

ARGENTINA: REGULATORY REFORM IN INTERCITY BUS TRANSPORTATION - IMPACTS AND ISSUES

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INTRODUCTION

During the 90's, major changes took place in Argentina, concerning public utilities regulation and state intervention in the economy. Deregulation and privatization became the main motto of government policy, and consequences were deep and lasting. The transportation sector, as an activity where traditionally the public sector had an important role, was of course one of the main targets of these policies. Railroads were almost entirely privatized, toll concessions in the road system were generalized, the port system was also almost completely deregulated and privatized, as did also the airport system and the state owned air company.

In the case of road transportation, besides the issue of infrastructure, there was room only for regulatory reform (and not for privatization) in the passenger sector, as operators were already totally private, and lorries activity had been fully deregulated since 1952.

There were not substantial reforms for urban buses; their regulatory frame is nowadays, with some minor changes, still basically the same as before 1990. The only important reform that took place was for the national intercity coaches; this only includes regular scheduled services.

Non regular services (i.e., charter services) had never been under any kind of economic regulation. On the other hand, it must be noticed that Argentina is organized under a Federal regime. Therefore, each province (and in some cases even each city **municipium**) autonomously regulates road transportation that operates in its own territory. This paper refers only to intercity regular services at the national level; their share in intercity coach activity can be roughly estimated as 40% of overall vehicle-km.

The reform took place in 1992, but in 1998 it was freezed, and since then there was almost no change in the system's regulatory framework and also in its network. Nowadays, a new setting is under analysis, in order to cope with an evident situation of services oversupply.

The purpose of this paper is to describe the outcomes of this reform, on the basis of currently available data; next, they will be appraised on the basis of some current theoretical contributions, especially from oligopoly theory. Previously, the situation of the sector before 1992 reform – and the reform itself – will be sketched out.

Unlikely other sectors, where several analyses about the effects of reforms were carried out, intercity coaches reforms have received little attention from researcher's. We can mention here Manigot [1], Müller [3] and Parodi and Sanchez [4].

INTERCITY COACH SERVICES BEFORE REFORM

The intercity coach service (ICS) was operated at the beginning of the nineties by 110 private enterprises, involving 2.400 coaches (these data and the following are based on Müller [2] and PNUD [5]). Some 700 lines were operated (from now on, we will term "line" the set of scheduled services for a given route, and for given comfort features).

Rider ship was of about 40.000.000 passengers; its evolution had been almost stationary, in the last ten years.

Some operation indicators are stated in Table 1

Table 1
ICS: Operation indicators before the reform

Item	1987	1988	1989	1990	1991
Number of operators	150	150	151	152	158
Coaches	2.431	2.482	2.523	2.597	2.597
Veh-km (million)	403,61	410,45	411,59	416,15	414,00
Average veh-km / vehicle	166.027	165.371	163.136	160.243	159.415
Average seating places /vehicle	42	42	42	42	42
Average age of vehicles	4,9	4,9	5,3	5,8	5,6
Passengers (million)	45,8	47,1	47,7	48,0	48,0
Passengers-km (million)	14.066,37	12.807,90	12.190,91	10.737,60	12.211,20
Average passenger /vehicle	34,85	31,20	29,62	25,80	29,50
Load factor	0,83	0,74	0,71	0,61	0,70
Average distance /passenger	306,90	272,00	255,80	223,70	254,40

Source: National Commission for Transport Regulation.

Note: data include some urban services of relatively reduced scale, but that have influence on overall passengers figures. For 1991, passengers of intercity lines amounted to 40.5 millions, and passenger-km to 12.093 millions. The numbers of operators is higher than that mentioned in the text, due to the mentioned urban services, and also because they do not consider merged firms.

There was an important degree of economic concentration: 9% of the enterprises owned half of the rolling stock. This was the outcome of a gradual but persistent process of takeovers.

The regulatory frame was formally one of strict control of entry. Lines could be operated only with a specific permission issued by the government authority (the Transportation Secretary). The basic level of fares was established by the latter, although downward flexibility was allowed. Additional luxurious services could be operated freely by operators on their own regulated. Frequency could be increased, over the level issued by the permission, up to a 100% limit.

This regulatory frame was probably inherited from private railroad times (i.e., before 1950), in order to prevent "unfair" competition from coaches; but it lacked any other explicit rationale (and anyway, the railroad passenger services held important shares of patronage only in some main routes; in the early nineties, they carried no more than 10 million passengers).

The actual regulation by the government was quite passive. Its main role was to prevent non-allowed services – and it was reasonably successful in doing so – and to arbitrate in the conflicts between operators. They happened typically when some modification in the network was attempted by one of them, as the government – with very few exceptions – did not take any initiative. As a consequence, there was an important competition for getting permissions, although a lot of requests were not answered (some 1000 requests for network modifications – some of them very contentious – were not answered by the early nineties).

The quality of the service was generally good, although with some variance. In a survey conducted at the end of the '80s, service was marked on average at level 7 (on a scale from 1 to 10). The average age of the vehicles did not evidence investment delays (in sharp contrast with great part of the transportation sector).

There were not, therefore, the typical reasons for a reform. The sector performance was good, there was no involvement of public finance, and it cannot be argued that technological improvements were blocked by regulation. Eventually, there were some cases where pricing suggested collusion, and also

there were examples of fares set above the maximum level. But surely, the weakest point was Government, due to its lack of interest on a more technically based management, and its scarce enforcement. Of course, these are evidences of an extreme capture by concessionaires.

