint of private investors, it was quite a lemon.

With 30,000 kilometers of rail track, FA was the largest railroad in Latin America and the sixth largest in the world, after those in China, France, India, the former USSR, and the United States (Galenson and Thompson, 1994, pp. 81–82). On the books, its assets were worth $8 billion, which was comparable to the market capitalization of the Argentine telephone and oil companies.[3] With 92,000 employees in 1990, FA was one of the largest employers in Argentina. Like many state enterprises, FA was vertically integrated, with in-house units for construction, maintenance, operations, marketing, and real estate; it was also horizontally integrated, offering freight transport, intercity passenger transport, and suburban passenger transport in Buenos Aires (i.e. commuter rail service).

FA's employees were not only unionized but also very powerful. Politically, they were allied with the Peronist party, which had nationalized railroads in

the first place and was traditionally pro-labor. Over time, the unions intervened in all aspects of management, including staffing, internal organization, and strategy. For instance, because passenger services were more labor-intensive than freight transport, the unions got FA to pay more attention to the former than the latter, even though freight was relatively more profitable. They successfully resisted efforts to streamline FA's operations through consolidation and rationalization because it would make some employees redundant. From time to time, the unions brought Buenos Aires to a halt, by going on strike and paralyzing suburban rail service in the capital. FA's unions opposed privatization, and there was no reason to think they could not veto its implementation by any Argentine government, especially a Peronist government.

In terms of market power, FA was the only provider of rail transport in every region in which it operated, and it was the only railroad company in the country. In the freight business it faced competition on many (but not all) routes from trucks, and in passenger transportation from buses and cars. Among FA's positive externalities was its role in integrating remote parts of the large country with the capital, Buenos Aires, and, to a lesser extent, with one another. FA operated several thousand kilometers of track and kept open dozens of stations to provide passenger rail service to remote cities. Its other important positive externality was to limit congestion and pollution in the capital by providing commuter rail service in the Greater Buenos Aires region for about a million travellers each day, a volume comparable to that of the subway systems in London and New York. Fares for intercity and suburban passenger service were kept low for political reasons and to encourage the use of public transport. The other important provider of public transportation in Buenos Aires was the subway system (SUBTE), which was owned by the province of Buenos Aires. Buses and trucks were privately owned.

To prospective private investors, FA's unattractive features included its powerful and militant union, its declining share of the transportation business, its low prices, and its high costs. Over the years, not only had FA's share of freight and passenger transportation declined precipitously, even the absolute volumes moved had fallen by 26% in the case of intercity passenger traffic, by 35% in the case of suburban passenger service, and 42% in the case of freight (see Table 1). Even bulky commodities were being moved over long distances by truck, despite rail's economic advantage in serving that segment. Real prices charged by FA fell by 20% over 1980–88, because of high inflation, price controls, and, in the freight segment, intensified competition from trucking. On the cost side, because of its large workforce, FA's wage bill alone consistently exceeded its total revenues. In 1986, for instance, its total expenses of US$1,145 million were four times its total revenues of US$289 million. The resulting losses were financed by government grants and subsidies that averaged US$829 million

Table 1. *Declining demand for rail services in Argentina, 1965–90*

Service	Units[a]	1965	1990	Percent change 1965–90
A. Market share				
Rail's share of total freight hauled	% of TKms	14%	8%	-
Rail's share of intercity passenger travel	% of PKms	11%	8%	-
Rail's share of suburban travel (Buenos Aires)	% of PKms	30–40%[b]	15–20%[c]	-
Buenos Aires' subway (SUBTE)[d]	% of PKms	about 10%[b]	about 3%	-[e]
B. Total demand				
Freight service	Mill. of TKms	14,186	7,523	–47%
Intercity passenger service	Mill. of PKms	6,373	4,716	–26%
Commuter service, Buenos Aires	Mill. of PKms	9,065	5,926	–35%
Buenos Aires metro (SUBTE)		na[f]	na	na

[a]Market share data calculated as a percentage of PKms for all modes, including, in the case of freight: trucks, water-based transport, pipelines, and air; in the case of intercity travel: air, private buses, and private cars; and, in the case of suburban travel: private buses and private cars.
[b]1970 data;
[c]1991 data, which was one of FA's worst years; may have been 20–25% in late 1980s.
[d]Not a part of FA; owned and managed by the province of Buenos Aires.
[e]not applicable
[f]not available
Source: Compiled from Kopicki and Thompson (1995, pp. 143–4); and Kohon (1994, p. F1).

per year in 1980–88 (Kopicki and Thompson, 1995, p. 142).

From this brief description, one can see that privatizing FA would create political and economic problems. Unions would oppose privatization, passengers would oppose it if higher fares would result, private investors would seek subsidies or special breaks before investing in railways, and it would require a high level of regulatory competence to ensure that socially desired investments and services were forthcoming from private providers. At the same time, because railroads had been a public monopoly for decades, the Argentine private sector lacked experience in the business, and FA's losses, shrinking market, investment needs, and managerial problems, would surely turn off anyone brave enough to entertain the idea of buying FA. Or, so one might reasonably have thought, but one would have been wrong.

In a nutshell, the Argentine government's strategy for privatizing FA involved (a) separating the company into its three main businesses, freight, intercity passenger service, and suburban passenger service; (b) further breaking up each service into six or seven parts, geographically, and privatizing each part separately; (c) adopting different approaches to privatizing each type of service; (d) leasing, rather than selling FA's assets outright, to private concessionaires for periods ranging from 10 to 30 years; (e) shutting down portions of FA's system, transferring others to provincial governments, and placing the rest in a new state enterprise, pending eventual privatization; (f) including the Buenos Aires subway system in the assets to be privatized; and (g) taking the first steps toward creating new regulatory institutions for railroads. FA itself was reduced to a shell corporation with 1% of its original employees and with title to the assets leased to concessionaires. Since our purpose here is to analyze and evaluate the Argentine strategy rather than to describe it, we refer readers interested in the details of FA's privatization to excellent summaries in Kopicki and Thompson (1995), Kogan and Thompson (1994), and Kohon (1994).

4. ANALYSIS OF THE STRATEGY

In analyzing the Argentine strategy we focus on how the government overcame the three obstacles to railroad privatization — bigness, market failures, and its limited appeal to private investors.

(a) *Bigness-related issues*

(i) *Confronting unions*

Perhaps the biggest obstacle to privatizing FA was the objection of its powerful union. In the final year of the Alfonsin administration (1983–89), the unions had successfully scuttled a relatively modest effort to privatize FA's freight operations in one region. The Peronist party, which was in the opposition, objected to FA's privatization, as well as the privatizations of Aerolineas Argentinas and the national telephone company. When the Peronist party under Carlos Menem succeeded Alfonsin, the chances of privatizing anything, not to mention railways, seemed slim. Menem's famous about-face and fervent advocacy of privatization within weeks of becoming president were undoubtedly influenced by Argentina's deep macroeconomic crisis at that time (Manzetti, 1994). Privatization became an important element of his strategy for ending hyperinflation and reversing Argentina's long-term economic decline. Within months, he persuaded Congress to pass the Law to Reform the State Sector, which gave him sweeping powers to privatize several state enterprises, including railroads (Fraga, 1991).

In most countries, railroads would not have appeared on the first list of candidates for privatization, but it did so in Argentina, probably because of the demands it was placing on the government's out-of-control budget. Subsidies and grants received by FA made up fully 9% of the government's budget and 1% of Argentine GDP! Among Argentine state enterprises, FA was the single biggest recipient of federal funds. In that context, only the privatization of giant enterprises could make a dent on the government's financial problems. Bigness became a reason to privatize a firm rather than a reason not to. Railway unions, led by former Menem associates, protested the government's plans and went on strike, paralyzing Buenos Aires, which coped with limited commuter rail service for 75 days. But Menem held firm until the unions cut a deal with the government.

