

Why Is Economic Theory Ignored in Environmental Policy Practice?

Friedrich Schneider

University of Linz, Department of Economics, Altenbergerstraße 69,
4040 Linz-Auhof, Austria, friedrich.schneider@jku.at

Hannelore Weck-Hannemann

University of Innsbruck, Institute of Public Finance, Universitätsstraße 15,
6020 Innsbruck, Austria, hannelore.weck@uibk.ac.at

Keywords. *Environmental Policy, Ecological Taxes, Tradable Permits, Voluntary Agreements, Road Pricing, Voting Behaviour, Public Bureaucracy, Interest Groups*

JEL. *Q00*

Abstract. In the past there was hardly any use of economic theory and instruments in environmental policy, mainly command and control measures dominated. More recently, ecological taxes became increasingly popular and have been proposed but not implemented with an ecological effect. Thus, the situation has not changed, and we must ask for the reasons of this situation and the prevailing non-acceptance of these instruments. The purpose of this paper is to give some answers on these questions using the Public Choice approach. The proposition of an ecological tax reform and road pricing measures are taken to discuss how actual environmental policy deviates from economic prescriptions.

1 Introduction

Today we are still far away from general acceptance and widespread policy application of market-based environmental instruments, and the situation has also not changed with respect to a successful environmental policy advice by economists. Hence, we should ask what are the reasons for this development and how a wider acceptance of policy advice by economists could be achieved. The purpose of this paper is to give some answers to these questions. To do so, we first present the main ideas of the Public Choice approach (Section 2). In Section 3 we discuss a recent suggestion of an ecological tax reform and its failure. In Section 4 pricing instruments in the transport sector are analysed with respect to their incentive

mechanism and political chances to be implemented. Section 5 concludes with a summary and outlook.

2 The Public Choice Approach to Environmental Policy¹

The usual way to proceed in the papers which follow the Public Choice approach is to single out the different (groups of) actors which are engaged in environmental policy making and to ask for their interests in the application of the different instruments which could be applied. Following Frey (1992: 133-140), typically, four groups of actors are considered: (i) the voters, (ii) the politicians, (iii) the public bureaucrats, and (iv) the 'economy', i.e. the owners, managers and employees of the industries which are to be regulated and their interest groups. In the following, we will give a short characterisation of the main interests of these four groups of actors in environmental policy.

2.1 The Voters

Over the last three decades, the sensitivity of voters with respect to environmental issues has certainly increased.² Thus, the approval of voters for ecologically sustainable policies should become more and more probable. However, it should be taken into account that ecological objectives 'compete' with other interests, especially with 'pure' economic objectives of the voters.

Assuming that the improvement of the environmental quality is a national (or, as in the case of the reduction of CO₂-emissions, even an international) public good, the most relevant question regarding the behaviour of voters is: Who will pay the costs? If the price elasticity of demand is low and/or if the supply elasticity is infinitely elastic, as in the case of mineral oil prices in small countries, where the consumer price of these products is determined by the prices on the international spot markets, the consumers have to bear the costs. This implies that the majority of voters directly pay for such a policy. But if price elasticity is high, only a small part of the burden of an environmental measure which increases the production costs of a good can be passed to the consumers. Thus, the producers, shareholders, managers as well as workers of these firms, have to bear the costs. Consequently, the resistance to environmental programs might be higher in regions with a high share of producer interests which oppose such a policy, because a higher burden can lead to reduced profits, wages and employment in these regions.

¹ Elements of this chapter are taken from Kirchgässner and Schneider (2003) and Schneider and Volkert (1999).

² See, e.g., the results of the IMAS-surveys for Austria (IMAS, 1995, 1996) or the results for Germany presented in Horbach (1992).

In Germany, empirical evidence for such a trade-off between the reduction of unemployment and ecological objectives was found. Horbach (1992) shows that in regions with a high unemployment rate the Green Party receives fewer votes in elections than in other regions. Moreover, he also shows that the more important the chemical and steel industries are in a certain region, the worse the election chances are for this party, because its ecologically oriented economic policy programme might weaken the position of these industries. Thus, citizens voting out of self-interest might be an obstacle for the approval of any kind of environmental policy. This implies that too little might be done, especially in those regions where environmental policy is needed most.

New arguments have emerged in the recent international discussion of the double dividend. The implementation of incentive-oriented environmental tax policies need not be accompanied by an increase, but by a shift in the tax burden. In such a case there is no immediate trade-off between fighting unemployment and enforcing stricter environmental policies. On the contrary, many simulations show that it might even be possible to have a small gain in employment.³ As a study of the OECD (1997) shows a large number of winners among different economic sectors and firms might be generated, but with only small gains. On the other hand, there would be a few distinct losers among the firms whose economic position could deteriorate quite substantially. Thus, at first sight, politicians might be expected to enact such a tax alternative in response to the preferences of the majority of voters instead of caring for the minority of losers. However, as Public Choice theory tells us, "... a small concentrated identifiable, and intensely interested pressure group may exert more influence on political choice making than the much larger majority of persons, each of whom might expect to secure benefits in the second order of smalls ..."⁴. Thus, even if a double dividend allows to fight unemployment by enforcing stricter environmental policies in the economy as a whole there still can exist a political trade-off between fighting of unemployment in small, intensely interested, and highly influential pressure groups of potential losers and an incentive-based environmental policy.

However, the case of a double dividend where employment is rising with a stricter environmental policy is an exception in environmental policy making, which to a large extent depends on the existence of involuntary unemployment.⁵ In most situations there is a trade-off between the production of better environmental quality and the production of consumer goods, i.e. the voters have to make a choice between better environmental quality and higher real income. In such situations, the decision of voters depends on the information of the citizens about the consequences of environmental problems, the lag between the time when the policy measure is taken and the time when the environmental situation is improved, and the discount rate of voters. Especially with respect to measures which are

³ See, e.g., the review of such studies in Kirchgässner (1998, 1999) or Schneider (1998) with results for Austria, Kirchgässner, Müller, and Savioz (1998) with results for Switzerland or Scholz (2000) and Bach et al. (2001) with results for Germany.