In this sense, we can say that this reform was performed merely on an ideological basis. Actually, there was not any technical study that supported the reform proposal. Indeed, some studies had been conducted from 1988 to 1993; but none of them concluded that a substantial reform was necessary.

1992: THE REFORM

In 1992, the sector's regulatory frame underwent a major change. The general trend was towards liberalization, although the outcome turned to be a mixed regime.

The new regime identified three types of services (the denominations presented here are conventional translations of the legal terminology):

- *Public Services (PS)*: this set include all the services that operators are enforced to furnish. They are identified by a number of basic features: weekly frequencies, comfort standard, and regulated (maximum) fare. When the new rule was issued, all the existent services turned to be PS in the new regime. The concession of PS was given for 10 years.
- *Free Traffic Services (FT)*: these are lines that can be defined and operated freely by the operators of PS, who are the only entitled to them. There is complete openness of comfort standard, frequency and route; fares are also free. Lines must be kept in operation for a minimum period of 9 months.
- *Executive Services*: these services are of high comfort (with restrictive standards), and can be operated by any firm interested, without restrictions, and also with free fares.

Three additional features of the new regime are worth to be highlighted:

- There was no technical criterion to define some kind of basic network of PS
- There was no restriction in the relationship, for each operator, among PS and FT, i.e., the "burden" of PS could be unevenly distributed, without any compensation mechanism
- Rolling stock could be rented freely; there was no obligation for operators to be the owners of coaches, even those used (or in the proportion used) for PS; as we shall see below, this was a very important element for the future evolution of the system.
- Systematic opening of bids was issued (and done), for new PS lines; the bids were restricted to newcomers, in order to increase competition.

The new regime therefore consisted of a deregulation, but limited to the existent operators. There was no previous study that furnished any technical justification for this scheme; therefore, it looks more as a kind of compromise solution.

This rule underwent modifications; and it was virtually cancelled in 1998, when new inscriptions of FT services were freed, and new bids for PS were stopped. Moreover, the obligations of PS were partially relaxed. By now, we are back to a situation that is closer to the one existing before 1992 (but not the same, as FT services still exist), and a new regime is under consideration.

THE OUTCOMES OF REFORM

General features

The reform triggered in 1992 had very impressive effects on the ICS structure and performance. Table 2 shows some indicators for the sector from 1992 up to nowadays.

Although demand did not grow at all, there was a sharp increase (about 40%) in the rolling stock; productivity of coaches (i.e., veh-km per vehicle) and their average capacity also grew.

Therefore, the most visible and important outcome of the reform was **a decrease of loading factor, a clear evidence of over investment**; occupancy rate was well below 45% from 1997 to 2001 (notice that the new regulation did not rule any more from 1998). For the whole system, assuming that the

average loading factor observed before 1992 – of about 70% - was enough to meet demand requirements, we can estimate roughly an over investment of some 1000 vehicles (30% of current rolling stock).

Table 2
The ICS after the 1992 reform

Item	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001(*)	2002(*)
Number of operators	158	160	164	165	171	167	178	185	154	157	142	135
Coaches	2.597	2.844	2.934	3.278	3.695	3.443	3.706	3.765	3.541	3.672	3.628	3.481
Veh-km (million)	414	472	531	622	650	645	684	723	720	696	678	665
Average veh-km / vehicle	159.415	165.955	180.931	189.813	175.985	187.194	184.683	191.946	203.389	189.435	186.869	191.088
Average seating places /vehicle	42	43	45	45	45	45	46	46	46	46	47	47
Average age of vehicles	5,6	5,3	5,1	4,4	4,2	4,6	4,8	5	5,2	5,4	5,5	6
Passengers (million)	48,0	49,8	55,8	50,5	50,3	49,4	49,9	50,4	46,5	42,3	40	41,6
Passengers-km (million)	12.211,20	12.669	14.078	14.622	14.624	14.057	13.955	14.786	14.901	14.041	13.858	14.893
Average passenger /vehicle	29,5	26,84	26,52	23,5	22,49	21,81	20,39	20,46	20,69	20,19	20,44	22,39
Load factor	0,7	0,62	0,59	0,53	0,5	0,48	0,45	0,44	0,45	0,44	0,44	0,48
Average distance /passenger	254,4	254,4	252,37	289,54	290,67	284,3	279,45	293,64	320,53	332,09	346,84	358,43

(*) Provisional data

See footnote of Table 1 for some warnings.

Services remained mainly on basic comfort standards. The overall size of executive services was quite modest, as well as the most luxurious services of PS and FT. Table 3 indicates the scheduled services nowadays, according to their comfort standards (in terms of the present rule).

Table 3
ICS: Scheduled services

(annual values)

Category	Lines	Veh-km	% Veh-km
Executive	43	27.177.323	3,5%
Class A	36	18.515.820	2,4%
Class B	52	51.489.361	6,7%
Common-Air conditioned	659	433.936.666	56,1%
Common	493	242.466.799	31,3%
	1.283	773.585.969	100,0%

Source: Internet site of the Secretary of Transport

Note: Except the case of Executive services, all categories can be run through PS or FT regime. Class B services are very close in comfort terms to common services.

