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Rent-seeking and grandfathering: The case of GHG trade in the EU

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Rent-seeking and grandfathering: The case of GHG trade in the EU

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**Rent-seeking and grandfathering:
The case of GHG trade in the EU**

*Urs Steiner Brandt
Gert Tinggaard Svendsen*

September 2002

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Summary

The EU Commission has recently proposed a new directive establishing a framework for greenhouse gas (GHG) emissions trading within the European Union. The idea is to devalue the emission quotas in circulation by the year 2012 at latest, so that the EU will meet its Kyoto target level of an 8% GHG reduction. Our main question is whether the final choice of allocation rule can be explained by potential industrial net winners involved in the policy making process. We answer this question by using rent-seeking theory and by analysing the Green Paper hearing replies from the main industrial groups. In other words, we want to explain and observe how rent-seeking (or lobbyism) affects the design of environmental regulation and energy policy in favour of well-organized industrial interest groups. We argue that some firms are likely to reap a net gain from being regulated by a grandfathered emission trading system. This is so because total costs of emission reduction and lobbyism are likely to be smaller than the total rents from having this type of regulation.

JEL Classification: Q28, H2, H4

Keywords: Rent-seeking, lobbyism, grandfathering, greenhouse gases, Kyoto Protocol, emission trading, EU.

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Table of contents

1. Introduction	7
2. Rent-seeking and grandfathering.....	8
2.1 Rent-seeking.....	8
2.2 Welfare effects	9
2.3 Tariff and quota.....	11
3 Grandfathering.....	13
3.1 Incumbent firms and regulation	13
3.2 The effect of a grandfathered system on the structure of the industry.....	14
3.3 Introduction of regulation.....	15
4. The case of GHG trade in the EU	20
4.1 Green Paper and final directive proposal	20
4.2 Industrial interest groups.....	21
5. Conclusion.....	24
References.....	26

1. Introduction

The EU Commission has recently proposed a new directive establishing a framework for greenhouse gas emissions trading within the European Union (CEU, 2001). The proposal for a Greenhouse Gas (GHG) directive is the outcome of a policy process started by the EU Commission in March 2000 with the Green Paper on greenhouse emissions trading within the European Union (CEU, 2000). The idea of permit trading is known from the United States, see Svendsen and Christensen (1999), Svendsen (1998) and Varming et al. (2000). Based on this experience, the directive aims to devalue the emission quotas in circulation by the year 2012 at latest, so that the EU will meet its Kyoto target level of an 8% GHG reduction, see Brandt and Svendsen (2002).

Both the Green Paper and the new directive proposal are extremely complex and detailed. However, our focus on the allocation rule of grandfathering allows us to simplify the empirical evidence and limit our analysis to the issues that stakeholders made concerning this point only. The main industrial groups mentioned in the Green Paper all had the opportunity to comment on the Green Paper. They are the electricity and heat sector, the iron and steel sector, refining, chemicals, building materials (glass/pottery/cement) and paper/pulp/printing. We limit ourselves to these industrial lobbies, as they are, by far, the most influential, see Markussen et al. (2002).

Thus, the main question this paper seeks to answer is: Can the final choice of allocation rule be explained by potential industrial net winners involved in the policy making process?

In other words, we want to explain and observe how rent-seeking (or lobbyism) affects environmental regulation in favour of well-organized industrial interest groups. In the literature, Hahn and Stavins (1992) and Cropper and Oates (1992) have pointed to the need for directing environmental economic research towards political reality. Dijkstra (1999), Wallart (1999) and Svendsen (1998; 1999) have tried to fill this gap by arguing that one major difficulty when putting

theory into practice is the absence of political acceptability of environmental taxes within producer communities.

Political reality implies that policy makers are confronted by special interest groups that pursue private goals which may conflict with the overall goals of society. So, if the dominant interest groups do not like a particular proposal, they may block it and policy makers will not succeed in achieving the desired environmental target levels. This means, in contrast to traditional economic theory that the institutional set-up in society must be taken into account. Economic theory has traditionally been 'institution free' as it does not explicitly refer to any state. The government is just there to correct market failures (Muel-ler, 1989). However, under the strong influence of interest groups, government intervention may, in reality, prove worse than the disease of market failure it was meant to cure.

Still, as we will argue, rent seeking is not necessarily negative when it facilitates the regulation and achievement of specific environmental targets. Our contribution is to analyse the lobbyism that has taken place during the design of the forthcoming Greenhouse gas (GHG) market in the EU. Such an analysis has, to the best of our knowledge, not yet been undertaken and we proceed as follows. First, Section 2 explains the concept of rent-seeking and its welfare consequences, which leads to our theoretical discussion of rents created by grandfathering and permit trade in Section 3 and our empirical evidence concerning the political positions of the dominant industrial interest groups (as listed in the Green Paper) in relation to allocation rule in Section 4. Section 5 concludes the paper.