⁴ Buchanan and Tullock (1975: 142).

⁵ See, the corresponding simulation results in Kirchgässner, Müller, and Savioz (1998).

mainly to the benefit of future generations, self-interested individuals would generally not be willing to bear high costs. This is one of the main obstacles against efficient CO₂-reduction policies. But similar conditions hold in other areas of environmental policy making as well. Consequently, it can be expected that in many cases voters care more about the economic short-term development than about the environmental situation. This might delay or even prevent the approval of ecologically-oriented politics by the majority of voters. Even if a citizen is to some extent altruistic, well educated and informed it is not obvious that she/he as a 'rational' (even long-term oriented) voter will support ecologically oriented economic policies in elections or referenda.⁶

2.2 The Politicians

Politicians can be assumed to pursue a certain policy if – given that they achieve their objective – it is supported by a majority of voters, under the qualification that there is no considerable resistance either from the bureaucracy or from the interest groups. Insofar, if voters accept or even demand an undersupply of environmental policies, a government which wants to maximise its re-election probability gets no incentive from the voters to provide a better environmental quality.

However, even a democratic government is hardly ever only seeking re-election. According to the partisan hypothesis first developed by Hibbs (1977; see also 1992) and incorporated into the politico-economic models of Frey and Schneider (1978a, 1978b, 1979) re-election is more of a constraint which the government has to respect than an objective in itself. Thus, if a coalition government includes a 'green' party and/or if the dominating party of the government has a clientele which has an especially strong environmental orientation a government might provide a stronger environmental policy than it is demanded by the voters altogether (the median voter) as long as this does not endanger its re-election prospects. On the other hand, if the clientele of the government is more economically oriented it will hardly accept that the output of consumer goods is reduced in order to improve environmental quality. Thus, there might be a less strict environmental policy than it is demanded by the median voter.

Even if the level of environmental activities is (on the average) too low, the question again arises whether the remaining policies in this field are carried out in an efficient way. Again, if there is no pressure by the voters but if they are, instead, in favour of more visible but less efficient policies, it cannot be expected that there are pressures on the government from the side of the voters to pursue an efficient environmental policy. Thus, the use of bureaucratic instruments might be more in the interest of politicians than the use of economic instruments. However, there are two qualifications to be made. First, because the government should be better informed than the average voter, it should take into account that the higher efficiency of an environmental policy which uses economic instruments allows to

⁶ The role of altruistic/moral behaviour in such decisions is discussed in Kirchgässner (2000).

use resources for other purposes and – on this way – to satisfy more of the demands of the own clientele and/or to improve the re-election prospects. For this reason, the government should – *ceteris paribus* – be more in favour of applying economic instruments than the average voter.

Second, environmental taxes might have a special attraction for governments because they create revenue which can be used to cut other taxes and/or to finance additional projects. This can be advantageous for the government if the tax resistance against ‘green taxes’ can be expected to be lower than against other taxes. This holds especially if the clientele of the government is more environmentally oriented than the average voter.⁷ On the other hand, as the opposition will try to use its chance and to make strong opposition against introducing or raising such visible taxes the leeway of a government to pursue such a policy is limited.

It is, moreover, possible to present environmental taxes as acceptable measures to the voters, if these taxes are characterised as ‘punishment’ for polluting the environment and if they are applied mainly to industrial polluters. Politically, it might be more difficult to sell the creation of a market for tradable permits to the voters because these can be considered as ‘licences to pollute the environment’ which – from a moral point of view – might be seen as morally unsound by those people who are especially strongly engaged for the natural environment.⁸ Moreover, at least as long as grandfathering is used as the method for the original distribution of the emission rights, the government is much less interested in using tradable permits than in using ecological taxes.

Taking all these arguments together, the interests of the government might on the average lead to a less than optimal level of environmental policy, but – as with the voters – they can hardly be the reason why the use of market oriented environmental instruments was on such a low level in the past. Therefore, those who really oppose such a policy must be the public bureaucracy and/or private business, i.e. the regulated industries and their interest groups.

2.3 The Regulated Industries and Their Interest Groups

Officially, representatives of the industries which are to be regulated by environmental policy are much in favour of economic theory and hence the use of economic instruments. However, whenever the application of such instruments is discussed, they are at least very hesitant and in most cases in strong opposition to such a policy. If, e.g., ecological taxes are discussed, they argue against it and instead favour voluntary agreements which are just the opposite of an economic instrument of environmental policy, command and control policies or – at the most –

⁷ Acknowledging this, several opponents against the introduction of environmental taxes do not really argue against the use of environmental taxes per se but they are anxious that, given the less severe tax resistance, the government might be successful in increasing the total tax load. See, e.g., Zimmermann (1996).

⁸ For a discussion of ethical aspects of international emissions trading see Ott and Sachs (2000).

tradable permits.⁹ For the latter, however, they demand grandfathering of the original distribution of the emission rights. Thus, if there are any economic instruments used at all, besides subsidies which are not discussed here, they prefer tradable permits which are distributed by grandfathering. In any case, they prefer a policy of command and control to a policy applying ecological taxes.

But why should the polluters, especially the industrial polluters, oppose the use of economic theory and of market oriented environmental policy instruments? After all, using these instruments the same ecological impact could be reached 'more cheaply' i.e. at lower costs, which finally should be in the interest of the relevant industrial sectors as well. It is obvious that the profit interest of any single producer which has a relevant amount of emissions is against any environmental regulation because it reduces its expected profits. But why is there a quite special opposition against economic measures of environmental policy?

The two main reasons for this opposition are probably the high efficiency of such a policy and distributional aspects.

