

**PRIVATIZATION OF RAILWAYS IN ARGENTINA:
GIVING A FRAMEWORK FOR A RAILWAY POLICY.**

**Alberto E.G. MÜLLER
Consultant**

**U.N.D.P.-Secretary of Transport
Buenos Aires - Argentina**

INTRODUCTION

This paper summarizes the findings of a study directed by the author (UNDP-ST, 1991), dealing with the present privatization process of Argentina's intercity railroads. First, I will provide a brief historical perspective and diagnosis. Next, I will turn to an analysis of the potential market for railroads and their economic feasibility, sketching out some policy guidelines. I will refer afterwards to the privatization process, in order to appraise how its regulatory framework and contractual terms match with the policy guidelines. Some conclusions are finally presented.

The Argentina's ongoing privatization of railroads does not have a true transportation goal; just like all the other privatizations underway, it is rather an ideological and political response to severe budget restrictions and to recent hyperinflation. This paper tries to help to build a frame for a sound railroad policy. This seems to be an unavoidable step. Besides the formulation of general transport policy, it will enable a well-substantiated negotiation with the private operators.

A final warning: the reader will notice that several issues will not be dealt with, either analytical and methodological; this is partly due to need for briefness, but the bulk is due to limited time available and the little resources devoted to this research. Therefore, outcomes are to be taken as provisional and subject to further analysis.

1. PRESENT SITUATION AND DIAGNOSIS

The critical present situation of Argentine railways is the outcome of a long process, which started during the Thirties' Depression, but became apparent at the beginning of the fifties, after nationalization. Having reached some 45.000 km, the network was gradually reduced. After the closing down of several branches carried out by two rationalization programs, nowadays operating branches make up no more than 29.000 km. Staff declined from more than 210.000 employees in 1959 to 85.000 nowadays (this figures include urban services). Freight traffic also declined some 50% from peak values, reached in the fifties; the railways'

share in the surface freight market was reduced from 35% to 15% (about 13 million tons and 8.000 million of ton-km). And obviously, the financial situation got worse: by the eighties, revenues covered 45% of current expenses (only 30% of expenditure including investment). The quality of service is nowadays low, with frequent delays and even cancellation of services, mainly due to failures in engines. Two additional features are worth to be mentioned here: the low density of traffics (less than 400.000 traffic units per km) and the low staff productivity (some 200.000 traffic units per employee). Finally, average freight and passenger costs (including capital expenditures) are much higher than road transportation costs: railroads lack nowadays of economic justification.

Several explanations have been proposed for this situation, most of them one surely well known in many countries. It is convenient to group them as follows:

a) It has been argued that the railroad crisis is due to the lack of adaptation to the new times; this means it should have undergone a resizing process, always understood as a reduction of service and concentration on bulk freight traffic, instead of aiming to meet all transport demand, "as in the old good times" of monopoly. As this was not performed, railways ran increasing deficits, which affected their overall performance; being a state owned-enterprise, this also meant an increasing involvement of public finance, removing budget restrictions and promoting corruption and vested interests of trade unions, suppliers, shippers, and the like. This point of view is usually held by international financing agencies; it will be termed the "rationalization" approach (RA) explanation.

b) On the other hand, railwaymen argue that trucks benefit from subsidies, due to low fuel prices, road user undertaxation and transfers from urban transport taxation. This allows truckers to set low fares, affecting railroads' financial performance. We will call this argument the "unfair competition" approach (UCA) explanation.

Both explanations can be briefly appraised as follows. Right or wrong, the RA has surely been widely implemented. The aforementioned impressive reductions in network and staff and the elimination of the bulk of secondary branches passenger trains (some 90% is nowadays supplied on trunk lines) are good examples of resizing. The present rail freight traffic is mainly composed of heavy and low value goods (grains, stones, cement, oil, fuels, etc.), and is strongly concentrated on relatively long distances (600 km, on average); less than 25% of stations account for more than 70% of freights, most of them carried through unit trains. But the outcome of this policy has been disappointing. On the one hand, productivity grew less than

50%; on the other, financial losses showed a slight increase (there is some evidence suggesting that there has even been a structural deterioration); and the quality of the service has shifted downwards. It may be argued that otherwise, things should have run even worse; it is difficult to assess counterfactual statements, but at least we can surely say that the results have indeed been very poor. Anyway, in respect of managerial deterioration and vested interests, the RA explanation is obviously right.

