

ECONOMIC APPRAISAL OF PRICING POLICIES IN THE EUROPEAN UNION

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Abstract

Transport infrastructure pricing has been the subject of long discussions among scholars and decision-makers in Europe. Though everybody agrees on the necessity to harmonize the infrastructure pricing at the level of the European Union, and despite the efforts of the European Commission, very few agreements has been reached for more than fifty years. It is therefore interesting and useful to try and understand the reasons for such difficulties. This is the aim of the present intervention¹.

It compares the doctrines at stake throughout the continent by the various actors (political bodies at the national or European levels, administrations, transport professionals, academics): what are the reasons underpinning these doctrines, what judgement can be borne on them from the point of view of economic analysis, and are these doctrines that different and incompatible?

In front of the benchmark doctrine of the European Commission -the Short Run Marginal Social Cost (SRMSC) principle- is set an overview of alternative pricing doctrines in a selection of European countries. This overview shows that the current views about charging are based mainly on principles such as Average Cost (AC) or Development Cost (DC) or Long Run Marginal Social Cost (LRMC), and differ from the SRMSC.

A comparison of these alternative doctrines is made from the point of view of economic analysis, and it is argued that most of the concerns that lead to alternative solutions are valid. But the economic theory is able to deal with these concerns and therefore alternative solutions are not called for. Furthermore, the situations where the most fit charges differ from SRMSC are rather infrequent. On the whole, the distances between these various doctrines are probably not that large compared to their distances from the present situation, and that any kind of movement towards the recommendations of economic analysis would be a great improvement.

Key Words

Infrastructure charges ; infrastructure pricing ; average cost ; marginal social cost ; efficiency ; equity ; information assymetry ; market imperfections ; European Transport Policy.

¹ This intervention draws on deliverable UNITE D4 and more specifically on the contribution of the author to this deliverable, on the communication of the author to the first IMPRINT seminar (Quinet 2001), and on the forthcoming book "La tarification des transports: enjeux et défis" by A de Palma and E Quinet, Economica, Paris.

INTRODUCTION

European Union has launched a pricing reform aiming at achieving a uniformized system of infrastructures charges based on Short Run Marginal Social Cost (SRMSC). This reform has encountered a lot of objections and obstacles. In order to achieve the goal of uniformization, it is necessary to have a clear view of these doctrines, to analyze their discrepancies, and to examine whether they can be reconciled.

This paper explores these issues. In the second section, the benchmark of the European Union reform, ie the principle of SRMSC is presented along with the framework of the European reform in which it is embedded. The third section is devoted to the presentation and classification of countries standpoints according to the infrastructure charging issue. In the fourth section is presented an assessment of these standpoints in terms of the concerns of the decision-makers, and in terms of economic analysis, comparing SRMSC with the alternative doctrines. The last section concludes.

THE BENCHMARK : THE SOCIAL MARGINAL COST PRICING PRINCIPLE

The proposals of the Commission for infrastructure charging reforms have been expressed in many documents, but more extensively in the now well-known Green Paper of 1995 and White Paper of 1998 and, more recently, the 2001 White Paper. The proposals contained in these documents are based on the principle of Short Run Marginal Social Cost pricing, which implies that each user of transport infrastructure should pay - at or close to the point of use - the full marginal social cost imposed by that use. It means that each user should pay for:

- the marginal cost of infrastructure damages
- the marginal external cost of congestion and scarcity,
- the marginal external cost of pollution,
- the marginal external cost of accidents,

The traditional justification of marginal social cost pricing is that it is “allocatively efficient” in the sense of optimising the allocation of resources and thus maximising the welfare of society as a whole. This result can be rigorously demonstrated through several theoretical presentations (see for instance LAFFONT 1984) : as a whole, it is valid in situations which are called “first best” by economists, i.e. when markets are competitive and when there is no external effect nor fixed costs. When these conditions are not fulfilled, economic theory provides indications on the corrections to apply to the pure and strict SRMSC principle.