That deal included an agreement that redundant FA employees could be let go in exchange for one month's salary per year of service, with no maximum. Since the average worker had spent 20 years in FA, the deal would cost the government US$10,000 per worker. The World Bank took the unprecedented step of financing this program, although it normally loaned money only for projects or to finance general imports. The Bank's backing assured workers that severance payments would be prompt and paid in full, unlike previous severance programs run by the Argentine government.[4] Initial staff reductions took place through voluntary retirement programs, since many of FA's employees were old. Subsequent reductions resulted from layoffs, concurrent with privatization.

(ii) *Lowering capital barriers*

Having thus broken FA's unions, a major obstacle to privatizing railways was overcome, but the other

big obstacle was putting FA within the financial reach of private investors, especially Argentine investors. Here, the government's decision to break up FA horizontally (by type of service) and geographically, carved up the giant company into more than a dozen parts, each of which was far more affordable than FA as a whole would have been. At the same time, it allowed investors to pick the parts of FA that fit best with their competencies, interests, and strategies. Furthermore, by leasing FA's assets for a monthly rent/fee rather than selling its assets outright, the government reduced by orders of magnitude the private sector's cost of gaining control over FA. According to one study, the annual lease payments due from the freight concessionaires was only 25% of the conservative estimate of the annual depreciation of the assets leased.[5]

With such low lease payments, freight concessionaires were likely to be profitable from the outset at prevailing prices. But, they were required to finance the capital costs of rehabilitating rail track and equipment, which could result in negative cash flows in some concessions. For this reason, the private sector's response to freight privatization was lukewarm. As we shall see, however, freight concessionaires did not honor their investment commitments, as a result of which their actual investment in rail modernization was lower than promised. If bidders had assumed that they could wiggle out of these investment commitments after winning the concession, their private estimates of future capital investments may have been quite a bit lower than the sums promised.

Many suburban rail services, on the other hand, were unlikely to be profitable at prevailing prices, even with low lease payments, and the investment requirements of this service were higher than freight's. Therefore, in this case, the government offered bidders subsidies to cover both operating costs and investments. As a result, private investors could look forward to positive cash flows from the outset.

In sum, the capital barriers to rail privatization were overcome by breaking up FA, leasing its assets, and, in the case of suburban service, financing operating deficits and capital improvements with taxpayer money.

(b) *Market failure and regulation issues*

The Argentine strategy illustrates three interesting principles about how governments can deal with market failure problems. As outlined below, the principles are probably applicable to other sectors, besides railroads. Each principle was exploited in the privatization of one of FA's three main services.

(i) *Unleashing latent competition (freight)*

In dealing with market failure issues, the Argentine government took advantage of the fact that by 1990 every service offered by FA faced competition from substitutes, a condition that was not true when the Argentine rail network was developed at the turn of the 20th century by foreign investors. Even as late as the 1940s, more than a decade after railroads had been nationalized, rail was a monopoly with few substitutes, especially for freight movement and intercity passenger service. Following Argentina's massive highway construction program in the 1940s and 1950s, and the modest tolls charged for their use, trucking and bus transportation services expanded rapidly. As a result, by the 1980s, FA faced stiff competition in the freight business from private trucks, many of which were one-man-one-truck operations that undercut FA's prices and offered superior service. One can see clearly in Figure 3 the inverse relation between growth of the highway network and the amount of freight moved by FA. Given the competition from a highly fragmented trucking industry on most routes, the government decided that the freight concessions would not have to face price or quality regulation. Similar, but less dramatic, shifts in rail's market share occurred in intercity and suburban rail service, both of which faced increased competition from private buses and cars.

It is interesting that such competition apparently did not spur FA to improve its efficiency or service. As a state-owned entity, FA was focused on political rather than economic goals, such as preserving jobs, placating the unions, providing service to all regions of the country, and ensuring that suburban trains kept running in Buenos Aires. Despite declining volumes of business, neither FA's network nor workforce shrank in proportion. Instead, FA turned to the government for subsidies to cover shortfalls at the end of the day. Thus, even though privatization did not lead to new competition in transportation, it promised to unleash the latent benefits of competition that were unrealizable under state ownership.

(ii) *Decentralizing subsidy decisions (intercity passenger services)*

A consultant study commissioned by the government concluded that most intercity passenger services, with the exception of the service linking Buenos Aires to a popular beach resort (Mar del Plata), were not economically viable, that is, their fares could not even cover variable costs. The government acknowledged that rail service was indispensable to some distant cities and therefore ought to be continued, possibly with subsidies. But, instead of automatically accepting responsibility for funding those services for the externalities they created, the federal government turned the issue over

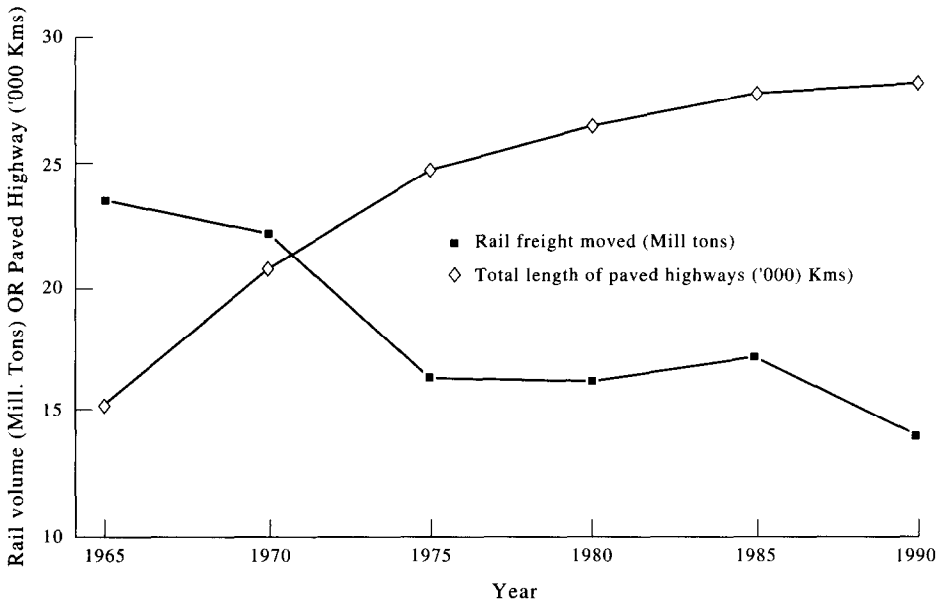


Figure 3. *Highway expansion and rail freight contraction, 1965–90.*

to the provincial governments, offering them the branch lines and equipment (engines, passenger trains, etc.) free of cost. The federal government also agreed to bear the severance costs for FA personnel that the provinces did not want to take over with the railway assets. In return, provincial governments would have to subsidize and regulate rail service into and out of their provinces. Faced with this choice, only four provinces chose to subsidize intercity passenger services, and as a result, more than 70% of the intercity trains were cancelled. By 1995, one of the four provinces had privatized this service. The Argentine government's approach to intercity rail service illustrated the principle that subsidy decisions are best made by groups that will capture the externalities generated by those subsidies (i.e. provinces) rather than by taxpayers at large (i.e. the federal government). Apparently, when put to this test, most intercity passenger services provided by FA could not qualify for subsidies.

