



Munich Personal RePEc Archive

## **The role of regulation in financing transport infrastructures in Italy**

Beria, Paolo and Ponti, Marco  
Politecnico di Milano

2008

Online at <http://mpa.ub.uni-muenchen.de/14108/>  
MPRA Paper No. 14108, posted 16. March 2009 / 11:26

# The role of regulation in financing transport infrastructures in Italy

Paolo Beria<sup>\*</sup>, Marco Ponti<sup>°</sup>

DiAP, *Politecnico* di Milano, Milano, Italy.

---

## Abstract

The paper discusses the present regulatory framework in Italy concerning transport infrastructures financing and provides some policy indications. The Italian situation is characterised by non homogeneity among the transport modes and insufficient, or even perverse, incentives to efficiency. Also, the norms promote the tendency to overinvestment and “gold plating” because applied within a weak planning framework.

After a theoretical introduction to the financing mechanisms (public funding, PPP, price cap, etc.), the paper is structured by modes. For each infrastructure type (national roads, highways, railways, ports and airports), the most common funding practices are commented, underlining their characteristics, limits and implications. National roads and railways are financed by general budget on the basis of a planning activity usually carried by the agent itself. Conversely, highways, airports and ports are partially financed by fares under conditions of legal monopoly granted by concessions. However, the formulas for fares determination are questionable and sometimes provide incentives to overinvestment.

The last section will provide recommendations for a more efficient regulation.

*Keywords:* regulation, investment, infrastructure, airports, roads, highways, railroads, price cap, ports, concession.

---

---

<sup>\*</sup> Corresponding author. *Address:* DiAP - Politecnico di Milano, Via Bonardi 3, 20133 Milano (Italy). *Tel.:* (+39)02.2399.5424. *E-mail:* paolo.beria@polimi.it.

<sup>°</sup> *Address:* DiAP - Politecnico di Milano, Via Bonardi 3, 20133 Milano (Italy). *Tel.:* (+39)02.2399.5424. *E-mail:* marco.ponti@polimi.it.

## 1. Specific problems of investment in transport infrastructures

The financing of large transport investments in the regulated sectors (toll highways, railways, airports and ports, even if in the latter sector a proper regulation is not present in Italy) are based on different and basically non consistent approaches.

The range of the financial channels used goes from total public transfers (even allowing the regulated company to skip any amortization during the technical life of the investments), to total financing by the tariffs, within a frame that can be defined as “Hot Project Financing”. In between, there are several forms of Public-Private-Participation, with various degrees of intervention of public funds. Furthermore, this participation happens either within existing concessions or within dedicated competitive tenders for a single infrastructure (a more traditional Build-Operate-Transfer – B.O.T. project financing scheme).

In general, it is worthwhile to remember that investments in transport infrastructures show some peculiar characteristic.

Firstly, commercial risk is seldom present and tends to be in fact a regulatory risk. In fact, the building of other competing infrastructures, gasoline taxation, often the regulation of the services using the infrastructure etc. are all public activities and are crucial for both the quantity and the willingness to pay of the users. Few actions of the operators can have a major impact compared with these public decisions, leaving a limited role to commercial capability.

Regulated transport infrastructures have in general large dimensions, a very long useful life and are also legal monopolies (related to land use planning). These facts raise capture risks, in the sense that little role is left for any competitive pressure.

Furthermore, these investments are either “internal” at existing concessions, or made within a Project Financing scheme. Some of them are partially or entirely state-financed, since within the transport sector there are present both environmental problems, social objectives (regional development) and other market failures, the more relevant being congestion phenomena.

The main issue presented in the following theoretical part is: under which conditions are investments in regulated infrastructures increasing welfare, (either as “social” investments, or in the form of efficiency-increasing instruments, like in the case of those made by a private firm), or are “gold-plating”, i.e. represent a waste of resources, generating either private or public rents (the latter ones in form of consensus building etc.)? Under-investment is assumed as possible only if the regulatory system creates no proper incentives – for example, too much risk, or perverse ones - for example they allow for increasing profits collecting tariffs only without investing, even in case of tariffs based on reimbursements of agreed-upon investments. Next parts will go in deep of single modes regulation in Italy.

## 2. A possible typology of infrastructure investments

We may stress four general cases of investments in transport infrastructures. The difference lays in the relationship between regulation and social profitability.

- a. Within a standard *price cap* scheme, investments are part of the instruments available to the regulated agent in order to gain temporary extra-profits due to either reduced costs and/or increased revenues, at a given tariff. In this way, the agent is incentivated to make efficient investments, and only efficient ones, during the “regulatory lag”<sup>1</sup>. By definition, these investments are profitable at the regulated tariff<sup>2</sup>. We can define this type of investment *endogenous*, i.e. basically similar to a private one made within a market context, and generating surplus.
- b. A second case is that of an investment profitable only *rising* the tariff for the direct users. The result depend on the case: it may be socially desirable, but it can also generate a waste of

---

<sup>1</sup> The issue becomes slightly more complicated for investments with a longer technical life, but the principle is clear cut.