To appraise the UCA, we may review the outcomes of a road user charges study (UNDP-ST, 1990), for 1984-88:

- Average fuel prices in Argentina have been almost the same as international prices; so that it cannot be argued that there is any subsidy.

- The average subsidy through road supply has amounted to 25% of truck's cost per km, and 8% of bus's cost.

- The overall amount of road agencies funds and the amount of specific taxes levied on intercity road transport are virtually the same, even if the former were not enough to meet the road system requirements.

These statements suggest that the UCA is fully right only in what concerns subsidies to heavy vehicles from light vehicles; and indeed they are not high enough to explain the railway's performance (although they must have been higher during the sixties and seventies, due both to lower fuel prices and lower transit densities).

We may conclude, therefore, that even if both approaches are right in some concerns, they do not provide a complete explanation; some new issues must be introduced.

First, we must reject the idea that railroads do what they should not: as mentioned, most of their traffic can undoubtedly be considered as adequate; perhaps, we may suspect that railways do not do what they should do.

Second, we must point out that the state railroads were not given clear goals by the government; they were viewed alternatively either as an instrument of public expenditure to satisfy vested interests (suppliers and trade unions, for example) or as an object to reduce fiscal deficit, depending on the particular situation, than as a transportation tool. There is an "objective" explanation for this: there are not very heavy freight corridors in Argentina; so, the justification for railways is by no means evident. So, railways were always "under suspicion", and subject to contradictory decisions, which happened very frequently in an unstable country as Argentina. Therefore, defensive behaviour was promoted, which resulted in deterioration of operations, having consequences throughout the railway system due to the strong interdependence of activities in railroads. A cumulative process evolved and vicious circles developed. For example, the resizing

programs, based merely on RA, produced drastic staff reductions which damaged the enterprise operation; this outcome called for more resizing, etc.. Rail managers, on the other hand, were unable to influence decisions at the political level. No enterprise is able to operate normally, in such conditions.

2. THE POTENTIAL FREIGHT MARKET FOR RAILROADS AND ITS ECONOMIC FEASIBILITY

One main issue, therefore, is to find the railroads' "right" place in the transport market. This task requires to measure the potential freight market (leaving aside passengers traffic, as is only viable in heavy freight corridors) and to obtain the overall transport costs - i.e., summing up road and rail costs - for different modal distributions. Based on this, we can appraise which modal split is more suitable, from an economic point of view. This part of the paper will describe the procedures developed and the answers obtained for this strategic question. The approach we use is based on the variation of costs due to density (through infrastructure costs, where sensible scale economies take place) and the additional transloading costs that transfer to railways may occasion.

2.1 The freight's potential market for railroads.

Assuming that the present freight traffic by the railroads should not be abandoned (except if a branch is not economically convenient), we must focus our attention on road transport demand.

The starting point is an OD matrix for road freights, classified in some 100 commodity items; it was obtained through a survey carried out in 1982/83 (corrected due to several omissions), updated to 1986/87; it covers the whole country, divided in 105 zones. Each commodity OD pair is first classified according to the number of transloadings that rail transport would require. Next, derivable traffics to railroad are defined, through the following criteria:

- a) Each OD pair must be covered by the rail network, through a rational route.
- b) Retail fuel transport is excluded.
- c) For freight that requires one or two transloadings, a minimum distance of 200 km is adopted. This criterion is based on comparative cost calculations, which will not be referred here in the sake of briefness.
- d) For less than truckload freight, no minimum distance is adopted, as both rail and road require transloading.
- e) For export grains, a minimum distance of 150 km is set, on the basis of available studies on the subject.

e) For each commodity, it is considered that only traffics of OD pairs larger than 20.000 tons/year are derivable (i.e., more than two weekly wagonloads per station), for little shipments are not of interest to railways.

