

9TH CONFERENCE ON COMPETITION AND OWNERSHIP IN LAND TRANSPORT

THE PRIVATIZATION PROCESS OF THE SUBWAY AND THE SUBURBAN TRAIN SYSTEMS IN RIO DE JANEIRO: contractual and integration aspects

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1 - INTRODUCTION

During the decade of ninety, the process of privatization of the systems of transport on rails begins and develops in the Brazil. First, with the transport of load of the Federal Railway Net Ltd at national level, later on, at state level with the passengers transport in the State of Rio de Janeiro. It was executed by means of the programme of denationalization of the system of subway or underground city railway system-operated in the epoch of the privatization by the public company METRO/RJ- and the system of suburban railways by the firm Flumitrens. In addition to these two systems, it was denationalized the urban transport for boats in the Bay of Guanabara. It is important to point out that those three means together were generating an operational annual deficit of approximately US\$300 millions in 1996.

In the State of Rio, it was chosen to transfer the railway services to the private initiative by means of preceded concession of public work over a period of 20 years in case of the existing lines, known as lines 1 and 2 of the subway, as well as for a 25 year period, in case of the lines of the suburban train. It included in the price of the concession, the right of use of goods and the possibility of the contract's renewal on an equal period (Rodriguez and Contreras, 1998).

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The public bid is the determined sale method by the Brazilian legislation. In these cases, this process had two phases:

1. Prequalification to guarantee a minimal level of technical, economic, operative capacity and fiscal regularity (to minimize the risks of the process).
2. Phase of offer in the strict sense, with the modality of choosing for auction. This auction was undertaken at the Stock Exchange of Rio of Janeiro City. The State, through the State Secretary of Transport carries out the planning of half and long-term, the attribution of services regulation, tariffs establishment, the defence of the users interests, and the inspection of the contract is in charge of the Regulatory Agency of the Granted Public Services of the State of Rio de Janeiro (ASEP-RJ)

The minimal prices of selling, established by the hiring of independent consultants, were of 28, 56 millions of US Dollars for the lines 1 and 2 of the Subway and 36, 25 millions of US Dollars for the lines of the Flumitrens. The values offered of US\$201, 66 millions and US\$279, 66 millions respectively, generated increases in price of 921 % and 671 %. The adopted form of payment was the parcelling out of the value, offered in an initial quota at the price of 30 % of the proposal plus the value of the consumer goods to be paid at once of the signature of the contract and the remainder divided into monthly quotas along the concession .In both processes, it was accepted bonds of the state debt as a form of payment on behalf of the first quota. There were also foreseen refund of the expenses realized by the State with the hiring of consultant for the previous modelling and the bid. In Rodriguez and Contreras-Montoya (2000, 2001) could be found other details about these relevant aspects of the process.

After this brief historical contextualizing and explanation of the process in terms of price, it is detached outstanding information about the transport and its characteristics in the region. It is also explained the conduction of the process of privatization in what refers to the contractual commitment. This contractual commitment defines the investments for recovery and expansion of the system, of course, linked to the analysis of the criteria of fixation and update of tariffs contemplating the cases of review and the tariff readjustment and its relationship with the economic-financial balance of the subscribed contracts.

Then, the problem of integration is discussed “inside the market”, since the implemented privatization in the phase of dispute “for the market” focused the processes in detached form among themselves and outside of a general systemic context of transport in Rio de Janeiro. Here the reflexes of that situation are analyzed in the behaviour of the awaited demand and for the emergence of other commercial poles not contemplated appropriately, situation that has a major impact in case of the suburban train(for instance, activities in Jacarepagua, Barra de Tijuca, Nova Iguaçu, Bangú), studying the impact of this lack of integrated operation when settling down individually the charged rate as a principal form of remuneration and

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interpreting its meaning as barriers for the implementation of tariffs socially fair and for the establishment of crossed financings among ways, as well as for the prioritization of a use of those ways and most adopted to the profile of the demand.

2. THE METROPOLITAN REGION OF RIO DE JANEIRO - RMRJ

The RMRJ was created in 1974 and it has today 20 municipalities, and a total area of 5.384 km². Its population, in accordance with the census of 2.000 year, done by the Brazilian Institute of Geography and Statistics IBGE, adds 10.894.756 inhabitants, near 76,6 % of the entire population of the State.

This region concentrates 78 % of the industrial establishments, 75 % of the commerce, and 79 % of the services and it absorbs 84 % of the manpower used in those sectors in the whole State. In accordance with the CIDE (Foundation Centre of Information and Datum of Rio de Janeiro), only the Municipality of Rio de Janeiro responds for near 60% of the total economic activity of the State, which GDP is next to US\$ 48,4 trillions (US\$ 3.500 per capita).

The offer of transports in the Metropolitan Region of Rio de Janeiro is characterized by the existence of diverse ways, in the majority of the cases; there is a direct competition for the reception of the users, without any scheme of prioritization for the systems of collective transport, and with very low levels of integration.

The distribution of the use of the land concentrates residences on the periphery (70 %) and in the central area and south zone (70 %), which it contributes to the pendulum movement of the displacements and to aggravate the congestions. As result, it is considered that users spend daily from 2, 5 to 4, 0 hours in each complete trip of the periphery (called baixada) up to the centre of the city.