(iii) *Creating competition for subsidized activities (suburban rail service)*

FA's suburban service, carrying more than a million passengers per day over an average distance of 20 kilometers, was vital to Buenos Aires' functioning. The service operated in a regime of regulated competition with buses, taxis, and the subway system, all of whose fares were controlled. The federal government decided to subsidize suburban rail service in Buenos Aires, rather than raise fares to cover variable costs, which would have not only discouraged rail use and worsened congestion and pollution in the capital but also produced a public outcry. But after considering other alternatives, the government decided that even though some suburban rail services needed subsidies, they could be privatized by creating a competition for subsidies. The selection criterion would be the amount of subsidy to deliver well-defined services, or, in the case of suburban lines with positive operating cash projections, bidders offering the highest payments to the government over the life of the concession.

The call for bids specified in detail the routes, stations, frequency of service, and punctuality targets that private operators would have to meet after privatization. Concessionaires were promised real price increases if they exceeded targets for quality of service. The government also laid out a physical investment plan for each route that the concessionaires would have to implement *with government finance*. To encourage bidders to seek as little public funds as possible to implement that physical investment plan, the criterion for selecting winners was the total discounted value of the operating subsidy and the capital subsidy sought by bidders over the life of the concession (10 years). The Buenos Aires subway was also privatized through a similar process, but with a 20-year concession. As a result, by 1994, almost all public rail transport in the Greater Buenos Aires region was being privately provided. The government was no longer *providing*

Table 2. *Freight and suburban rail concessions: date, no. of bidders, lease payments, and investments planned*

Line	Start of private operation	No. of bids received(US $ millions)	Lease payments promised[a](US $ millions)	Investments proposed
Freight				
Rosario-Bahia Blanca (FEPSA)	11/91	2	36.0	218.0
Mitre Line (NCA)	12/92	2	49.1	411.0
Roca (Ferrosur)	3/93	1	15.0	166.0
San Martin (BAP)	8/93	2	71.0	344.0
Urquiza (Messapotamico)	10/93	1	2.2	58.0
Total			173.3	1,197.0
	Start of private operation	No. of bids received	Operating SUBSIDY required	Govt-financed investments
Suburban Rail Service			(US $ Millions)	(US $ Millions)
Mitre line	/95	6	84.1	221.2
Sarmiento line	/95	7	(177.9)	193.2
Roca line		4	(70.0)	136.0
San Martin line	4/94	na	(44.7)	62.7
Belgrano South line	5/94	3	166.1	43.8
Belgrano North line	4/94	4	196.7	58.7
Urquiza line	1/94	4	101.7	37.8
Buenos Aires subway (SUBTE)	na	na	(438.4)	399.2
Total			(182.4)	1,152.6

[a]Total undiscounted amounts for the first 15 years, in the case of freight, and for the first 10 years, in the case of suburban service.

rail service but continued to be responsible for *regulating* it.

Unlike the freight concessions, which elicited only one bid each in three cases and two bids each in the others, suburban rail concessions elicited up to seven bids per concession, and never less than three (see Table 2). Presumably, therefore, the competition for subsidies was effective, and the least cost approach was selected for delivering the defined services.

(iv) *Residual regulation and regulatory institutions*

Despite the preceding steps, the Argentine government was left with some important regulatory responsibilities. In freight, this included protecting small shippers or producers heavily reliant on rail service from exploitation by concessionaires. Therefore, concessionaires were required to file maximum freight rates for various routes/commodities with the government, they could not discriminate among users, and they were not allowed to shut down service on any route or at any station without government permission. To motivate concessionaires to care properly for the assets entrusted to them, the concession period was very long — 30 years initially, with provision for an unlimited number of 10-year extensions — but the government would also ensure that concessionaires made the capital improvements they had promised at the time of privatization. In suburban service, the government would monitor the quality of service, routes, and fares, and supervise the implementation of the government-financed capital investments.

To discharge these responsibilities, the government planned to create two new regulatory institutions, one to oversee national railroads, mainly freight, and another to regulate all public transport in the Greater Buenos Aires region, including suburban rail service. A third agency was to focus exclusively on safety issues.

By mid-1995, the first agency was beginning to function with about 70 employees, many of them former officers of the transport ministry. The group had a few economists and lawyers but consisted mostly of engineers. With respect to freight concessions, its most pressing concern was what to do about the fact that concessionaires were not making the capital improvements they had promised and that some were were requesting a morotorium or reduction of lease payments owed to the government. The agency looked to the ministry for advice, even though it was supposed to be autonomous, because any renegotiation of concession agreements was bound to have political ramifications.

By mid-1995, even the legislation to create the second agency (UNAM), to regulate transport in the Greater Buenos Aires region, had not been approved by the various bodies concerned. Therefore, suburban rail concessions were being regulated by the *ad hoc* group created to privatize that service, the so-

called Railway Restructuring Unit, which was largely funded by international agencies. Although that group had some of the best talent for the regulatory tasks involved, it was anybody's guess as to how much of that talent would be institutionalized in an agency such as UNAM.

The third agency, for safety, was up and running as of mid-1995.

In summary, the Argentine strategy for privatizing rail dealt with market failure problems by (i) exploiting competition *in* the market where possible (freight), (ii) injecting competition *for* the market where regulation and subsidies were unavoidable (suburban rail), (iii) terminating services that met neither the market test for profitability nor the political test for subsidies (many intercity trains), and (iv) decentralizing some regulatory responsibilities to lower echelons of the political system (intercity train services that were not terminated). Thus, the regulatory burden on the federal government was narrowed and lessened, but what remained of that responsibility was by no means trivial, and the government was not particularly well organized to discharge it.

(c) *Making rail attractive to investors*

Even with three intercity passenger service lines shut down and four transferred to the provinces, the federal government had to privatize six freight lines and seven suburban rail service lines. By mid-1995, the government had found private buyers for all but one freight line. Who were these buyers, what were their motivations, and why were they not deterred by the fact FA was a "lemon"?

(i) *Turning a lemon into a grapefruit?*

A big part of the answer, of course, was that the government did several things to turn FA from a lemon — not into a plum — but into a much sweeter proposition than before (grapefruit?). Four government steps in that direction were: breaking FA's unions, picking up the tab for downsizing its workforce, splitting up the company into smaller parts, and then leasing rather than selling its assets. In addition, the unions agreed to greater flexibility in the deployment of workers, and to negotiate contracts with private owners that would increase rail's competitiveness. Given FA's very poor track record, most investors interviewed believed they would be able to improve performance and meet the expectations of the traveling public. The combined effect of these factors was to reduce the financial and managerial risks to investors. But the buyers of FA's businesses had another important motivation as well.

Table 3 provides a profile of the buyers for each privatized railroad. The reader will note that the buyers were in fact consortia of firms, although in many instances several of the constituent firms belonged to the same conglomerate (such as Techint). This arrangement reduced risks for all investors. In addition, the same consortium bought more than one line, since this was not prohibited under the government's terms of privatization. Thus, the six commuter service businesses were bought by three different consortia, and two freight concessions had the same firm as principal investor. All but three consortia were wholly Argentine owned, by companies with no experience running railroads, but every consortium had a foreign railroad company as technical advisor, as required by the government.

(ii) *The search for synergy*

The most interesting information about buyers is shown in the third column of Table 3, which indicates each investor's past connection with FA. In the case of freight, many investors were former customers of FA, while in the case of suburban rail service, many were past or prospective suppliers of equipment and services to the concession. Privatization gave these investors an opportunity to integrate forward, backward, or horizontally. The preponderance of construction companies in the consortia shows that many buyers saw privatization as a means of obtaining contracts for rehabilitating and modernizing the railroads. Among the winners of the freight concessions were two of rail's largest users, a large cement producer and a large soyabean exporter.