Fares underwent a very moderate average decrease; there was indeed a decrease in the relationship between the regulated level and the market one. While nominal fares were increased in 15% from 1992 to 2001, the effective fares dropped some 5% in the same period (Parodi and Sanchez, op. cit.).

But anyway, there were important differences among routes. In a 1996 survey by Manigot [1], the relationship between market and official (i.e., PS) fares ranges from plus 46% to minus 45%. Manigot finds a decreasing relationship between fares and number of operators, although it is quite weak and with low statistical significance. The entry of one additional operator in a route produces, in Manigot's model, a decrease of 2% in the average fare (the t statistic found is -1.92).

The quality of service increased. Larger and more luxurious coaches were introduced; this is not to be credited to reform itself, but rather to the reduction of vehicle prices, due to tariffs reductions and the low value of the foreign currency. And anyway, before the reform significant improvements in quality had taken place already. The average age of vehicles decreased, due to the incorporation of new vehicles.

Of course, the combination of over investment and almost unchanging fares had a strong impact on the operators' accounts. And actually, many important operators, that had been present a long time (some of them from the very beginning) went bankrupt. As it will be shown below, some 40% of total PS supply (measured in veh-km) that existed previously to the reform belonged to failed operators.

On the other hand, an important entry of new operators took place. In addition, some pre-existent operators grew many times their original size; this reflected a largely used mechanism of formal renting of buses not owned by the operator, meaning the virtual take over of the company by the outside investors. In other terms, the outsiders "rented" the company concession and name (and eventually the name itself was changed) and run business on their own.

One key feature that allowed survival was the modification of labor conditions. They were renegotiated, in worse terms for workers. Although there are not official data, informally it is well known that drivers underwent an important reduction in their real wages (perhaps some 30%), due to changes in their union affiliation (source: Parodi and Sanchez, 2002). In the early nineties, drivers were the main item of the ICS cost, sharing 40%.

Despite the entering of new actors, concentration is still a characteristic feature in ICS, although nowadays the main players are quite different than before. Table 4 indicates the distribution of supply, among

operators, according to their size. It should be noted that some re-elaboration of available data was needed, in order to take into account several cases where apparently independent companies were owned by other firms (this task was performed with the valuable advise of some ICS experts).

We can see that the ten larger operators comprise 55% of the ICS supply. Only three of the “top ten” were in this group before the reform. The largest firm – a newcomer – is nowadays operating more than 13% of the overall scheduled services, an index not reached in the pre reform situation.

Table 4
ICS: concentration – scheduled services
 (annual values)

Operators	Numb. Operators	% Veh-km
Five larger	5	39%
Five following	5	16%
Remainders	108	45%
Total	118	100%

Source: author, on the basis of the Internet site of the Secretary of Transport and expert’s advise.

Of course, the stories that can be told about behavior and performance vary strongly among routes. There were both fare wars and attempts of coordination of services and fares, giving room to the usual instability present in this kind of markets. In about 100 lines there was no competition at all, due to the little size of the market (about 5% of the veh-km).

In what concerns government, the regulatory agency performance (nowadays, the National Commission of Transport Regulation) was not much better than before. The enforcement of the sector was limited, being much more reactive than proactive. As an example, operators are not enforced to specify, in timetables or tickets they issue, if a line is a PS or a FT (recall that the PS lines must accomplish maximum fares). Moreover, the comfort categories defined in the rules for example are not used in practice. And even the follow-up was limited: there was no systematic registration of market fares; and there was no complete processing of information about demand (although data were available).

Anyway, two features are to be remarked.

- First, several lines were open through bids, restricted to new operators. This was the “official” mechanism to allow entering of new operators (besides the case of the Executive services).
- Second, in some cases of bankrupt of existing operators, the Secretary of Transportation negotiated concession of their PS lines to other existing operators, without any bidding mechanism (actually, they are temporary concessions, although no decision has been taken about a new bid). It should be noted that a very important volume of services was involved (as it will be shown below); but not in all cases failed firms were substituted. This policy was followed in the last years, after new FTs were not allowed.

In any case, there was not an explicit policy of assuring some basic level of PS, as it should seem to be the underlying doctrine of the reform. As before, the position of the authority was mainly passive.

In order to assess some interesting features about the reform, we will concentrate now in some specific issues.

Freedom of entry: how much deregulated was the ICS?

The first important question is if the reform meant the deregulation of ICS activity. Although formally entering the sector was restricted by the 1992 frame, we have already stated that through takeovers it was possible to outsiders to get into the activity (it should be recalled that there was no limitation to the size and ownership of rolling stock). On the other hand, the lines of failed companies were given in concession to other companies, many of them newcomers.

In order to get an empirical answer to the question of real openness of the sector, we may identify three cases of operators, on the basis of available information:

1. The *pre-existing operators* (PO): operators that already existed before 1992 and kept their economic size.
2. The *acquired operators* (AO): operators that existed before 1992, but that underwent the entering of outside investors; the typical feature in this case is the increase in size.
3. The *new operators* (NO): the newcomers in the sector, through biddings (or for the executive services, which were, as we stated, of marginal importance).

On the basis of available statistics and other (informal) data, it was possible to identify the former groups. Table 5 shows the scheduled supply for each group.