2. Rent-seeking and grandfathering

2.1 Rent-seeking

Tullock (1967) first introduced the concept of rent seeking and later defined it as the use of resources in lobbying and other activities directed at securing protective legislation (McKenzie and Tullock, 1981), see also Fishback et al.

(2000). In other words, ‘rent’ is not used in its everyday meaning, as the payment for using a good one does not own. Rather, it means the economic rent created by government intervention in the market economy.

These rents are generated when a license/permit system restricts the level of economic activity to below what it would be in the absence of such system. This gives positive rents to holders of permits, such as holders of CO₂ permits. Because such licenses and permits have no alternative uses, they only have value to their holders; thus, this value is the rent.

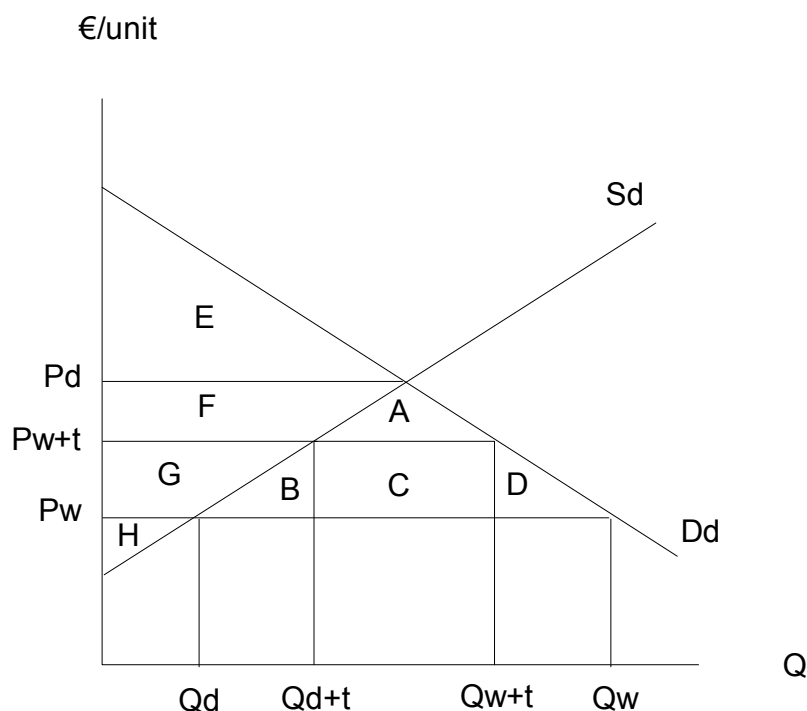
Typically, governments create rents by issuing permits to local producers or by taxing imports. In the case of the EU, let us first look at the traditional case of welfare effects and favored firms within the EU compared to outsiders, before turning to the specific case of grandfathering and how existing firms are favored compared to future firms.

2.2 Welfare effects

The EU common market has most prominently led to the disputed Common Agricultural Policy (CAP). Also, the EU has introduced import quotas on, e.g., bananas (permits) and has taxed imports of sugar. For these reasons, EU prices on agricultural products, bananas and sugar are far above world market prices. Figure 1 shows why.

Buchanan and Tullock (1962) showed that the loss from distorting policies is not confined to the dead-weight loss when resources are shifted into or out of affected activity. Two other types of costs must be added to the dead-weight loss. First, a person or group affected by the policy may engage in lobbying efforts to block or advance it. Second, a person or group may also engage directly in politics to get access to decision-making power. Overall, the State is seen to be pushed and pulled by lobbies and interest groups that are more interested in redistribution than overall economic growth in society. In this way, resources are directed from production to ‘rent-seeking’.

Figure 1: Welfare effects of an import quota and the rents that accrue to holders of import licenses



Source: Based on Meier and Rauch (2000, p.435) and Svendsen (2003).