<sup>2</sup> But still in particular cases they can be inefficient due to deadweight losses, externalities, etc.

resources. In this case it is in fact a form of *gold plating*, especially if the relevant demand is non elastic. The related example is quite obvious: an extra lane on a highway link can be financially viable with a higher toll, even if technically not needed, in case of the demand on that link is rigid enough, like is in general the case with highways with few real alternatives.

- c. A further case is that of an investment profitable only if the tariff increase is extended to other users of the network. Moreover it can be useless, especially in the case of an extended regulated network, generating only a limited unit toll increase. The case of an extra lane can be used as an example, but the problem can be present also in case of entirely new infrastructures, with limited “direct” demand, whose costs are paid by existing users on the rest of the network.
- d. Finally, there is the case when the investment needs also substantial state subsidies to be financially feasible. In this case the *gold plating* effect is even more transparent and an economic, not only a financial analysis, is specially needed.

In cases b, c, d, we can define the investments as *exogenous*, i.e. external to the price-cap rationale. They need public intervention on the tariff structure and level, on top of the standard definition of the X (related to efficiency) and the quality parameter after each regulatory lag.

The issues are basically similar within in a periodic competitive tendering, or a Project Financing scheme: the tendered contract has to define carefully the typology of investments involved, and, in case of exogenous ones, has to check the real economic rationale of them.

### 3. Highways

Italian highway system consists in approximately 6.500 km, the majority of which is franchised. Part of this network, 600 km, has characteristics of highway, but is built and owned by the National Road agency and will be discussed in next paragraph.

The franchisees are 25, usually privately owned or mixed public-private. The main franchisee is the private company “Gruppo Autostrade”, which owns the 61% of the network and serves the 67% of the traffic. It was formerly owned by the state and was privatised in 1999. Another group, the “Gruppo Gavio” owns the 20% of the network. The rest of the network is owned by local authorities or by minor private shareholders (Ragazzi, 2008).

#### *The extension of concessions and the new investments*

Until the end of the Nineties, all the concessions were automatically renewed at the same conditions and without any tender. The renewal was formally justified with the promise of further investments, which needed to be remunerated. In 1999, the Government decided to privatise the main concession, “Autostrade” in order to accomplish at European request to dismantle the former owner, IRI, a public company. However, the hidden rationale of such privatisation was to earn resources in a period of financial constraints, as will be commented later. However, the still public “Autostrade” obtained easily the renewal of the concession for another 40 years up to 2038, just before the privatisation. This fact opened the way, between 1999 and 2000, for the other concessionaires to extend their concession period, despite the European rules forbidding automatic renewals without tendering.

As fixed by the decree named “Costa–Ciampi” (20 October 1998, n. 283), according to the criterion of past costs recovery, the renewal periods would have been very limited for all the concessions (1 to 7 years, with one exception only of 18 years) (Ragazzi, 2008). However, the franchisees succeeded in having a further concession period in order to repay *new* investment plans. These investments could have been properly financed by fixing an end of concession value to be paid by the new concessionaire after the tender to the present one. This would have avoided of having longer concession periods before tenders. Unfortunately, this did not happen and

concessions were extended for 6 to 27 years (with two shorter exceptions only). Moreover, only few concessions would have expired around 2010<sup>3</sup>, all the rest around 2020 or later, up to 2038<sup>4</sup>.

Summarising, after 1998 all the concessions were renewed for decades to recover unpaid past investments and to finance huge investment plans. The new investments, with the exclusion of Autostrade, consisted in approx. 4.500M€. The figure is slightly lower than the initial proposal made by the concessionaires of approx. 5.500M€. These amounts determined the extension periods. Also the past costs recovery were particularly generous (Ragazzi, 2008), given the new *price-cap* regime (see below).

### *The privatisation of Autostrade*

Autostrade is the first motorway group in Italy and Europe. It has been founded in 1950 by IRI, a state owned agency for industrial reconstruction and development. At those times, the society was considered as an operative agency whose aims were to build the Italian network without making any profit, exactly as is up to now the National Roads agency ANAS (see next chapter). However, during the years, the Italian economy and the traffic increased dramatically. At the same time, the tariffs never decreased, even if the initial investments got repaid. For these reasons, the Autostrade gave to the owner (IRI) and to the Italian state enormous profits, which, due to the public property, may be properly defined as taxes. A first share of 13% was sold in 1986, making Autostrade a share company and limiting the state power.