The regulated systems operate without the exploitation of the real vocations of each of the modes; also, they face the competition of the clandestine systems (kombis and vans). The matrix of current transport presents a big distortion and a very low participation of the systems of high capacity.

Of the total of about 10.4 million motorized trips, the participation of the diverse ways has been distributed this way: bus 72,1 %, alternative transport 5,8 %, automobiles and taxis 13,5 %, subway, 4,3 %, suburban trains 2,9 %, boats 0,9 %, motorbikes 0,3 % and another 0,2 %. The small participation of the systems of transport of mass (meter, trains and boats) in the total volume of passengers transported in the RMRJ is a direct result of the scarcity of investments in the systems. Nevertheless, its strategic geographical position justifies its potential of transport estimated in 2, 3 million passengers - day in the studies that proceeded to the process of privatization (COPPETEC, 1999 to, b, c).

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In accordance with the result of the survey of origin and domiciliary destination hired in the ambience of the Plan of Transport of Mass - PTM, realized in 1994, of the 8.800.000 daily trips for public transport, approximately the half needs from more than one way, concretely: 37 % of the trips per subway; 47 % of the trips for train and 41 % of the trips for bus need one or more transferences of its origin to the destination.

The users have been penalized paying two or more tariffs, when they might take the same displacement with an integrated tariff. If it is considered the use of the voucher-transport for those who have stable employment, it is had a financial load on the society, by virtue of the consistent transference of those costs for the economy in general.

The railroad system of suburban trains of passengers of Rio de Janeiro is operated by the licensee Supervia, from the services concession to the private initiative in 1998, and by the State Enterprise of Transport and Logistic- Head office(its name was Flumitrens until the year 2002) in charge for the operation of the remaining system. The system under responsibility of the Super Via attends 16 of 20 municipalities of the metropolitan region. It is formed by 5 trackwalkers of wide gage (1.600 mm) electrified with 172 km and 3 trackwalkers of narrow gage (1.000 mm) not electrified with 92 km. It has 95 stations and 32 stops, a fleet of 244 TUEs and 41 locomotives diesel.

The system on the responsibility of the Head office, everything in narrow gage and diesel haulage, is constituted by 2 trackwalkers with entire extension of approximately 75 km, 6 stations, 25 stops, with 3 locomotives and 12 passengers' cars.

The system of subway, operated by the concessionaire Opportrans, attends only to the municipality of Rio de Janeiro; it is formed by two trackwalkers of wide gage (1.600 mm) electrified with 35, 2 km from extension. It has 32 stations and a fleet of 146 cars and 30 articulated cars.

The system of boats, ran by the concessionaire Barcas Inc, is composed of five lines, with entire extension of about 81 km, and where 6.300 is the average number of trips per month.

The system of bus public transport consists of 129 companies that work or operate next to 1.550 municipal and intemunicipal lines which use more than 14.000 units considering all the buses of urban and inter-city type, its production is next to 127,6 thousand trips - days and 4,7 million km covered every day. This circulation generates significant costs that impact negatively the environment of the RMRJ and degrade the quality of life for the excessive presence of atmospheric pollutants and levels of noise ambience; In addition, it is responsible for a high number of accidents.

The institutional organization of the transportable sector in the RMRJ could be considered as quite complex. There is a quite diversified set of more than 28 organisms and entities (federal,

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state and municipal) linked to aspects of planning, project, management, operation and regulation of the different ways of transport and infrastructure.

The existence of a Metropolitan Agency of Urban Transports (AMTU), according to its current design, does not replace the need of integration and operational coordination of the diverse ways of transport that operate in the RMRJ. This Agency acts basically in the ambience of the State Secretary of Transport. In the practice, it does not exercise the role of an organ capable of planning and manage the system of the widest form.

It must be emphasized the Regulatory Agency of Public Services in the State of Rio de Janeiro (ASEP-RJ) that exercises the regulation in the ambience of the services of transports granted for the operation to the private initiative, without exercising any function of planning or management of the system of transports.

3. MINIMAL PRICES

The minimal prices of selling were established for three companies from the hiring of independent consultants who determined the potential existing demand in the period of the authorization. These firms evaluated technically the operational involved goods, established the potential capacity of every system, the total of necessary investment in order to recover them, the operational costs and investment in restoration during the period of the authorization and the collection to be generated by the transport. With these elements, they established by the method of cash flow, the present value of each of the systems in study. Thus, the minimal prices were established by the capacity of generation of resources of the goods used by the systems granted. Other forms were discarded such as the residual value, of the value of restoration and of the countable value.

The minimal prices established for the selling of every system were the following ones:

METRO - the minimal established price was 25, 0 millions of US\$ for the authorization or concession and 3, 56 millions of US\$ for the materials of consumption. The foreseen payment form was: a first quota whose amount corresponded to the sum of 30 % of the offered value by the authorization plus 100 % of the established value for the materials of consumption, paid at the date of the signing of the contract of authorization (concession); plus 233 monthly equal and successive quotas to be paid after concluding the programme of public due investments and whose dear value was 641, 87 millions of US\$. The hereditary dear value is of 5.000 millions of US\$.