In Figure 1, *Sd* is domestic supply whereas *Dd* is domestic demand. We assume that the EU does not affect the world price within the production range we focus on, so P_w is constant along the supply curve for the EU imports in question.¹

In the absence of international trade, the market will clear at the price of P_d . With free international trade, the market will clear at the price P_w . The EU gains from free international trade can easily be measured as the increase in consumer surplus. Consumer surplus is the area below the *D*-curve and above the market price in question because EU consumers are willing to pay a higher price than the equilibrium price for the first units (as expressed by their *Dd*-

¹ This might not be a realistic assumption, but even if EU could affect the world market price, it would not change the arguments put forward, but complicate matters unnecessarily.

curve). Before free international trade at price P_d , consumers' surplus amount to area E . After free international trade is introduced, the new S curve is flat following the world market price, P_w . Thus, consumers gain in consumers' surplus corresponds to the area $A + B + C + D + F + G$.²

While the consumers gain from free trade, the domestic producers lose. Producer surplus is the area to the left of the S -curve and below the market price in question because producers can produce the first units at a lower cost than the equilibrium price (as expressed by their S_d -curve). Figure 1 illustrates that at the world market price, P_w , only area H is left in producer surplus. Following free trade, domestic producers have suffered a loss in producer surplus amounting to areas $G + F$.

Buchanan and Tullock (1962) were first in showing that the loss from a distorting policy is not confined to the dead-weight loss when resources are shifted into or out of affected activity. Two other types of costs must be added to the dead-weight loss. Firstly, a person or group affected by the policy may engage in lobbying efforts to block or advance. Secondly; a person or group may also engage directly in politics to get access to decision-making power. Overall, the state is seen to be pushed and pulled by lobbies and interest groups that are more interested in redistribution than overall economic growth in society. In this way, resources are directed from production to 'rent-seeking'.

2.3 *Tariff and quota*

Now, suppose in Figure 1 that government imposes a tariff (t) per unit of imports, e.g. on sugar, so that P_w rises to $P_w + t$. Then the units purchased will fall from Q_w to Q_{w+t} . By this, EU import is reduced to $Q_{w+t} - Q_{d+t}$ units compared to $Q_w - Q_d$ without any trade restrictions. In contrast, domestic units supplied will rise from Q_d to Q_{d+t} . Gains from trade shrink from areas A, B, C and D to A . The EU net loss from less free trade (dead-weight loss) amounts to

2 We do not consider income effects arising from changes in consumer surplus, which might change the producer surplus as well.

the two triangles B and D since area C is the tariff revenue collected by the EU, i.e. $t \times (Q_{w+t} - Q_{d+t})$. The ‘rent’ of area C is in this case collected by the EU.

A quota system, e.g. for bananas, results in the same net loss for the EU. The quota of $(Q_{w+t} - Q_{d+t})$ limits EU imports and creates an excess demand at P_w . Therefore, P_w is bid up to $P_w + t$ where supply equals domestic demand. This situation allows holders of import licences to purchase imports at the price P_w and resell them in the domestic market at the price P_{w+t} earning a rent of $t \times (Q_{w+t} - Q_{d+t})$. This ‘rent’ of area C is equal to the tariff revenue and is now collected by the holders of import permits. Overall, we observe the same net loss in the quota system as found in the tariff system (triangles B and D) and the reduced area A gain from restricted free-trade (see Meier and Rauch, 2000).

Once more, it is instructive to identify winners and losers. While the consumers lose consumer surplus as described above, the domestic producers experience an increase in producer surplus of size G , since they can increase their prices (due to reduced competition) and sell more. In this case, we get the opposite situation that although society as a whole is worse off; the producers still prefer this new situation (compared to the free trade situation). The overall lesson to be drawn from this example is that identifying winners and losers of a proposed regulation (or government intervention into market solution) will be important when such parties have lobbying power in order to fully understand the choice of regulation.

Most importantly, the domestic suppliers are willing to invest up to the amount equal to area G to induce the domestic government to put the tariff, t , on imports. Thus, we have a quantitative measure of the amount that suppliers are willing to use for lobby activities if such activity is expected to change the choice of the policy makers in the suppliers’ preferred direction.

Just as firms will lobby for rents from keeping international competitors out of their domestic markets, so will they lobby to get rents from environmental regulation. One way of achieving the latter could be to ask for environmental regulation where the rents from receiving permits for free exceed the

lation where the rents from receiving permits for free exceed the environmental abatement costs added to the costs of lobbyism. The rent from regulation could either result from getting better market conditions compared to other actors (including potential actors) in the market or by getting property rights over some parts of the environmental assets. In the latter case, the rent can be perceived as a payment for possessing a scarce input factor. The rent is net of the direct costs of regulation, but we will, in the next section, identify conditions under which the net benefit from regulation (rent minus cost of complying with the specified target) is positive, leaving a lot of room for even costly lobbying activities.

The amount of lobbying activity is dependent on two different conditions, first the size of the ‘rent’ for the firms arising from different instruments and second, the likelihood of the success of such activities. In the next section, we show how these two conditions enter the choice of instruments to reduce pollution, and in particular, we turn to the case of a grandfathered permit market.