In 1996 was also introduced the *price-cap* to determine the tariffs. The Italian *price-cap* will be described below, evidencing the important distortions introduced, especially concerning investments, and its consequences on efficiency. Concerning the privatisation only, the most important (and hidden) driver of the political choice was, according to many authors (Boitani, 2004; Coco and Ponti, 2006), to maximise society value. This has been done by

- applying a weak regulation on efficiency and, especially, on investments;
- extending for many decades the concession without any tender (in 1997, until 2038) .

The mix of these two conditions made the society extremely profitable for the investor and increased noteworthy its value. Boitani (2004) quotes some documents of that time evidencing the fact that the expected profits of Autostrade were largely superior to the official ones, due to the particularly favourable regulatory framework. The counterpart is that such a favourable regulation cannot, by definition, promote efficiency and favour the users.

It must be underlined that both the Italian Court of Auditors and the EC tried to make the process clearer. However, in 1999, the private society *Schemaventotto*, succeeded in obtaining the control of the Autostrade.

The operation demonstrated ex-post to be very profitable. The value of the shares remained steady until 2003, when the price-cap rules were finally approved. Then, in three years only, the value started to increase and reached an exceptional level, three times higher the (already high) price paid for the privatisation.

### *Price-cap and investment recovery*

After the above described transitory phase, since 2000 a new regulatory regime for operation and investment is applied. This regime is ruled by a *price cap* formula, but the model applied is far from the theoretical one (Coco and Ponti, 2006).

The principle determining fares is that of uniformity across parts of the network and tariffs are, in fact, defined only to recover investment costs. No efficiency criterion is applied (Boitani, 2004), in order to efficiently allocate the demand. This background is heavily affecting the strategy of the franchisees and of the State. Franchisees are in charge of the commercial risks (even if this is completely neutralised by the low forecasted demand), but their infrastructural investments are fully

---

<sup>3</sup> Centropadane (Piacenza-Brescia) in 2011, Cisa (Parma-La Spezia) in 2010, Padova- Mestre in 2009.

<sup>4</sup> Torino – Savona.

guaranteed by the *price cap*. What is more worrying is that these investments are assessed by the franchisee and not by the regulator, whose control on methodology and unit costs is weak and not transparent. Moreover, as Italian norms require, the assessment refers to single, specific, investments and not to a plan.

The core of these issues is the *price cap* formula, as defined with law 498/1992, as described by CIPE<sup>5</sup> decree 319/1996 and deeply revised by CIPE decree 1/2007. The formula used in the last decree is the following:

$$\Delta T \leq \Delta P - X + K$$

Where  $\Delta T$  is the highest variation of current fare,  $\Delta P$  is the programmed inflation rate,  $X$  is a parameter including the productivity variation defined at the beginning of the concession,  $K$  is a coefficient defined to recover the investments of the previous year. In the previous formulation it was included also a parameter  $\beta\Delta Q$  representing the variation of some quality parameters.

Without entering in detail of the rationale of the formula and the general problems related (like the absence of *claw-back* and other issues, clearly described by Boitani, 2004), one must underline two<sup>6</sup> aspects directly related with investment regulation.

- a. investments are explicitly remunerated in the tariff automatically, i.e. without any verification of their efficiency;
- b. the formula defines only the *variation* of the tariffs. A key issue is then the fixation of the *initial* tariff. Renewed concessions set the initial tariff at the level of the “historical” one, i.e. the tariff applied before the extension. To the contrary, the initial tariff should be the one to recover only past investments not yet recovered. New investments are included in  $K$ .

The most important modifications introduced with CIPE decree 1/2007 deal with new investments. It is stated that further investments not included in the concession will be included in the  $K$  parameter of the tariff only when actually spent and not, as was happening before, at the moment of the approval by the regulator (ANAS). The decree has been issued because of many cases of investments declared, paid by users, but actually never built.

Another correction of the past, problematic, framework deals with the quantification of the value of the investment. Before 2007, the amount of the investment was updated at the end on the basis of the declared ex-post costs. This did not give any incentive to correctly forecast the investment cost and opened the way to large and uncontrollable overruns. Since 2007 the investment remunerated in *price cap* formula is the one declared ex-ante by the promoter – franchisee.

Last, but not least, the explicit introduction of the parameter  $K$  (before not explicit) opens the way to reduction in tariffs as soon as the related investment is paid back. Before, the absence of an explicit reference to investments made possible to go on in remunerating investments indefinitely.

### *Regulation or incentive to gold-plating?*

The given description stresses that the Italian regulatory framework concerning highways investments is critical, despite the recent corrections introduced. It is not only a matter of weakness and normative inadequacy. Rather, some contents of the regulation are distorting the sector and inducing opportunistic behaviours of the agents. Their resistance has been until now capable of reducing the effectiveness of the regulation.

Some problems can be evidenced.

