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# **Fiscal Regimes and Environmental Goals in the European Transport Policy**

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## **Fiscal regimes and environmental goals in the European transport policy.**

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## **Abstract**

Transport is one of the key factors of modern economy and the ongoing process of European integration. The increasing problems with delays due to lacking capacity and poor quality of some transport services as well as the arising conflicts over environmental and sustainability goals pose a major challenge to the European transport policy. The Community's answer cannot simply be the construction of new infrastructures. For this reason the focus of the transport policy has shifted in the last years on the optimisation of infrastructure use through fiscal instruments.

The policy approach of the Commission has been elaborated in different green papers and was confirmed in the White paper on the European transport policy for 2010. The predominant approach is based doubtlessly on social marginal cost pricing, giving special emphasis on welfare and efficiency aspects. Although, this approach is backed by substantial research efforts in recent European projects, prominent transport experts have expressed considerable criticism. The principle arguments against the social marginal cost pricing approach are: its static view, its lack of addressing alternative instruments, its ignoring the impact of innovation in more dynamic approach prospective as well as the uncertainty about attaining the environmental goals. Moreover it has been underlined that the social marginal cost pricing faces considerable practical difficulties.

The paper intends, in the first part, to briefly review the approach chosen by the European Commission addressing the advantages and disadvantages of the prevailing fiscal regime based on social marginal cost pricing as well as the critics by the major opponents. The goal of the second part is to elaborate on tradable permits as an alternative instrument to regulate transport flows. An important argument in favour of tradable permits is its possibility to achieve quantitative targets by an efficient market process. The paper concludes with the proposal to introduce the tradable permits to create a coherent regime to regulate the transalpine freight traffic (pilot project) in order to meet capacity problems and environmental goals, without distortion and detour traffic among the different corridors.

## **Keywords**

European transport policy, pricing, tradable permits, environmental goals, – 3<sup>rd</sup> Swiss Transport Research Conference – STRC 2003 – Monte Verità

# 1. Introduction<sup>1</sup>

There is hardly any doubt about the importance and role of transport for the ongoing integration process in Europe. However, Europe faces major problems arising from the transport sector itself, it becomes evident that particularly road transport is confronted more and more with its own success. Increasing costs from congestions and considerable health and environmental impacts are an evident sign. Moreover, pricing schemes for infrastructures use have been very different and based on different principles over the European countries. Therefore it is commonly recognized that there is a need to shift the policy approach in the transport sector from a purely technical and infrastructural approach to economic instruments. The current debate is almost exclusively based on the marginal cost approach.

The original scope of the paper was to prepare the arguments in favour of the idea to build up an exchange market (Transitbörse) for tradable permits, giving the right heavy vehicles to cross the Alps. The idea has been launched recently by the Alpeninitiative and has rapidly been picked up in the policy debate. Initially, it was planned to participate in a tender for a research project to analyse various aspects of this idea. The scope of the paper is to produce a first overview of the present debate at the European level and introduces the arguments in favour of an alternative policy approach.

The paper is structured as follows:

- Chapter 2 introduces the topic and the theoretical principles of the proposed pricing regime in the European transport policy. It further sheds some light on the background of the development of the European debate.
- The third chapter gives some examples of the EU research projects dealing with social marginal cost pricing and presents some monetary values for specific external effects of freight transport.

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<sup>1</sup> This paper could heavily profit from the Alp-net workshop organised by Ecoplan in September 2002 in Berne.

- Chapter 4 deals with the major criticism in the ongoing debate over the most appropriate policy instruments. Besides principle problems of social marginal cost pricing we refer to critics expressed by some prominent experts during a workshop organised by the Thematic Network on Trans-Alpine Crossings Alp-Net in September 2002.
- Chapter 5 deals with the alternative economic instrument of tradable permits. Tradable permits have received almost no attention in the transport and environmental debate so far. Major obstacles to the implementation of tradable permits were undoubtedly technological reasons for implementation. However, with the large diffusion of new information and communication technologies as well as the internet tradable permits have the potential to become a major economic policy instrument to overcome problems of congestion and environmental impact. Tradable permits are a quantity oriented policy instrument, perfectly conform to market principles.
- In the last chapter we finally draw some conclusion on the ongoing policy debate and reassume the arguments in favour of an alternative and more comprehensive policy approach in the field of transportation.