3 Grandfathering

3.1 Incumbent firms and regulation

In this section we present a simple model that shows how a grandfathered permit system affects the costs of incumbent firms and entrants. This enables us to draw important conclusions about the cost-difference between these two types of firms, the size of the rent and how the regulation influences the dynamics of the production market coming from entry and exit possibilities.

If the industry is polluting, it will be subject to regulation. It is well known that (at least in a full information situation) an appropriate choice of either taxes or (tradable) quotas will bring about any level of pollution in a cost-efficient way.³ This result of cost-efficiency is achieved for any tradable permit system (TPS), no matter how the initial allocation of permits is designed, e.g. whether permits

3 In what follows we will neglect the possibilities of transaction costs, or other distortions in the permit market.

are allocated by an auction or are grandfathered. So from an efficiency point of view, the instruments are equivalent. However, different instruments treat incumbent and entrants unequally. While a pollution tax (or an auction) treats all firms equal, a grandfathered system is strongly beneficial to the incumbent firms.

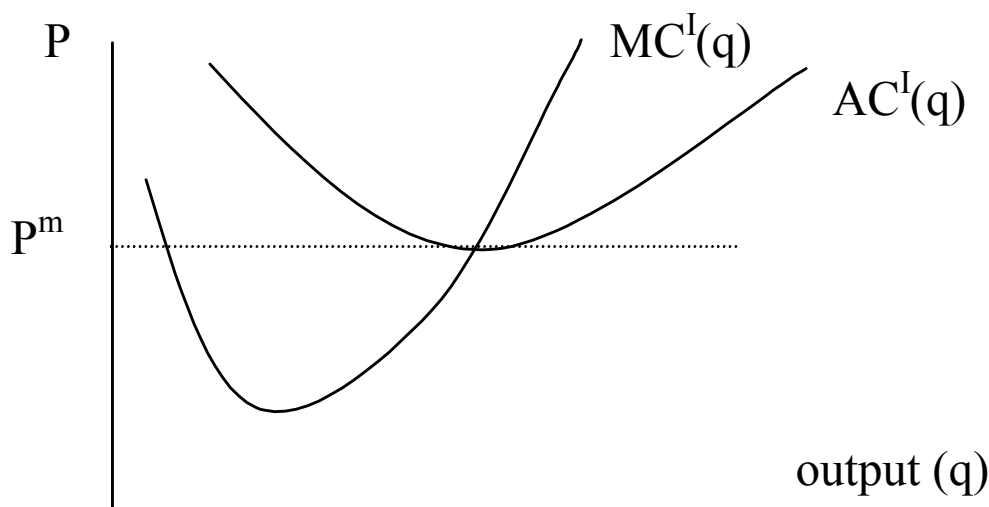
Using the insight gained in the previous section on the choice of regulatory instrument to control the CO₂ emissions in the EU, we identify winners from different types of regulation and make an assessment of the prospective outcome from using lobbying activity to direct the regulation in a preferred way. We do not explicitly specify an objective function for the policy makers in charge of the final choice of regulatory instrument. Instead, we take the view that the policy outcome is (at least partly) determined by the lobby-activities of interest stakeholder groups, and in the case of EU-legislation, partly by the objective of the EU of free competition. Given this, an instrument that satisfies the following criteria is a serious candidate for the final choice: a) minimizing the resistance from important lobby-groups (by securing the environmental target (environmental groups) at a minimum cost for the affected firms/ industries, and b) has no (or does minimize) the adverse impact on the output market that the regulated firms supply to. Specifically, we now show that a grandfathered permit system satisfies all these criteria.

3.2 The effect of a grandfathered system on the structure of the industry

In order to focus on our main points, we introduce a simple model. First of all, assume a perfectly competitive product market⁴ Initially, no regulation exists.

4 We make this assumption in order to focus exclusively on the welfare effects of regulation.

Figure 2: *Example of a firm under perfectly competitive conditions*



In figure 2, $MC^I(q)$ represents the incumbent firm's marginal cost of producing a good, q , while $AC^I(q)$ is the average production costs. P^m is the prevailing market price. In this figure a standard u-shaped cost structure and the resulting long run zero profit result is presented. The zero profit result occurs as a long run effect of entry.⁵

3.3 Introduction of regulation

As a by-product of the production of output, pollution is generated, which enters the ecosystems.⁶ However, the regulating authorities wish to control this emission since it generates external costs, which are not appropriately accounted for in the product price. The proposed regulatory instrument is a grandfathered TPS. Let us first investigate this grandfathered permit system without any entry considerations. In a grandfathered system, the property rights over the permits are handed over to the polluting firms for free. Together with this transfer, the number of permits will have to be reduced over time in order to get a