It should be emphasized that first this cost is a short run cost, and second that it is a marginal cost. These two points imply that the charges should not include the fixed costs of infrastructure provision, nor any other taxes over and above the applicable rate of VAT. This fact may lead to deficits for the infrastructure manager, the revenue from the charges being lower than the expenses. In order to cope with this point, generally recognized as a drawback for the management of infrastructures (this point will be discussed below), the White Paper also accommodated institutional financial constraints by acknowledging the need for departing from SRMSC - through two part tariff or similar devices- aiming at cost recovery strategies for infrastructure terminals and some new infrastructure.

These principles have lead to a lot of studies aiming at allowing for workable and common methodologies to implement these principles. In the framework of the European Commission,

research activities on these topics developed under the 4th and 5th Framework Programmes, through programs such as CAPRI, DESIRE, AFFORD, MC-ICAM, UNITE or IMPRINT.

THE VARIETY OF COUNTRIES STANDPOINTS AND DOCTRINES.

Vis à vis this benchmark, what are the beliefs and doctrines currently in use in European countries? In order to answer this question, a survey on pricing doctrines in a selection of European countries has been achieved in the framework of the UNITE project (UNITE D4, 2001).

A small survey was made among the partners of the consortium, in order to have an overview of doctrines in a selection of European countries. Three questions were asked :

- What are the differences between the picture given by the theoretical review and the current teaching at universities about transport infrastructures pricing ?
- What are the current doctrines expressed by the political authorities (Government, Parliament, etc.) on the subject of transport infrastructure pricing?
- What is the real situation of present infrastructure pricing?

The surveyed countries are Austria, France, Germany, Ireland, Spain, Switzerland and the United Kingdom. A summary of the answers for the first two questions is presented in Tables 1 and 2. These tables show that several other principles are supported by various countries and bodies. They can be classified into two main types :

- The first one, close to the SRMSC, is the *Long Run Social Marginal Cost* (LRSMC), which, in its general expression, is the sum of the marginal infrastructure cost and of the marginal investment cost (the division of the marginal investment program by the marginal increase of traffic which causes it).
- The second one is the *Average Cost* (AC) ; it is more akin to private accounting procedures : it is a break-down of the expenses between the various categories of traffic through several keys which are more or less linked to the responsibility of each category in the damages and expenses.

It is possible to summarize the answers and to classify the various positions which are expressed in the previous tables :

- differences about teaching lie between basic courses in economics or engineering and advanced economics courses ; it appears that standard economic theory - ie Social Marginal Cost principle with its validity limits - is taught only in the more advanced economic programs in universities (in many countries, it is considered as mostly theoretical and difficult to apply) ; in other courses, such as engineers courses or MBA in universities, less sophisticated methods are taught, based on cost allocation procedures (this point is probably coming from the fact that, at the beginning, transport economics were developed by engineers).
- differences about current doctrines expressed by political authorities appear between countries : France and the United Kingdom are the most in favour of marginal cost pricing, under the shape of Long Run Marginal Social Cost ; the French standpoint is mainly due to the fear of strategic behaviour by operators and to equity considerations (with LRSMC, the users pay for the whole expenses, and not only for the variable expenses) ; in United Kingdom, there is some interest on road pricing.

Table 1 : *Current teaching at universities about transport*

Country	Answer
Austria	Marginal cost pricing is taught in the context of microeconomics but is not considered as a possible implementation principle. Pricing has been discussed first as a funding generator.
France	Economic theory is taught in the more advanced economics courses in universities; but in other courses (equivalent to MBA) less sophisticated methods are taught; they are based on principles of cost allocation.
Germany	Marginal cost pricing is considered as a theoretically interesting approach but not as an important input for transport pricing in practice. Comments on the White Paper on Infrastructure Charging (CEC, 1998) were very critical from the academic world as well as from representatives of the relevant parts of the public administration.
Ireland	Not known. Transport economics is not widely taught.
Spain	Students generally are shown the main principles of economics theory. But most of transport courses in Spain are more often offered by engineering schools and tend to stress more the technical analysis.
Switzerland	Transport economics is not widely taught. The two national technical universities in Zurich and Lausanne offer courses in transport science, but the approach is rather engineering and planning than economics. In the last years, transport economics has been the subject of two National Research Programmes, which included research on the question of different pricing approaches in transport.
United Kingdom	Advanced theoretical courses cover classical economic theory, but there is still a tendency to teach traditional cost allocation procedures.