## 2. The pricing principles in the European transport policy

### 2.1 Background and evolution of the pricing debate

The discussion over the introduction of a coherent pricing regime in the European transport policy can basically be traced back to two categories of problems. On the one hand side, there has been the growing awareness that the transport sector is provoking a considerable amount of externalities (environment, health, congestion), not covered by the transport users. On the other hand side, the different and very articulated national taxing schemas were provoking considerable distortion in the single market. This failure to spread the burden fairly between infrastructure operators, taxpayers and users causes considerable distortion of competition and both between transport operators and between modes of transport. It is therefore a fundamental goal to introduce a fair and efficient pricing regime in the European Union. The following table gives the estimates of external cost for a heavy goods vehicle proposed for the future transport policy.

Table 1 External and infrastructure costs of a heavy goods vehicle travelling 100 km on a motorway with little traffic

External and infrastructural costs	Average Range
Air pollution	2.3 - 15
Climate change	0.2 – 1.54
Infrastructure	2.1 – 3.3
Noise	0.7 – 4
Accidents	0.2 -2.6
Congestion	2.7 – 9-3
<b>Total</b>	<b>8 -36</b>

Source: European Commission (2001) White Paper. European transport policy for 2010: Time to decide, Brussels.

The table shows a considerable range between the lowest and highest cost estimation. The average charge was estimated in 1998 between 12 – 24 €, which is slightly lower than the proposed costs. The maximum indicated amount of the external and infrastructural cost of 36 € corresponds to the level of the mileage related fee for heavy goods vehicles in Switzerland.

However, the White paper clearly argues that the introduction of infrastructural and external costs would hardly modify to overall level of taxes on the transport sector and hardly hamper the competitiveness, but significantly change the structure of the taxes based on criteria of efficiency and fairness. Whether the introduction of charges based on the infrastructural and external costs can also help to achieve a significant rebalance of the modal split is quite a different question and is not a focus of the present paper.

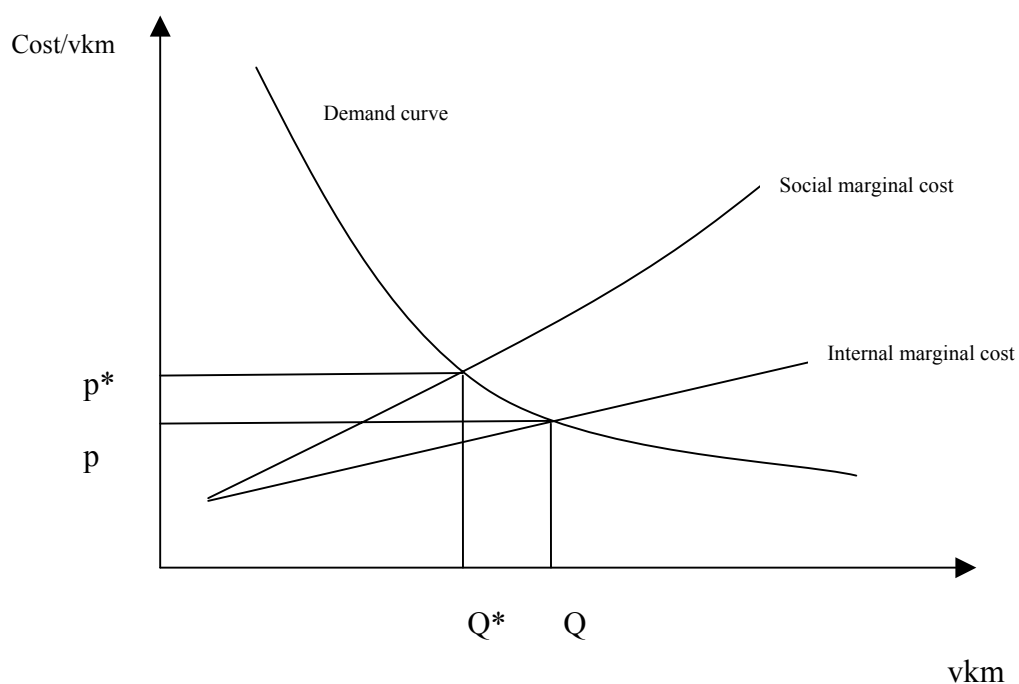
## **2.2 Theoretical principles of the pricing approach**

The principle or mainstream argument explaining the existence of externalities such as environmental damages, impacts as well as congestion etc. is based on the conviction that there are consequences of individual activities which are not accounted for in the balance sheet of enterprises as well as private actors. Therefore these external effects are supported by the society as a whole. Private actors have to include in their calculations all the relevant costs private as well as social costs and comply with the polluter pays principle. For comprehensive introduction see Rechsteiner (Rechsteiner, 1990).