- At the level of the economy as a whole, the high efficiency of economic instruments means that the aspired ecological objectives can be reached with minimal (social) costs. For the single firm, however, the situation is quite different. As long as a policy of command and control is pursued, it has a (sometimes considerable) leeway for negotiations with its environmental protection agency. In these negotiations it has an informational advantage; it knows the processes and the potential costs if the emissions have to be reduced by a certain amount, and it can threaten with a reduction of employment or even with the displacement of the firm if the regulations are too strict. On the other hand, if environmental taxes are used, the firm can pollute as much as it wants, but it has to pay for it. Reductions of a tariff which has been fixed in the parliament and written into a law are much more difficult to negotiate than the extent of a regulation which is necessarily – more or less – individual for each firm. Thus, it can be expected that the regulation will – on the average – be less strict with a command and control policy than if economic instruments of environmental policy are used.
- There are also, however, important distributional consequences. Let us assume that the firm uses the same technology and has the same emission in both regimes, under a command and control and under an economically oriented environmental policy. Thus, at the margin everything is the same, the same technology, the same marginal costs, and the same prices of the goods produced. Moreover, the costs for reducing the emissions are the same. Inframarginally however, if taxes or tradable permits are used the firm has to pay for its (remaining) emissions while under a policy of command and control it gets it free. Thus to the extent of the legal emissions it gets an additional rent.¹⁰ If wages are given, this rent can be appropriated by the owners. However, the employees (and/or their organisations, the trade unions) will realise that there is a possibility for a wage increase; they will demand their share of this rent. On the other

⁹ See Horbach (1992) who shows that two thirds of the German companies favour standards whereas only one third favours levies and taxes.

¹⁰ This argument has first been put forward by Buchanan and Tullock (1975).

hand, if taxes are used (and the revenue is used to cut other taxes, e.g.,) the general public benefits. Thus, shareholders (employers) as well as employees have an own interest to prevent the use of economic instruments.

A similar argument holds if we compare grandfathering with auctioning tradable permits. If there is competition, at the margin both systems lead to the same condition. That implies that the prices for the goods produced will be the same. If the permits are auctioned, there is additional revenue for the government which can be used to cut other taxes and which – in this way – may be to the benefit of the general public. If grandfathering is used, however, as, e.g., in the case of the sulphur dioxide allowance-trading program in the United States,¹¹ the existing firms get an additional rent. Moreover, they get a competitive advantage against newcomers in the market who do not get this rent because they have to pay for all the permits they need: Grandfathering of pollution rights creates a barrier to entry against new firms. Thus, it is no surprise that the existing companies as well as their interest groups favour the grandfathering of tradable permits.¹²

Given this situation and the at least partial conformity of employer and employees interest it is no surprise that the industries which are to be regulated generally oppose the use of economic environmental instruments, especially of ecological taxes.¹³ Moreover, their organisations are well organised and they are important players in the political game. There are five main reasons why these interest groups are not only better organised than environmental interest groups but also better able to achieve their self-interested goals:

- In contrast to environmental interest groups, the respective industry and business associations usually have sufficient financial backing which is used for efficient lobbying.
- Producers themselves are closest to the origins of environmental problems in the production sector. This is the reason for substantial information asymmetries. Therefore, ‘green’ groups often have difficulties in getting information about pollution effects as well as about the feasibility of alternative technologies.
- Based on this information asymmetry, industry and business associations often have considerable influence on public opinion through their publications as well as through their impact on the media.
- The ‘market power’ of these interest groups is a crucial factor in the achievement of their objectives in the political arena. It is not only important in the

¹¹ See Joskow, Schmalensee, and Bailey (1998: 671): “Allowances are given to existing electric generation units and those under construction, according to fairly complicated rules For our purposes here it suffices to note that essentially all of the allowances were allocated ‘free’ to incumbent sources.” A more detailed description if the initial allocation is given in Joskow and Schmalensee (1998).

¹² See for this also Svendsen (1999).

¹³ There seems to have been some change of the opinion in the United States. According to Svendsen (1999), private business interest groups are today more in favour of a grandfathered permit market, and no longer so much in favour of a command and control policy, but they still reject a tax policy.

goods and services markets but in the labour market as well, especially in the form of the threat of transferring production abroad.

- Quite often these associations gain personal representation in legislative institutions, in the parliament and its committees, which makes it possible to postpone or even reject environmental issues.

Taken together, representatives of industrial and business interest groups are able to influence legislative proposals in their early stages through active lobbying in hearings and in parliamentary committees. For that purpose, they provide detailed information about environmental measures. This has the effect of linking together lobbyists and members of the legislative bodies. As a result of this relationship, arrangements are made between the political administrative system and 'private' interest groups representing business interests. In Germany, such agreements have become common practise in more than 50 industrial committees and 'voluntary self-obligations' as well as in several hundred committees for the definition of the 'best available technology'.¹⁴

Compared to their counterparts of business and the economy, environmentally oriented interest groups are in a weak position. They have the possibility of organising spectacular actions, a strategy which is often used by Greenpeace which might be the best known of these groups. In doing so, in special situations they can have a strong impact on public opinion, influence private consumption and in this way influence the policy of single companies,¹⁵ they might also have some impact on the decisions of voters, but they rarely have the same direct impact on the parliamentary system and the public bureaucracy economic interest groups have. Moreover, until the eighties the green interest groups were themselves in favour of command and control measures in environmental policy and against the use of economic instruments. Their main argument was that the natural environment should not be 'commercialised'. Against the combined pressure of economic and environmental interest groups, however, an efficient environmental policy using economic instruments had no chance at all.

2.4 The Public Bureaucracy

Already a cursory view at the available evidence tells us that – at least in Europe – many members of the public environmental bureaucracy are in strong opposition against using economic theory and the application of market-based instruments of environmental policy. They rather prefer the use of command and control. In most cases they favour, of course, policies which improve the situation of the natural environment; most members of the 'green bureaucracies' are highly motivated to

¹⁴ See Maier-Rigaud (1996) or Helbig and Volkert (1999).