Table 2 : *Current doctrines expressed by the political authorities*

Country	Answer
Austria	The priority objective of environmental protection was implemented through regulatory and pricing measures. Nevertheless, pricing measures introduced so far serve first of all for the generation of funds for the general budget and the financing of the transport infrastructure, though a on-going project on road transport infrastructure costs will most probably result in an opening of the discussion about this issue.
France	The doctrine has varied over the years. About twenty years ago, the principle was that freight should pay the marginal cost, and passenger traffic should pay the full cost. More recently, the main stream of ideas shifted towards the use of long run marginal cost principle, based on concerns about the manipulability of short run marginal cost and on (intermodal) equity considerations.
Germany	The current pricing doctrine is dominated by financing issues and not by considerations referring to marginal cost pricing. The discussion on environmental taxation relates more easily to MC pricing.
Ireland	There is no move for pricing of inter-urban road networks (with the exception of tolled bridges, for the purposes of project finance). There is no pressure for road pricing in Dublin, although studies have been commissioned in the past (e.g. with a view to developing finance sources for light rail). For other sectors, there is no political momentum behind changes in charging policy.
Spain	The previous administration launched plans based on publicly financed investments. After 1996, the new government has shifted the balance slightly towards a model of charging infrastructure costs to users.
Switzerland	Recently, it has become clear that short run marginal cost pricing is considered as an interesting economic approach but not as central future guideline.. Environmental costs play a role in pricing policy.
United Kingdom	There is a tradition going back to the 1960s in favour of long run marginal cost pricing, combined with a current strong encouragement towards congestion pricing for both road (delegated to local authorities for urban roads) and rail, which may be taken to indicate a move towards short run marginal costs. There is a minimal interest in charging issues in the ports, aviation.

In other countries, doctrines about charging stem mainly from financial considerations about the public general budget and secondly about the transport sector ; this position is expressed in Austria (environment is coped with through regulations ; charges are aimed at raising funds for general and transport budgets) and in Ireland (in this country there is no momentum towards road pricing). In a third category of countries, close to the previous one, doctrines are based on financial considerations, but mainly inside transport sector and secondly inside general budget : in Germany, the charging principle is based on average cost, with an interest on Polluter Payer Principle for environment (acknowledging that environment is mainly dealt with through regulations) ; the standpoint of Switzerland is similar, with the fact that efficiency considerations, which are at the basis of SRMSC, do not seem to be an important issue ; in Spain there is an emerging interest in infrastructure charging, due to financial concerns and to the idea that users should pay more than presently for the use of infrastructures.

- The main differences concerning the real situation of infrastructure pricing lie between modes : in all countries, the type of charging in the same mode are roughly the same, and the differences between modes are very important ; so the presentation is done by mode, and in each one the (generally small) differences between countries are indicated; furthermore it is shorter as those facts are well known :
 - Road : the most used means fuel taxes. There is a general tendency towards mileage related charges, especially in Germany, Switzerland and in Austria. In France, Italy and Spain, the charging system relies heavily on toll motorways, the tolls being settled for financial purposes and not for efficiency purposes. In every country they are toll bridges and tunnels, but they are specially important in Austria and Switzerland for Alpine transit.
 - Rail. The charging systems for rail are recent ; they date back only to the fragmentation reforms, about 10 years ago and there are large discrepancies between countries, concerning both—the principles and the results. Cost recovery is high in Austria, France, Germany and the United Kingdom.
 - Inland waterways. The charging system is fit to cover the total costs in Austria, Germany and Switzerland ; charges are very low in France and probably do not cover the SRMSC.
 - In Air Transport, as well as in Sea Transport, the general principle is a total cost recovery, coherent with the fact that infrastructure operators of these modes are (often public) firms having to break-even.