An additional correction was made, to take into account the low densities of four major commodities (cattle, vehicles, vehicle spare parts and general freight), in order to obtain equivalent tons.

Aggregated outcomes are shown in Table 1.

TABLE 1

	MILLIONS TON-KM
RAILWAY FREIGHT	8,387
TRANSFERABLE ROAD FREIGHT	22,393
NON TRANSFERABLE ROAD FREIGHT OD PAIRS NOT COVERED BY THE RAIL NETWORK	36,107
OD PAIRS EXCLUDED DUE TO THE OTHER REASONS (RETAIL FUEL, SHORT DISTANCE HAULS AND LOW VOLUMES)	13,311
	22,796
OVERALL ROAD FREIGHT	58,500

We can state that only 38% of road freights may be transferred to railways; simmetrically, the "true" railroad share in freight market (27%) is bigger than suggested by simple overall figures. The main commodities included are the following: grains and by-products for domestic market (30% of overall tonnage), grains and by-products for export (18%), general freight (12%), cattle (10%) and cement (6%).

2.2 Road and rail transportation costs.

In this chapter, we present costs estimations for both rail and road transportation, and for transloadings. This study being concerned with long term policies, the costs considered include capital costs, for assets that need replacement (for infrastructure and rolling stock). However, infrastructure requirements to accomodate additional capacity are not considered, for in the present situation in Argentina they are not deemed as necessary. All currency values are in U.S. dollars.

2.2.1 Railroad transportation costs

The starting point for railroad cost is a cost model developed for this study. After its calibration on the basis of a cost survey done for railways in 1987, several modifications were introduced in order to assume a more efficient management. These are the main parameters adopted:

- Average locomotive running: 75.000 km/year
- Average wagon running: 25.000 km/year
- Average number of wagons per train: 35
- Average load per wagon: 50 tons
- Staff per train: 3 employees
- Average distance between stations: 40 km
- Average staff per station: 5 employees
- Rate of interest: 10%

The cost model takes as inputs the freight volume on a railroad stretch and the overall passenger services supplied through it, assuming they are the same as in 1986/87. Obviously, the higher the volume of passenger services, the less will be the freight cost, due to scale economies in shared infrastructure costs.

Through the optimized model, several combinations of density and passenger services were tried; through regression analysis, the following cost function was therefore obtained:

$$RC = 0.346 \cdot D^{-0.171} + (1 - \frac{DP}{2000}) \cdot (5.05825 - 0.35067 \cdot DP^{-0.171})$$

where RC: railroad freight cost per ton-km for a stretch
 D : annual rail freight density (tons/km)
 PD: passenger supply density (daily seating places/each way)

2.2.2 Road transportation costs

Road transportation costs include both long haul transportation and short haul transportation when it is complementary to railroad haul, when transloading is necessary. The vehicle cost were calculated on the basis of usual available sources (mainly road agencies); the infrastructure costs were obtained from the aforementioned road user charges study. Vehicle costs are assumed as constant; infrastructure costs vary with the vehicle flow.

For long distance haul, this is the function adopted:

$$AC = 0.442 \cdot D^{-0.168}$$

where AC: road freight cost per ton-km for a stretch
 D : annual road freight density (tons/km)

For short haul, cost assumed is of U\$S 0.5 per ton-km, for a fixed distance of 10 km.

2.2.3 Transloading costs

On the basis of available studies and consultation, the assumed transloading cost is of U\$S 1.5 per ton.

2.2.4 Network allocation and cost

Through usual procedures, a codified network was designed for the 105 zones, both for road and rail, reproducing in a schematic way the real network of both modes; routes linking each pair OD were defined, on the basis of minimum distances and current practices in railways operation. For each stretch of the rail network, passenger and actual freights densities were identified; on the other hand, non transferable road freight was assigned once for all (the allocation process was also used to validate the overall OD matrix data). It must be noted that in several cases, due to inadequate zoning criteria and the complexity of rail network, oversimplification and conventional assumptions were necessary.