FLUMITRENS- the minimal established price was 28, 0 millions of US\$ for the authorization and 8, 25 millions of US\$ for the materials of consumption. The due form of payment was: a first quota whose amount corresponded to the sum of 30 %

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of the offered value by the concession plus 100 % of the value established for the materials of consumption, paid at the date of the signing of the contract of authorization; plus 233 monthly equal and successive quotas to be paid after a period of initial grace of five years. The investment in the due program of accomplishment works was 707, 47 millions of US\$. Its hereditary dear value is of 30.000 millions of US\$.

As for the fixation of these minimal prices, it is necessary to highlight the following:

- 1 The projections of demand that served as base for the calculation of the revenue for the companies of the Metro and Flumitrens took into account the increasing number of passengers transported until the 3rd and 12th year of the respective authorizations, without considering any later evolution. Increases of demand were not foreseen due to the expansion of existing lines or the incorporation of new lines, in spite of the process of bid guaranteed the winner the right to exploit due projects of enlargement.

On the other hand, there are indications that the studies of capacity of the systems, realized to quantify the benefits generated by the due investments, overestimated the potential of transport (for example 735.700 passengers- useful day for the Metro and 1.440.000 passengers for the Flumitrens).As a matter of fact, considering the time of deprived operation of every system and the values of the made forecasts for the respective studies, none of the companies reached up to the moment, the volume of transported passengers foreseen in the studies of modelling.

- 2 The reductions of operational costs considered in the items of personnel, materials and services were quite conservative and rapidly overcome by the concessionaires.
3. The discount rates used for the calculation of the present value of the cash flows were: 12 % a year for the Metro; 15 % for the Flumitrens. These valuations did not take as compensation those interests received on the value of selling financed by the Government. The systematicness of calculation of the value of the established quotas by the relative clauses to the form of payment of the cartels of tender of the Metro and Flumitrens did not foresee the incidence of interests of delay, as it was of being expected in reason of the existence of the discount rate. In the practice, this fact represents a substantial reduction in the price of selling since the period of the foreseen quotas in the cartels of tender were closely 20 years.
4. With regard to the landed property, the concessionaires received a big quantity and diversity of hardware, devices and measuring devices, not related in any annex of the Cartels of Bid, since they had been already withdrawn from the stock of the stores of

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the companies (materials of consumption) in order to be used for the diverse teams of operation and maintenance of the systems. The whole existing furniture in the diverse facilities was also excluded from the evaluation for the minimal price and it is not related in any part of the cartels of bid and of the contracts. Such materials are, at present, in full use for the teams of maintenance, operation and personnel of the administration of the concessionaires and they should, at least, be related so that at the end of the authorization could be returned to the State or to the Concessionaire who is going to replace them so they do not generate right to indemnification.

For lack of the previous establishment of administrative criteria to be continued by the Metro and for the Flumitrens to take into account the segregation of the immobilized one given to the concessionaires up to the beginning of 2001. Some fiscal questions related to this topic went on being pending, like the fact of the segregation of the immobilized one that was not taken into account of the Flumitrens transferred to the Super via, for the value of 1.390 millions of US\$.

5. As for the materials of consumption (stocks of existing parts at once of the transference of the systems) their values were fixed across the historical prices of the materials taken into account in the stocks of the balances of the respective companies two years before making the authorization effective. These prices did not suffer any type of correction or update, altering the values of the materials of consumption. The distortion of these values happened in reason of the depreciation of the Brazilian currency from the accounting date of the items of material in real, without the companies have proceeded to the accounting adjustments of their values allowed by Law.

In relation to the latter item, in the balance of the Flumitrens to December, 1997, and published in the official newspaper of the State on 04-24-98, there is a note revealing the fact that part of the stocks of spares and components imported between 1981 and 1983 and inclusive under the manufacturer's guarantee, kept, sealed and in perfect conditions of use, had lost count ably their monetary expression, being registered to the symbolic value of US\$ 0, 01.

It is possible to obtain a quantification of the distortions provoked by this omission through partial results of realized works by an internal technical commission, designated later on, that aims a difference between the value of acquisition and the superior countable one to 9.7 millions of US\$ for only seven items of those materials. Beside, they showed that the present value of seven contracts of import, realized between 1981 and 1984 and included in that stock, was more than 36,9 millions of US\$ (COPPETEC, 1999 b).

Results of the Auctions

METRO - Of 4 taking part groups of the realized auction on 12-19-97, the winning event, for the value of US\$ 291, 66 millions corresponds to the offer of 3, 56 millions US\$ for the material of consumption (equal to the minimal value plus 288, 10 millions US\$ for the authorization (concession) It was offered by the Opportrans Consortium, constituted by Sorocaba Empreendimentos and Participation, Brazilian company of the Opportunity Group and the operating company Argentina Cometrans Inc.

FLUMITRENS - Of 4 taking part groups of the realized auction on 07-15-98, the winning event, for the value of 279,66 millions US\$, corresponds to the offer of 8,82 millions US\$ for the material of consumption (equal to the minimal value), plus 28,0 millions US\$ for the authorization (equal to the minimal value), plus 183,49 millions of US\$ in volume of investments in works and plus 59,9 millions of US\$ in value of the Factor of Profitability (difference between the estimated price by the Government in order to recover 60 TUEs and the price really charged for the execution of the service), was offered by the Consortium of Spanish Companies called Stock Exchange 2000.