---

<sup>5</sup> Inter-ministry committee for economic programming, i.e. the body responsible for economy planning and public investments. The CIPE is from that date responsible also for fares regulation, by means of the sub-group NARS.

<sup>6</sup> The 2007 formulation corrects one significant distortion present in the past law. In that case, both the quality increase and new investments were remunerated. However, part of the investments directly increases the quality of the road (the state of the surface and the safety of the road). Therefore, all those investments were remunerated twice.

- a. The way initial tariffs are set, i.e. the “historical” ones, determines an unregulated monopolistic rent. In fact, part or all that past investments were already repaid in the previous concession period. The effect has been a dramatic increase in concessions values.
- b. In the price cap formula the new investments are automatically remunerated in the tariff, without applying any efficiency criterion and in a scarcely transparent way. Moreover, these increases are spread on the whole network even if benefits (e.g. a new section) are limited to some users only (Boitani, 2004).
- c. The extension period of the existing concessions depends on the financing of new investments. These new investments are included also in the K parameter of the *price-cap* formula. If the regulation is not strict in reducing K (as always happened in the past) after payback new investments are paid *twice* (Ragazzi, 2008). This is clearly an extra-profit, completely unlinked from the actual quality of the management.
- d. *Price-cap*, possibly in a correct form, is good for existing networks. However, it is applied for new investments and this may be seen as a double regulation. Rather, a correct project financing scheme, or a traditional procurement scheme, would be more efficient and prevent *gold plating* (see below).
- e. Present contracts remunerate any kind of investment. However, not all should be remunerated. For example, new capacity should be built only if new demand generates sufficient revenues or if the decrease of congestion determines an appreciable increase in quality, and not *per se*. Similarly, investments reducing operation costs should not be paid by users, but should be self-financing. In these cases, the current scheme may be an incentive to build any kind of investment and investments promoting efficiency or stimulating new demand are paid *twice*.
- f. A final and fundamental issue is who is deciding investments. The present framework is clearly distorted, since every new investment is proposed by the franchisee, which actually acts as a planner. As we have just seen, these investments can be remunerated twice (or more times...). A distinction between investments promoted by the concessionaire (to be paid by new demand or cost reduction) and by the authority/planner (to be paid in tariff or by a tender) is necessary.

The consequences of this regulatory framework are important. Privatisation and regulation aimed at maximising the value of the public companies to be privatised and not to obtain efficiency. The consequence is that now the franchisees are doing, with no exceptions, extraordinary extra-profits (Ragazzi, 2008). Also the transparency of such profits is scarce. Furthermore, no productive and allocative efficiency is promoted.

Finally, a perverse incentive to overinvestment is given, known as *Averch-Johnson effect*, both in quantity (new and unnecessary investments) and in unitary prices (no control on cost overruns and inefficient engineering situations, defined as *gold plating*). Obtaining the approval of monumental and unjustified investment plans, even if longer than the concession period, is easy. This behaviour, even if not linked to a longer concession period, gives *immediately* extra-profits, thanks to the K parameter. Moreover, the socio-economic rationale of these investments is weakly verified by the authority. ANAS, in fact, approved investments plans without any priority verification, stressing that investments are not publicly funded.

#### 4. National roads

The Italian national road system consists of approx. 21.500 km, plus 15.000 recently devolved to Regions. Also Provinces and Municipalities build and manage their road networks. The whole national system is managed by a concessionaire, named ANAS and 100% owned by the Treasury. The concession will expire in 2030<sup>7</sup>. Italian national roads are completely free. The ANAS network

---

<sup>7</sup> Unless renewed until 2050 as requested by the agency itself

is also made of some 4 lanes roads and of approx. 1.200 km of highways or roads with characteristics of highways.

Due to historical reasons, ANAS is not only the network manager, but also the authority for franchised highways. Under this function, it manages the bids and regulates the fares of the various concessions. Since ANAS is now in charge also of some toll concessions and aims to introduce tolls on many trunk roads, the double function is capable of distorting the relationships and the independence of the authority.

ANAS is now a stock company, state owned, but its financial autonomy is still very scarce and depends mainly on earmarked state transfers. The company recently issued an ambitious plan of restructuring, mainly aiming at becoming an independent subject, independently promoting development plans, increasing revenues, introducing tolls and increasing debt expositions. However, the ambiguous status of public company and of authority, in contradiction with the new role of market agent, was never put into discussion.

### *Traditional investment mechanism*

Investments come always from the state or by local authorities. For this reason, ANAS investments concur to national debt, constrained by European agreements. No remuneration of investments is supposed to come, since the network is nowadays completely free.

In 2007 ANAS received 444.2 M€ for network maintenance. The amount of such transfers varied considerably in the last years, from 360 M€ in 2005 to 255 M€ in 2006. In reality, also the “name” of these transfers changed in 200: from being a pure transfer at the end of the list, to the payment for the availability of the network under a contract. The result of the past balance sheets has always been negative.