¹⁵ The best known case is that in 1995 Greenpeace succeeded in preventing Shell from sinking the oil platform Brent Spar into the North Sea. See for this Huxham and Sumner (1999).

pursue this goal.¹⁶ However, they do not necessarily favour efficient policies. More important for them is that a policy strengthens their personal position in the environmental policy game.

The empirical studies by Holzinger (1987) demonstrate that German environmental administrations have at least some leeway to follow their own interests, whereas objectives such as 'economic efficiency' or 'overall economic cost optimisation' are only of minor importance for them. They are vitally interested in environmental policy measures which are labour- and resource-intensive. As a result – and in accordance with the economic theory of bureaucracy as originally developed by Niskanen (1968, 1971) – they are able to increase their number of employees, and each year to have a larger budget at their disposal. The result of this is that the environmental administrations will try to implement those environmental policy measures which require high administrative controls. To increase their leeway they want the political authorities to regulate as little as possible so that they have the greatest possible leeway (and budget) for their own decisions.¹⁷ Discretionary budgets are also necessary in order to meet the demands of those lobbies for which the different environmental sections of German ministries have become even more important than the parliament with its committees.

Economic instruments and especially environmental taxes are much less attractive for the public bureaucracy. While command and control policies can only exist with high labour costs and other expenditures, the use of taxes requires much less expenditure and less staff. Hence, a budget increase or a rise in the importance of environmental authorities is less likely than with the use of standards. Furthermore, a change from the current system of environmental standards to a system of taxes would require a high degree of flexibility in the environmental agencies.

Using taxes or tradable permits would of course reduce the information requirements of the public environmental bureaucracy considerably. Detailed information is only necessary for the tolerable total burden, for the 'correct' total emission amount derived from it, and – in the case of taxes – on the reactions of the industries to the taxes, which can be obtained in a kind of trial-and-error procedure by a gradual increase of the tax rate over a longer time span, but no detailed information about the prevention costs of different producers is needed, which is difficult to acquire. Thus, the efficiency of the bureaucracy could be increased considerably. But this is not necessarily also in the interest of the members of the bureaucracy, as the lower information requirements make it rather difficult to justify a large budget and a large staff.

Taking all arguments together, the industries which are to be regulated and the members of the environmental bureaucracy are the ones who are most in favour of command and control policies, and both have a strong impact on the design of the actual policy. Thus, it comes to no surprise that economic instruments like environmental taxes or tradable permits were hardly used up to now. On the other hand, with respect to the extent of the environmental program the interest of these

¹⁶ For a model which employs this assumption to explain the results of international climate protection policy see Congleton (1995).

¹⁷ See the results of the surveys described in Gawel (1994a, 1994b, 1995).

two groups of actors are quite opposite: While the bureaucrats favour a strict, most industries strive for a rather soft environmental policy. Thus, whether a policy is really strict or not depends mainly on the preferences of the voters (and of the clientele of the party (parties) in government). Taking into account the discounting behaviour of voters, the policy might be strict in those areas which today have a direct, noticeable impact on today's voters, but rather loose in those areas which would mainly benefit future generations. And this is exactly what we observe. There have been, e.g., considerable improvements in the water quality of our lakes and rivers, but up to today there is hardly any effective policy to prevent or even slow down global warming.

3 The Ecological Tax Reforms

3.1 General Remarks

The main theoretical as well as empirical argument in favour of an ecological tax reform is the hope for a double dividend: If taxes which cause distortions in one sector of the economy are reduced and at the same time taxes which reduce distortions in another sector of the economy are introduced instead, the efficiency of the whole economy should improve and – as a consequence – unemployment should be reduced. This idea, originally proposed by Binswanger et al. (1983) and strongly supported by Pearce (1991) could play a key role in reducing CO₂-emissions by the introduction of a general energy and/or CO₂ tax and – in this way – fighting global warming. In the last decade, it has become more and more popular in Europe, but not so much because of its environmental consequences but mainly because it seems to be an ideal method to solve the problems of many European labour markets without, e.g., having to introduce more flexibility into these markets. This belief is quite widespread despite the fact that the scientific discussion starting with Bovenberg and De Mooij (1994) has shown that with such a reform an increase of employment while not impossible is difficult to reach, and that it might improve the labour market situation somewhat, but not really solve the unemployment problem.¹⁸ Thus, in many countries not only green but also other left-wing parties are today in favour of such a policy, and it is also supported by trade unions. This is insofar no surprise as there is quite a lot of evidence that left-wing parties are more active in fighting unemployment compared with right-wing parties which are more concerned about inflation.¹⁹ Thus, the main interest in

¹⁸ See, e.g., the surveys in Goulder (1995), Kirchgässner (1998), and Bovenberg (1999). This is, of course, no argument against such a reform which still can make much sense; it is an argument against expectations of some of its proponents which are too high and which – with high probability – will prove to be wrong.

¹⁹ See, e.g., Hibbs (1977, 1992) as well as the politico-economic models of Frey and Schneider (1978a, 1978b, 1979) and the survey about political business cycles by Paldam (1997).

pursuing such a policy by left-wing (or green) parties is in many cases not a concern about the situation of the natural environment but about the labour market, even if the expectation is that it will help the environment more than the labour market: Such governments might help the environment ‘for the wrong reason’.

On the other hand, as already mentioned above, environmental taxes have a special attraction for left-wing parties which traditionally aim for a higher government (tax) share because these taxes create revenue, which can be used to finance other projects, and the tax resistance against ‘green taxes’ might be lower than against other taxes.²⁰ This is important in a situation where the current social security system and its financing is not at all sustainable and – besides structural changes – new sources have to be found to finance it. Again, such governments might help the environment ‘for the wrong reason’.

Thus, while these ecological tax reforms might be seen as a step in the right direction, taking into account the motives of the politicians in enforcing such a reform one has to conclude that this new development is far away from indicating a change in the general perception about the relative merits of command and control versus economic instruments of environmental policy and of the political acceptance of the latter. We still have the situation that – in principle – nearly everybody supports the use of incentive orientated economic instruments for ecological reasons, but when it comes to their application there is strong resistance by important political actors. At best, they will be introduced for other (non-environmental) reasons and/or in a way which is not very helpful for the environment. But, on the other hand, it is a step in this direction and one might hope that over time citizens become more familiar with such instruments and their advantages which might – in the long run – increase their acceptance in the electorate.