It is necessary to stand out and to comment that:

- a. The high events of the winning offers in the auctions of concession of the Metro and Flumitrens respectively equal to 10, 2 and 7, 7 times the value of the minimal established prices. And the fact that all the other bidders also were presenting proposals with values considerably superior to the minimal prices (Metro - 3,9 times, 4,7 times and 7,2 times; Flumitrens 1,2 times, 1,3 times and 4,5 times the value of the minimal price That demonstrates a possible error in the evaluation of those systems. This ambiguity truly has origin in the identified distortions in the application of the used parameters to fix the minimal prices. An additional reason of this surcharge can also be attributed to the dispute happened among the bidders.
- b. The fact of having had four competing ones in both processes, with high offers, and having been the winning event closely of 42 %, in case of the Meter, and 70 % in the case of the Flumitrens, superior to the event of the second placed one, are aspects that indicate the great awakened interest in the auctions. Nevertheless, this interest would not lead to disproportionate or absurd events, considering the experience of all the participants.

4. INVESTMENTS

The deterioration of the systems of the subway and of the suburban trains, partly, by budgetary insufficiency, was generating an accented reduction of the quality level of the service and loss of the capacity of transport. It resulted in a low productiveness next to 350

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thousand transported passengers per day in the metropolitan case and 180 thousand passengers per day in case of the suburban train.

The strategy used to make viable to obtain credits in the national and international banking institutions was to grant those preceded systems of public works for their recovery and expansion, creating attractiveness on that business without offering subsidy, since the Brazilian legislation prohibits the onerous concession of public services.

In both processes, the State assumes a set of works and services that would qualify the systems of subway and railroad to transport respectively 1,1 and 1,4 million passengers - days (COPPETEC, 1999th, 1999b).

In the Table 1 are the foreseen global values of investment. The State has concluded the relative works to the expansion of the line 1 of the Subway between the stations of Botafogo and Siqueira Campos in Copacabana. Currently, it negotiates the financing for the extension up to the square in Ipanema, by means of a contractual additivity, the air conditioning installation was assumed in the trains of the suburban system, budgotten works in more than 100 million dollars.

Table 1 - Investments in recovery and expansion for the subway and railroad systems

Type of Investment	Subway	Suburban Train	Total
System Recovery	87,69	707,46	795,15
Civil Works and Systems	61,77	419,15	481,22
Rolling Stock	21,53	210,40	231,93
Acquisition of Equipment	2,23	52,15	54,38
Others	2,16	25,76	27,92
System Expansion	553,86	0,00	553,86
Civil Works and Systems	485,08	0,00	485,08
Rolling Stock	68,80	0,00	68,80
TOTAL	641,87	707,46	1.349,33

Sources: Metro and Engevix, Values in $1 \cdot 10^6$ US\$

At contractual level, the sentence XIII, 10th clause, forces the concessionaire to realize the necessary investments to reach the goals of foreseen quality, performance and safety of services in those contracts. It links that cost to the given offer by the concession. Also, the sentences 7 and 8 of the 1st clause include in the concessional object any realized expansion by the State, forcing the concessionaire to realize the necessary investments in order to operate them under the established patterns, as a way of compensating the obtained profits with the increases of demand.

On the other hand, the concessionaires have the right and the obligation to realize investments in technological changes. They can reduce their operational costs, are able to increase the reliability and safety of the system benefiting the users. In this case, the ASEP-RJ, regulatory

organ of the concession authorizes and verifies such investments and to guarantee that part of the profits be moved to the users.

4. READJUSTMENT AND REVIEW OF TARIFFS AND THE ECONOMIC - FINANCIAL BALANCE

Readjustment of the Tariffs

It is understood by readjustment, an updated tariff that considers the variation in the time of the relevant parameters to establish their values (generally prices, which are reflexes of the inflationary processes). This change cannot support the relative relation between the values of the excellent used parameters, but it is not altered significantly in its magnitude neither abruptly in the time.

For the cases of the subway and the suburban train, the equation and basic index for the calculation of the readjustment establish that the tariff will be readjusted by the change of the general price index GPI-M of the Foundation Getulio Vargas, in the last 12 months. This index mixes the change of prices of all the activities of the economy avoiding auto-indexations and endogenous effects.

As for the admitted regularity for pricing readjustment, it was foreseeable to find clauses in the two contracts fixing it annually. Nevertheless, by virtue of the inflationary Brazilian history, it was also foreseeable to find clauses that grant a certain gap for possible readjustments in inferior periods to one year.

The important thing is that in the caput of the 7th clause of the contracts, the basic condition that provokes obligatory readjustment (or review) is defined in an ambiguous way: whenever the economic and financial balance of the contract could be broken, be by occurrence of inflationary process, be by virtue of unforeseen changes of market conditions or of costs. The relation cause - effect does not remain clear, and the causes for the change could imply in any of two different effects, readjustment and review, whose nature and reasons to be realized, are different. It is necessary to verify if such writing does not open space for increases and undue readjustments without the public power could restrain them.