Pigou (1923) produced for the first time an adequate theoretical concept of private and external or social costs in a purely welfare economic perspective. Pigou was convinced that external costs disturb the optimal functioning of the neoclassical price mechanism and are at the origin of major market failures, reducing social welfare. In these cases the state has to/ is allowed to intervene and implement the necessary corrections. In the following figure we find the difference between private and social marginal costs.

Figure 1. Social, external and private marginal cost curves and demand for transportation services

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Source: Adaption from Weinmann (1990)

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Inclusion of social costs leads, as can be seen in the above figure, to higher marginal costs shifting the demand from Q to Q\* at a price of p\* rather than p.

The result is a reduction of the externalities e.g. reduction of the externalities such as environmental pollution. Moreover the amount of the reduction is efficient. Under certain restrictive assumptions it can be shown that there is only one way to efficiently use of social resources. The corrections are in theory not linked to a political decision process but to an efficient economic calculation by individual and rational actors. This approach does not consider technological change and therefore regards basically short term optimal solutions.

However, it has to be noted that this approach is not oriented to the elimination of external effects or environmental impacts but to achieve an economically optimal amount of it (Wicke,



1982). Every effort to further diminish external effects is not efficient in so far as the marginal social benefit is smaller than the marginal costs to further reduce externalities. The internalization reduces external effects and helps the economic mechanism to reach its optimal operation, since its principle scope is to eliminate economic inefficiencies.

Despite of the efficiency argument and the straightforwardness of the Pigouvian tax its implementation it is everything but simple to determine empirically its exact amount. Quoting from Baumol/Oates, 1971 p.44 “the basic trouble with the Pigouvian cure for the externalities problem does not lie primarily in the technicalities that have been raised in the theoretical literature but in the fact that we do not know how to determine the dosages that it calls for”. In particular this problem refers to the exact calculation of all externalities linked to any activity. Nevertheless, as will be shown in the next paragraph, there is a considerable amount of different studies and calculations of external effects linked.

Due to these fundamental difficulties different approaches and various policy proposals for environmental policy interventions have been developed in recent years. It has to be mentioned in particular the environmental standard price approach (Baumol/Oates, 1971). They basically suggest renouncing to calculate all external costs and therefore to introduce an environmental standard for a specific emission, which can be scientifically justified and approved by the public. This limit can be used to determine a general emission tax, which will lead to respect the limit. This approach is based on a different concept. Its scope is to achieve a certain environmental standard, scientifically determined. Pigou had no such goal, was to internalize all externalities in order to eliminate market failures, economic efficiency equal to social efficiency (welfare). Standard price approach a more pragmatic and scientific oriented approach in the interest of environmental goals. The amount of the tax can be subject to periodical revision in order to increase its impact and to reach its initial goal. It therefore does not depend on a exact determination.

From a theoretical point of view there is radical difference between a Pigou and standard price approach. However, the latter represents an important step in the direction of a more pragmatic approach to environmental policy. Nevertheless, the implementation of this approach requires a substantial financial and administrative investment. The effectiveness of such an instrument depends directly on the elasticity of the involved variables. Considerable margins of uncertainties remain even with the standard price approach, reflecting the assumptions on the impact on the behavioural variables. There are good reasons to believe that the relationship between the amount of the fee and its impact on the behaviour is not necessarily linear. Thresholds have to be reached in order to achieve a considerable change in behaviour or

change in activities. The amount is very often much higher than what would be requested to really attain the fixed goals.

### 3. Some case studies

In the previous chapter we have shortly hinted to some difficulties to implement Pigouvian taxes in real cases. In fact the experiences with such emission or incentive taxes are not very rich and it is generally acknowledged that there is still a considerable gap between the tremendous efforts on theoretical level and the implementation of pricing approaches based on the pure social marginal cost calculations (Opschoor, 1994). The following tables give a selected overview of marginal cost estimates for air pollution (Ecoplan, 2002), which have been calculated recently, representing the best available cost estimates. For the sake of space, we limit the presentation of two aspects, the marginal infrastructure and air pollution costs.