3.2 Example: An Ecological Tax Reform Suggested in 2003 and Its Failure

In order to strengthen our argument of the small effect and influence of economists using their theory in environmental politics we would like to give a concrete example. For Austria, an ecological tax reform has been suggested in 2003 which, in principal, should have a chance to be implemented but most probably will not due to public choice reasons. The key elements of such an ecological tax reform – having been developed in a study by Schneider and Proidl (2003) – are the following²¹:

1. In order to reduce CO₂-emissions, taxes on non-renewable energy sources are introduced in such a way that there is a positive ecological effect, i.e. a significant reduction of CO₂-emissions should occur.

²⁰ For the discussion of this argument see, e.g., Zimmermann (1996) or Schneider (1997, 1998).

²¹ This study contains first a lot of information about ecological taxation in small open countries which can be compared to Austria. Then in the study a detailed suggestion and model of an ecological tax reform is presented.

2. All revenues from this tax are immediately spent in a revenue neutral way. One part of this additional revenue is used for the subsidisation of renewable energy investments, another part is spent to reduce the burden of taxes and social security payments on labour income, and a third part is used for subsidising middle and lower income households in order to partly compensate for the increased spending on gasoline and other energy sources.
3. This means that there are no additional tax revenues for the minister of finance but every cent of this new revenue is spent in the economy, or redistributed to the households.
4. For planning this ecological tax reform, a long time horizon is considered: The fossil energy tax starts with a value of 0.44 cent/kwh in the year 2004 and would end in 2013 with a value of 1.45 cent/kwh, i.e. a yearly increase of about 0.11 cent/kwh with a final rate of 1.45 cent/kwh in the year 10.
5. It is estimated that in total, i.e. aggregated over the 10 years, additional tax revenues of 31bn EUR would be achieved and the ecological steering effect would be a 10% reduction of fossil energy use. As already argued, the aggregated sum of 31bn EUR would be spent for different purposes: It would be used for subsidising investments for renewable energy sources up to an amount of 6.7bn EUR so that the use of renewable energy sources would increase by 5%. Another 10.9bn EUR would be used to reduce the burden of the direct income tax of low and middle income earners so that they would be almost fully compensated. The final amount (13.4bn EUR) would be dedicated to reduce the tax and social security burden on labour income, from which all labour intensive enterprises will profit most. This would mean that almost all enterprises would make a net-profit because the burden of taxes and social security payments per year on labour income would be reduced by 3.69% per year (over the 10 years) so that the overall production costs will not increase with the exception of only a few energy intensive enterprises.
6. If one undertakes a dynamic simulation with the help of a macro-econometric model estimated for Austria one can demonstrate that if such a tax reform would be implemented an additional increase of 2.3% of the GNP over these 10 years would result and employment would rise by about 0.5%.

Hence, one can clearly demonstrate that with such an ecological tax reform two major political concerns could be avoided. First, every increase of indirect taxation is disadvantageous for low and middle income earners because they are net losers. Thus, without compensation politicians realistically will have no chance to realise it. This has been avoided in the proposal of Schneider and Proidl (2003). According to their type of compensation most low and middle income people would even win and have somewhat more money, only those who have a long way from home to work (if they drive more than 40.000 km per year) could not be fully compensated. Second, industry quite often claims that due to increased energy costs, they will shift production out of the country. This threat can not be put forward because the compensation in reducing tax and social security burden on labour income is by far bigger for most industries so that they will also make a net profit. In addition, the overall economic development is slightly positive. Due to

additional investments in renewable energy sources, even a small positive increase of gross national product and of employment is to be expected.

According to this design the ecological tax reform as suggested by Schneider and Proidl (2003) should have chances to be realised as the main reservations are overcome from a politico-economic perspective. However, the latest suggestions of a tax reform by the Austrian government actually intend lower direct and corporate tax rates in a very traditional way without any ecological effect. It seems that the opportunity to implement an ecological tax reform which would be politically attractive will be missed once again. Whether the political benefit of an ecological tax reform has so far not been realised or the political benefit of a traditional tax reform lowering income taxes and corporate taxes can be better sold in the political arena/market has to be left open at this time.

4 Pricing Road Use: Politico-Economic Considerations

With respect to the negative externalities associated with private transportation – either congestion in urban areas or environmental damages more generally – economists have extensively explored the role that economic incentives might play in bringing about a more efficient allocation of road space and natural resources. The idea that road users should be charged their marginal external costs is a widely accepted principle in the economic as well as in the transportation literature.²²

However, while analysts see road pricing as an attractive policy tool, most attempts to introduce economic incentives of this type in the transport sector have failed. These failures may partly be due to the technical difficulties of introducing the appropriate price incentives but more importantly, politico-economic reasoning suggests that road pricing is rarely adopted because the public does not support these policy measures.²³

Previous work that studied the political difficulties of using economic incentives to allocate road space and natural resources sought to compensate those who lose when road pricing is used with the help of revenues generated by road pricing programs.²⁴ However, as is argued by Oberholzer-Gee and Weck-Hannemann (2002), a wider notion of what the public perceives to be the ‘cost’ of using economic incentives is adequate. Politico-economic reasoning suggests that voters as consumers and/or producers (employers/employees) in the industries affected have to pay the costs and thus will not be enthusiastic about such a policy. In addition,

²² See, e.g., Button and Verhoef (1998).

²³ For evidence of these failures see, e.g., Jones (1998). More recently, the introduction of road pricing measures in Germany seems to have failed due to technical difficulties indeed. Austria, in contrast, was successful with implementing a road pricing scheme in 2004, but the measures hardly differentiate as to ecological characteristics and in addition, the revenues are earmarked exclusively for financing road infrastructure.