The clause of yearly readjustment is relative to a citation of a law that prohibits the readjustment in inferior term to one year. However, in the hypothesis of existing possibility of readjustment in an inferior term, the company will be able to request it.

Review of the tariffs

It is understood by review, a modernization of the foreseen tariff in the contract of concession that, as a first aspect, it considers that significant alterations appear in the magnitude of the relative relation between the values of the used relevant parameters to establish its value, or that abrupt changes appear in the value of the same ones, and as a second aspect, the redefinition of the composition of costs motivated by technological reasons, of alteration of the services and of fiscal or legal order.

The Law Nº 2869 of 12/18/97 is the one that disposes on the “Regime of benefit of the public service of railroad transport and the subway transport of passengers in the State of Rio de Janeiro”. In its 9th Art., & 3rd stipulates that the review of the tariffs will take into account the need of stimulus to the increase of the operational efficiency by means of the composition and evolution of costs, considering the productiveness of the concessionaires or formal consent operators. This law establishes obligations for the regulatory agency with the target to indicate the suitable tariff procedures, as well as the legal obligation to justify its action in case of not approving the proposed value of the tariff, according to the Art. 20, & 2nd “*it will have to be presented to the concessionaire or to the formal consent operator the respective decision, properly based, exhibiting of clear and precise form the reasons of the rejection of the order and indicating the correct value of the limit of readjustment or the revision that could be practiced*” For the subway, the review could be requested to the ASEP/RJ in any moment that the concessionaire verifies technically the existence of an economic fact that alters its balance. In case of the train, the contract defines two types of reviews: ordinary with term of five years based on the cost of the services and the extraordinary operational efficiency that the concessionaire could request at any moment, verifying technically the existence of an economic fact that alters its balance. In addition to, it is mentioned the possibility of a review downward when favourable impacts are proven to the reduction, without specifying how that situation will be canalized.

Tariffs and Economic - Financial Balance of the Contract.

The reduction of the costs of production is a premise of the Brazilian politics of privatization of public services and the concessionaire becomes to be the person in charge for the costs incurred to produce. Then, it is understood that the readjustment of the tariffs, with base in those mechanisms of the contract and of the cartel, means to support the contractual economic-financial balance, excusing the State of any another obligation in this matter.

As a matter of fact, , the concessionaires, impliedly in case of the train and explicitly in case of the subway, admit that the tariffs in validity and the fulfilments of the rules of readjustment and review, are sufficient for the suitable lending of the service and to guarantee the economic - financial balance of the contract. In general, it is not foreseen the need of that the companies submit to the Public Power the accounting of their expenses, as in the rules for pricing calculation, known as cost bonus type.

Table 2 - Change of the tariffs after the process of concession

COMPANY	Tariff in reales (R\$)		Variation (%)		Diference
	Initial	Actual	Tariffs	Inflation	
OPPORTRANS (subway)	1,00	1,89	89	50,80	+ 75,2%
SUPERVIA (train)	0,60	1,37	128	49,88	+ 156,6%

This increase of the tariff, at first excessive and unjust with the users, also helps to propitiate a low use of the systems, as we will see on the following topic.

5. THE REFLEXES OF THE PRIVATIZATION IN THE INTEGRATED TRANSPORT

In the last 15 years, it was invested little in the enlargement and maintenance of the systems of transport on rails. The hired enlargement and recoveries as compensation of the State Government and of the concessionaires in the process of privatization; were not realized in accordance with the foreseen chronogram. Therefore, the majority of the works were not completely concluded, continuing the big difficulties for the population in its daily displacements and a sub-use of the subway net and suburban trains in operation.

This fact is evidenced when comparing the provisions carried out in the studies of modelling of the quantity of passengers exactly transported in those first years of concessional operation.

Table 3 - Comparison between that foreseen and that carried out in attended demand

SYSTEMS		Mean daily population displacements by year (in 1.000)					
		1	2	3	4	5	6
SUBWAY	Foreseen			735,7	735,7	735,7	735,7
	Realized	320	399	425	416	417	422
SUBURBAN TRAIN	Foreseen	365	690	831,8	899,6	963,9	
	Realized	236	285	292	321	304	

Inside the corresponding modal alternative to the integration with the subway, the studies of demand executed during the process of modelling indicated the following values for the demands: adjoining - 764.185 pas/day; integrated with the system of trains - 108.960 pas/day and integrated with the system of bus 272.638 - pas/day, both in the southern zone, as in Baixada Fluminense, being foreseen a total demand of 1.145.783 pas/day.