The other major motivation for participating in the railroad privatization was horizontal integration by providers of alternative modes of transport, who hoped either to preempt competition from the privatized railroads (for example, the participation of bus owners and an association of 52 bus companies in Trainmet, which won three commuter rail service concessions), or hoped to integrate railroads with other means of transport to offer multimodal freight service (for example, the participation by multimodal transport companies in the freight concessions). A few investors were adding railroads to their already diversified portfolios (for example, Sociedad Comercial del Plata's investment in Ferroexpresso Pampeano).

Thus, most investors participated in the rail privatizations because they anticipated some kind of synergistic advantage from vertical or horizontal integration. The government may not have found any buyers for Argentine railroads if it had precluded such buyers from participating, as governments sometimes have done in other sectors to avoid conflicts of interest between the privatized firms and their controlling investors.[6] One industry expert noted that neither freight nor suburban passenger service would ever be highly profitable, but one of

Table 3. *Profile of winning consortia for freight and suburban service concessions*

Name of line	Firms in consortia, and their shares	Main activity and past connection with FA	Foreign Rly advisor
Freight			
Rosario-Bahia Blanca Line	Techint (58.94%)	Construction/holding co.	Iowa interstate Railroad (US)
	Sociedad Commercial del Plata (5.48%)	Holding co.	
	Gesiemens (8.39%)	NA	
	Riobank (8.39%)	Bank	
	EACA (8.39%)	Construction	
	Chase Manhattan (8.39%)[a]	Bank	
	Iowa Interstate Railroad (2%)[a]	Railway operator	
Mitre Line	Aceitera General Deheza (61.25%)	Oil and byproducts[b]	Montana Rail Link (US)
	Banco Frances (17.5%)	Bank	
	Roman Maritima (12.5%)	Multimodal transport[b]	
	Asoc. de Cooperativas Agrarias (8.75%)	Agr. producers assn.[b]	
Roca Line	Loma Negra (65%)	Major cement producer[b]	CANAC (Canada)
	Decavial (5%)	Highway construction	
	Acindar (10%)	Steel production	
	Petroquimica Comodoro Rivadavia (10%)	Petrochemical producer[b]	
	Asoc. de Cooperativas Agrarias (5%)	Agr. producers' assn.[b]	
	Banco Frances (5%)	Bank	
San Martin Line	Industrias Metaurgicas Pescarmona (65.7%)	Diversified industrial	Conrail (US), and Railroad Dev. Corp. (US)
	Transapelt (1.25%)	Holding co.	
	Roman Maritima (25%)	Multimodal transport co.[b]	
	Gervasio Bunge (6.25%)	Individual investor	
Urquiza Line	Ind. Metalurgicas Pescarmona (75%)	Diversified industrial holding	Conrail and Railroad Dev. Corporation (USA)
	Olmatic (10.125%)	Construction co.	
	Alesia (8.125%)	Construction co.[a]	
	Petersen, Thiele y Cruz	Construction co.	
Suburuban Rail			
Mitre, Sarmiento, and Urquiza Lines ("Metrovias" consortium)	Benito Roggio (33.33%)	Diversified holding co.	Burlington Northern (US)
	Burlington Northern (16.37%)[a]	Railway co.	
	Cometrans (30.33%)	Bus owners	
	Morrison Knudsen (16.67%)[a]	Rolling stock manufacturer	
	SKS (3.00%)	Construction co.[c]	
Roca, San Martin, and Belgrano South Lines ("Trainmet" consortium)	Ormas (22.0%)	Construction co.	JARTS (Japan) and Bay Area Rapid Transit
	Roman Maritima (15%)	Multimodal transport co.	
	EACSA (10%)	Construction co. (US)	
	Comintersa (3.00%)	Electronics	
	DGT (3.00%)	Bus owners	
	Trainmet (4.25%)	Bus owners	
	52 Bus Companies (42.75%)	Bus companies	

Table 3. *Continued.*

Name of line	Firms in consortia, and their shares	Main activity and past connection with FA	Foreign Rly advisor
Belgrano North Line ("Ferrovias" consortium)	Seminara (23.125%)	Construction co.	Transurb Consult (Belgium)
	TAC (23.125%)	Bus co.	
	EMEPA (20.0%)	Rolling stock manufacturer[c]	
	Pilar (3.125%)	Steel co.[c]	
	CODI (10.0%)	NA	
	CONIPA (6.625%)	Construction co.	
	CONEVIAL (6.5%)	Construction co.	
	Eduardo Gragila (3.25%)	Railway consultant[c]	
	Javier Picco (3.25%)	Railway consultant[c]	
	Transurb Consult (1.00%)	Railway subsidiary	

[a]Foreign investor; [b]Previously a customer of FA; [c]Previously a supplier to FA.
Source: Compiled from Kohon (1994, Annexes E-2 and F-3).

their positive features, especially the latter, was the ability to spin off a steady supply of cash that could be invested in other parts of the conglomerates' empire.

Foreign firms participated as technology providers rather than investors. Privatization gave them the opportunity to earn technical fees from the concessions, and in some cases also the opportunity to test the privatization waters. The only two foreign companies with equity in the concessions (Iowa Northern Railroad and Transurb Consult) held very small positions (1–2%), and the only one with a sizeable stake (Burlington Northern) was trying in 1995 to divest that stake.

5. OUTCOMES

The previous discussion showed that rail services can be privatized, despite falling in quadrant 4 of Figure 2 and having lemon-like qualities. But what does the Argentine experience tell us about the consequences of rail privatization in developing countries?

When the research reported in this paper was conducted, the longest any freight line had been under private control was four years (the Rosario-Bahia Blanca concession), and the longest any commuter rail service had been in private control was a little over one year (Metrovias). Thus, only the short-run outcomes were known with some certainty. In a nutshell, those results indicated that FA's workers were the main losers from privatization, while taxpayers, consumers, and investors were winners.

(a) *Impact on workers and labor productivity*

Table 4 shows the dramatic drop in total employment in rail services before and after privatization. About 30,000 of the 72,000 workers who lost their jobs in this sector were 51 or more years of age in 1988, and would therefore have retired soon if they had not left under FA's severance program. Some large but unknown percentage of the FA workforce reportedly ran private businesses on the side, and the lumpsum severance payment may have helped others start new businesses. Laid off workers were prohibited from seeking employment in the public sector for five years, but given the fact that the rest of the Argentine public sector was also downsizing at this time, this was not a real possibility. On the other hand, labor shedding and recovery of rail traffic volumes boosted labor productivity after privatization by a factor of four or more (see Table 4). This was the single biggest source of cost savings from privatization.

Could these savings have been achieved without privatization? After all, it was the government, not the new owners, that designed, paid for, and negotiated the labor rationalization scheme with unions. Our conclusions on this question are that:

(a) the workforce cuts were surely deeper because of privatization. For instance, one government study in 1989 estimated that FA's workforce could be reduced by about 50,000, and the official goal agreed to in 1991 between the government and the World Bank was only for a 30,000-person reduction, compared to the reduction following privatization of about 70,000 (World Bank, 1991). A small part of the labor reductions was financed by the private owners: for instance, owners of the San Martin (BAP) and Urquiza (Mesapotamico) concessions began

Table 4. *FFA's workforce and labor productivity before and after privatization*

	Pre-privatization (June 30, 1989)	Post-privatization (June 30, 1994)	Percentage change
A. Workforce			
1. FA	92,500	1,500	
2. Belgrano freight line (to be privatized eventually)	-	1,274	
3. Provincially operated intercity train services	-	1,820	
4. State-run suburban rail services (pending privatization)	-	7,485	
Total Public Sector	*92,500*	*12,079*	
5. Private Freight concessions	-	4,415	
6. Private suburban passenger concessions	-	3,188	
Total Private Sector	*0*	*7,603*	
TOTAL Public and Private Sectors	92,500	19,682	−78.7%
B. Labor Productivity	Pre-privatization[a]	Post-privatization[b]	
Suburban rail service			
Number of employees	15,491	8,404	−69.3%
Passenger-Kms moved (millions)	4,178	7,852	+35.4%
Labor productivity (PKMs per employee)	269,705	934,317	+370%
Freight (for five privatized lines)			
Number of employees	n.a.	4,415	n.a.
Ton-Kms moved (millions)	5,886	5,735	−2.7%
Labor productivity (TKMs per employee)	n.a.	1,298,980	n.a.