AN ASSESSMENT OF THE RESULTS

These results can be viewed through the standpoints of decision-makers, and trying to find out the concerns behind them. They can also be analysed through a normative analysis, looking what are the teachings of economic analysis and especially whether the economic analysis has recommendations about the concerns of the decision-makers. Let us successively examine these two points.

The positive point of view : the concerns of decision-makers

Concrete charging systems are the result at a point of time of a stratification of various past decisions, taken by different non-coordinated decision-makers (for instance local authorities

fix parking fees and national authorities determine fuel taxes), who are moving over time and are subject to electoral agendas and pressure from lobbies.

In this general framework, from the previous survey and also from the author's experience, it appears that decision-makers find several drawbacks to SRMSC :

- Politician decision-makers are not much concerned by efficiency ; they derive no benefit from a gain in efficiency, which affect the voters only to a limited extent, but they are very keen on equity, as are the voters. It appears that SRMSC has many drawbacks on this ground ; for instance congestion costs induce a very high charge during peak-hours, when the majority of trip are home-to-work ;
- Acceptability is another important political concern. This notion is close , but not exactly equivalent to equity; it is related to the bargaining power of social groups which struggle against a decision which would hurt them (unfair measures can be accepted if the social groups which are disadvantaged have no bargaining power) ; it turns out that SRMSC consequences have in general a low acceptability level, as is shown by the unsuccessful proposals of road pricing in several European countries.
- It is often thought that SRMSC leads to deficits, due to fixed costs and increasing returns to scale ; the deficit has to be funded by tax-payers, though the benefitters from the infrastructure are the users, and this point may be deemed as unfair.
- Furthermore the subsidies are also leading to inefficiencies : decision-makers know, as well as economists, that a body which is allowed subsidies is induced to inefficient behaviours and spend relatively more time and efforts in rent-seeking than in cost abating.
- Another point, which is clear not only to the economists but also to decision-makers, is that SRMSC calculations are difficult and uncertain, and that a lot of expertise and audit is necessary to check their validity. In the real world, decisions are the result of bargains between several pressure groups and stakeholders, who use the uncertainty of the calculations to try to reach their private goals.

Among those people, there is a large consensus on concepts such as *Long Run Marginal Cost* (LRMC), *Development Cost*, *Average Cost* or *Full Cost*. Though they are generally not precisely described, they cover the idea that the users should pay for the expenses they cause to the society.

The Development Cost is a way to have a more precise definition of the idea behind the LRMC. It is the ratio between the discounted sum of the future investments and the discounted sum of the traffic increases that make them necessary.

Other advocated concepts are the concepts of Average Cost or Full Cost. A wide panoply of calculation procedures have been developed around these concepts. Several options have been discussed about them. The first ones relate to the numerator side. Which expenses have to be distributed across the various categories of traffic: actual transport expenses, the actualised historical construction expenses, or the expenses that would be incurred if it were necessary now to build and operate a modern infrastructure? Other kinds of considerations relate to the denominator side: how to distribute the cost between the different categories of traffic? Generally, accounting-type solutions are used. they are based on equivalence ratio between traffic categories for the various kinds of cost categories. For instance, pavement thickness is allocated according to the damages caused by axle load (for instance, the 4th power of the axle load according to the AASHTO tests, based on Highway Research Board (1962).

The ideas that support these concepts are manifold and are related to the concerns of decision-makers and to the drawbacks they see in the SRMSC. A first reason for advocating concepts such as Development Cost, Average Cost or Full Cost is related to the difficulties of SRMSC calculations and to the possible manipulations by pressure groups and lobbies. In comparison, concepts such as average cost or development cost (this one avoiding the external costs and especially the congestion costs) seem more simple and less uncertain, and therefore less manipulable. Other considerations are based on efficiency considerations for the operator : SRMSC do not screen unprofitable services with high fixed costs which are not incorporated in the charge, and the operator can use this fact and the asymmetry of information to manipulate the cost, lowering the marginal cost in order to increase the patronage and gain more subsidies from the public authorities.