After five years of concessional operation the system of suburban trains is only integrated with the system of subway. The last one is integrated with 30 lines operated by 4 bus companies of the Rio de Janeiro's Municipality and 5 intermunicipal lines operated by 4 companies that passengers catch for the station of Pavuna. Besides, as it was already signed

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up, its integration with the suburban train. Of the table or chart 4, that set of integrated lines respond on one hand very small of the attended demand by those systems in the year 2.002 (2, 38 % of the total of passengers)

Table 4 - Passengers of Metro and Supervia according to type of charged ticket

Ticket type	Bimonthlies of 2002 (in 1.000)						Total
	1	2	3	4	5	6	
Metro/Municipal buses	11,9	13,8	13,7	14,0	14,6	14,5	81,9
Metro/intermunicipal buses	399,4	470,6	346,8	390,6	376,4	535,6	2.519,7
Metro/Supervia	214,6	303,5	312,8	361,7	435,0	459,4	2.087,1
Total of Integration	624,9	787,8	673,2	766,3	826,5	1.010,0	4.688,8
Total of Metro	16.050	18.258	17.925	19.326	20.087	18.367	110.012
Total of Supervia	11.858	13.990	14.406	16.014	16.242	14.795	87.305
Total of Pass.	27.908	23.248	32.331	35.336	36.329	33.162	197.317

In what refers to the integration of the subway with the municipal lines of buses, this low performance has origin in the fact that those lines compete with the metropolitan system in most of their extension and that their part of the integrated tariff, presented in the Table 5, is smaller than the value of their full tariff, which does not stimulate them to offer to their users the integrated ticket. In case of the intermunicipal buses, although the integrated lines are really complementary, the fact that those companies also operate other lines that are competitions. They are not stimulated to increase the offer of places in the integrated lines.

Table 5 - Tariffs practised in the RMRJ by the systems of trains and buses

Simple ticket	Valor (R\$)	Integrated ticket	Valor(R\$)
Suburban Train (Supervia)	1,37	Suburban Train / Subway	2,80
Suburban Train (Central)	0,60	Train CENTRAL / Supervia	1,37
Subway (Opportrans)	1,88		
Municipal Buses	1,40	Subway / Municipal Buses	2,60
Intermunicipal Buses	Variable	Subway / Intermunicipal Buses	3,35

The fact that the companies of trains and buses are remunerated by means of the cashing of the tariff and that at the same time, they compete in the market of transport, it does not stimulate them to offer the integrated tickets, in those cases in which their remuneration is smaller than the simple ticket.

Like special case, it is reported the dealing given by the Opportrans to the South section of its line, it occurs the integration with the municipal buses and where it also presents idle capacity. From September, 2002, starting from a special permission given by the Municipality

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of Rio de Janeiro, it passed to operate a line of bus which stretch and stop points, corresponds to the projected extension of its line (part of the station Siqueira Campos, with 15 minutes of interval, stopping in the foreseen places for its future stations in the squares General Osório, Nossa Senhora da Paz, Antero de Quental and Santos Drumond). This service given free to the subway's users increased itself the reception in about 10.000 passengers – days, with a clear tendency of growth.

As product of the success of this line, starting on July, 2003, the company of the metropolitan passed to offer a new option for its users by means of the direct operation, similar to the previous one, a line of bus whose trip up to the Gávea Quarter by the route of the Botanical Garden, continues the stretch of the future line 4.

In addition to these measurements, and from July, the company tries to alter the division of the integrated tariff of the municipal buses that act in the reception of demand of the south stretch, remunerating these companies for the value of their simple tariffs, which it would eliminate the principal motive for increasing the offer of the integrated tickets.

Those differentiated dealing given by the Opportrans to the lines 1 and 2 and to the north and south stretches of the line 1, have on principle to obtain the biggest collection charging the authorized maximum where suppressed demand exists and offering advantages where there is excess of offer.

6. CURRENT INTEGRATION AND CONSIDERATIONS ON CHALLENGES TO FUTURE

Current Aspects of Integration

Until the beginning of 2003, the great challenge for the System of Transport of the RMRJ was the process of integration in the different used ways, in particular those of the subway and of the suburban train transferred to the private initiative from almost five years before. In spite of being part of the reasons of the privatization, in the reality, anything or very little it was made to implement a regulatory process, or of operational planning, so that the diverse operators worked in an integrated way.

The State Government of Rio of Janeiro could not act because, in most of the cases, it depended on the performance of Municipal Governments (responsible for the concession, regulation and inspection of the municipal considered services) and of the understanding among the operators that competed for the users in the roads. For this reason, many of the participants didn't believe that the integrated operation was beneficial, because they thought that at least an operator would lose in the distribution of the new integrated rate.

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However, due to the success obtained in the installation of two lines operated by the own Oportrans (concessionaire of the subway's lines) as extension of the offered service and in integrated form, that vision began to change and the first operational agreements were signed, starting from the second semester of 2003, with almost any intervention of the Granted Power.

Today, the subway holds those two lines with other nine integrated lines, operated of common agreement with traditional operators in the bus modality, the value of the integrated rate is distributed in same quantity for both. Those 11 (eleven) lines, in May of 2005, are responsible for 80.000 (eighty thousand) passengers-day approximately, that is, about 16% of all of the users of the metropolitan system.

In the case of the suburban train, operated by the company Super via, that integration process was accelerated a lot after 2003. At the beginning, it was motivated by the success of the integrated lines to the subway and later on, for the own results. Today, the system has 76 integrated lines that distribute equally the rate of R\$ \$2, 25 (around 0, 8 US \$) among the operators. Because they operate in a not very dense suburban area, those integrated lines don't still present a very significant result, transport daily near 16.000 passengers (May of 2005) or a 4% of the users' of the suburban system of trains.