Aside to maintenance transfers, the largest part of national expenditure is for new investments. The year 2006 was an anomaly, with “only” 100M€ spent. For example, in 2007 the total amount available was 1.120M€ (ANAS, 2006). The new 13 new road projects approved during 2006, sum up to a total cost of 1.431 M€.

The availability of these funds is subject to considerable fluctuations, due to state budget constraints and political choices. This volatility is a threat for proper building phasing and determined in many cases enormous delays (also of decades), scarce quality and huge cost overruns due to increase of costs and changes in design.

Concerning the selection of projects, it is supposed to come from central planning. However, the historical role of “agency” and not of “concessionaire” makes this separation less strict. In particular, the construction of brand new trunks comes from political choices, but the needs of expansion and modernisation of the network are driven by internal planning, simply accepted by the Treasury. The risk of capture and *gold plating* is present, both rising unitary costs, due to lack of regulation, and allocating resources out of an efficiency-based framework.

### *Recent modifications and new directions for the future*

Recently, the “*Legge Finanziaria 2007*”<sup>8</sup> introduced a new source of revenues, even if not specifically dedicated to new investments. The highways franchisees must pay to ANAS part of the surcharge they apply on their tolls. It is supposed to cover ordinary and extraordinary maintenance of free feeder roads to the toll highway system, but also for the “improvement of non-toll roads”.

In 2007 a new industrial plan has been issued. It is proposing radical modifications on the status, the role and the autonomy of ANAS. The plan has not been approved yet at the moment of writing, but it will likely be. The key issues are listed below. All of them are heavily affecting the way Italian roads will be financed in the future.

- Introduction of shadow tolls and real tolls on some roads (now free), instead of state transfers. State transfers remain for the “non commercial” network;

---

<sup>8</sup> art. 1, c. 1021.



- Acquisition of the network of some highway concessions under expiration, with the consequent revenues and profits;
- Some new roads are financed by ANAS budget (obviously larger than now) instead of direct state transfers. Direct funding remains for the new “non commercial” roads, that will be the large majority.

All these measures have the primary purpose to “deconsolidate” ANAS from the Italian public debt. Also, the public ownership, the status of legal monopoly and the lack of any regulation makes ANAS potentially very attractive for loans, improving its exposition capacity, and for private investors.

However, at the same time, the selection of new investments (in other words, the planning of national network) will move from ministry and public agency to a private-like company, whose goal is profit. Moreover, the monopoly is not regulated and the ambiguity of ANAS as franchise and franchisee at the same time is not solved at all.

## 5. Railways

Italian railways are divided among the National Railways (Ferrovie dello Stato S.p.A.) and numerous concessions for local networks. The main operator, FS, was formerly an integrated public company in charge of the network and with the legal monopoly on services. After the introduction of liberalisation principles, the group has been divided into a service company (Trenitalia) and a network manager (RFI), plus some smaller specific societies<sup>9</sup>. The national network consists of approx. 16.000 km, plus some 3.500km of conceded railways.

The financial soundness of FS S.p.A. is scarce. The budget of the company, including state subsidies, is often performing null or negative operative results<sup>10</sup>. Equity is more than double of comparable European national networks, such as DB or SNCF, while debt is considerably lower. The consequence is a negative ROI, given the totality of state transfers (FS, 2007).

In reality, the analysis of FS a single year of balance is not giving a true picture of the company. While the costs (6.747 M€ in 2005) and the fares revenues (approx. 3.200 M€ in 2005) can be representative, the other revenues are largely misleading. In fact, the two other main sources of revenues of the group (excluding investments) are state transfers in form of subsidies to track operator (1.349 M€ in 2005) and to service branch (1.205 M€ from Regions for regional trains and 490 M€ from State to long distance trains). In this case, the amounts are nearly completely unlinked with the market conditions. Rather, transfers and consequently net results depend on the money available year by year in Treasury. In conclusion, recent negative results depend partially by inefficient management, but also on “stochastic” state transfers and demand reduction.

The liberalisation process in Italy is aligned with Europe, with some specificities. National railways have been unbundled, but tracks and services are still under the same state owned holding. Tracks are a legal monopoly managed by one single company and regulated by a *transfer-cap* mechanism. No discussion on the minimal efficient dimension of the network took place and the concession is one for the whole country. On goods sector, there is a penetration of new-entrants for approx. 10% in terms of tonn·km. For passengers, Trenitalia is still the monopolist both for long distance and regional services, even if, formally, both markets are opened (some new rail companies are nearly ready to enter in the market of high speed and some regions performed bids, always won by Trenitalia or by consortia including it). FS group is absent in logistics.