Table 2 Road passengers Transport: Marginal infrastructure costs in €/1'000 vkm

Specification	Value	Source
European average	12	ECMT (2001)
Figures for France and UK	3.2 and 4.0	PETS, Cross Channel cast study, ITS (2000)
France	4.1	Link, H. et al. (1999)
Switzerland (motorways)	3.0	UNITE, case study, SchreyerC. et al. (2002)
Switzerland (motorways)	3.7	Maibach M. et al. (1999)

Source: Ecoplan (2002) Key note paper: Thematic Network on Trans-alpine Crossings

Table 3 Road freight Transport: Marginal costs of air pollution in € / 1'000 tkm<sup>2</sup>

Specification	Value	Source
European average (HGV)	14 -50	Infras and IWW (2000)
European average (LGV)	28 -118	Infras and IWW (2000)
European average	23.6	ECMT (1998)
Belgium , inter-urban	18.2	Beuthe, M. et al. (2002)
Belgium , inter-urban	5.5 – 10.3	Friedrich, R., Bickel, P. (2001)
Belgium , inter-urban	20.4 -50.9	Friedrich, R., Bickel, P. (2001)
Corridor Basel-Karlsruhe (HGV)	15	UNITE; case study, Nash, Johnson (2002)
Corridor Strassburg – Neubrandenburg (HGV)	6-3 -16.2	UNITE; case study, Nash, Johnson (2002)

Source: Ecoplan (2002) Key note paper: Thematic Network on Trans-alpine Crossings

HGV= Heavy Goods Vehicle; LGV= Light Goods Vehicle

The table shows significant differences between the studies at one hand and the considerable ranges of the values within the same studies, on the other. This raises different questions. 1) Where do these differences come from? Can these difference and uncertainties be reduced by further research efforts? What would be the impact on the present price level? Who is going to decide the value to be applied? What are further possibilities to differentiate the cost levels due to different technologies (Euro Norm), time and space?

Answers to these questions are essential for policymakers and unless serious responses are produced the implementation of pricing schemes remains even more difficult. Yet, the European Commission is quite confident, that of a social marginal cost approach wouldn't affect the overall price level for freight transport very much but basically lead to a more efficient and fair pricing. It is not the purpose of this paper to answer all those questions and to evaluate the possible outcomes of the new pricing schemes. Since the impact of the introduction of a marginal cost pricing still depends very much on the reference pricing scheme and whether the Pigouvian taxes are applied to all vehicle categories on a specific transport mode or not

<sup>2</sup> Original data very calculate for vehicle. In the present table these data has been transformed on the basis of a given average charge per vehicle.

However, we would like to mention that the differences of the values hint to a more fundamental and more general problem linked to the assumptions and the hypotheses underlying all calculations and attempts to monetize externalities. It is rather unlikely that these uncertainties can be eliminated in the near future by further research. The determination of externalities has its fundamental flaws given by the nature of the relationships. This makes the political decision process even more difficult and gives valid arguments to the opponents. Moreover, this kind of uncertainties will substantially influence the choice of the value, possibly low in order to reach highest acceptance. However, setting the value for externalities at the lower end will immediately reduce its impact on the behaviour.

However, it is worthwhile to shortly mention one of the most prominent cases, where the instrument based on the social marginal costs has been implemented, namely the of the Mileage related fee on heavy goods vehicles trucks (LSVA), which has been introduced in Switzerland in the context of the bilateral treaties with the European Community in 2001. The mileage related fee has been introduced in order to compensate the abolishment of the 28 ton limit and to internalize external effects of heavy freight vehicles in Switzerland. It has to be mentioned that the mileage related fee is not really based on the social marginal cost pricing but rather represents the standard price approach.

However, the mileage related fee is also supposed to be an essential instrument to shift freight traffic from road to rail and to achieve the goal, established by the Alpeninitiative, to reduce the present number of lorries crossing the Swiss Alps to about 650'000 per year – about half the number of the heavy vehicles counted in the year 2000 – until 2007. Whether this goal can be achieved depends on various factors and it is partly independent of the fiscal regime in Switzerland. However, there has been expressed serious doubts that the high hopes in the potential impact of this fiscal instrument to shift further road traffic to the rail (Rossera, Rudel, 2001). Similar results can be derived from a case study on the transalpine freight traffic in the European research project PETS. In particular, the calculations clearly indicated that the value of the fee is not high enough to induce a substantial amount of road hauliers to shift from road to rail. Moreover, the project clearly demonstrates that the current pricing schemes do not reflect the short term marginal costs. Therefore it has to be taken seriously into account that Switzerland will not be able to maintain its very favourable modal split and that the number of heavy vehicles on the main transalpine corridors will be more balanced than in the past. On the background of these results Switzerland starts to reflect about alternative instrument to handle the transalpine freight problem. The 5<sup>th</sup> chapter deals in more detail with an instrument, stemming from a tradition, which has to be considered as an alternative to the mainstream approach of social marginal cost pricing.