Therefore, for each traffic allocation to road and rail, densities for each codified link are obtained, and cost are calculated, through the aforementioned cost functions; transloading costs are also included.

2.3 Alternative freight transfer to railroads: economic analysis and results.

In addition to the present situation, three intermodal transfer hypotheses are defined:

- The maximum hypothesis assumes 100% transfer.
- The minimum and medium hypothesis (which will not be detailed here for brevity) are based on criteria which attempt to identify cargo traffics more or less likely to be transferred; they were defined through linear functions, which increase transfer as tonnage of each OD pair and distance increase. In the case of grains for export, special assumptions were made, on the basis of a recent comprehensive study about the subject.

The same hypothesis were also applied to an increase in overall demand of 25%, in order to get a rough approximation of demand for a time-horizon of 10-15 years.

Finally, an additional assumption was introduced, concerning railroad costs. As their estimation is based on the present situation, an error is likely to occur when dealing with much higher traffic densities, as probably economies of scale will not be fully captured by the cost model. An additional hypothesis, allowing a 15% cost reduction for railway, was therefore introduced, in order to test sensibility; of course, it was not applied in the scenario using present modal split.

The outcomes attained through the 12 alternative

hypothesis tried out are shown in table 2:

- In general, the overall cost variation due to transfer to railways is modest. Under the most favourable assumptions, overall cost decreases by only 9-10%.
- Only if the additional 15% cost reduction is assumed, the three hypothesis allow an overall cost reduction. Otherwise, this happens only with the maximum transfer hypothesis.

2.4 Conclusions: The role of railroads and privatization

The results of our simplified exercise confirm the general idea put forward in the diagnosis, that there is no clear cut market for railroads in Argentina; even under the most optimistic hypothesis of intermodal transfer, there are no typical rail corridors. On the other hand, it can be suggested that railways will face, in the long run, a kind of "all or nothing" game: only if very great increases in traffic are obtained, they will be economically justified.

What should be therefore expected from privatization, in this context? Four main targets can easily be set out:

- a) A very tight policy in what concerns operational costs.
- b) A strong incentive to traffic increases, which should be reflected in an aggressive commercial policy. Traditional very selective policies do not seem to be sound here.
- c) A strong commitment with investment to sustain the required traffic increases, besides requirements to replace exhausted assets; a preliminar estimate suggests that some 2.100 million dollars should be necessary, in a long run term (in 15 years, this means as much as 3 times the investment to keep present freight traffic levels).
- d) A very tight policy with respect to suppliers, trade unions and the like.

It must also be reminded that operators must face the truck's subsidy, although not very significant, that limits even more their margin of manoeuvre. And last, but not the least, a very effective government policy is also required; to this issue we turn in the following section.

3. THE ONGOING PRIVATIZATION PROCESS

3.1 Stages of the process.

Privatization of Argentina's railways was first led, during the end of the eighties, by some private enterprises, which showed interest in some parts of the network; in a second stage, started in 1990, the government decided to privatize altogether the whole system, divided in several lines. There is at present an explicit commitment to end the process during 1992 (not only for