### *Traditional public procurement*

Historically and presently, all new investments, especially those involving infrastructures, are fully state financed. Sometimes there is an intervention of local authorities, but the extent of this is

<sup>9</sup> In charge, for example, of commercial revitalisation of major stations (“Grandistazioni”) or of estates development (“FS Real Estate”).

<sup>10</sup> For example, 1.354 M€ in 2006, in front of 6.706 M€ of revenues.

very limited. No private or self financing investments are at stake. In general, investment costs are transferred from public purse to RFI that spends it. Just to give a hint on the quantity of investments, the high speed network alone cost 24 billions€ along 20 years.

At the same time, the new infrastructures (or new equipments) are never supposed to remunerate the investment<sup>11</sup>. As already said, RFI is in charge of tracks and “sells” the slots to the service branch, which is almost only Trenitalia. The price of the slots is calculated by a formula according to the type of the line or node. The overall tariff is regulated with a *transfer-cap* scheme.

The fare system used is in between a *marginal cost pricing* and *average cost pricing*: there is no full cost coverage, but fares are kept quite low in order to make easier the entrance of new competitors (Ponti et al., 2007). Despite the fact that the price is higher than marginal cost, the tariff is not actually remunerating even part of the investment. In fact, there is no link between the residual payback (for old lines) or a financial plan (for new lines) and the fares. Moreover, given the quasi-monopoly and the large subsidies of Trenitalia, the toll it pays to RFI is a simple transfer internal to the holding<sup>12</sup>.

The scheme used for Italian railways subsidies is called “*triple till*”, covering at the same time investments, fixed infrastructure costs and operations. Literature suggests avoiding *triple till* funding (Ponti, 2005). If the infrastructure is not financially profitable even excluding the investment cost (i.e. paid by the State anyway), the subsidies to operation should be provided directly or to the infrastructure operator (“*double till*” schemes). In the first case the service operator is paying the full operating costs (fixed and variable ones) to the infrastructure operator, but among its revenues there are also the subsidies. In the second case, the infrastructure operator is keeping access prices lower because subsidised, and the service operator is not subsidised. In both cases distortions are minimised, but transparency in access to infrastructures is better guaranteed in the second case (Beria, 2008). Italian railways are subsidised for the all three *tills*, with the effect of non transparent cross subsidisation between the parts of the system.

### *The case of high speed lines*

The Italian high speed network is under construction since the 90s<sup>13</sup> and will consist until 2010 in the line Turin – Milan – Rome – Salerno, plus some doublings between Milan and Venice. The HS program is the largest public investment in Italy nowadays, absorbing the 70% of all resources destined to railways.

According to public declarations, the Line Turin – Milan – Naples was initially supposed to cover the 60% of total investments with revenues from fares. Ten years later the line, not yet completed, is costing much more than expected and only 5,1 billions€ out of 24 are financed by equity, all the rest by public transfers (Ponti and Beria, 2007). It is worth noting that the fares to cover part of the costs are paid mainly by Trenitalia itself. This is a fundamental guarantee on the future level of traffic, even if first results for the lines Milan – Turin and Rome – Naples are below expectations. Moreover, FS was the protagonist of an enormous and unjustified state transfer to cover all of the investments previously classified as “private”: in 2006 the State paid back the totality of the debt contracted by RFI – TAV, 13 billions of €, with *Infrastrutture S.p.A.*, another public company created to finance investments out of state budget.

## **6. Airports**

The majority of Italian airports are managed by franchisees, with the exception of some minor airports managed directly by the Civil Aviation authority. Often airports are franchised by public companies owned by local authorities. Few exceptions exist of private airports, especially among

---

<sup>11</sup> An exception is supposed to be the high speed network. Please refer to next paragraph.

<sup>12</sup> A further problem, apart remuneration, is that tariffs give no scarcity signal, apart the fact that nodes are fareed differently from lines and secondary lines differ from main lines.

<sup>13</sup> With the exclusion of the Florence – Rome direct line dating back to the 80s.

the larger ones. In particular, Rome and Naples airport systems have been privatised and the discussion about Milan one is frequently at stake. Concessions are 40 years long.

Until 2007 (CIPE decree 86/2000) the regulation was quite weak and based on the basic pillars of separated bookkeeping, transparency, cost based fares, productivity increase. The regulator is ENAC. The airside fares were defined by a *price-cap* rule. This regulatory framework was modified in 2007<sup>14</sup>, but current rules still present some incoherencies with theory and facilitate the rise of monopolistic profits. Moreover, both directives are nearly unapplied concerning transparency and cost based fares (Sebastiani, 2007).