## **4. Arising critics to the SMCP - approach**

The social marginal cost pricing has a considerable appeal and is has to be considered at least at a theoretical level - a very efficient way to deal with externalities. In fact in the past years the increasing environmental problems and other external effects of transport have drawn the increasing attention of various economists and there is a considerable number of studies on different external effects as well as on different spatial scales. However, the apparent success of the social marginal cost pricing and the welfare economic background are contrasted more and more by prominent criticism. In this paragraph it be attempted to summarize the main arguments against this approach.

1) An important cornerstone of the theory of external effects is based on the possibility to exactly relationship between cause and effect. From a scientific point of view it becomes more and more evident, that an external effect of a human activity interacts with its environment in a manifold way and that the interaction is with a very complex system. Therefore the relationship between a cause and its effect can assume a very complicated function, with thresholds, feed-back relations, time lags and so on. Therefore it becomes extremely difficult to establish the relations between a cause such as air pollution and health problems and to precisely identify the cause in order to apply the polluter pays principle. Moreover the natural system as such is a very complex system leading to many uncertainties regarding the consequences of human impact. For these reasons even the scientific basis is everything but a hard bedrock and different scientific opinions about one and the same effect can be observed.

2) The difficulties to establish scientifically the exact relationship between cause and effect are also reflected in any attempt to monetize the external effects. This problem has mainly been tackled by subjective methods to determine the monetary value of goods or services, which are not exchanged through the market process. In recent years different problems have been developed such as contingent valuation or willingness to pay. These methods aim to establish a monetary amount for environmental services such as clean air, a walk in a forest or a uncontaminated landscape. However, besides these more technical difficulties, there are also more fundamental (moral) problems linked to the general procedure. In particular, it is questionable whether it is reasonable to reduce invaluable goods to a unique monetary dimension.

3) Moreover, there are arising more and more doubts about the effectiveness of Pigouvian taxes in terms of reducing environmental damage. In other words, the monetary amount of an external effect should be very high in order to create an incentive to reduce the substantially reduce the corresponding external effect. In this case, however, the externalities would be in no relation to the internal costs of a project or activity. This immediately leads to the next problem.

4) Considering the consistent uncertainties over the value of external effects it is extremely difficult to find the acceptance by the large public. Several studies on this topic have clearly indicated that fees are accepted as long as the area applied to cover the infrastructural cost or toll systems to reduce congestion problems. But it has clearly been demonstrated that large majorities are against taxes to internalize external effects.

5) Last but not least there is a growing awareness that the complexity of the problems require a mix of policy instruments. Therefore opponents consider the current approach based on social marginal cost pricing as too narrow and short-term oriented, ignoring a wider perspective and options to deal with environmental problems. In particular, different opponents plea for instruments with a higher potential to create the incentives for innovation processes. This plea is based on the conviction that the present environmental problems require a substantial long term transformation to technological and organisational setting of contemporary societies rather than a short term optimization of the current system by the internalization of external effects.

The last consideration will directly lead to our next paragraph, illustrating an alternative approach to external effects as well as an alternative policy instrument.

## **5. An alternative approach and long term goals**

Although R. Coase essentially shared the view of Pigou that externalities would lead to an inefficient allocation through the market process his approach to the solution of this problem was very different.

### **5.1 The tradition of property rights and tradable permits**

The approach of Coase (1960) can best be understood as a reaction to the traditional perspective and the way externalities were handled. In his view the origin of environmental problems is in the lack of responsibilities or assignment of responsibilities due to insufficient property rights and a conflict over the use or right to use specific (natural) resources. In the discussion about externalities the question of responsibility is hardly developed or not even asked for in the tradition of Pigou. The relationship between the cause and the effect seems to be given from the starting point, independently of the concrete problem taken into account, (smoking, transport congestion, climate change). Moreover, the externalities can be traced back easily to its cause and be reduced by internalizing the external costs via a tax. Considering the multitude of external effects, which can be found in almost all economic activities, it offers to the state the legitimacy to intervene in a very wide range.