²⁴ For such an argument see, e.g., Common (1989), Small (1992), or Rietveld and Verhoef (1998).

while economists universally embrace the allocation of resources via markets, the general public often appears to be much more sceptical of pricing instruments. There is ample evidence that pricing is not considered to be a fair allocation mechanism whether in situations to eliminate excess demand or in public good contexts. Moreover, economic incentives have the potential to crowd out intrinsic motivation which implies that pricing measures become less effective and, in addition, there may be negative spillovers to other areas where no (monetary) incentives for environmental protection exist.

Political economists view the policy measures that governments and parliaments adopt as outcomes of exchange processes. This implies that, in practice, voter preferences are not directly translated into politics. Elected officials supply the policies that voters and interest groups demand, and in exchange for regulation, politicians receive votes, money and information. From a political economy perspective, it is useful to think about the negative externalities of private transportation as transfers to specific groups which are allowed to make use of resources without bearing the full opportunity costs. The introduction of road pricing then increases transfers to some groups (for instance, those who primarily consume environmental amenities) and decreases the transfers to others (e.g., low-income drivers). Whether or not it is possible to devise a road pricing program that will find political acceptance not only depends on the changes in welfare brought about by pricing – the approach taken generally in the transportation and the welfare-oriented economic literature – but also on the relative influence of groups in the political game.

Once the influence of groups is taken into account, the set of environmental policy instruments that is actually employed in politics can deviate significantly from the theoretical optimum.²⁵ As is argued in public choice theory, policy makers favour instruments that weaken the government's budget constraint. In this respect, environmental taxes recommend themselves because they generate additional funding. If road pricing revenues ought to be returned to citizens, lawmakers can still try to channel these funds toward their own constituencies. Road pricing revenues could also be used to compensate those who lose when economic incentives are introduced. Goodwin (1990) and Small (1992) have identified important interest groups and made suggestions how the revenues from road pricing schemes can be used to overcome their political opposition. In such exercises, the analyst should keep in mind that expected welfare changes are a necessary, but not a sufficient condition for political mobilisation to occur. If groups are not already organised – existing carpool users are an example for a group that would mostly benefit from road pricing – it is unlikely that they will exercise decisive influence in any road pricing debate. In contrast, automobile associations, public transport unions and environmental groups can be counted on to exert considerable influence.

Road users are certainly the best organised group whose members are likely to lose when road pricing is introduced. This is an argument to target revenues from road pricing to projects that benefit drivers. There is some empirical evidence that

²⁵ Buchanan and Tullock (1975), Hahn (1989) or Schulze and Ursprung (2000).

indeed, taxes can be introduced if they are channelled back to the transportation sector. As Rivlin (1989: 113) states "(T)here is one apparent exception to the tax rule: taxes held in trust funds and earmarked to specific purposes can be raised. There was no perceptible backlash when the gasoline tax was raised (in the United States) in 1983, presumably because the increase was thought necessary to fix the roads." Kimenyi, Lee and Tollison (1990) show for the US in general that, in comparison to general fund financing, earmarking leads to increased tax revenues. Similar arguments apply to the 1993 popular referendum in Switzerland that approved an increase in gasoline taxes. Earmarking the revenues for the purpose of maintaining and improving the road infrastructure apparently convinced some drivers that the increase in taxes was in their best interest.²⁶

Previous research comparing the relative effectiveness of compensation mechanisms shows that increases in road investments are by far the most popular measure while in comparison, using road pricing revenue to reduce income taxes is highly unpopular.²⁷ In other words, these studies suggest that reduced accessibility to roads ought to be compensated with improvements of the road network instead of a reduction in general taxes. In view of the progressivism of many tax systems, these attitudes may reflect a preference not to combine a regressive policy measure such as road pricing with a reduction in general taxes that would also mainly benefit higher-income groups. In addition, this evidence underlines the principle that compensating those who lose is easier if compensation remains in the same 'dimension' as the losses.²⁸

Nevertheless, road pricing programs are still politically problematic not only when compensation of losers is deficient but also in another respect. Politicians are inclined to favour policies whose costs are difficult to see and, on the contrary, whose benefits should be highly visible and attributable to their programs. As the negative externalities of private transportation vary geographically and over time, the prices for road usage will have to vary as well to be economically efficient. Charging drivers different amounts at different points in time keeps the costs of using roads highly visible, reminding voters of the policy every time they stop at toll booths or look at their electronically generated charges. Thus, the costs remain highly visible while the benefits of the policy – better environmental quality and reduced congestion – are much less salient, at least in the long run. The benefits are hard to see, for instance, because the counterfactual – how prevalent asthma or how much congestion would be without road pricing – is hard to assess.

In summarising this discussion it can be concluded that road pricing measures as other incentive-based instruments in environmental policy are difficult to implement but have better chances to be realised when their design deviates from the ideal. The question posed in the subtitle of the seminal paper by Hahn (1989: 96) "How the patient followed the doctor's orders" can be answered in the way – here once again – that the actual use of incentive-based instruments in environmental policy departs "from the role which economists have conceived for them".

²⁶ See Kirchgässner (1993).

²⁷ See Verhoef, Nijkamp, and Rietveld (1997).

²⁸ For a discussion of this argument see Oberholzer-Gee and Weck-Hannemann (2002).

5 Concluding Remarks

There are many possible reasons why incentive-based instruments as a means to internalise external costs have been rarely applied in environmental policy in the past. Public choice theory suggests that there are good reasons why politicians, voters, bureaucrats and representatives of well organised interest groups are rather reluctant to favour price instruments on a large scale. It is argued that incentive oriented instruments are neither in the interest of the decision makers on the supply side nor they are favoured by the most influential groups of voters on the demand side on the political market.