Table 5
ICS: existing operators and newcomers
(annual data)

	Number	Veh-km	%
<i>Pre-existing operators</i> (PO)	70	395.011.996	51%
<i>Acquired operators</i> (AO):	11	236.203.971	31%
<i>New operators</i> (NO)	37	142.370.002	18%
Total	118	773.585.969	100%

Source: author, on the basis of the Internet site of the Secretary of Transport and expert's advise.

Figures show therefore that although AO and NO sum up less than 40% of overall operators, they represent almost half of the scheduled services. This means that entry of new investors in the sector has been substantial, and also that they have been more concentrated than existing operators (AO average size is four times the average of PO and NO).

A second feature to be accounted for is the relative share of PS and FT lines. As it should be expected, FT and executive lines increased sharply from 1992, as it was the typical way to enter in any route. In table 6, we present some figures related to this topic:

Table 6
ICS: PS, FT and executive lines
(annual data)

Line	Number	Veh-km	%
Public Service	727	396.514.465	51%
Free Traffic	513	349.894.181	45%
Executive	43	27.177.323	4%
Total	1.283	773.585.969	100%

Source: Internet site of the Secretary of Transport

We can state therefore that nowadays almost one half of scheduled services is not under the PS regime. This assertion must be qualified, anyway, because it is based on data for the whole network, and things may surely run quite different in specific routes. In order to partially meet this objection, as a full analysis requires not available information, we have divided the network in two sets, defined as follows:

- *Trunk routes*: routes of more than 200 km, that convey lines whose aggregate services sum up 5 or more services, daily.
- *Remainder routes* (which are meant to be at a second or third level)

It should be expected that new lines should prevail in trunk routes, where the “cream” of the market is to be found. Figures, nevertheless, suggest that the behavior in these two groups is not very different. Indeed, as it is shown in Table 7, NO and AO have a bit greater share in non-trunk lines.

Table 7
ICS: Operators in trunk and remainder routes
 (% of veh-km scheduled)

Line	Acquired operators (AO):	New operators (NO)	Pre-existing operators (PO)	Total
Trunk	32,0%	20,6%	47,4%	100,0%
Remainders	28,8%	15,8%	55,4%	100,0%
Total	30,5%	18,4%	51,1%	100,0%

Source: Internet site of the Secretary of Transport

We can conclude, therefore, that even if there was not a formal deregulation in the sector, entering of new investors has been quite important and pervasive. And also there has been an active response from PO, as will be shown below.

How much did the network change?

According to Parodi and Sanchez (op.cit.) little change has taken place, within the new network, as new lines have been traced on the route of the existing one.

This statement is to be considered with caution. First, Argentina's road network is quite well developed (although we cannot say that it is well maintained), and has not undergone any substantial changes in the '90s. Second, the previous ICS network widely covered the country; according to surveys conducted right before the reform, very few trips required transferring. Third, even before the reform, some cases of oversupply of services were identified, through special processing of information. Therefore, it does not seem that the previous regulatory frame prevented an adequate development of the network. And, anyway, it should be noted that the demand increase had been scanty, so it was not likely that major changes would be required.

These statements lead to the conclusion that major changes in the network were not to be expected. But anyway, FT lines are not mainly doubling the PS network. Table 8 shows that 39% of veh-km supplied by FT lines are not coincident with the routes of PS lines.

Table 8
FT lines: superposition with PS lines
 (veh-km scheduled)

	Routes	Veh-km	
Only FT	157	137.214.369	39%
PS & FT	125	212.679.812	61%
Total	282	349.894.181	100%

Source: author's, based on data from the the Secretary of Transport internet site

Of course, this is not meant to say that there are not superpositions at all in these routes. We can conclude that oversupply came with some innovation in the network.

Who were the network innovators?

This question can be answered through the identification of the firms that more actively operate nowadays FT and executive services. We may consider two levels. First, we can observe how FT services distribute among firms belonging to different size groups. Second, we can analyze FT in relationship with the operators group (i.e., EO, AO and NO).

Table 8 indicates the incidence of FT lines, considering the three categories mentioned above: first five, following five and remainders.

Table 9
ICS: Incidence of PS, FT and executive services
per size group

(% veh-km scheduled)

Line	Five larger	Five following	Remainders	Total
PS	62,3%	58,6%	39,0%	51,3%
FT	37,5%	38,8%	54,3%	45,2%
Executive	0,2%	2,6%	6,7%	3,5%
Total	100,0%	100,0%	100,0%	100,0%

Source: author, on the basis of Internet site of the Secretary of Transport

It can be stated that incidence of FT services is clearly higher in the minor size group. **Actually**, 54% of these services are operated by this group. Small firms have been **rather** more innovative.

Let us explore now how existing and new firms did react to the possibility of expanding the network, by operating FT services. We can classify here four cases, according to the history of the firm and the lines it operates. The following schema qualifies each case obtained:

	Acquired and new operators	Pre-existing operators
FT	"Invasion" of newcomers	Active response of PO
Executive		
PS	Takeovers of pre-existent operator gone bankrupt	Pre reform group

The share of each case will show how much the network expanded due to PO or to AO and NO. Table 9 shows the outcome of this analysis; it includes also the division between trunk routes and remainders, in order to capture any differential effect between both levels of the network.