Coase, who was rather sceptical with regard to the state intervention tried to show in 1960 that the exclusion of the question of responsibility from the economic analysis might lead to even greater problems and the problem of external effects should be understood in a wider perspective. In particular, he argued that the problem of external effects included a dimension of mutual influence or reciprocity. Reduction of externalities or resolution between the polluter and the polluted are settled down by negotiation. Externality problems can be resolved without the intervention of the state, in defining price structure in the market process. It rather establishes clear definition of the right to carry out certain activities (for example to pollute in a certain amount). The solution of conflicts is identified in a process of reorganisation of property rights, better the right to carry out a number of activities.

Coase was convinced that property rights represented a fundamental condition for a regular social life and they had to be extended to common goods and natural resources. In this perspective we can understand externalities or environmental problems basically a situation of



lacking rules or norms or conflicts with no exact prescription to resolve them. The arguments introduced by Coase shift the attention from an activity with a certain (negative impact or externality) to the legal framework and institutional conditions of activities. Coase is not interested in the individual activity or its concrete impacts. His concept of externalities corresponds to a profound change of the perspective, introducing institutional aspects of the problems of externalities but also providing interesting starting points by reinterpreting and understanding market mechanisms in an evolutionary perspective, where norms and rules are part of a cultural evolution (Jaeger, ).

The following example of air pollution tries to illustrate the case in question. Air as common good (not private) is available to all type of users. Unless there is no significant air pollution, the different users have unrestricted access or right to use (pollute) the air. As soon as there is a considerable impact by one specific user or category of users a conflict over the use of this resource is emerging. In the presence of such technical externalities it becomes evident that the given situation of property rights is not efficient. However, the way this kind of situation is resolved is open to debate. One way to settle this kind of conflict is to reorganise the property rights through negotiations with the different parties involved. A typical example for the outcome of such a process is discussed in the next paragraph.

It is expected that the outcome of such negotiation process leads to a reduction of the conflict and consequently to reduction of externalities. In principle, and this is generally considered a particular advantage of this approach, the amount of externalities can be defined in advance through the definition of new property rights. In our case of air pollution this would basically mean a transformation of an unrestricted use or access to a common resource to a private right or private property of a certain amount of the same resource. The goal of the reorganisation of the property right is not to eliminate short term market failure but rather to change the institutional framework of activities and limit their impact/externalities to a certain amount. In this respect property right approach leads to quantity oriented (environmental) policy instrument and not to change in relative prices.

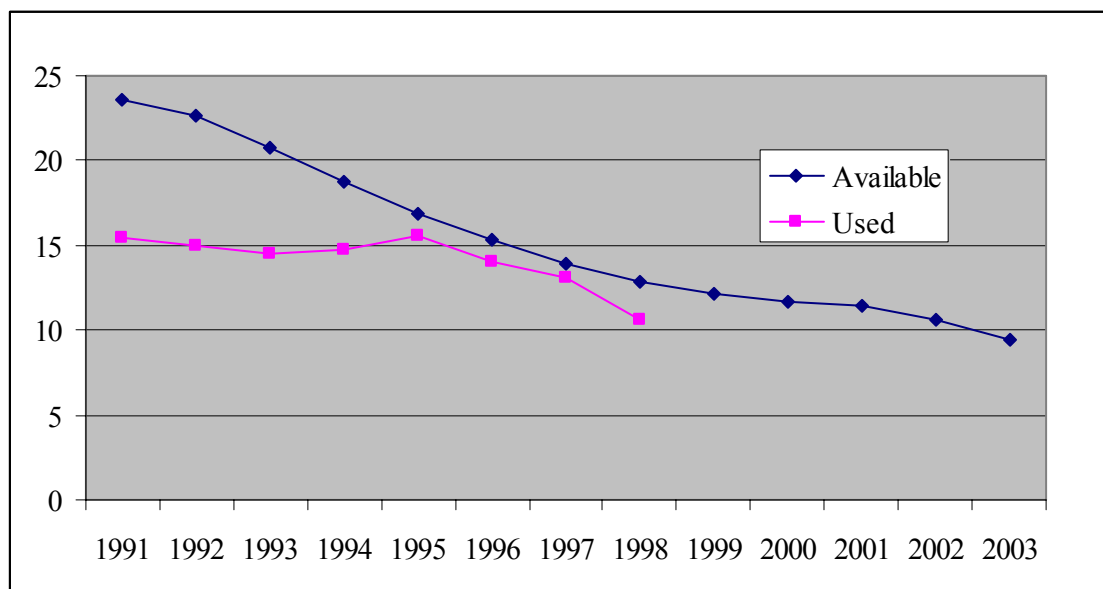
The process of reorganisation of the property right requires in principle considerable transaction costs. It is commonly agreed the introduction of private property rights significantly reduces these transaction costs. The implementation of this principle in different forms can lead to flexible and very efficient forms achieving goals, which have been defined in advance. If we consider externalities or environmental problems as the result of an excessive use of natural resources, one way to improve the situation is to assign property right, a solution which was introduced in environmental economy quite a long time ago. The policy instrument in