[a]1991 data for both suburban rail service and freight (data for suburban service was net of one round of labor rationalization prior to privatization).
[b]1994–95 data for suburban rail service and 1993–94 data for freight. Source: Compiled by author

with a combined workforce of 2,700, compared to FA's total of 8,800, but reduced that even further to 1,700, at a private cost of US$ 10 million. (Interview with BAP/Mesopotamico executives, Buenos Aires, 1995).

(b) Even if the government had cut FA's employment as sharply as the private owners did, it is very unlikely that the cuts would have been sustained over time. At least two previous workforce reductions in FA's history were followed by periods of hiring that swelled the ranks of FA's unions, notwithstanding huge operating losses.[7] At least in Argentina, SOEs like FA have not had much success sustaining gains in labor productivity.

(c) Changes in labor contracts and work rules that followed privatization almost certainly would not have occurred without privatization, and therefore the labor cost savings could not have been as high as they were with privatization. (Vermeulen and Sethi, 1982 allude to the pressure on governments to be "model employers" or to follow a "soft-management" approach.) For instance, by annulling existing labor contracts between FA and its four unions through a presidential decree, President Menem allowed the private concessionaires to renegotiate all aspects of labor policy. As a result, the new owners consolidated the four union agreements into just two, reduced the number of job classifications, obtained the right to redeploy workers across job classifications, de-recognized the union representing FA's managers, and reduced the size of the operating crew for a train from three to two (Kopicki and Thompson, 1995, p. 165). (At the same time, however, the concessionaires agreed to large pay hikes for those FA engineers and rail workers who were retained.)

(b) *Impact on budget/taxpayers*

In the 1980s, FA received an average of US$829 million each year from the treasury to cover only operating deficits (Kopicki and Thompson, 1995, p. 142) and $298 million per year for capital projects (Kohon, 1994). In contrast, after privatization, during fiscal year 1994–95, no operating subsidies were paid to freight concessionaires, and the total operating subsidy paid to suburban rail concessionaires by the federal government was US$140 million. Collectively, the provincial governments probably paid a net amount of zero by way of subsidies for the intercity train services that were continued after FA's privatization.[8] If one further ignores the modest lease and income tax payments made by freight concessionaires to

the government, the net annual operating subsidy to rail service from all levels of government in 1994–95 was probably US$ 650–700 million less than in the 1980s, with reductions in labor costs alone accounting for US$350–400 million in annual savings.[9] A detailed breakdown of the remaining savings was unavailable, but it was probably accounted for by less fare evasion on suburban services, higher volumes on freight and passenger services, non-labor operating costs saved by shutting down about a third of FA's network, and other operating cost savings instituted by the private sector.

After privatization, capital spending was under US$200 million per year, consisting of $140 million provided by the government for investments in suburban rail service, and US$40–50 million in self-financed investments in freight service. Thus, total capital spending was only two-thirds of the pre-privatization average, and 70% of it was still publicly financed, and private capital investments in freight were only one-third to one-half the levels promised by concessionaires. Freight concessionaires were particularly reluctant to invest in rail infrastructure (see data in Table 5), possibly because those investments were immobile and hence at higher risk if the concession were terminated prematurely for any reason (Bradburd, 1995).[10] On the positive side, because post-privatization investments in freight were guided by commercial rather than political criteria, the quality of investments was probably better than before.[11] But, investments in suburban rail were probably distorted in some degree by political criteria, since it was still government-funded, with additional distortions introduced by the fact that capital contracts were executed by the concessionaires' sister firms. Thus, the results on the capital investments side are more complicated than they were on the operating expenses side, where the improvement seems to have been unambiguously positive and large.

(c) *Impact on consumers*

Consumers benefited from expanded rail services, lower prices, and better quality. Freight rates declined by 20% in real terms over 1991–94, as the concessionaires competed more aggressively with trucks and increased rail's share of freight movement from 8% to 10%. For instance:

Table 5. *Capital investments by freight concessionaires: promised vs. actuals*

Concession	Period	Amount promised (US$ millions)	Actual (US $ millions)	Actual/promised (%)
Rosario-Bahia Blanca (FEPSA)	1991–94 (3 yrs)			
Infrastructure		32.26	7.82	24.2
Additional investments		2.88	0.00	0.0
Rolling stock		18.37	6.43	35.0
Communications/signaling eqpt		3.47	3.35	96.5
Machinery and other equipment		5.46	5.54	101.5
Total		62.44	23.14	37.1
Mitre Line (NCA)	1993–94 (2 yrs)			
Infrastructure		50.82	na	na
Additional investments		1.70	na	na
Rolling stock		25.48	na	na
Total		78.01	20.40	26.0
Roca Line (Ferrosur)	1993–94 (1 yr)			
Infrastructure		7.33	4.26	58.1
Rolling stock		6.76	4.82	123.6
Communications/signaling		4.96	6.13	71.4
Total		19.05	15.21	79.8
Urquiza Line (Mesopotomico)	1993–94 (1 yr)			
Total		2.37	1.91	80.0
San Martin Line (BAP)	1993–94 (1 yr)			
Total		35.82	12.11	33.81
Total for all concessions		197.69	72.77	36.81

Source: Compiled from data obtained from National Railway Transport Commission, March 1995

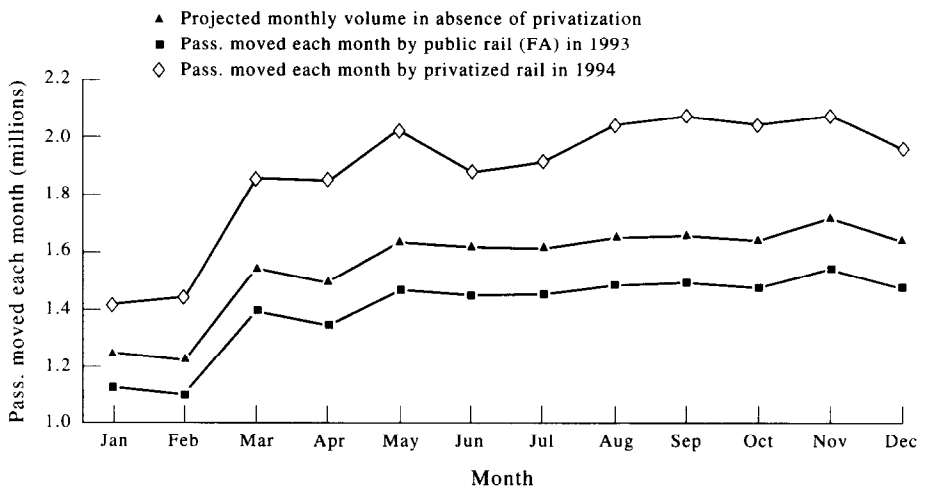


Figure 4. *Suburban rail service: volume moved before and after privatization [Urquiza Line, 1993 (public) vs. 1994 (private)].*

On the Tucuman to Buenos Aires route (1150 kms), where rail-truck competition was fierce, truckers had been charging US$38 per ton of sugar, but after rail privatization, rates had fallen to US$ 22 per ton for trucking and US$ 20–21 for rail. Similarly sharp declines were observed in the rates for moving grain from silos to ports (300–350 kms) (based on Kohon, 1994, section I.y.)