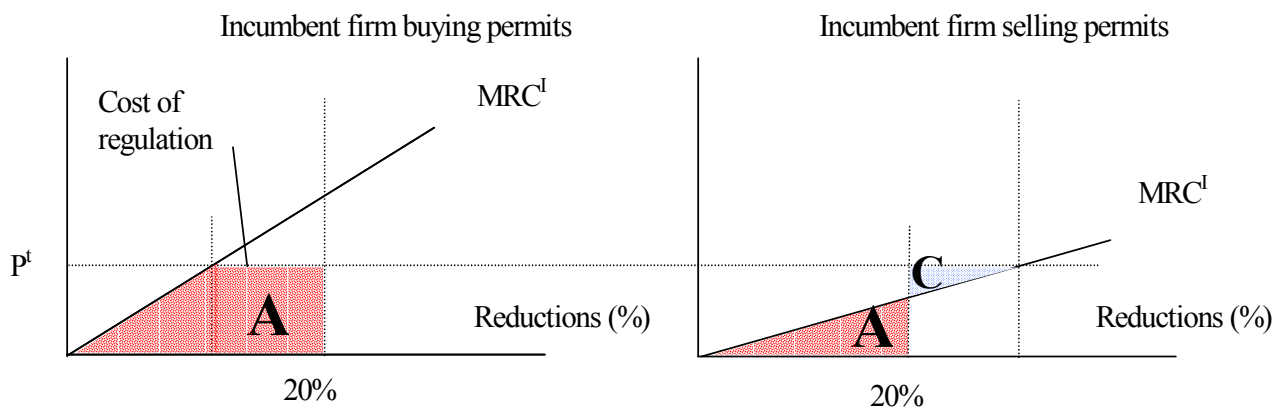
5 A zero-profit equilibrium does not imply that it is not profitable to be in this industry, it means that all of the factors of production are being paid their market price. A zero profit situation means that there will be no further profitable entry into this industry.

6 We exclusively look at uniformly mixed pollutants, such as CO_2 .

reduction of pollution. This can be achieved in several ways. The simplest approach is to uniformly (in the sense of treating all incumbents equally with respect of reduction targets) reduce the value (or the amount) of transferred permits over time. As an example, each firm gets the property rights over $(1-x)$ percent of its current emission level, where x is between 0 and 1. Hence, if $x=0.2$, then each firm gets the property rights over 80% of its current emission, implying a total reduction of 20% by the industry. For simplicity, we look at a situation where the reduction of permits is made instantaneously.

When trading is permitted, incumbent firms with high marginal reduction costs (MRC^I) will buy permits, while firms with low marginal reduction costs will sell permits, until each firm's marginal reduction costs are equalised, representing the cost-efficient allocation.⁷

Figure 3: Costs of regulation in a tradable permit market



In figure 3, we analyse a situation where all incumbent firms have been given free permit for 80 % of their pre-regulation pollution. MRC^I represents marginal reduction costs. The buying firm (the firm with high reduction costs) incurs a cost from regulation of area A, while the selling firm (the firm with low reduction costs) incurs a total cost regulation amounting to $A-C$. The permit

⁷ The reason why the firm with the high cost of reduction has survived in the fully competitive market is that so far there have been no demands on reductions.

price that equalises the marginal cost from regulation between sources is called p^t .

The possibility of entry is now introduced, and for simplicity we assume that this does not change the permit price.⁸ We will now correct two misconceptions often made about the grandfathered permit system. The first is that a grandfathered system acts as a barrier to entry, and secondly that it reduces the dynamics in the product market by reducing the pressure from potential entrants.

The grandfathered system does not establish a barrier to entry. To verify this claim, let us be more specific about what is meant by a barrier to entry. There exists no uniformly agreed upon definition of what establishes an entry barrier. However, in our case it has been argued that a grandfathered system yields a cost advantage to the incumbent firms. A natural candidate for an adequate definition is given by Bain (1956):⁹ A barrier to entry exists where established sellers in an industry have an advantage over potential entrant sellers, where this advantage is reflected in the extent to which established sellers can persistently raise their prices above the competitive level without attracting new firms to enter the industry.