On having been overcome the initial problems of the integration process among the bus companies, subway and suburban trains, there has been an amplification of those combined operations in the time and today is frequent that the offer of new integrated routes is announced.

Challenges to Future

Conquered the initial challenge that wrapped all the actors of the System of Transport of the RMRJ, the challenges that are presented depend on each actor's paper, either to be able to licensor, regulator or operator.

- *Government (Licensor)*: its challenge consists on responding the following questions appropriately:

1. How to finance the expansion of the existent lines and the installation of new sub-systems.
2. How to strengthen to the Metropolitan Agency of Urban Transports (AMTU-RJ) so it can execute their planning activities and coordination in the diverse ways of transports appropriately.

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The first answer can be linked to the implementation of the Law 11.079, promulgated on December, 30, 2004, that instituted general norms for bid and public-private partnership - PPPs - in the environment of the public administration. That recruiting type allows to delegate to private entities the responsibility for the reception of resources for financing of public interest projects, and to reimburse them in function of the effective benefit of the services. It also allows the payment for the public partner to the private partner, of an additional value to the charged rate of the users for the benefit of the service, in the practice, that measure makes feasible the grant of services of public interest which don't have financial viability for the private partner.

For further credibility and security is created a fund of guarantee, formed by money in kind, titles of the public debt, personal property and real state, inclusive actions of societies of mixed economy and other rights with patrimonial value, that fund can be worked if the State doesn't fulfil its pecuniary obligations. Finally, it allows, if it is foreseen in the cartel that the financial agents can emit invoice of direct collection to the granted power, whenever that value is inferior to the value that is owed for the benefit of the service and be authorized by the concessionaire.

The second answer needs of a wide political negotiation among the State and the 20 municipalities that compose the metropolitan region, to motivate the acceptance and participation, in a voluntary way, of the decisions of the AMTU-RJ.

- *Regulatory Agency ASEP-RJ*: responsible for the regulation of the granted public services (recently, it was divided to assist the transports on one hand and for another aqueducts and energy), still today and after seven years of their creation the challenge persists of structuring an appropriate staff of qualified human resources to exercise the regulation functions and inspection of the systems. In spite of the above-mentioned, there is technical experience and of negotiation due to diverse regulated cases and to the recent process of five-year revision of the rates of the train, subway, boats and tolls in freeways.

- *Opportrans Concessionaire*: in this case, where the collections are enough to cover operational expenses and to generate lucre, its challenge consists on negotiating the reception of resources to acquire rolling material (vehicles). In that way, it could increase the offer of places and to use the capacity of the installed lines fully. The operator has that responsibility for force of the concession contract; its argument is that the value of the current rate is not enough to redeem the necessary investment inside the term of remaining concession, 14 years.

It should be pointed out that the contract previsions the restitution of the relative part to the not redeemed investments in the period of the concession, the problem is as guaranteeing the pass from that value to the financial entity because the loan is responsibility of the concessionaire, and also to define the parcel of the rate that would be used to redeem those investments in next 14 years.

- *Supervia Concessionaire*: in this case the problem is more complicated, in fact, the company has not still gotten operational surplus (bigger collections than expenses), after seven years of operation. Therefore, its main challenge is to generate enough collections to cover its operational expenses, so much for the increase of the quantity of transported passengers, like for the operation of associate or complementary services, and rent of properties, propaganda or for the renegotiation of the concession contract.

6. FINAL CONSIDERATIONS

The implemented privatization focused the processes of detached form of a general systemic context of transport in Rio de Janeiro; therefore, it affects an integral vision of its administration. For that reason, all the systems are treated individually, establishing the received tariff as principal form of remuneration, which means barriers for the implantation of socially fairer tariffs, for the establishment of crossed financing between modes and for the prioritization of a use of those modes, most adapted to the profile of the demand, in addition to returning more difficult the definition and implementation of an integrated model that it considers both transport and ground use.

Based on the aimed characteristics in the analysis, it is concluded that the systematic of calculation used to determine the value of the minimal price could be considered as formally appropriate. However, the tendentious manner as the values of the projected demand were established for the fixation of the incomes, operational costs, financing quotas, materials of consumption and the lack of consideration of the value of real state for the establishment of the minimal prices of the companies, they produced distortions that, in case of the subway and the suburban train, were minimized by the dispute between the bidders.

Comparing the minimal price of the concession with the hereditary value of the privatized companies, it is verified that the denationalization did not look for recovering the invested capital, but liberating the public treasury of the operational deficit. To reach this objective, the State implemented a strategy of mode sale to create conditions to attract the interest of national and foreign businessmen, like the establishment of the regulatory legislation with the intention of endorsing the process and to guarantee a minimum of stability of the economic and contractual relations, the creation of a regulatory agency (ASEP-RJ), the establishment of minimal values of sale that attracts the biggest quantity of possible interested people, etc.

The Government (Licensor) assumes the investments in capacity and enlargement of the systems. It maintains in separated negotiation the realized investments by the concessionaire in order to operate those systems and the realized expansions appropriately, impeding that the first ones impact on the operational costs of the system. It is not clear wherefrom the resources will come to guarantee the payment of the obtained financing by the State to execute the expansions of the systems. It is possible to interpret that they will be or come

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from the reduction of the state expenses due to the process of privatization, since the systems on rails were generating an annual deficit around US\$ 235 millions.