Commuter train users benefited from reductions in train cancellations and from greater punctuality of service. A survey conducted in early 1995 found that 91–96% of the travellers on four suburban lines felt the service was as good as or better than before, with a majority feeling that it was better.[12] Unlike other privatized sectors (e.g., telecommunications), suburban rail customers did not have to pay higher prices for this quality improvement. Ridership in commuter trains and the Buenos Aires subway system increased by 30–40% within months of privatization, but about half of this gain was believed to be due to less fare evasion. Figures 4 and 5 show the month-to-month volumes in the year before and after privatization for two suburban lines. As in these cases, ridership (as measured by paying passengers) typically increased by 15–20% in the first month or two after privatization, and presumably this was due entirely to less fare evasion. In addition, ridership increased by another 15% within a year of privatization,

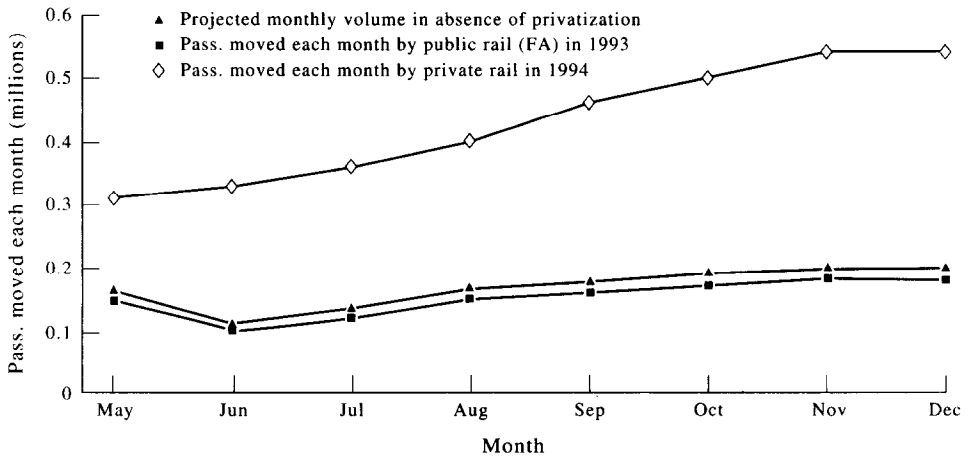


Figure 5. *Suburban rail service: volume moved before and after privatization [Belgrano South Line, 1993 (public) vs. 1994 (private)].*

presumably because rail attracted more users as service improved. To be sure, ridership rose even in the unprivatized suburban lines, but by a much lower percentage (as shown by the third line in the figures labeled "projected volume in the absence of privatization"). Thus, the only losers among consumers were fare evaders, who probably contributed $20 million in additional revenues per year to the suburban rail business.

(d) *Impact on investors*

It is not possible to say precisely how well investors did, because the private concessionaires would not release their financial statements, but as of 1995, two freight concessionaires were reportedly exceeding their profit projections, two were below projections but breaking even, and the fifth (Rosario-Bahia Blanca line) was reportedly running a loss of US$ 15 million for the third year. Suburban rail concessions were reported to be doing much better, but again details were not available. In 1994, both services had raised the volume of traffic by 25–35%, compared to 1990, but both were also running at 20% or more below projections made at the time of privatization, which may have been biased upward because of the government's selection criteria.[13] Whatever the returns from the concessions may have been, the total return to many investors, especially in the case of suburban service, was surely higher because of the synergies they realized between railways and their other businesses.[14] One sign that investors were not doing terribly is the fact that at least through the end of 1995 none had walked away from its concession.

6. SUSTAINABILITY OF REFORMS

Will the short-run gains be sustained in the long term? Our conclusion is that some gains are more likely to be permanent than others. A case in point is the increase in labor productivity, which is likely to remain high or even increase further, because the private owners have a strong incentive to minimize labor costs. Since freight rates and passenger fares are regulated by the price-cap method rather than the cost-plus method, private owners will profit, peso for peso, from operating cost reductions, not only in labor but in other areas as well. Concessionaires also have strong incentives to maintain and improve quality of service, since that can help increase capacity utilization, which in a high fixed-costs business can boost profits substantially. Suburban concessionaires face the added incentive of higher real fares if quality is improved, with *real* increases of up to 3.2% per year and a cumulative increase of up to 25% over the life of the concession.

A second lasting gain will be rail's heightened capacity to compete with substitute modes of transport because of the change in ownership. This will be especially important in freight, where the privatized lines were not purchased by competing modes of transport (i.e. trucking). To be sure, competition could have been strengthened even more if Argentina had adopted the British strategy of placing all rail track and stations under one company while permitting multiple freight and passenger rail companies to ply on those tracks. But given Argentina's low traffic density, the British approach would not have been feasible. Similarly, the competition faced by some suburban lines might have been more vigorous if they had not been sold to their bus competitors. One positive implication of such sales, however, is that rail-bus services might be better integrated, adding to passenger convenience. Similar prospects exist for the development of multimodal freight transport, which might enable the rail freight business to take off, as it has in the United States after the deregulation of transportation.[15]

A third lasting gain from privatization will be the diminished economic power of what used to be FA, and the concomitant decline in the power of unions. What used to be one monolithic firm has been divided into more than half a dozen independent decision-making units, even after recognizing that some of FA's pieces are owned by the same investors. Although each piece of FA is still the only railway company in its region, the break up makes the regulators' task a little easier for two reasons. First, they have to deal with firms with less economic and political power than FA. Second, they can use "yardstick competition" (Vickers and Yarrow, 1988) to spur the privatized firms to higher levels of performance, for example, by insisting that all firms adopt the best practices developed by any one of them. Even in 1995, regulators were comparing suburban rail companies on indicators such as punctuality, reliability, and customer perceptions of service quality. The possibility of playing one concessionaire off another also reduces the risk of regulatory capture.

But the long-term outlook for both freight and suburban rail service concessions is clouded by at least two factors. One is the commitment of private investors, especially those involved in suburban rail service. Are they truly committed to providing rail service for 30 years and beyond, or are they more interested in profiting from government-funded capital improvement programs in the near term? It is quite possible that the construction companies and other rail suppliers who joined the consortia will lose interest in rail if and when the capital spending

declines, but the investors who were FA's former customers or competitors may have a long-term economic interest in rail.

The second concern is the government's capacity to regulate the concessionaires effectively in the long term. At the time of privatization, Argentine officials benefited from an extraordinary amount of technical assistance on how to restructure and privatize FA, much of it funded by the World Bank and other international agencies.[16] The concession agreements negotiated in that process embodied much of the regulation necessary, but government officials seem to have been optimistic about the shelf-life of those agreements. For instance, the investment obligations of the freight concessionaires were spelled out in detail, and were regarded as firm, for the first five years, but deviations from those plans were sought within months of privatization!