this tradition has been introduced as the so-called tradable permits (Dales, 1968). Their main advantage is the achievement of quantified environmental goals, without intervening in the price regime. Prices for tradable permits are in principle defined by the market process itself. It has been stressed several times that tradable permits have the great advantage to create incentives to innovation and therefore have a clear dynamic impact.

## 5.2 The case of the Austrian “Ökopunktsystem” (Ecopoints)

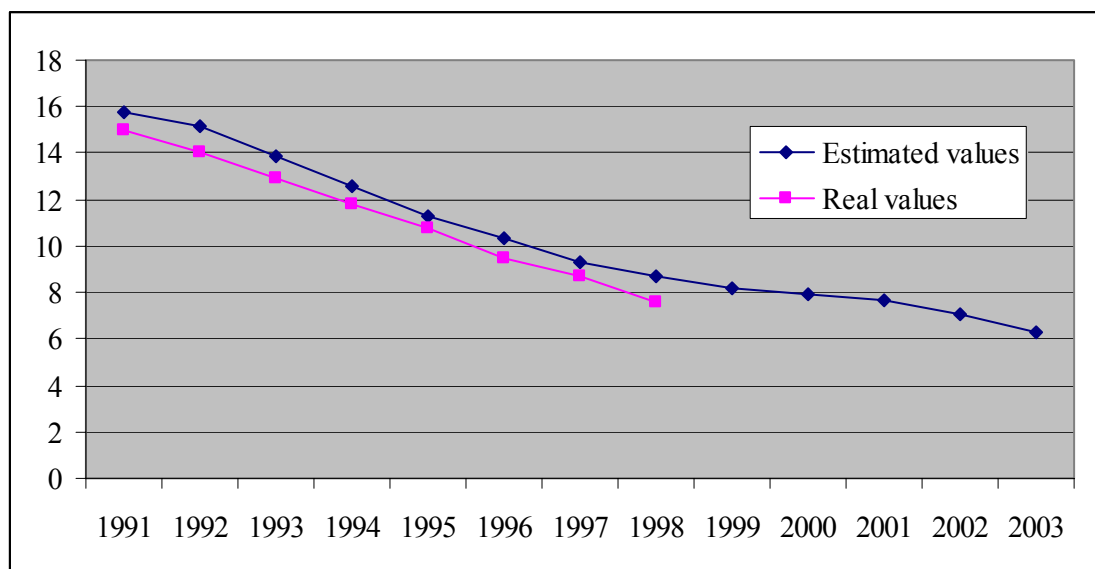
Although ecopoints do not fulfil completely the requirements of tradable permits it is worthwhile to present the Austrian experience in this context. The most important difference with tradable permits is the fact that they are not traded on an exchange market. However, ecopoints are a quantity oriented policy instrument. In the present case the main purpose was to reduce emissions by heavy freight vehicles to a certain amount, which was progressively lowered over the years.

Figure 2 Evolution of the use of ecopoints in Austria (in mio.)



Source: Verkehrsentwicklung in Tirol, Bericht 1998. Amt der Tiroler Landesregierung, Abteilung Verkehrsplanung. Innsbruck, 1999.

Figure 3 Evolution of average emissions of NO<sub>x</sub> per kWh performance  
(in grams)



Source: Verkehrsentwicklung in Tirol, Bericht 1998. Amt der Tiroler Landesregierung, Abteilung Verkehrsplanung. Innsbruck, 1999.

The figure clearly indicates the decline in the volume of emission on the Austrian transalpine corridor. It is quite interesting to note that this decline is not necessarily associated with a reduction of the number of circulating heavy goods vehicles. On the contrary, the number of the vehicles slightly increased during the same period. But the scope was not to reduce the number of vehicles but the volume of emission.