The task of verifying the behaviour of the costs of operation of the concessionaires, the economic result of the implementation of new technologies and the change of the mix of the production factors and their reflexes in the operational costs, assumes special relevancy in the processes of tariff review so that undue profits are inhibited for the concessionaire and it is guaranteed that a part of those possible undue profits due to technological improvement and the increase of the technical efficiency be moved to the users.

To fulfil with the previous situation, it should be carried out a review of the systematic tariff and improve the control and inspection to be exercised by the regulatory agency ASEP/RJ. As soon as, the procedures of readjustment and review are redefined together with other contractual and legal conditions, is possible to defend technically the maintenance of the economic - financial balance of the contract by way of the updated tariff, independently of whom will check with the new amount.

To modify the tariffs with base in the costs that consider the global verified incomes, the expenses really realized and the operation of the service in the regime of efficiency, the regulatory entity has, in the terms of Law and contractual terms, sufficient instruments to incorporate the mentioned redefinition. Furthermore, these terms let the regulator control indeed the transparency and relevancy of the modifications to the contracts by way of additives, without incurring in advantages out of the legality or foreign actions to the juridical and technical nature that sustain the origin of the process.

The diagnosis prepared for the RMRJ allows concluding that the service of collective transport is characterized by the absence of integration and complementarity. The principal reasons that lead to this picture are: first, a historical poor sequence of public management of the transport services, which has allowed the consolidation of irregular services, and that never did effective concrete actions to discipline the offered services. Although in the last years, there have been reasonable efforts in this sense, it is well-known the absence of work conditions and of organization; second, a picture of absolute absence of modal complementarity of the different transport in the RMRJ.

Considering the rapid urban and population growth that the RMRJ has had in the last years, the network of official transport shows clear signs of delay between his organization and the growth of peripheral areas. From the structural point of view, the suburb trains and the subway that should transport a significant quantity along their axes, suffer the competition of municipal and intermunicipal lines of buses and of alternative transport, that as a whole, they just fulfil a role that should be of systems of major capacity.

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It is necessary to highlight that the alternative transport, part regulated and in part not, has received demand, especially of the users who give priority to the service of the type "door to door" without changes of lines or ways.

Prior to this, the RMRJ is not alone opposite to a problem of network of lines, of adequacy of offer of trips, laying of stops, and regulation of autonomy and elimination of the secrecy. What is needed is a wider focus that bears a real reorganization of the service of collective transport, which will demand a coordinated action of the operating companies, and principally, of the diverse managerial organisms as the own Secretariat of State of Transports.

That solution of the collective transport problems in the RMRJ goes obligatorily by the improvement of the reasons that generated the current picture. This means that it depends on the implantation of a transport organization at level of the Metropolitan Region, in such way that inside a planning with wide vision, it breaks with the geographical borders of the municipalities, and immediately, the operation of the different ways of transport is coordinated, obeying aspects of physical, operational, pricing and institutional integration.

BIBLIOGRAPHIC REFERENCES

- COPPETEC (1999a). *Análise do Processo de Privatização do METRÔ*. Relatório Final. COPPE, UFRJ, Rio de Janeiro.
- COPPETEC (1999b). *Análise do Processo de Privatização da FLUMITRENS*. Relatório Final. COPPE, UFRJ, Rio de Janeiro.
- COPPETEC (1999c). *Análise do Processo de Privatização da CONERJ*. Relatório Final. COPPE, UFRJ, Rio de Janeiro.
- Rodrigues, C. A. y C. Contreras-Montoya (1998). Privatización de Sistemas de Ferrocarril: evidencias del caso brasileño. *X Congreso Panamericano de Ingeniería de Tránsito y Transporte*, octubre, Santander, España. pp. 371-381.
- Rodrigues, C. A. y C. Contreras-Montoya (2000). Privatizações de Infra-estruturas de Transporte: O caso das concessões de transporte de passageiros sobre trilhos no Estado do Rio de Janeiro. In: Santos, E. & J. Aragão (eds). *Transporte em Tempos de Reforma. Ensaios sobre a problemática*. pp. 305-329, Editora LGE, Brasília..
- Rodrigues, C. A. y C. Contreras-Montoya (2001). Análisis del Precio de Venta y de los Aspectos Tarifarios en las Privatizaciones del Metro, del Tren Suburbano y de las Barcas en el Estado de Rio de Janeiro. *XI Congreso Latinoamericano de Transporte Público y Urbano*, setiembre, La Habana, Cuba. Actas en medio electrónico.
- Relatórios de Modelagem do Sistema de Trens Urbanos do Rio de Janeiro, *Programa Estadual de Desestatização*, Rio de Janeiro, 1997.
- Relatórios de Modelagem do Sistema de Trens Metropolitano do Rio de Janeiro, *Programa Estadual de Desestatização*, Rio de Janeiro, 1997.
- Plano Diretor de Transporte Urbano da Região Metropolitana do Rio de Janeiro, *6o Relatório – Montagem da Rede e Diagnóstico*, Governo de Estado do Rio de Janeiro, 2003.