Table 10
ICS: Incidence of PS, FT and executive services
per size group

(% veh-km scheduled)

Route	Type of line	New Operators (NO)	Acquired Operators (AO)	Pre-existent Operators (PO)	Total
Trunk	Executive	3,2%	0,7%	0,2%	4,1%
	FT	9,2%	13,6%	19,1%	41,8%
	PS	8,2%	17,7%	28,2%	54,1%
<i>Total</i>		20,6%	32,0%	47,4%	100,0%
Remainders	Executive	2,2%	0,3%	0,3%	2,8%
	FT	7,0%	15,3%	27,0%	49,3%
	PS	6,6%	13,3%	28,1%	47,9%
<i>Total</i>		15,8%	28,8%	55,4%	100,0%
Overall network	Executive	2,7%	0,5%	0,2%	3,5%
	FT	8,2%	14,3%	22,7%	45,2%
	PS	7,5%	15,7%	28,1%	51,3%
Total		18,4%	30,5%	51,1%	100,0%

Source: author, on the basis of Secretary of Transport Internet site.

This table allows the following statements:

- Only 28% of services match with the existing before the reform (i.e., PS run by PO)
- PO have been active in creating FT services; indeed, more than half of them.
- Newcomers (NO and AO) have taken an important part of PS, from firms gone bankrupt; actually, more than 40% of overall supply of PS (for the purpose of this paper, it was not possible to identify cases of PS lines of failed operators that were transferred to other PO.). Beware that this percentage can be taken as a rough estimate of the overall supply (measured in veh-km) that belonged to failed operators.
- There are not substantial differences between trunk and remainder lines.

We can therefore conclude **that both PO went to operate FT services and newcomers took over PS.** Of course, these overall data conceal some diversity of cases. One of the largest operators and some of medium size operate very few FT lines. But for most of the PO, the FT share is more than 1/3 of total supply.

That is, the firms' behavior was far from being static or conservative.

Why did the regime fail? The present situation

As it was stated before in this paper, the regulatory regime issued en 1992 was changed six years later. The new frame freezes the permission for running new FT lines; and there are no more calls for bids for PS lines.

The alleged reason for this decision was initially a bureaucratic one, related to the implementation of a services register; but recently it was officially admitted that the real factor stems in the perception that the situation in ICS sector was no longer sustainable, and a new regime is under analysis.

As it was stated before, the sector has undergone an important capital inflow, via new or existing operators. The outcome was an important oversupply of services, not matched by any significant demand increase, and reduction of fares.

The most important conclusion that can be driven from this fact is that operators were not able to reach a collusive agreement, in order to raise fares and correct over investment.

After 1998, fares do not seem to have risen very much, but nowadays they are probably higher. In a survey of few cases, made for this paper, the average fare per km is in general equal or higher than the regulated one (even for PS!). Anyway, comparisons are not easy to carry out, as Argentina has fallen in an outstanding economic crisis in 2001, from which it is slowly recovering.

An interesting statement is that nowadays we are back in the situation previous to 1992, although the players of ICS are clearly not the same. It may be true (as it is suggested by Parodi and Sanchez) that a complete liberalization did not take place due to interest protection of existing firms and trade unions. Nevertheless, the end of the story tells that trade unions were not able to prevent worsening of working conditions, and half of the biggest 1992 existing firms disappeared.

THE ICS MARKET STRUCTURE: AN ATTEMPT OF CLASSIFICATION

In this section, we will discuss briefly the nature of the ICS market structure, for the case of Argentina. Although the available information is not sufficient – especially concerning effective fares and ridership – it seems possible to reach some (provisional) conclusions, on the basis of the empirical analysis sketched above.

There is an obvious reason for this quest. If a kind of competitive market is likely to arise from a deregulated frame of ICS, deregulation would find an economic justification.

As we have not reviewed other experiences of regulatory reform in ICS, no comparative analysis will be carried out. But we shall refer to the theoretical literature about oligopolistic markets. We will rely on Shapiro [6], Viscusi et al [8] and Shepherd [7].

It must be stressed that this is only an exploratory attempt, that aims to suggest some hypothesis, for further research.

The fundamentals of ICS market

In order to classify the ICS market structure, some basic features of the activity must be studied: relevant market and barriers to entry, number of players, existence of product differentiation and nature of cost functions. Each of them will be treated separately.

Relevant market and barriers to entry

The relevant market for ICS is defined by the demand that exists in a given route. It is true that firms normally cover different routes, and therefore they are strictly multiproduct firms; but this is consistent with this definition. Indeed, in any route where there is more than one pair OD, there is also multiproduction; but as the demand is met with the operation of the line, it may be considered as a unique product. Of course, the relevant result for the firm comes out from the whole markets where it is involved. But we are assuming that every particular market shares basically the same features, although a more detailed approach will call for a perspective that classifies the markets according to some relevant characteristic (in fact, this was the criterion we used before when we distinguished between trunk and **remainder** lines).

Each market – so defined – has some barrier to entry, as any newcomer has to face some additional costs that become sunk (such as counters, logistics chains, etc.) and because it takes some time to be known by customers. Notice that we are not considering the vehicles themselves as sunk costs, as they can be readily used in other routes.