According to the ecopoint scheme the number of necessary ecopoints, giving the right to cross the Austrian Alps was directly linked to the volume of emission and hence to the technology of the engine. The less polluting the engine was the less ecopoints are necessary for the passage. Therefore it is not surprising that the ecopoints provoked a major and rapid change in the vehicle fleet. Hauliers quickly changed to less polluting vehicles. It has been argued that hauliers with the polluting vehicles (Euro Norm 0) were deviated across Switzerland or

France. However, this effect has not been supported by empirical data. Ecopoint is certainly one of the most successful applications of a quantity oriented policy instrument in Europe.

Although the Swiss regime with the mileage related fee for heavy vehicles and it is unlikely that this regime will be changed in the near future the Alpeninitiative recently launched the idea to introduce a kind of exchange market for tradable permits giving the right to cross the Alps in Switzerland or even on the whole Alpine bow. This idea has been taken up by the federal administration and is currently investigated in a research project of the Swiss association of transportation engineers.

The advantages of regulation system of the road freight traffic across the Alps based on tradable permits are evident. In particular, it the number of vehicles crossing the Alps could be defined in advance. The price for crossing the Alps would essentially depend on the overall volume or demand. The possibility that at a given time there are no permits available could lead to a major shift from road to rail. Moreover, shippers could be interested to organize their logistic chain differently in order to eliminate or reduce the risk to pay the tradable permit at a very high price. So the incentives to consider the difficulties to cross the Alps would be perceived by shippers as well as by hauliers. However, the introduction of tradable permits would not necessary lead to a given reduction of environmental pollution. Tradable permits could neither guarantee that there would be no congestion at all. Since the regime would be applied only to the heavy vehicles and instances of congestions cannot be excluded.

It cannot be excluded either, that different lobbies would build up a considerable resistance against a regime based on tradable permits, since it is against tradition and right to free access to road infrastructures and the free choice of transport means. However, more illuminated actors could identify in tradable permits an interesting approach to reduce the problems with road congestion, a major problem to the haulier industry in Europe. The implementation of tradable permits on the Alpine corridors might be a promising start in the European transport policy to clearly set quantitative goals and incentives to a more sustainable transport system.

## 6. Conclusions

The paper tried to illustrate that the current European policy approach to the external problems of transportation is linked to social marginal cost pricing, based on mainstream economic wisdom. Moreover, it was stressed that this approach emphasizes the welfare aspect rather than the solution of the environmental problems. Further it has been shown, that a large number of studies on the topic of external effects and social marginal cost pricing are available. Nevertheless major uncertainties and large ranges over the values still prevail. It is not very likely that these uncertainties can be overcome shortly. Therefore, instruments based on social marginal cost pricing are very appealing from a theoretical point of view. However, a concrete implementation in the policy process seems to encounter major barriers.

Moreover, there are serious doubts are express regarding the real impact of social marginal cost pricing to achieve environmental goals. Until now the critical voices have found little understanding in the European commission or Brussels administration. This fact can partly be explained on organisational and sociological ground. The European administration is dominated by economists trained in mainstream economics and they are reluctant to consider alternative points of view.

Although environmental economics offers since long time ago an alternative approaches, which have been neglected or even ignored so far. This can partially be explained by the difficulties to implement instruments like tradable permits. Nowadays, these difficulties could be easily overcome with modern communication technologies.

It might be surprising and somehow the irony of the history, that tradable permits (giving private property right on common resources) are proposed by a grass-root organisation such as the Alpeninitiative knowingly against the extension of private property rights in other realms. But it might be a very important sign and insight that every instrument had to be seriously taken into account in order to achieve certain goals. Tradable permits have certainly the potential to significantly contribute to reach quantitatively defined environmental goals, contrary to the Pigouvian taxes.

The Alpine freight transport is in the European transportation landscape an important laboratory in particular in the realm of intermodal freight transport. Extending the ongoing debate over policy instruments to tradable permits could add a new dimension to the leading role of

the alpine freight transport, dealing with environmental problems as well as with congestions. This, of course, requires a very tight cooperation between Switzerland, Austria and France and a common view in the transalpine policy. The growing problems with the ecopoint scheme makes Austria a very important candidate to start a debate over a common policy approach. Implementing tradable permits for the Alpine crossings could foster an innovation oriented debate in Europe and help to overcome a never ending discussion about monetary values of external costs. In this way Switzerland could also significantly contribute to a policy debate with clear quantitative environmental goals, overcoming the present state of external pressure and the guarantee to achieve the fixed goals.

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