Although the incumbent firms have lower costs of production than potential entrants equipped with similar technology to the incumbents, the endowment of permits has an opportunity cost that adds to the incumbent firms' costs as well (the firm is squandering the potential revenue from selling the permits). The free (grandfathered) permits represent a market value (the number of permits times the permit price). However, this value can only be realised by not using the permits (and selling them). If a firm uses its permits, it loses (foregoes) this opportunity. Hence, using the permit has an opportunity cost equal to the value of the endowment of the permits. As is well known from microeconomics, in

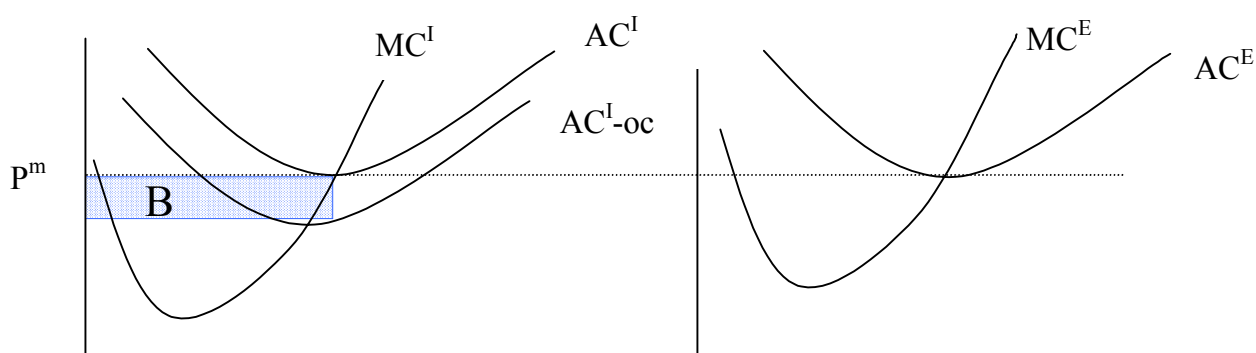
8 This assumption can be justified if entry is small or entrants will price out incumbents, or when entry is merely a threat if incumbents act inefficiently and profit opportunities exist.

9 See also Koustaal (1997).

order to derive economic profit, all costs, including opportunity costs, must be included in the profit function.¹⁰

What are the long run consequences of this type of regulation? Assume that an incumbent firm has average costs of AC^I , and by subtracting opportunity costs of the endowment of permits gives $AC^I\text{-oc}$ as in figure 4.¹¹ In the long run, the entrants can copy the technology of the incumbent firm, in which case it is expected that $AC^I=AC^E$ in our fully competitive environment. This has as a long run consequence that the long run output price is pushed downward to P^m implying zero profit for all market participants. Given the above definition of barriers to entry, the incumbent firms cannot persistently raise prices above the competitive level (that is, $P^m > AC^{\min}$), since this will attract entrants.

Figure 4: The rent for the incumbent firm



Another way to see that at P^m the incumbent firms operate with zero profit, is to consider what happens if a firm acts inefficiently. An inefficient incumbent will still be priced out by an efficient entrant. If an incumbent acts inefficiently, it will earn a negative profit at $P=P^m$. That is, stopping production and selling its stock of permits is a more profitable option than continuing production. Hence, any price above $P=P^m$ will result in entry, and any price below $P=P^m$ will result in incumbent firms leaving the industry.

10 See e.g. Varian (1999) chapter 19.

11 The exact shape of this curve is not important; all that matters is that the $AC^I\text{-oc}$ curve lies above the AC^I curve.

Hence, the grandfathered system neither establishes barrier to entry nor does it reduce the long run dynamics coming from entry.

Although the incumbent firms operate under a zero profit constraint in the long run, they nevertheless receive a rent from regulation. The rent comes from holding a factor that is scarce, in this case the permits. The value of this holding is given by the area B in figure 4, which is equal to the market evaluation of the value of the endowment of permits that the incumbent holds. This rent has no implications regarding the profits and entry decision (since it is equal to the opportunity costs of the permits), but it still represents a value to the firm. (See Koustaal, 1997, for more examples of this type of rent). Although the incumbent firm operates under zero profit, as it did prior to the regulation, it still receives a rent due to regulation that it would not receive under a tax or auctioned system. Therefore, the incumbent firm obviously prefers the grandfathered system. The rent is a form of payment, or redistribution from the regulator to the incumbent firms and can be thought of as political costs to make regulation feasible. As the example in section 2 with the agricultural support systems in EU demonstrated, the incumbent firms are willing to use part of these resources in lobby activities either to convince policy makers that this system is the best, or once the regulation is in place, to keep this type of regulation.