Italian airport regulation may be defined as “*half dual-till*”, since it is not a pure “*single-till*”, nor a “*dual-till*”. *Single-till* schemes regulate concessionaires’ revenues on airside and landside as a whole, preventing the rise of long lasting monopolistic rents. *Dual-till* schemes impose a regulation on airside fares and separately define royalties for landside profits. The first scheme is favourable for airlines, the second not. Italian law is regulating air fares as in a *dual-till* scheme, but do not have any form of control on landside revenues (parking, shops, etc.). For this reason is named “*half dual-till*”. Clearly, the scheme is extremely favourable for concessionaires, since regulates only part of the revenues, allowing extra-profits on the other.

#### *Remuneration of new investments*

Both in 2000 and 2007 regulations, another point of weakness is that of investments. Exactly as for any other regulated sector, investments that improve efficiency and give temporary extra profits to the concessionaires must not be remunerated. The franchisee will decide independently whether it is worth doing that investment or not. In *price-cap* terms, it is repaid by the gain of efficiency included in the “X” parameter.

Only when an investment gives a net social surplus, but not a benefit for the concessionaire, it must be publicly financed or, in this case, paid by users through an increase of tariff. For this reason, the “K” parameter is introduced both in theory and in Italian practice.

A problem rises when *any* investment financially feasible at a given increase of tariff is proposed and approved. This is the situation of Italian airports, where ENAC, that is called to approve investments and consequent tariff increase, do not perform any kind of transparent analysis. The procedure usually used is the approval of a “*contratto di programma*” (a contract) that may include various new investments, without an explicit evaluation of their effect on demand, efficiency and profits. In other words, there is no distinction between financially feasible investments (decreasing costs or rising demand) and socially desirable ones.

#### *Limits of present remuneration mechanisms*

A cross-check of the existence of large monopolistic rents, reinforced by an insufficient investment remuneration control, is the high level of profits made, especially by larger Italian airports. Their self financing capability is large due to monopolistic positions, to the scarce regulation power and to inelastic demand. For example, Malpensa 2000 project could have been fully paid by franchisee budget, without any public subsidy.

Exactly as the case of highways previously described, the fact that every investment gives a certain increase of tariffs sufficient to pay it back, is a strong incentive to overinvestment and *gold plating*. Also when the regulation is not on fares, but fixing a threshold on maximum profits, the expansion of the total of assets through new (and maybe inefficient) investments maximises absolute profits (*Averch-Johnson* effect).

In conclusion, also in airport sector the *price-cap* as it is, i.e. without sound economic analyses of proposed investments, seems not to be the right regulation tool for new investments. Linking the

---

<sup>14</sup> The new regulation, finally approved in 2008, is still based on price-cap method. The new price-cap formula includes productivity parameters, new investments remuneration and the reaching of some environmental parameters.

remuneration of investments through fares increase to sound and public evaluation is necessary to cut the extra-profits at present common in Italy.

## 7. Ports

Italian ports are not regulated as other infrastructures are. The authority responsible for tariff regulation in Italy, the NARS, is not competent on ports. Moreover, for the ports there are not general concessionaires in charge. The entities in charge of ports operations and decisions in the so called *Autorità portuali* (“port authorities”), whose task is not limited in time, is not regulated and no subject to periodic renovation. The port authorities can franchise part of the ports (for example a pier) or the totality of it, to private operators, like logistic groups.

Exactly as there is no regulation on fares, consequently very high and not efficiency driven, also investments do not follow a regulation framework. In particular, large investments are paid for directly by the state, generally without socio-economic feasibility check. Minor ones are sometime financed by the concessionaires of part of the port premises (“*autonomie funzionali*”), within the concession contract.

The rationale of this framework is clearly doubtful: ports are unregulated monopolies, there are no efficiency driven fares, investments can be arbitrarily decided by authorities and paid by the state or by privates. Since private operators will do only financially profitable investments, leaving larger and weaker ones to the state, the possibility of cross-subsidies from the state to private operators is more than a risk. Also, there is no control of *gold plating* phenomenon, very common in practice.

## 8. Conclusions and policy indications

The answer to the initial question on the efficiency of the regulated transport investments seems to be generally unfavourable. It can be stressed a widespread convergence of objectives of the political decision makers and the regulated firms, at least in the sense of the maximization of any type of investment, without paying much attention to the relation of social costs and benefits. A definite possible explanation can be found in the fact that large public works are one of the few sectors where the State can transfer resources, directly or via tariff regulation, to national firms, given the European constraints of state subsidies in other sectors. The evidence is in fact that in this sector the competition is limited (and not only in Italy), due to the “non-foot-loose” nature of construction activity (the winner of the bids are in general both national firms, and in general within a “rotation” context with a limited number of players). Another possible factor explaining the limited interest for incentivating efficient investments is related to the dominant “*pork-barrel policy*”, i.e. the tendency of allocating public resources on a geographical basis, or, even worse, on “*geography-plus-party*” basis.