Average cost seems to avoid complexity and uncertainty in calculations, and also lack of finance and manipulations on fixed costs and subsidies: if fixed costs are too high, the average cost will be high. Eventually, because of the increase of the charge, the demand will disappear, causing the closure of services whose fixed cost is too high. It also solves some equity problems in the sense that it ensures that transport costs are paid by the users and not by the taxpayers. The problem is that average cost is arbitrary, as there is no non-arbitrary way of allocating the common costs (the procedures that have been already quoted have no logical justification), except if the allocation of common costs is made according to the Ramsey rule, which is based on SRMSC.

The problem of manipulation of SRMSC for rent-seeking behaviours is real and average cost is a way to fight against it. But it is clear from the above presentation that average cost has also a lot of uncertainties, especially for the break-down of total expenses between the categories of traffics, and for the estimate of amortizations.

The LRMC seems also to be easier to calculate than SRMSC as it does not take into account congestion cost ; furthermore it corresponds more or less to the idea that SRMSC leaves aside the investments and that it is necessary to take them into account. When saying this, people are not fully aware that LRMC equals SRMSC in the optimal situation and does not exist in other situations, and that it does not easily take into account changes in quality of service. The development cost relies on the same reasons. It looks smart and it is attractive because it seems to combine several nice features (the word marginal is avoided, the reference to investment, the relation to the expenses). It avoids the objection not to be defined when the situation is not optimal, but it has no real justification.

In conclusion, it appears that many of the concerns of the decision-makers about SRMSC are quite valid. But in order to deal with these concerns, they suggest alternative solutions which do not really solve the problems they intend to solve and which have several drawbacks.

The normative point of view : an assessment by the economists

Economists have other views on SRMSC charging, some of them rejoining the concerns of the decision-makers. They relate to efficiency, equity and information and institutional issues.

The virtues of SRMSC on the grounds of efficiency are well established in a "perfect" world where markets are competitive (firms act as price-takers), there is no public good (then no tax), no externalities (except, in transport, the congestion externality), cost functions show no increasing return to scale and there is no information problem.. But real world differs from

this perfect world. Let us first recall the case of a "perfect" world, then analyze the main departures from this case.

The real world departs from this paradigm on two points : first, it is not possible to implement the diversified charges recommended by the theory ; second, the hypotheses of the first best solution are not fulfilled. Let us explore these points.

Implementation is made difficult by the fact that SRMSC is dramatically changing over time and location, a situation which entails several problems :

- translations schemes require first an adequate delineation of time frames. Sets of definitions (concerning ultra short run, short run, medium run and long run) may differ for different kinds of infrastructure. There is also a problem of adequate delineation of space frame.
- if such variable charging system were implemented, should users be able to respond to so subtle incentives, implemented in complicated charges? It appears that in many sectors, price differentiation is widely used by private firms, but not to such an extent as SRMSC requires. In air transport, deregulation has induced a lot of differentiation, but after a few years, differentiation decreased. Differentiation may be better accepted in wholesale markets where transaction cost of finding and agreeing on a satisfying contract are no deterrent given the large volume of the sales.
- In general, we have not the proper instruments to charge the right SRMSC ; for instance the pollution cost varies according to the maintenance of the car, and is higher during the first km of the trip. There is no practical tool to replicate such a sophisticated charging framework, though in the next future, telematics may procure the proper devices for that.
- As a consequence of the two previous points it is necessary to average the charges, for instance to set up a unique congestion charge for the whole day ; this congestion charge is then an average between very low cost for off-peak periods and very high costs for peak periods, and in both period there is a loss of efficiency. Is not this loss too important to make useless the implementation of SRMSC?