Therefore, we do not accept the eventual idea that ICS markets are contestable. Notice we are not qualifying contestability. As Shepherd points out, rightly, in contestability theory “if actual conditions depart even slightly from any of the assumptions, then the theory’s lessons are false” (op.cit., p. 220). Therefore, we can not refer to “more” or “less” contestable markets, as frequently found in the literature.

In other terms, the players in the market that must be accounted for are only those that are already there.

It is interesting to state that barriers to entry allow a separate analysis for each market; i.e., even if most firms in the sector are multiproduct (i.e., multiroute), we will consider that what happens in one market is independent from the other one (there will be a qualification, anyway, when we will refer to differentiation).

i. Number of players

The number of players, of course, is quite variable among routes. More specifically, trunk routes are likely to have many players, while the **remainders** are fewer. In the case of Argentina, only 21 routes have more than 5 operators; and in any case, concentration (and therefore, leadership) of players is normal. Therefore, there is no room for assuming price-taking competition.

ii. Product differentiation

The features of ICS are basically standard, as coaches are supplied by relatively few firms, and are not manufactured on client’s specification (except some particular features). Therefore, differentiation of product can arise from some specific features of service (timetables, provision of meals, etc.) and eventually from different ages and conditions of coaches.

Eventually, it could be suggested that operators at the national level are better known than the smaller, and therefore they enjoy some kind of favorable differentiation. But this hypothesis must be tested (the aforementioned survey of current fares is not conclusive in this point; but there is some slight evidence).

iii. Cost functions

ICS is an activity where there is probably a minimum economic size, but in very low levels. As a way of getting an approximation, it can be assumed that the reserve vehicles should amount to no-less than 10% of the service requirement. Therefore, if one vehicle is to be held idle, a minimum level of cost should be reached with an overall rolling stock of 10-15 vehicles. When this threshold is trespassed, there should not be relevant economies of scale or scope (recall that these are to be considered normally as multiproduct firms). In the case of ICS in Argentina, almost all the firms have a larger size. Notice that this analysis must be conducted at the firm level (and not at a particular market).

Therefore, it can be assumed that costs are broadly proportional to size; there are not increasing or decreasing returns. Obviously, the cost for each route will have its own determinants, due to road topography and surface, and due also to the rotation of rolling stock timetables allow (besides, of course, the level and attention of intermediate ridership).

In the short term, capacity is anyway fixed. But it can be safely assumed – for the purpose of analysis – that normally there is not overload, as is usual in intercity transportation. This means that on average there should not be extraordinary gains due to excess of use over capacity in a deregulated market (except eventually in very high demand periods). The usual Marshallian graph of increasing marginal costs does not seem to be the best representation. Instead, the L shaped cost curve – constant short run variable cost up to full capacity use – suits better.

A final warning is to be made. Although it is not usually recognized, short run marginal cost is not so a clear cut concept. As W. A. Lewis pointed out a long time ago, there is not any sharp criterion to distinguish between the short run and the long run; in fact, the very short run marginal cost is almost zero, in most cases (as it happens typically in passenger transportation). The practical criterion is based on the decision of the supplier about how much he will decide to charge. In a context of uncertainty – which is the

only one where the notion of short run supply curve makes sense – this decision is likely to be quite conventional. This consideration is important when focusing on pricing models; we shall come back to this point later.

ICS in Argentina: an oligopolistic market

Clearly, the above statements lead us to classify the ICS market (or better, markets) as oligopolistic. There are few suppliers, and no auction mechanism nor external alternatives are available; therefore, there is room for interdependence and strategic behavior.

These are not, of course, good news. Oligopoly theory has produced a lot of models; the best we can say about it is, with Shapiro (op.cit.), that such diversity allows to search the one that better suits to the case under study; we do not have a general frame available. As Shepherd (op.cit.) rightly states, “Predicting oligopoly is much like predicting the weather. Rough averages and ranges can be guessed at, but reliable and precise answers simply can’t be obtained” (p. 243).

We shall therefore try to find the best suiting model for ICS in Argentina. We first consider the two classical on collusive oligopoly hypothesis (Bertrand and Cournot models); next, the case for collusion will be analyzed.

Before starting our analysis, a point requires clarification. The regulatory regime issued in 1992 was, as we have seen above, a mixed one, as there were two segments, one of regulated lines (PS), and the other without any regulation (FT), although restricted to operators of PS. Now, on the basis of the data reviewed, we can assume that the sector was open to new investors, through bidding of PS lines or through take-overs. And actually, entering did happen; indeed, eight firms that won concession biddings did not finally enter the market (source: Parodi and Sanchez, op. cit.).

We may therefore assume that the market can be analyzed as a conventional one, without any consideration of regulations to entry; operators of PS were (and are) indeed higher in number than firms in typically oligopolistic sectors. Although this hypothesis may need some qualification – as full deregulation did not take place – it is surely a good starting point; at least, because it allows us to study the conditions for an eventually completely deregulated market.

Price and quantity mechanism: Bertrand and Cournot

The first quest is to find which kind of non collusive oligopolistic mechanism can better represent the ICS market. More precisely, should we think of price adjustments, a la Bertrand, or in a quantity adjustment, of Cournot type?

This is a difficult matter, even in pure theoretical terms. As Shapiro (op. cit.) rightly points out, Bertrand mechanism is more realistic in its premises, while its conclusions are quite unbelievable; Cournot adjustment is instead sound in its conclusions (tying the oligopolistic mark up to the number of incumbents), while its assumptions are not sound.