Concerning the main transport modes, the basic goal of maximizing investments seems to be articulated in function of the willingness to pay of the users: since railways users are unwilling to pay for the infrastructures (in fact, not even for the services, subsidized independently), consensus is the dominant objective of railways investments, and the environment a useful “lip service” added in order to show a vague justification even for some very far from passing any cost-benefit test.

Since, at the opposite, highways and airports users show a high “willingness to pay”, financing investments for these modes can pass through tariff increases even for projects of dubious utility, with no problems with the European budget constraints and a weak resistance from the (uninformed) users. Anyway, due to the same high willingness to pay, the overall inefficiency of this type of investments is probably in average less severe, compared to the railways sector.

Ports are a special case: there is no efficiency oriented regulation. Investments are either paid by the State or within long-term contracts with private operators. The dominant feeling is that no real cost-benefit analysis is at play in this picture.

The main conclusion emerging is that there is no political interest for allocative (no cost-benefit binding mechanism for exogenous investments) nor productive efficiency (no visible endogenous investments). *Gold plating* and capture phenomena seem to prevail in the sector, also due to the

absence of an independent and powerful regulatory authority. Common wisdom stresses that *gold plating* is promoted as an egoistic objective by the regulated actor, in order to amplify transfers, assets and profits. However the Italian case presented points out that *gold plating* is an objective also of regulator, since it is clear that it has no incentives in setting a proper control on investments.

Some provisional recommendations seem to emerge as evident enough.

- Ex-ante, a clear distinction is needed between exogenous (mainly social) and endogenous investments, according to the scheme presented in section 2.
- In general, commercial risks cannot be passed on to the investors: it may be both technically impossible (the investors will ask for hidden guarantees), and inefficient (the investors will be bound to ask for tariffs/subsidies high enough to hedge them from any real risk). Commercial risk is, in fact, a “regulatory” one in this sector.
- Tariffs optimizing financial results are in general not efficient in allocative terms (given a large set of external costs and benefits). Therefore, the relevant risks that remain “on the table” are mainly industrial ones, both for construction and operations. It is worth while to manage jointly these risks only if they are strongly linked, due to technical reasons (a net increase of “life-cycle efficiency”).
- The different transport modes present a wide range of different technical content, and related issues. Within a consistent general frame, a “case by case” approach is mandatory.
- An independent Authority is *badly* needed also for investments, notwithstanding the fact that many investments are mainly “social”, i.e. the exogenous ones following the previous definitions.

## References

- Alderighi, M. Cento, A. Nijkamp, P. Rietveld P. (2007), Assessment of new hub-and-spoke and point-to-point airline network configurations, *Transport Reviews*, Vol. 27, No. 5, p 529-549.
- ANAS (2006), *Bilancio 2006*, ANAS, Roma (Italy).
- Beria P., (2008), *The megaprojects' issue. Evaluation, policies and decision making of large transport infrastructures*, Ph.D. Dissertation, Politecnico University of Milan, School of Doctoral Programmes.
- Boitani A. (2004), *La regolazione delle autostrade italiane tra Piano Generale dei Trasporti e privatizzazioni*, paper presented at the workshop “Highways”, Bergamo (Italy), November, 27 2004.
- Brambilla M., Beria P., Erba S. (2004), *The Italian expenditure in transport infrastructure: a survey*, paper presented at the workshop “Highways”, Bergamo (Italy), November, 27 2004.
- Coco G. and Ponti M. (2006), *Riflessioni per una riforma della regolazione nel settore autostradale* in De Vincenti C. e Vigneri A. (2006, edited by), *Le virtù della concorrenza*, Il Mulino, Bologna, 185-228.
- FS (2007), *Piano industriale 2007-2011*, Ferrovie dello Stato, Roma (Italy).
- Greco A. (2004), Regulation and licensee companies in the Italian Highways Network, paper presented at the workshop “Highways”, Bergamo (Italy), November, 27 2004.
- Ponti M. (2005), *Competition and regulation in the Public Choice perspective*, in ECMT (2005), *50 Years of Transport Research. Experience gained and major challenges ahead*, proceedings of 16<sup>th</sup> International Symposium on theory and practice in transport economics, ECMT, Paris (France).
- Ponti M., Beria P. (2007) “La rotaia arrugginita e il vagone del futuro”, *Il Mulino*, No. 6, p. 1028-1041.
- Ponti M., Beria P., Erba S. (2007), *Una politica per i trasporti italiani*, Laterza, Roma/Bari (Italy).
- Ragazzi G. (2008, forthcoming), *I signori delle autostrade*.
- Ragazzi G. and Rothengatter W. (2005, edited by), *Procurement and Financing of Motorways in Europe*, proceedings of the conference “Highways: Costs and Regulation in Europe”, Bergamo, 26/11/2004, Elsevier, Amsterdam (NL).
- Sebastiani M. (2007), “La telenovela dei "requisiti di sistema"”, *LaVoce.info*, 08 June 2007.