On the theoretical grounds, SRMCS has to be adapted to cope with market imperfections; these market imperfections are numerous, but in any of these cases, economic analysis provides way to cope with the problem and to derive second best formulas. Here let us just consider two cases: imperfection of general taxes and imperfect pricing of substitute modes.

It is possible to take into account the fact that taxes are costly. It would be a draw-back of SRMSC which is often thought to lead to deficit which must be funded by taxes. This last belief can be challenged : due to external costs - and specially congestion costs - there are many cases where SRMSC revenues would be higher than costs. For instance a recent study made for France, Germany and the UK (REVENUE, 2000) has shown that deficits appear in rail and intercity road transport, but they are superseded by excedents in urban road transport. If nevertheless SRMSC leads to deficits which have to be cancelled, the famous Ramsey-Boiteux formula shows how to deal with this constraint: the charge should be higher than the SRMSC, in a proportion inverse of the demand elasticity.

There are also results when the substitute mode is not priced at the SRMSC. The intuitive result is that charge is lower than SRMSC when the substitute mode's charge is lower than its SRMSC. This practical problem happens within the European Community under the principle of fair competition within markets. If the train system receives somehow a subsidy

(e.g. the network owner, trickling down to train operators), express bus line companies for example could file a complaint about unfair competition.

Economic analysis gives also results when there are equity concerns, when for instance some agents are given a priority vis-à-vis the other ones. This priority is traduced by a specific form of the Social Welfare function, giving a special weight to the prioritized agents ; the result for infrastructure charges are given by complicated formulas which are a generalization of the SRMSC principle, and are not reproduced here (see for instance : MAYERES and PROOST 2001).

It then appears that, on the grounds of efficiency and equity, SRMSC - or formulas deduced from it in situations of "imperfect" world - provides valid answers and leads to better situations than ~~the~~ other concepts such as Average Cost or Long Run Marginal Cost. Let us now turn to more realistic situations of asymmetric information (for instance the infrastructure manager has a better knowledge of costs and demand than the regulator), conflicting objectives between institutions (the regulator aims at welfare maximizing, and firms aim at profit maximizing), and where furthermore there is uncertainty (so that it is not possible afterwards to know whether good result on costs is due to the efforts of productivity of a firm or to chance).

It is clear that institutions are important for the analyze of these situations ; for instance the information asymetry between infrastructure management and operations is much lower when both are included in the same organization than when they are run by two different organizations. We assume that, in the line of the reforms of the European Union (and according to the real situation in most modes of transport), there is a separation between infrastructure management and the operators, and that the third actor is the regulator.

let us consider the case of relations between the infrastructure manager and the regulator. The task to which charging can contribute is then for the regulator to induce efficiency in the infrastructure manager's behaviour. Efficiency must be taken in a very wide meaning : first to minimize the cost of infrastructure provision, then to ensure static efficiency (the infrastructure manager does not misuse its monopoly power), and also to achieve dynamic efficiency (mainly to induce a correct infrastructure investment).

The solutions -and their problems of implementation - are classical : regulation on infrastructure charges to avoid monopolistic behaviour, price-caps for cost-minimization. A specific case of transport infrastructure is that they are supposed to have large return to scale and fixed costs and may lead to rent-seeking on behalf of infrastructure managers whose objectives are more bureaucratic than welfare maximizing : using the uncertainty on costs, they advocate for low marginal costs, then low charges ; they get large subsidies to cover fixed costs and large investment to cope for the demand which is artificially increased by the low charge, at the expense of the tax-payer. The argument is advocated by the pros of average cost. The solution of economic theory is to propose a menu of charges to the infrastructure manager, and it appears that the charges is higher - and closer to the average cost - , the uncertainty and information asymetry is high.