However, pricing instruments may have a chance to be implemented if they are introduced in such a way that well-organised groups are benefiting most and the costs are spread to less influential and latent interest groups. Earmarking of revenues in this case may be an essential feature to achieve the respective aim on the part of politicians and most powerful interest groups. Beyond that, the opposition to environmental measures – either incentive-based instruments like taxes or tradable permits as well as command-and-control instruments – may be mitigated by accepting exceptions and allowances. If, for instance, taxes are fixed at a relatively low rate and thus avoidance costs in the case of emission standards exceed the tax burden, this solution is in effect favourable for polluters. If likewise exemptions are made for the most polluting sectors, e.g. the energy intensive producing industries in the case of CO₂ taxes, this implies that resistance of those producers who produce most emissions can be weakened. On the other hand, such a procedure aiming at increasing the political chances to implement such measures at the same time reduces the environmental impact and economic efficiency of such a policy significantly.

Altogether, it has to be concluded that either there is still limited support of the use of incentive-based instruments in environmental policy or the application of such instruments in many respects deviates from the ideal lowering their economic and ecological impact. Public choice theory as a positive science contributes to explain these facts as was tried to elaborate in this paper. On the other hand, public choice theory as a normative approach and, more specifically, constitutional economics gives hand to try to overcome this situation. One way is to think about adequate institutional conditions contributing to improve the chance that incentive-based instruments as the most efficient means in environmental policy are implemented in a right way in the political decision making process. Referring to a process-oriented approach, it may be argued that the political process itself has to ensure that all relevant arguments have a chance to be considered in the discussion resulting in efficiency to be reached endogenously, i.e. via the process. All the pros and cons have to enter in the political process without distortion. This may be better guaranteed if voters have a direct say in political matters and can act as agenda setters as is the case with institutions of direct democracy and the right of initiative. In this case it is expected that politicians are forced to be more responsive to voters' interests than in a system of representative democracy where principal-agent problems are more pronounced. Moreover, when the principles of fis-

cal equivalence and institutional congruence are realised spillovers in external effects may be overcome and all relevant benefits and costs are more adequately taken into consideration in the political decision making process.

Finally, the caveat that the interests of future generations are neglected remains. This argument is especially relevant in the discussion about sustainable development and environmental policy. However, there is no way out of this dilemma except to rely on the present generation and living individuals to pay regard to these interests though not in a comprehensive way but least partially. This is another argument besides political failure that political decisions deviate from the economic ideal considering the welfare of the general public, including present and future generations.

References

- Bach, S., M. Kohlhaas, B. Meier, B. Praetorius, and H. Welsch (2001), *Auswirkungen und Perspektiven einer ökologischen Steuerreform in Deutschland: Eine modellgestützte Analyse*, mimeo, University of Osnabrück.
- Binswanger, H.C., H. Frisch, and H.G. Nutzinger et al. (1983), *Arbeit ohne Umweltzerstörung*, 2nd edition, Frankfurt.
- Bovenberg, A.L. (1999), Green Tax Reforms and the Double Dividend, *International Tax and Public Finance* 6, 421-443.
- Bovenberg, A.L. and R.A. de Mooij (1994), Environmental Levies and Distortionary Taxation, *American Economic Review* 84, 1085-1089.
- Buchanan, J.M. and G. Tullock (1975), Polluters' Profits and Political Response: Direct Controls Versus Taxes, *American Economic Review* 65, 139-147.
- Button, K.J. and E.T. Verhoef (1998) (Eds.), *Road Pricing, Traffic Congestion and the Environment: Issues of Efficiency and Social Feasibility*, Cheltenham.
- Common, M.S. (1989), The Choice of Pollution Control Instruments: Why Is So Little Notice Taken of Economist's Recommendations? *Environment and Planning A* 21, 1297-1314.
- Congleton, R.D. (1995), *Return to Rio: On the Political Economy of Environmental Treaties*, Universität Konstanz, Sonderforschungsbereich "Internationalisierung der Wirtschaft", Diskussionsbeitrag Nr. 280, Serie II.
- Frey, B.S. (1992), *Umweltökonomie*, 3rd edition, Göttingen.
- Frey, B.S. and F. Schneider (1979), An Econometric Model with an Endogenous Government Sector, *Public Choice* 34, 29-43.
- Frey, B.S. and F. Schneider (1978a), An Empirical Study of Politico-Economic Interaction in the United States, *Review of Economics and Statistics* 60, 174-183.
- Frey, B.S. and F. Schneider (1978b), A Politico-Economic Model of the United Kingdom, *Economic Journal* 88, 243-253.
- Gawel, E. (1995), Bürokratie, Theorie und Umweltverwaltung: Ökonomische Einsichten in verwaltungsrechtliches Handeln im Umweltschutz, *Zeitschrift für Angewandte Umweltforschung* 8, 79-89.
- Gawel, E. (1994a), *Zur politischen Ökonomie von Umweltabgaben*, Tübingen.
- Gawel, E. (1994b), Umweltpolitik zwischen Verrechtlichung und Ökonomisierung, *ORDO* 45, 63-103.