An important result emerges from comparing figures 3 and 4: Situations exist where the rent from regulation with grandfathered permits exceeds the cost to the firms of this regulation. This is the case when $A > B$ for a buying firm and $A - C > B$ for a selling firm. When is this situation most likely? One situation is when pollution is an inevitable by-product to production, which is often the case when considering CO₂-emissions. In this case the grandfathered permits represents a high value. In such a case we cannot exclude the possibility of the unexpected result that introducing regulation actually improves the net position of an incumbent firm and here the firm definitely has an incentive to use some of its resources for lobbying activities in order to influence the regulation.¹²

12 Of course, such calculation should also include costs of lobbying.

The industry prefers the grandfathered tradable permit system, since it yields a rent to the incumbent firms, which the other types of regulation do not. Thus, the rent seeking motives of the firms should result in lobby-activities aimed at influencing policy decisions if it is likely that such activity will influence decisions in a preferred direction. On the other hand, we do not, from a theoretical point of view, find any significant reasons to expect strong resistance from policy makers against this system, since it guarantees the environmental target, yields long-run dynamic efficiency, and consequently, not higher commodity prices compared to an auctioned system. In one respect, however, the system with auctions is superior to a grandfathered system. In case when the payments collected from auctions are used to reduce distorting taxes. This however, affects all taxpayers, who are not organised and are not likely to lobby against this type of regulation.

Thus, we consider the grandfathered system to be a feasible compromise between economic efficiency and political feasibility.

4. The case of GHG trade in the EU

4.1 *Green Paper and final directive proposal*

The Green Paper on GHG trade in the EU contains ten questions for discussion and these can again be divided into four main groups. The first four questions concern the *target group*. Questions 5 and 6 are about *allocation rule* concerning permits, i.e. the focus of this paper. Questions 7 and 8 address emissions trading and the potential *mix of the permit system with other instruments*. Finally, questions 9 and 10 cover the *compliance* issue.

On the second issue of *allocation*, the Green Paper lists a number of possibilities such as auctioning-off permits to the highest bidding parties. The **auction mechanism** suggested by the Commission would clearly eliminate rent-seeking, as existing firms would have to pay for all the permits they acquire just as new firms would have to do. Still, the optimal solution of auctioning-off the

permits is not politically feasible because the final choice in the directive proposal is an allocation rule free of charge in the form of grandfathering.

The grandfathering system is to be based on benchmarking or a historic baseline, which is clearly the solution that benefits rent-seeking industry the most (as argued in Sections 2 and 3 above). Exactly the same choice of allocation rule can be observed in all US tradable permit systems where grandfathering was chosen, see Tietenberg 1985; Svendsen 1998; Daugbjerg and Svendsen 2001).

The purpose of the following analysis is to state whether, according to their answers given to questions at the Green Paper hearing, a sector is a winner or a loser regarding the final choice of allocation rule. Here, we define ‘winners’ as actors who influence the market design in their favour, thus achieving a net gain from rent-seeking. This approach is in line with the theoretical framework of Tullock (1967) and Olson (1965).

Thus, we look for the answer to the following question: if there is to be regulation, will industry prefer grandfathered GHG emission trading or something else? We deal with the six main industrial groups, namely electricity producers, refining sector, iron and steel, paper and pulp, building materials, and chemical industry. The stated preferences are all found in the Green Paper hearing replies (DG Environment, 2000). When we refer to the preference of a political actor in the following, this Green Paper hearing is the source. If another source is cited, this source will be explicitly listed. The following section 4.2 relies heavily on Markussen et al. (2002).

4.2 Industrial interest groups

EU electricity producers are the main emitters of CO₂ and are their participation is therefore crucial to the liquidity and environmental success of the permit market. The opinion of these large electricity producers is mainly represented by EURELECTRIC. A main concern of EURELECTRIC is that the electricity

sector will be required to reduce emissions much more than other sectors. EURELECTRIC also states that with respect to CO₂ emissions, the electricity sector should be recognised by the Commission and by politicians as a sector that has already done a lot, and in the long term, electricity offers the possibility of minimal emissions. In its hearing reply, EURELECTRIC clearly states that it wants GHG trade and that the best method of allocation is grandfathering based on historical emissions and not any type of auction. In conclusion, the large electricity producers won on the grandfathering allocation rule.

The oil and gas industry is represented by the International Association of Gas and Oil Producers (OGP). The daughter organisation, EUROPIA, represents the refineries and is the author of their Green Paper hearing reply. Clearly, given the ‘right’ implementation of the Kyoto Protocol, the gas industry envisages a booming market because the carbon intensity of gas is about half the intensity of coal. Consequently, an increased share of natural gas use in the energy sector will be needed to support the Kyoto targets. In this respect, the gas lobby is almost like an abatement lobby. The position of the gas sector is identical to that of electricity producers, namely they prefer GHG trade and grandfathering as the allocation rule.

The European Confederation of Iron and Steel Industries (EUROFER) represents 96% of the iron and steel industries in Europe. Therefore, the answers from EUROFER are used to describe the attitudes to emissions trading in the steel industry. Steel and iron production is energy intensive and ways to increase productivity and reduce the use of energy are the same as reducing costs. Thus, the EUROFER asks for grandfathered emission trading rather than traditional standard regulation under the condition that allocation must take early actions and voluntary agreements into account.