Another argument advocated by the pros of Average Cost is that without a link between expenses and revenues, and a punishment if expenses exceed revenues, there is a risk of overinvestment due to the uncertainty of investment appraisal and strategic behaviour by infrastructure managers who are guided by bureaucratic goals of extension in size of their

business. The criterium of Average Cost ensures that the investment is profitable, but it leads to reject other investments which are also profitable but do not satisfy this criterium. The main idea underlying this question is to put a link between expenses and revenues, but this link may not be just an equality ; a well devised lump-sum subsidy may both achieve this goal and allow for a SRMSC charging. Anyway this situation advocates for an improvement in the expertise in project appraisal.

This kind of situation advocates for a specific attention has to be given to the fine-tuning of the financial arrangements: the way you give money is more important than the amount you give. For instance, a private infrastructure manager whose objective is profit should not be directly given the revenues from congestion costs as this would induce it to underinvest in capacity infrastructure ; these revenues should better go to him through lump-sum subsidies.

CONCLUSION : HOW TO RECONCILE?

On the whole, it appears that there are large discrepancies about charging doctrines, on the fields of academic teaching (advanced courses teach SRMSC principle and its limits, other teach accounting based procedures), of official doctrines (some states support average cost principle, other ones are closer to SRMSC principle), and of practical implementation (in most modes, real charging systems more or less tend to achieve break-even).

These results can be viewed through a positive analysis, looking at the behaviours of decision-makers , or through a normative analysis, looking whether the economic analysis has answers to their concerns.

It appears that politician decision-makers are more interested in acceptability and equity than in efficiency, and SRMSC often implies unfavourable consequences on these grounds. Furthermore SRMSC is a complicated concept, its estimates are uncertain and this uncertainty leads to strategic behaviours by the operators, the result being increases of deficits, subsidies and costs.

Alternative concepts are suggested by decision-makers in order to overcome these drawbacks. They are average cost, long run marginal cost or development cost. What are the assessments of economic analysis on these questions ?

Economic analysis put more emphasis on efficiency. On this ground a first limitation of SRMSC arises from the fact that there is no practical tool to implement the very diversified charges of the SRMSC, and proxies imply loss of efficiency. A second limitation comes from the fact that the assumptions of the first best world are not fulfilled : apart from information problems, there are market imperfections (non-competitive markets, cost of public funds, externalities). Economic analysis provide answers to these situations. It provides also formulas to solve equity problems. Those formulas are derived from SRMSC, they include informations on demand (mainly elasticities). Without information and uncertainty, these formulas are superior to the alternative doctrines such as average cost or development cost.

Things change a lot with uncertainty and information asymmetry. It appears then that charging may not be the proper way to achieve efficiency : in some cases, regulations or auctions should be preferred. Furthermore, alternative doctrines gain in interest, as they

prevent from strategic behaviours such as rent-seeking and they induce more incentives for cost minimization. The problem is how large are fixed costs and information asymmetries :

- Recent econometric analyses show that fixed costs have been often overestimated in the past and are not that high. Often, fixed costs are due to the fact that infrastructures are overdimensionned. In this case the charging problem is mainly a matter of political choice and equity the solution is to close the infrastructure, and is not a charging problem, except if some kind of charging may induce this closure and do not entails too many drawbacks on other grounds.
- If fixed costs are high, the infrastructure is then more akin to a pure public good. The solution is not to be found in charging but in the institution which allow for the better decisions of doing or not doing ; clearly, this situation advocates for public management, ie intregation between the infrastructure manager and the regulator. The same happens when public service obligations and external effects are very important.
- Is information asymetry high ? The answer is highly depending on specific situations. If it is the case, a budget balance solution is necessary, but it does not prevent from a generalized SRMSC charging solution of the Ramsey type.
- In those situations, the formula to use is not exactly the SRMSC but is based on the knowledge of the SRMSC, and very often not far from it. Furthermore, in almost all situations, the charging priniple must be set up in accordance with- and closely linked to- institutional arrangements.

It is then important to assess, in each specific situation, how far are we from the hypotheses of first best, how large are uncertainty and information asymmetry, and how large are fixed costs. The opinion of the author is that, on those matters, we are in general not far from first best hypotheses, that fixed costs are not that high, and that consequently there is a large scope for SRMSC.

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