We shall develop both lines of argument, and afterwards some conclusions will be drawn.

Price adjustment: Bertrand

In the context of ICS, where fare wares took place, Bertrand mechanism seems to be attractive. But it requires some additional assumptions, in order to escape from the trivial competitive outcome. We will consider three issues: the Edgeworth model, product differentiation and costs functions.

First, we must consider the *Edgeworth proposal*, which can be focused as a critical development of Bertrand’s model. The central idea is as follows. There are two players, with fixed capacity; demand is not fully covered when price is set equal to marginal cost. In this situation, a kind of unstable pattern emerges:

when one player sets its price at the marginal cost, the other one has an incentive to *rise* his own price, as his demand is tight enough. The first player will follow this price increase and next Bertrand's mechanism forces a price reduction, and the play starts over again.

It is surely interesting to attribute the instability of ICS market to this kind of mechanism. But it requires an assumption of insufficient capacity, which we have already banned, as not realistic, at least in this specific case. Indeed, load factors we reviewed above do not suggest, in any way, capacity limitation.

The classical way to go around Bertrand's full competitive result is to introduce *product differentiation*. In this case, we should accept that each operator has some specific feature that makes him different from the others; he therefore enjoys some degree of monopoly power. This possibility must be appraised on empirical grounds. As long as an observer can perceive, differentiation may exist basically in the case of little firms that supply medium quality services at lower fares. But this seems to be a marginal case. There does not seem to be any important brand loyalty in the market; indeed, reputation of long aged enterprises did not allow them to resist the attack of newcomers. We must therefore give a moderate credit to differentiation, although this conclusion must be empirically tested.

What about *costs*? We know that Bertrand's scheme, when marginal costs are different among players, assigns the whole market to the lower cost supplier, and market gets finally monopolized, at a price equal to the marginal cost of the next supplier.

Obviously, this is not the observed outcome. But we may suggest a different approach, based on Bertrand's mechanism. Although total costs may not be very different among well-operated lines, it may happen that some kind of strategic behavior may take place, referred to *the marginal costs the firm wants to recover in the short term*. That is, it may happen that the different firms may consider different marginal costs, expecting to enjoy a higher market share in the future (recall the mentioned indication of Lewis, about short run marginal cost), "postponing" therefore a part of costs. Of course, this is the logic of the fares war, which may be fed by the fact that an additional passenger costs nothing. As expectations are embodied in the cost to be considered in the short run, and as expectations of the different firms may not be consistent, the outcome will be in this case quite unpredictable. But price competition will actually take place (at least, until players perceive that collusion can be a better way of survival).

We may anyway suggest a case that seems to be usual – although not general – in scheduled transportation. The setting is as follows:

- There are firms of two sizes ("big" and "small"); for the sake of simplicity, let us assume that there is only one firm in each set.
- The small firm has a limited supply capacity (say, due to the difficulty to raise financing).
- The pricing policy of the small firm is to be systematically below of the other's price. Therefore, it is able to fulfill its capacity.
- The rest of the market is taken by the big firm, which adjusts its supply and price, in order to maximize its profit. It must be noticed that, even if we have a kind of Bertrand's competition, prices will not be equal for both firms.

Of course, this model requires that the big firm will not be interested in eliminate the other one from the market. This is a matter of a kind of cost-benefit analysis: banning the little firm costs a price cut, and therefore losses, that may be not profitable (at least, it depends on expectations and on the interest rate). There is some empirical evidence, in ICS market, that this configuration may happen. The possibility of some kind of product differentiation may help for it.

We may therefore conclude that a kind of Bertrand's mechanism may be present in the firms' behavior, although we must add a conventional component of expectations, leading to results that are not likely to be anticipated. But, of course, this is too loose an argument for building a model.

Quantity adjustment: Cournot

The basic assumption of Cournot's model is quite difficult to observe. The idea that each player takes quantities of other players as given is at least odd looking. In the case of ICS, perhaps supplied capacity

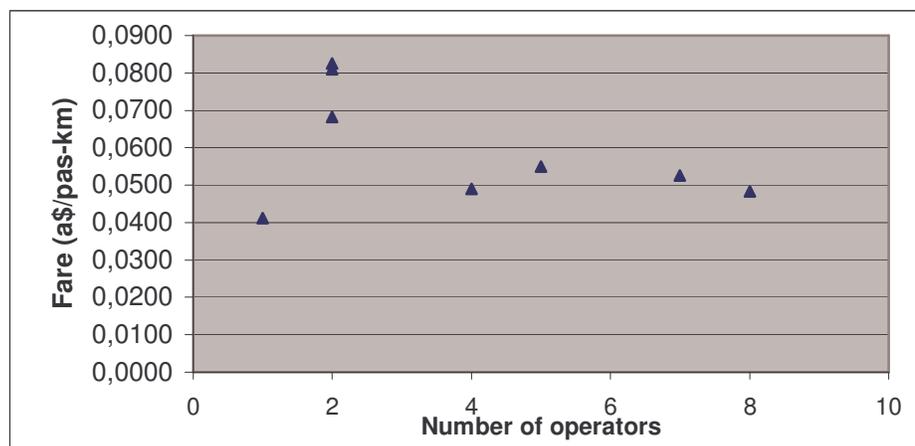
could be taken as an indication of quantity; but if we have normally some level of idleness – as it happens in ICS – supplied capacity cannot be taken as an indication of production.