TABLE 2

EFFECTS OF ALTERNATIVE DERIVATION HYPOTHESES

PRESENT RAILROAD COST															
TRANSFER HYPOTHESES	FREIGHT WITHOUT TRANSLOADING		FREIGHT WITH TRANSLOADING		PRESENT NON RAIL ROAD FREIGHT FREIGHT		TOTAL FREIGHT		C O S T S				C O S T		
	RAIL	ROAD	RAIL	ROAD	RAIL	ROAD	RAIL	ROAD	RAIL	ROAD	RAIL+ROAD	TRANSL.	TOTAL	INDEX	TON-KM (d&I.)
1986/87 FREIGHT															
PRESENT SITUATION	0	9,155	0	13,238	8,387	22,796	8,387	45,189	347	1,686	2,033	0	2,033	100	0.0379
MINIMUM TRANSFER	5,006	5,882	3,993	9,245	8,387	22,796	17,386	37,923	566	1,468	2,034	18	2,052	101	0.0371
MEDIUM TRANSFER	4,995	4,701	7,092	6,154	8,387	22,796	20,474	33,651	686	1,320	2,006	26	2,031	100	0.0375
MAXIMUM TRANSFER	9,162	0	13,238	0	8,387	22,796	30,787	22,796	896	988	1,884	63	1,947	96	0.0363
FREIGHT INCR. - 25%															
PRESENT SITUATION	0	11,444	0	16,548	10,512	28,495	10,512	56,487	416	2,029	2,445	0	2,445	100	0.0365
MINIMUM TRANSFER	4,107	7,352	4,993	11,564	10,512	28,495	19,612	47,411	674	1,769	2,443	22	2,466	101	0.0368
MEDIUM TRANSFER	6,244	5,165	8,865	7,692	10,512	28,495	25,621	41,352	804	1,590	2,394	32	2,426	99	0.0362
MAXIMUM TRANSFER	13,116	0	16,548	0	10,512	28,495	40,176	28,495	1,053	1,190	2,243	79	2,322	95	0.0338
15% REDUCTION OF RAIL COST															
1986/87 FREIGHT															
PRESENT SITUATION	0	9,155	0	13,238	8,387	22,796	8,387	45,189	354	1,686	2,040	0	2,040	100	0.0381
MINIMUM TRANSFER	3,285	5,882	3,993	9,245	8,387	22,796	15,665	37,923	496	1,468	1,964	18	1,982	98	0.0370
MEDIUM TRANSFER	4,995	4,171	7,092	6,154	8,387	22,796	20,474	33,121	601	1,320	1,921	26	1,947	96	0.0363
MAXIMUM TRANSFER	9,162	0	13,238	0	8,387	22,796	30,787	22,796	793	988	1,781	63	1,844	91	0.0344
FREIGHT INCR. - 25%															
PRESENT SITUATION	0	11,444	0	16,548	10,512	28,495	10,512	56,487	427	2,029	2,456	0	2,456	100	0.0367
MINIMUM TRANSFER	4,107	7,352	4,993	11,564	10,512	28,495	19,612	47,411	591	1,769	2,360	22	2,382	97	0.0355
MEDIUM TRANSFER	6,244	5,125	8,865	7,692	10,512	28,495	25,621	41,312	711	1,590	2,301	32	2,333	95	0.0349
MAXIMUM TRANSFER	13,116	0	16,548	0	10,512	28,495	40,176	28,495	932	1,190	2,122	79	2,201	90	0.0321

railways, but also for all state owned enterprises), and to close down branches that are interesting for private sector (or possibly to transfer their management to provincial governments).

By now (january 1992), only the first bidding has ended; some 5.200 km are now under private operation. The second tendering process recently failed, after long negotiations with the unique interested group; a new call for tenders will soon be issued. A third 5.000 km network has been awarded, and negotiations are in course.

3.2 Regulatory framework for railroad's privatization.

The regulatory framework and contracting terms are basically the same for all the intercity network bids. Their main features for the now privatized network are the following:

- a) Privatization is performed through a concession for 30 years; both infrastructure and rolling stock are rented to the concessionaire, who must give them back at the end of the concession. The granting agency is the Government.
- b) The concessionaire must accomplish an investment plan; part of it is included in the bid terms, the remaining being proposed by the former. The plan, anyway, can be renegotiated after five years. There are also an obligation to keep operating conditions of infrastructure.
- c) The concessionaire has no practical obligation, in what concerns shippers requirements; the only limitation is a maximum fare level (actually set at very high levels).
- d) In the case of contract rescission due to concessionaire's fault, it loses a guarantee amount, but recovers the current value of investment, minus a share of 40 to 50%, as unique indemnification. It must be noted that, in the specific case of the already privatized railway, this may mean that in the first years it may pay more to give up the concession than to keep it.
- e) The state owns a share of 16% of the concessionaire society; but this is not a kind of golden share.