- Goodwin, P.B. (1990), How to Make Road Pricing Popular, *Economic Affairs* 10, 6-7.
- Goulder, L.H. (1995), Environmental Taxation and the Double Dividend: A Reader's Guide, *International Tax and Public Finance* 2, 157-183.
- Hahn, R.W. (1989), Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Orders, *Journal of Economic Perspectives* 3, 95-114.
- Helbig, J. and J. Volkert (1999), *Freiwillige Standards im Umweltschutz*, Heidelberg.
- Hibbs, D.A. (1992), Partisan Theory After Fifteen Years, *European Journal of Political Economy* 8, 361-373.
- Hibbs, D.A. (1977), Political Parties and Macroeconomic Policy, *American Political Science Review* 71, 1467-1487.
- Holzinger, K. (1987), *Umweltpolitische Instrumente aus der Sicht der Bürokratie: Versuch einer Anwendung der ökonomischen Theorie der Bürokratie*, München.
- Horbach, J. (1992), *Neue politische Ökonomie und Umweltpolitik*, Frankfurt.
- Huxham, M. and D. Sumner (1999), Emotion, Science and Rationality: The Case of the Brent Spar, *Environmental Values* 8, 349-368.
- IMAS (1996), *Umfrageberichte von IMAS-International*, Linz.
- IMAS (1995), *Umfrageberichte von IMAS-International*, Linz.
- Jones, P.M. (1998), Urban Road Pricing: Public Acceptability and Barriers to Implementation, in: Button, K.J. and E.T. Verhoef (Eds.), *Road Pricing, Traffic Congestion and the Environment: Issues of Efficiency and Social Feasibility*, Cheltenham, 263-284.
- Joskow, P.L., R. Schmalensee, and E.M. Bailey (1998), The Market for Sulphur Dioxide Emissions, *American Economic Review* 88, 669-685.
- Joskow, P.L. and R. Schmalensee (1998), The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program, *Journal of Law and Economics* 41, 37-84.
- Kimenyi, M.S., D.R. Lee, and R.D. Tollison (1990), Efficient Lobbying and Earmarked Taxes, *Public Finance Quarterly* 18, 104-113.
- Kirchgässner, G. (2000), Die Bedeutung moralischen Handelns für die Umweltpolitik, *GAIA* 9, 41-49.
- Kirchgässner, G. (1999), Wirtschaftliche Auswirkungen von Energiesteuern auf kleine offene Volkswirtschaften: Theoretische Überlegungen und Simulationsergebnisse, in: Schneider, F. (Ed.), *Internationale Strategien und Erfahrungen zur Neuorientierung der EU-Energiewirtschaft*, Linz, 153-181.
- Kirchgässner, G. (1998), Ökologische Steuerreform: Utopie oder realistische Alternative, in: Krause-Junk, G. (Ed.), *Steuersysteme der Zukunft*, Berlin, 279-319.
- Kirchgässner, G., U. Müller, and M.R. Savioz (1998), Ecological Tax Reform and Involuntary Unemployment: Simulation Results for Switzerland, *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* 134, 329-353.
- Kirchgässner, G. (1993), Akzeptieren die Bürger Steuererhöhungen? Einige Bemerkungen im Zusammenhang mit der Erhöhung des Treibstoffzolls, *Aussenwirtschaft* 48, 153-174.
- Maier-Rigaud, G. (1996), Für eine ökologische Wirtschaftsordnung, *Jahrbuch für Ökologie*, 71-79.
- Niskanen, W.A. (1971), *Bureaucracy and Representative Government*, Chicago.
- Niskanen, W.A. (1968), The Peculiar Economics of Bureaucracy, *American Economic Review, Papers and Proceedings* 58 (2), 293-305.

- Oberholzer-Gee, F. and H. Weck-Hannemann (2002), Pricing Road Use: Politico-Economic and Fairness Considerations, Transportation Research Part D, *Transport and Environment* 7, 357-371.
- OECD (1997), *Environmental Policies and Employment*, Paris.
- Ott, H.E. and W. Sachs (2000), *Ethical Aspects of Emissions Trading*, Wuppertal Institute for Climate, Environment and Energy, Paper No. 110, Wuppertal.
- Paldam, M. (1997), Political Business Cycles, in: Mueller, D.C. (Ed.), *Perspectives on Public Choice: A Handbook*, Cambridge (UK), 342-370.
- Pearce, D.W. (1991), The Role of Carbon Taxes in Adjusting to Global Warming, *Economic Journal* 101, 938-948.
- Rietveld, P. and E.T. Verhoef (1998), Social Feasibility of Policies to Reduce Externalities in Transport, in: Button, K.J. and E.T. Verhoef (Eds.), *Road Pricing, Traffic Congestion and the Environment: Issues of Efficiency and Social Feasibility*, Cheltenham, 285-308.
- Rivlin, A.M. (1989), The Continuing Search for a Popular Tax, *American Economic Review* 79 (2), 113-117.
- Schneider, F. and H.M. Proidl (2003), *Ökonomische Aspekte für eine österreichische ökologische Energiebesteuerung*, Energieinstitut an der Johannes Kepler Universität Linz, Linz.
- Schneider, F. and G. Kirchgässner (2003), On the Political Economy of Environmental Policy, *Public Choice* 115, 369-396.
- Schneider, F. and J. Volkert (1999), No Chance for Incentive-Orientated Environmental Policies in Representative Democracies? A Public Choice Analysis, *Ecological Economics* 31, 123-138.
- Schneider, F. (1998), Induzieren ökologische Steuerreformen einen Lenkungseffekt oder nur volle Staatskassen?, *IAW-Mitteilungen* 26.
- Schneider, F. (1997), Einige Bemerkungen zu den Umsetzungsproblemen ökologisch-orientierter Wirtschaftspolitik aus der Sicht der Neuen Politischen Ökonomie, in: Schmid, H. and T. Slembeck (Eds.), *Finanz- und Wirtschaftspolitik in Theorie und Praxis*, Bern, 467-486.
- Scholz, C.M. (2000), *Environmental Tax Reforms and the Double Dividend: A Theoretical and Empirical Analysis for Germany*, Tübingen.
- Schulze, G. and H.W. Ursprung (2000), Economic Integration and Environmental Policy: A Survey of the Politico-Economic Literature, in: Vosgerau, H.-J. (Ed.), *Institutional Arrangements for Global Economic Integration*, London, 161-186.
- Small, K.A. (1992), Using the Revenues from Congestion Pricing, *Transportation* 19, 359-381.
- Svendsen, G.T. (1999), U.S. Interest Groups Prefer Emission Trading: A New Perspective, *Public Choice* 101, 109-128.
- Verhoef, E.T., P. Nijkamp, and P. Rietveld (1997), The Social Feasibility of Road Pricing: A Case Study for the Randstad Area, *Journal of Transport Economics and Policy* 31 (3), 255-276.
- Zimmermann, K.W. (1996), Zur politischen Ökonomie von Ökosteuern, *ORDO* 47, 169-194.