Freight concessionaires argued that they had underestimated competition from trucking, that demand was softer than expected, and that the railways had more problems than they realized; for all these reasons, they wanted to scale down the investment programs they had agreed to finance and implement, and some of them sought to lower or waive altogether the lease payments owed to the government. By 1995, at least two freight concessionaires had stopped making lease payments. Regulators and freight concessionaires also argued about which expenditures were investments and which were merely maintenance. As Table 5 shows, in the first couple of years, most of them invested about half as much or less as promised, with particularly high shortfalls in track rehabilitation, probably because those sunk investments would be unrecoverable if the concession were terminated prematurely for any reason. The following comments by the senior manager of one freight concession were typical:

> Market conditions have changed since privatization. We face fierce competition from trucks. They have no public service obligations, and roads are almost free because tolls are not high enough. They also face no rules or regulations.[17] But rail is considered a public service, and we are obliged to provide service from city A to city B, even if traffic is low, through the life of the concession. When we bid for the concession we thought railroads were in good condition, but now we find that the condition of tracks and locomotives is very bad, and they need more fixing (Interview notes, Buenos Aires, 1995).

Suburban rail concessionaires, too, wanted to redefine the investment plans specified by the government at the time of privatization. As in the case of freight concession renegotiations, some of these requests may have been legitimate, e.g., because a firm had located a good source of second-hand rail equipment, while others could be illegitimate, e.g., because a firm wants to divert more contracts and business to sister organizations. The government's decision to allow rail's suppliers, customers, and competitors to bid for suburban rail concessions will probably come back to haunt regulators when a scandal or two erupts about the purchasing or sourcing practices of these concessionaires.

It will take a great deal of skill and professionalism for government officials to navigate these tricky regulatory waters. Regulators will need expertise, credibility, and a reputation for integrity if they are to be trusted to constantly renegotiate deals with concessionaires that balance the interests of all parties fairly. In 1995, a competent group of professionals, involved from the beginning with the reforms, was in place to regulate suburban services, which pose more difficult regulatory issues than freight service. But, these skills and the group's professional culture had not yet been institutionalized.

One particularly disturbing point about regulation is that in any future renegotiations, the government's bargaining power will be weakened by two realities: (a) no government, including any in the future, will want to close down the privatized operations, because of the social and economic consequences; and (b) no government is likely to want to renationalize railway operations. Thus, private concessionaires cannot be disciplined with either the threat of bankruptcy or that of renationalization. As one senior government official put it, "We can't even think about it [renationalization]!" The government can threaten to rebid the concession to other private parties, but the response from the private sector may be lukewarm if experience has shown that another private investor did not find the concession attractive. For these reasons, existing concessionaires will have the upper hand in negotiations, and can be expected to try to take a bigger slice of the pie for themselves or to pass on to the government risks that they willingly accepted at the time of privatization. The chief countervailing power for the government is the fact that many of the investors are large Argentine conglomerates (such as Techint) who have many other coals in the fire besides railway concessions, and it will be important for them to keep the government happy.

So, what is the bottom line? Our conclusion is that although privatized rail will have its share of regulatory and other problems, it will almost certainly fare better than the counterfactual case where rail continued to be run by state-owned FA. This is not saying very much, though, given FA's dismal performance in terms of high costs, poor service, and inability to compete.

7. CONCLUSIONS

The Argentine rail case illustrates both the possibilities and limits of privatization in developing countries. On the one hand, it shows that despite FA's size, huge losses, and powerful unions, it was feasible to privatize the firm — and to good effect. Given the political will it was possible to confront unions, reduce employment, and improve labor productivity by a factor of four or more. Private investors could be attracted by breaking up the monolithic firm, horizontally and vertically, and by leasing rather than selling its assets. Likewise, rail's market power could be handled by separating activities in which competition from substitutes was effective (freight) from those in which it was less so (suburban rail service), and deregulating the former. Externalities were preserved by subsidizing selected activities. In addition, activities that neither generated profits nor sufficient externalities to merit subsidy were terminated (intercity rail service). The result of these measures was a sharp reduction in the burden on taxpayers, better service at the same or lower prices for consumers, profits for most investors, and job losses with severance pay for former employees of FA. Rail became more efficient, especially in the use of labor, it became competitive with trucking in moving freight, and intermodal services began to emerge. Therein lies the promise of privatization.

Yet, Argentine railroads could not have become more efficient and competitive, nor continued to operate in the private sector, without the heavy involvement of the Argentine government, which still owns the railroad assets, provides a few hundred million dollars in operating subsidies each year, and finances 70% of the investment in the sector. True, the sector's labor productivity has skyrocketed, but only because the government downsized FA's labor force *before* privatization. Finally, privatized rail still has to be regulated, by the same government that regulated FA badly. The private owners of Argentine railroads are at least as capable of "capturing" government regulators to extract rents as FA's unions and employees once were.

These facts show that the new arrangements still involve the government heavily, but they do not amount to a repudiation of privatization. The question is not whether privatization is perfect but whether it is superior to state ownership. Subsidies still flow to the rail sector, but at a greatly diminished level, because some services were terminated and labor was downsized in what remained. In theory, both these steps could have been taken without privatization, but they were not, until FA was privatized. Moreover, labor cuts were deeper, and are much more likely to stay that way, because FA was privatized rather than downsized within the public sector. Privatization also forced the government to think harder about which activities merited subsidy, and competitive bidding, an option not available under purely government ownership, probably kept subsidies to a minimum.

The most valid concerns are about government failures in regulation after privatization. Here too, however, one should note that deregulation and the termination of some services reduced the regulatory burden on government. Privatization formalized the rights and obligations of managers and regulators in ways that had not been attempted earlier,[18] and made yardstick competition possible.[19] On the other hand, the private concessionaires did try to renegotiate the concessions to their advantage every time an unanticipated contingency arose. Investors participating in the privatizations had a stronger-than-average ability to bargain with the government, because of their political connections and economic power. The government had not created strong institutions to regulate the sector even three years after privatization, and its leverage over private concessionaires was weak because they could not be threatened credibly with either renationalization or bankruptcy. Perhaps the pressure on the government to strengthen regulation will be higher with private ownership than it was with state ownership, but this remains to be seen, and on it will greatly depend the long-term success of railroad privatization in Argentina.

In other words, the Argentine railroad experience confirms what we know to be the strengths and weaknesses of the public and private sectors. In its search for profits, the private sector will cut costs and build revenues more aggressively than SOEs, but it will ignore externalities, and it will not invest readily in projects with a long payback period, e.g., railroad track improvement. Therefore, subsidies and regulation will have to continue after privatization, but these bring with them the risk of regulatory failure and capture. In sectors such as railroads, privatization may end the government's role as *producer*, but not its roles as *financier* and *regulator*.

To what extent is the Argentine experience transferable to railroads in other countries? Like FA, railroads in many developing countries are overstaffed, have high costs, high losses, and are unable to compete. But three factors that made privatization feasible and desirable in Argentina may or may not apply to those countries. First, the Argentine government's resolve in forcing reform down the throats of FA's workers and unions was fuelled by the need for drastic action to solve the country's macroeconomic crisis. In countries where the economy is not in as deep a crisis, the political will to restructure and/or privatize railroads may be lacking, even if the railroads are performing badly, and it will be still weaker if the railroads are not

performing as badly as FA was. Second, in Argentina, the national highway network was well developed, making it possible to have competition between rail and alternative modes of transport in some segments, but where this is not the case, privatization will be less attractive because regulation will be more difficult. Finally, the strategy of breaking up FA by service and by region before privatization made sense because scale and scope economies seemed to be low in FA: the major rail lines ran radially out of Buenos Aires rather than forming a tightly integrated network, and only freight had to be moved over long distances once the decision had been made to terminate most intercity passenger services. Moreover, potential scale or scope economies were not being exploited in practice by FA.[20] In countries where railroads offer greater scale or scope economies, breaking them up may be undesirable, but privatization may be harder without it, because investors may not want to buy the whole firm, unless the railroad is small. The fact that in 1995 and 1996 railroads have in fact been privatized in a few more countries, including some large ones (e.g., Brazil, China, and Mexico), suggests that the limiting factors just discussed may not be overwhelming (for information on recent railroad privatizations, see Thompson and Shaw, 1997).