The concessionaire is selected between bidders through a point system, which considers mainly the rail operation antecedents of the offerer, the committed investment amount, the committed rent amount and the number of railwaymen absorbed.

There are not explicit subsidies; but an implicit one is included in the rent of infrastructure and rolling stock: for the already privatized railway, this subsidy is equivalent to more than 40% of annual yield.

3.3 Expected outcomes of the process.

A full evaluation of the privatization is impossible here; we will concentrate on the expected outcomes, relating them with the policy recommendations we put forward in par. 2.4.

Surely, private operators will succeed in what concerns operational costs reduction, even if they will have to face a learning by doing process; the present evidence shows a definite trend towards the adoption of the operative model of U.S. regional railroads; this will mean a significant change (staff requirements are to drop dramatically). It may be expected that private operators will be able to cope with trade unions and suppliers.

But the crucial question is whether this regulatory framework will be able to promote strong traffic increases, which seems to be the right path for railroads in Argentina, in the long run. This goal requires both large amounts of investment resources and strong incentives. In what concerns the former, some of the existing tendering groups are financially sound, while others are not. But the most critical feature of the adopted regulatory frame is perhaps that incentives are working exactly in the opposite way: while present traffic levels are assured through subsidized assets, traffic increases will require fresh money in large amounts. And also they will also require fare reductions, as it is not likely that railway in Argentina will be able to supply very differentiated services (it must be reminded that average freight distances in Argentina are not very high). More funding and lower fares will surely reduce the rate of return of the "marginal" project of increasing traffics, starting from a present situation of not very high profitability (the internal rate of return of the nowadays privatized network has been valued by the author, under rather optimistic assumptions, at 10%). In addition, generally private enterprises in Argentina expect that each project should be self-financing (large external funding is resorted only when a very significant leverage effect is expected).

Which will be the future path of railroads privatized under such conditions?

Great operational changes will surely take place, and the meeting of current expenses by yields may be taken as granted; this is undoubtedly a positive feature.

However, with regard to investments, evolution is indeed more uncertain. It may be expected that some investment will take place, in order to maintain present operation levels and standards, in a kind of steady state situation; but investment in order to enlarge capacity is very unlikely. Moreover, it may be guessed that private

railways will probably go on till great investment will turn unavoidable, mainly for infrastructure replacement; in such case, private operators will not be interested, and will perhaps give up the concession, returning back the remaining assets to the state. If the truck subsidy persists, the incentive to expand railroad activity will be dampened. Investment plans will surely be renegotiated.

Of course, this will not happen soon; therefore, there is a lapse for re-thinking strategies for railways, once the awarding process will be ended. And surely at this point the government policy will be crucial for the future of rail transportation in Argentina. If the goal of strong traffic increases will prevail, some important changes will be necessary. We may suggest here some alternatives:

- To run state operated services through the concessioned infrastructure.
- To increase state concerning with investments, through budget funds (provided by the rent payments).
- To transform concessions into mobility concessions, putting infrastructure investment and management under the state responsibility, and providing adequate incentives for traffic increases (for example, through a decreasing average toll, and granting an equivalent subsidy to both trucks and railroads).

This is not the place to develop this ideas. However, one central issue must be stressed: privatization will not mean that government will be relieved from the "railways problem"; on the contrary, the still not answered question about the railroad's role in Argentina's transportation will be at stake again. It should be expected that the answer will be a sound one.

Acknowledgements

The UNDP studies quoted in the text were done with the helpful collaboration of Adriana Garrido, Gabriela Navarro, Graciela Armesto and Héctor Leone. I am grateful for the useful comments of Karl Knechtel (G.T.Z.), who also kindly helped to improve my English.

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