The Confederation of European Paper Industry (CEPI) represents the pulp and paper industry in Europe. The position of CEPI is also supported by the Confederation of European Forrest Owners, CEPF. The sector wanted a voluntary system, where targets are set by negotiation and compliance should be on a

community level. The allocation rule should be based on common guidelines at the EU-level through grandfathering based on a common baseline. In conclusion, the pulp and paper industry has partly lost because they did not get a voluntary system – still, they are winners in the sense that the suggested mandatory system includes grandfathering as the allocation rule.

The cement industry is represented by CEMBUREAU and the ceramic industry by CERAMIE-UNIE. The answers from the ceramic sector are not very detailed and are, to a large extent, similar to the cement industry's answers. Overall, they are in favour of an early but voluntary start of the programme in 2005. The same sectors and companies should be covered in all member states. In order to avoid distortions to competition, a co-ordinated framework at the EU-level is needed and this could be done by grandfathered emission trading. Auctioning is not favourable because it is tantamount to a tax, though the ceramic industry is in favour of auctioning.

The European Chemical Industry Council (CEFIC) is the umbrella organisation for the national chemical federations and chemical companies in Europe. It represents more than 40,000 companies and has a net turnover of €40 billion. The chemical sector lobby does not want to be a part of an EU program. The industry emphasizes that permit trading will constrain their competitiveness and their ability to grow. The sector has already improved its efficiency through a Voluntary Energy Efficiency programme and further end-of-pipe abatement is not economically feasible. The chemical industry can be said to have won, as they are not a part of the final proposal and are regulated by national and voluntary targets. Furthermore, because the number of producers is very large and because they do emit all 6 GHGs in complicated processes, it is probably too administratively burdensome and thus too expensive to monitor and control them.

5. Conclusion

The theory outlined in this paper strongly suggests that the incumbent firms prefer a grandfathered permit system to other types of regulation. While this conclusion might not come as a surprise, the reason for it is most interesting. The analysis has shown that the grandfathered permit system does *not* yield a cost-advantage to the incumbent firms compared to (potential) entrants, however, it yields a rent to incumbent firms equal to the market evaluation of the value of the initial endowment of the permits. Thus, the lobbying for a specific type of regulation is triggered by rent seeking motives. We find that such lobbying activity is likely to be successful since the grandfathered permit system does not imply any reduced competition in the product market. This is so, because the grandfathered permit system does not yield any barriers to entry and does not reduce the pressure coming from potential profit seeking entrants thus still inducing the incumbent firms to act efficiently in the product market.

Turning to the empirical side, our ‘first-round’ observation was that the chemical sector won by avoiding becoming a part of the final program and thereby facing the extra cost of having to undertake abatement efforts. However, the reason for excluding the chemical sector was administrative rather than political. It did not pay to monitor and control the chemical sector for administrative reasons because of its many small producers and the fact that they generally emitted all 6 GHGs, see Markussen et al. (2002).

However, the other five industrial groups listed in the Green Paper, were generally and overwhelmingly in favour of emission trading and grandfathering as the allocation rule. This could be a plausible explanation why grandfathering was chosen among a number of permit allocation rules, most prominently the auction solution. Grandfathering favoured industry in general as it minimizes private emissions reduction costs and creates, as we showed in Section 2, a rent to existing firms. Thus, this feature of the design in the proposal directive points in particular to the presence of powerful industrial rent seeking. A similar result

can be found in the US, where all tradable permit systems use grandfathering as the permit allocation rule, see Svendsen (1998).

The electricity sector is the largest and most important sector for the implementation of the programme and the directive did, therefore, support their interests. The electricity sector has, as shown by Varming et al. (2000), numerous and cheap options for CO₂ reduction compared to other industrial sectors that use fossil fuels for energy production. This argument is illustrated by the fact that industrial representatives such as UNICE and DG Enterprise were most active in lobbying against the final directive proposal, which for this reason, was significantly delayed (ENDS, 2001a-b). Because this sector in particular has access to cheap technical possibilities generally, it may turn out to be an overall potential seller of permits so that its emissions reduction costs and lobbying costs in total are lower than the rent and potential trade gains it will face.

In conclusion, the grandfathered permit system to be used in the EU, establishes a sound political compromise since it on the one hand generates a rent for established firms (the one bearing the main costs of regulation) and on the other hand provides a system that copes with one of the main pillars of the EU, to establish and maintain competition in the product markets without jeopardizing the specified environmental target levels.

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