Although it is a bit of a stretch to draw lessons from the Argentine railroads case for other Quadrant 4 sectors (see Figure 2), a few points are worth noting. Without strong commitment to privatization at the highest level, it is highly unlikely that SOEs that build and operate roads, ports, water, sewerage systems, telephone networks, or power plants, will be restructured or privatized. Poor performance by these SOEs is likely to be a necessary, but insufficient, condition for privatization. Potential and actual economies of scale and scope will determine whether it is advisable to break up these SOEs before privatization. The potential to introduce competition in the sector will be another major determinant of whether privatization is likely to improve performance. In this regard, privatization offers considerably more promise in a sector like telecommunications, in which technological change is revolutionizing the prospects for competition,[21] than it does in sectors such as ports, highways, or water. (Water, for instance, offers even less hope for competition than railroads.) Sectors such as roads, water, and sewerage also require far greater amounts of new investment than did Argentine railroads, and since market power and externalities are at least as important in these sectors, the amount of capital and operating subsidies required will be greater, and the regulatory task more difficult, than it was in Argentine railroads.

In conclusion, in sectors such as railroads, where market failures exist, privatization promises not to be a panacea that eliminates all subsidies and all regulation, but a palliative that reduces subsidies, improves regulation, and yields some gains for consumers, especially if the concerned SOEs are performing poorly to begin with, if opportunities exist to inject competition into the sector, and if economies of scale and scope are not high. Since both market failures and government failures arise in these cases, a public-private solution is likely to prove superior to either a purely private or a purely public solution.

NOTES

1. Past studies have noted the strong correlation in developing countries between size, as measured by total assets, and state ownership. For instance, in the 1970s, the 10 largest enterprises in Brazil were state owned, as were seven of the next 15 largest; in India, the seven largest firms were state owned, as were 12 of the 16 largest; in Korea, 12 of the 16 largest firms were state owned, as were 20 of the 50 largest. More generally, Fortune magazine's 1979 list of the world's largest firms included 34 state enterprises among the 52 largest firms in developing world (Jones and Mason, 1982p. 38–41).

2. Although Williamson's (Williamson, 1975) transaction cost model has not been applied to state-owned enterprises, one can view state ownership as internalization by the state of activities that might otherwise be accomplished through arm's-length contracting with the private sector.

3. The Argentine telephone company (ENTel) was privatized in two parts whose collective market capitalization in 1995 was about US$ 6–8 billion (Ramamurti, 1996, p. 18), while the oil company (YPF) had a market value of US$ 6–7 billion at the time its shares were first floated in 1993 (Knoop and Yoshino, 1996, p. 10).

4. In previous severance programs, the government had payments in installments, with inflation and delays lowering substantially the real value of the compensation.

5. In calculating the value of assets leased to freight concessionaires, Kohon (1994) excludes the investment in rail track altogether, and estimates very conservatively the market value of the 322 locomotives and 20,525 wagons taken over by concessionaires at US$ 366 million. Assuming a remaining life of 20 years, the annual depreciation charge on rolling stock alone would be US$ 18.3 million, compared to the total annual lease payment of about $4.5 million.

6. In many of the telecommunications privatizations, e.g., in Mexico, equipment suppliers were barred from

gaining control of the firm. More commonly, however, governments have not restricted buyers seeking to integrate vertically or horizontally through privatization. In a sample of six developing countries, Seth (1989) found that 60% of the privatized firms were bought by local competitors.

7. In the 10 years following rail nationalization, FA's workforce grew from 150,000 to 220,000. In the early 1960s, the workforce was reduced by 50,000 through an expensive severance program, but employment expanded in 1974–76 and 1982–85. Thus, periods of downsizing were invariably followed by periods of rehiring.

8. The most important intercity service, accounting for 75% of the intercity Passenger-Kms moved by rail after privatization, ran a surplus that probably covered any deficits on the remaining 25%.

9. Assuming an average annual salary of US$5,000–6,000 per worker for the 70,000 employees laid off in the course of privatization.

10. Bradburd (1995) notes the "importance of government assurances that privatized natural monopolies will not be expropriated in the future. Without some confidence that this is true, risk averse operators of unregulated natural monopolies will be.....reluctant to invest in new physical plant. The effect of this will be continued sub-optimal provision of services" (p. 261).

11. For instance, freight concessionaires argued that investments to upgrade rail track to permit trains to run faster would not make economic sense unless customers were prepared to pay higher prices for that speed. Instead, they argued that targeted investments aimed at lifting bottlenecks to faster and better service, e.g., by purchasing wagons and locomotives or upgrading signaling equipment, would yield better economic returns. To be sure, in some cases, freight concessionaires may have used such arguments as excuses for underinvesting in infrastructure.

12. Between 54–95% of the passengers surveyed on four suburban lines by an independent firm said they thought service had improved after privatization. On one line (Belgrano North), 8% thought service had *worsened*, while on the other three only 1% or less felt service had worsened. (Data obtained from Ministry of Transport, see *Comunicado de Prensa.*)

13. Among the 10 criteria used by the government to select freight concessionaires were (a) the investors' business plan and projected profitability, and (b) number of employees to be hired. Since both these indicators would look better with higher projected volumes, bidders may have been motivated to make optimistic projections.

14. There was also some undefined value to the real estate that the concessionaires obtained with the privatization. Although the government deliberately denied them title to any real estate, some of which was incredibly valuable, they were granted the right to use a fair amount of land adjoining railway stations and track. Concessionaires were reportedly proposing to relocate freight yards outside metropolitan areas in exchange for permission to develop the freed up land for commercial uses.

15. See "How Conrail became a success story," *New York Times* (December 1, 1996) p. D1.

16. The Railway Restructuring Group, which developed and implemented the strategy for reforming railroads, received technical assistance and funding from the World Bank, while the agency for regulating public transport in Buenos Aires (ATAM) began as a project funded for almost three years by the United Nations Development Program (UNDP).

17. Another concessionaire complained that the ratio of highway tolls for trucks:cars was only 5:1, and that it ought to be higher. He further complained that trucks were routinely overloaded, and that truckers worked dangerously long hours, and that rail, with unionized workers and government regulation, could not compete on a level playing field.

18. Poole and Fixler (1987) have noted in the US context that "when a contract is put out to bid, it may be the first time that [a government] has been forced to devise written, quanifiable performance measures and/or evaluation criteria. Thus contracting out can actually lead to greater accountability than before" (p. 616).

19. The standard assumption behind yardstick competition models (e.g., Shleifer, 1985) that the regional monopolies operate in identical environments seldom holds in practice, but it is not a terribly unreasonable assumption in the case of suburban rail service, since all the concessions operate in the Greater Buenos Aires region.

20. A 1988 report noted: "Over the years, since the initial nationalization, a number of attempts have been made to coordinate, or unify, the operations of the individual lines [of FA...but] there remain major gaps in the unification ...Each of the lines has doggedly clung to its separate identity...The interests of FA as an integrated transportation network are frequently lost or ignored" (World Bank, 1988 Annex 2, p. 5). FA may even have suffered from *dis*economies of scale and scope, because it had a very large corporate administrative structure to rein in and manage the autonomous divisions of the company.

21. The advent of microwave and satellite communications have turned long-distance service from a natural monopoly into a potentially competitive business, and the same is beginning to happen to local telephone service, thanks to mobile cellular technology and stationary wireless (Ambrose *et al.*, 1990). Innovations in regulation, emanating from the United States and the United Kingdom, have made it possible to inject competition in segments of the industry that are not naturally monopolistic, and to better regulate activities that are.

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