Therefore, as mentioned before, Cournot’s model is more interesting for the basic outcome it provides: mark-up is inversely correlated to the concentration in the market. Now, if even this outcome is not observed in ICS, we should discard it, both for its assumptions and its results.

We stated that for 1996 the observed correlation between fare level and number of operators was mild. A very brief survey made by the author recently tends to confirm this conclusion, although on the basis of a very little sample, that combines cases of monopolistic or duopolistic operation with others where there are more operators. The following graph summarizes this preliminary outcome; it relates the number of operators with the average fare for standard services.

Figure 1.

ICS: Correlation between fares level and number of operators



If this conclusion is to be held, there seems to be little room for Cournot’s based models. But more research is due, to confirm this conclusion.

Collusion

Let us consider *tight collusion* (as that arising from oligopolistic games and supergames), where the threat of retaliation (“flooding the market”) is said to prevent cheating. As it is well known, collusion requires plentiful of information on the effective fares, in order to get information about cheating. This is easy to perform in this case, as fares are announced publicly, at least at the main terminal stations.

The history we have reviewed suggests that in the case of Argentina, price and quantity collusions were attempted, through the pooling of services; but it was not lasting. On the other hand, collusion normally leads to stable industry configuration; and surely this was not the case in ICS. Should therefore the possibility of collusion be banned?

Although facts suggest a positive answer, we must nevertheless be cautious. As we pointed out, costs have not been stable, due to the renegotiation of labor conditions (in fact, drivers are probably among the greater losers in the reform process). There was therefore a sensible shift in the cost functions, and an equilibrium point (or better, a stable situation) may have been fully reached only after some years. Actually, pooling was essentially tried by pre-existing operators, in the very beginning of the new regime.

Notice that this point is a key one in order to furnish a right explanation of the important changes in the sector configuration we have described above. The winners may have won either due to faster renegotiation of labor conditions, or because they had more capacity to sustain market predation. But after costs got more stable, there may be room for collusion.

Nowadays, no open coordination among operators is taking place; but some kind of tacit (or unfolded) collusion may be happening. Actually, fares were increased recently by many firms in an almost simultaneous pattern; but they are not always equal among operators in the same routes and comfort level.

Conclusions

This sketchy discussion suggests that any theorization about ICS market should be better approached from some version of Bertrand's model. The basic (and trivial) model must anyway be enriched, perhaps by some empirical research in order to test sources and significance of service differentiation. Cournot's approach will have its case only if the decreasing relationship between number of operators and fares will be empirically found.

On the other hand, we must not deny the possibility of some kind of collusion. Indeed, the history of the sector suggests us that demand seems to be quite inelastic, in relationship to both fare and income. If this perception is true, price competition seems especially little attractive, as demand as a whole is not likely to get larger. The "rational" behavior calls therefore for collusion. Therefore, this outcome is to be expected.

We may therefore conclude that a deregulated ICS market is not likely to be fully competitive.

Anyway, there is one important outcome of the reform which is not taken into account in the brief discussion about the market structure we are ending here: the oversupply of services. Indeed, both Cournot and Bertrand approaches do not produce any result that can be associated to excess capacity. It could be argued that this is a temporary situation; but in fact it has persisted for a couple of years (even after the freezing of the regime in 1998). This point deserves more research.

SOME CONCLUDING REMARKS

This paper only aims to furnish some empirical and analytical suggestions for further research, which is surely lacking for ICS in Argentina. We can therefore summarize the main results we obtained.

- The reform issued for ICS consisted in a partial deregulation, where incumbent operators were allowed to run services in any other route.
- In practice, the reform meant a virtual deregulation of the sector, as massive entry through biddings and take-overs took place.
- The behavior of operators has been quite active, generating a competition environment.
- Some productivity indicators show improvements; but the main outcome was a visible oversupply, which meant low load factors and decreasing fares.
- There was an important change in the sector's structure, as newcomers replaced many of the existing firms, including some of the biggest.
- The reform has been admittedly a failure, and was frozen 6 years later. Nowadays, a new frame is being searched.
- Although the reform made it easier the entry to the sector, the markets formed on each route can not be termed as fully competitive; the notion of oligopolistic structure fits well.
- Some brief theoretical analysis suggests that Bertrand's frame (price adjustment), allowing probably some differentiation in order to avoid trivial outcomes, is more appropriate than Cournot's. Although the history of the sector does not suggest that collusion took place, it can be guessed that once a stable situation has been reached (as it seems nowadays), collusion may occur. The low elasticity of demand is surely an argument for collusion.

The analysis conducted in this paper allows for a general appraisal of this reform. It seems clear that it does not deserve a positive judgment. Some “fresh air” has entered the sector, and the network was improved. But the important overinvestment that occurred is surely a bad outcome; and it seems unlikely that it can be compensated by other benefits. The improvement of the regulated frame that ruled before 1992, providing some flexibility and ameliorating a great deal the poor government performance, was a better decision.

Free markets are especially good when innovation is important, and continuous new information about opportunities is added. This was the case of telecommunications, but not of ICS. Therefore, a more centralized arrangement could have been more suitable.

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